CITY COMMISSION REGULAR MEETING AGENDA

Thursday, February 13, 2025 at 5:30 PM

City Commission Chambers – 105 S. 2ND Street, Flagler Beach, FL 32136

ALL MEETING ITEMS WILL BE CONTINUED UNTIL MEETING IS COMPLETE.

1. **Call the meeting to order**
2. **Pledge of Allegiance followed by a moment of silence to honor our Veterans, members of the Armed Forces and First Responders**
3. **Proclamations and Awards**
   - a. Recognizing February 16th as A1A Scenic & Historic Coastal Byway All-American Road Designation Day.
   - b. Recognizing February as Black History Month.
   - c. Recognizing February as Teen Dating Violence Awareness Month.
   - d. Certificate of Appreciation John Timmins.
4. **Deletions and changes to the agenda**
5. **Public comments regarding items not on the agenda**

   Citizens are encouraged to speak. However, comments should be limited to three minutes. A thirty-minute allocation of time for public comment on items not on the agenda. Each speaker has up to three-minutes to address the Chair, and one opportunity to speak, no time can be allotted to another speaker.
6. **Consent Agenda**
   - a. Approve the regular meeting minutes of January 23, 2025.
   - b. Acceptance of dedicated infrastructure.
7. **General Business**
   - a. Quarterly Financial Update (Quarter 1 - Oct - Dec 2024).
   - b. Resolution 2025-08. A Resolution by the City of Flagler Beach, Florida, for Water, Sewer, Stormwater, and Sanitation Fee increases to provide revenues that will be sufficient to operate financially self-supporting Utilities; repealing Resolution 2023-21; providing for conflict and an effective date.
   - c. Resolution 2025-04. A Resolution by the City Commission of the City of Flagler Beach to award Bid No. FB-24-0111 Project # 238 Wastewater Sludge Management Improvements to McMahan Construction Co., Inc. in an amount not to exceed $2,992,000; providing for conflict and an effective date.
   - d. Resolution 2025-09. A Resolution by the City Commission of the City of Flagler Beach, Florida to close out the Beach Management Reserve and move funds to the Dune Protection Reserve and redesignate the Dune Protection Reserve as the Dune Walkover Reserve; providing for conflict and an effective date.
   - e. Resolution 2025 - 10. A Resolution by the City Commission of the City of Flagler Beach, Florida, to award a contract to England-Thims & Miller, Inc. in an amount not to exceed $826,586.66 to be the Construction Manager Adviser (CMA) and serve as the City's on-site representative overseeing the construction of the Flagler Beach Pier; providing for conflict and an effective date.

f. Resolution 2025-11. A Resolution by the City Commission of the City of Flagler Beach, to award a contract to Lads Construction Services, LLC for an amount not to exceed $34,440.00 to repair damages incurred to the Flagler Beach Public Library during Hurricane Milton; providing for conflict and an effective date

g. Resolution 2025-12. A Resolution by the City Commission of the City of Flagler Beach, to approve Project #589 in an amount not to exceed $164,500 to DDS Enterprises, LLC to improve Parking Lot #4; providing for conflict and an effective date.

h. Resolution 2025-13. A Resolution of the City Commission of the City of Flagler Beach accepting a proposal from Neu Urban Concepts to develop a Mobility Action Plan and Mobility Fee for the City of Flagler Beach; providing for conflict and an effective date.

i. Resolution 2025-14. A Resolution by the City Commission of the City of Flagler Beach, to award a contract to Moffatt & Nichol (M&N) for the fee of $ $349,500 to provide construction support services in the capacity of Engineer of Record (EOR) overseeing the construction of the Flagler Beach Pier; providing for conflict and an effective date.

j. Resolution 2025-15. A Resolution by the City Commission of the City of Flagler Beach, Florida, approving an amendment of the Fiscal Year 2024/25 Budget to authorize the merger of two budget line items (Taser Reserve and Body Cam Reserve); authorizing the purchase of Tasers and Body Cams from Axon; providing for conflict and an effective date.

8. Public Hearings

a. Ordinance 2025-01. An Ordinance by the City of Flagler Beach, Florida, amending the Flagler Beach Code of Ordinances, Appendix "A", Land Development Regulations, to specify elevation of manufactured homes in Flood Hazard areas; to adopt and reformat local amendments to the Florida Building Code; providing for applicability, severability, and an effective date - first reading.

9. Staff Reports

a. City Attorney:

b. City Manager:

c. City Clerk:

10. Commission Comments

a. Commission comments, including reports from meetings attended.

b. Public comments regarding items not on the agenda. Citizens are encouraged to speak. However, comments should be limited to three minutes. *A thirty-minute allocation of time for public comment on items not on the agenda. Each speaker has up to three-minutes to address the Chair, and one opportunity to speak, no time can be allotted to another speaker.*

11. Adjournment

RECORD REQUIRED TO APPEAL: In accordance with Florida Statute 286.0105 if you should decide to appeal any decision the Commission makes about any matter at this meeting, you will need a record of the proceedings. You are responsible for providing this record. You may hire a court reporter to make a verbatim transcript. The City is not responsible for any mechanical failure of the recording equipment. In accordance with the Americans with Disabilities Act, persons needing assistance to participate in any of these proceedings should contact the City Clerk at (386) 517-2000 ext 233 at least 72 hours prior to the meeting. The City Commission reserves the right to request that all written material be on file with the City Clerk when the agenda item is submitted.

A PROCLAMATION OF THE
FLAGLER BEACH CITY COMMISSION
PROCLAIMING FEBRUARY 16, 2025, AS
"A1A ALL-AMERICAN ROAD DAY" IN FLAGLER BEACH

WHEREAS, Flagler Beach is committed to the protection of scenic beauty, preservation of history and culture, enhancement of motor vehicle, bicycle, and pedestrian safety, and the promotion of nature through outdoor recreation; and

WHEREAS, the Friends of A1A Scenic & Historic Coastal Byway, Inc., work tirelessly to support these efforts along the 72 miles of A1A Scenic & Historic Coastal Byway All-American Road including 20 miles of Flagler County's coastal corridor; and

WHEREAS, the A1A Scenic & Historic Coastal Byway was created by the U.S. Department of Transportation's Federal Highway Administration through the partnership of three established Florida Scenic Highways under the Florida Department of Transportation's Florida Scenic Highway Program, linking A1A Ocean Shore in Flagler Beach, the A1A River-to-Sea Trail in the Hammock, and Scenic and Historic A1A in St. Johns County; and

WHEREAS, the A1A Scenic & Historic Coastal Byway served since 2002 as a designated National Scenic Byway by the U.S. Department of Transportation for 19 years before becoming an All-American Road; and

WHEREAS, the A1A Scenic & Historic Coastal Byway was designated by the U.S. Department of Transportation's Federal Highway Administration as an All-American Road on February 16, 2021, the highest designation within the National Scenic Byway Program; and

WHEREAS, the All-American Road designation is one of two in the entire State of Florida to have earned this distinction, and one of 58 in the entire United States of America with this designation; and

WHEREAS, the Friends of A1A Scenic & Historic Coastal Byway, Inc. will recognize the 100th anniversary of State Road A1A in 2027 as part of the A1A Centennial Commission;

NOW THEREFORE, BE IT PROCLAIMED BY THE FLAGLER BEACH CITY COMMISSION that they herby declare **February 16, 2025** as **"A1A ALL-AMERICAN ROAD DAY"** in Flagler Beach and applaud the efforts of the volunteers who serve as stewards of this iconic roadway and A1A Scenic Byway communities. Their dedication to the protection, preservation, promotion, and enhancement of the A1A Scenic & Historic Coastal Byway is nothing short of legendary, and they shall forever be remembered for their service and dedication.

Adopted this 13th day of February 2025.

_____
Patti King, Mayor

Proclamation
Celebrating Black History Month

WHEREAS: Each year, February is designated Black History Month, a time for honoring and exploring the culture and history of African Americans and recognizing that our society's rich diversity is one of our greatest strengths;

WHEREAS: The origins of Black History Month date back to 1915 when Dr. Carter G. Woodson founded the organization known today as the Association for the Study of African American Life and History;

WHEREAS: Black History Month began as "Negro History Week" in February 1926 in the United States;

WHEREAS: In the 1960's, the week expanded into Black History Month as it coincides with the birthdays of Frederick Douglass (February 15) and Abraham Lincoln (February 12);

WHEREAS: As we celebrate the history of Black Americans – brilliant African American artists, talented musicians and successful business and industry leaders – may we also recognize the barriers they have overcome;

WHEREAS: Observing Black History Month provides opportunities to gain a deeper understanding of African American history and acknowledge the centuries of struggles for equality and freedom;

WHEREAS: Black History Month also celebrates the achievements and contributions that African Americans have made in shaping our country and communities; and

WHEREAS: We must not forget the men and women who worked tirelessly for freedom, civil rights and equality for all people and whose deeds helped to broaden and enrich American culture.

NOW, THEREFORE, I, Suzie Johnston, acting under the authority vested in me as the Mayor of the City of Flagler Beach, do hereby proclaim February 2023, as

"BLACK HISTORY MONTH"

and urge the citizens of the city to take cognizance of this event and participate fittingly in its observance.

IN TESTIMONY WHEREOF, I have hereunto set my hand and caused the Seal of the City to be affixed this 13th day of February 2025.

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_____
Patti King, Mayor

PROCLAMATION
TEEN DATING VIOLENCE AWARENESS MONTH
CITY OF FLAGLER BEACH, FLORIDA
FEBRUARY, 2025

WHEREAS, the City of Flagler Beach is committed to the well-being and protection of our youth, the safety of our communities, and to fostering a society based upon mutual respect for one another – with zero tolerance for any forms of victimization and abuse; and

WHEREAS*,* teen dating violence is a serious crime that can involve physical, sexual, verbal, emotional, economic, or other abusive behavior, including harassment and cyberbullying via texting, emailing, instant messaging, or posting on social media; and

WHEREAS, women who are 16 to 24 years in age are more vulnerable to intimate partner violence, experiencing abuse at a rate of nearly triple the national average; and

WHEREAS, one in three adolescents in the United States is a victim of physical, emotional, or verbal abuse from a dating partner – a figure that far exceeds rates of other types of youth violence; one in ten high school students has been purposefully hit,, slapped or physically harmed by a boyfriend or girlfriend; one in ten teens reported sexual victimization from a dating partner; and one in four teens in a relationship report their boyfriend or girlfriend isolating them from all friends and family; and

WHEREAS, young people who have been victimized by an abusive dating partner can experience serious negative effects to their physical and emotional health and are more likely to be depressed, develop low self-esteem, perform poorly in school, engage in risky behaviors such as drug and alcohol use, and contemplate or attempt suicide; and

WHEREAS, while dating violence affects teens across all races, genders, religions, nationalities, sexual orientations, and socioeconomic statuses, it disproportionately affects lesbian, gay, and bisexual youth, who experience rates of intimate partner violence that are almost twice as high as the rates for heterosexual youth; transgender youth report even higher rates of victimization and dating violence than their heterosexual peers; and

WHEREAS, parents and guardians of victims of dating abuse are often unaware of the problem: studies show that only 33 percent of teens in an abusive relationship ever told anyone about the behavior and 81 percent of parents responded either that teen dating abuse is not an issue or that they did not know whether it is an issue; and

WHEREAS, Flagler County Advocates Alliance is working to increase public understanding of this problem and mobilize community efforts to end Teen Dating Violence.

NOW THEREFORE, BE IT PROCLAIMED BY THE CITY OF FLAGLER BEACH COMMISSIONERS that they hereby declare **February 2025** as **"National Teen Dating Violence Awareness Month"** in Flagler Beach and applaud the efforts of the many victim service providers, police officers, prosecutors, national and community organizations, and private sector supporters for their efforts in promoting awareness about teen dating violence.

Adopted this 13th day of February 2025.

_____

Patti King, Mayor

Certificate of Appreciation

THIS CERTIFICATE IS AWARDED TO

John Timmins

In recognition of John Timmins, to show our appreciation of his generous donation of time and materials to repair park facilities at Palmetto Park.

CITY OF FLAGLER BEACH

Mayor Patti King

February 13, 2025

CITY COMMISSION REGULAR MEETING MINUTES

Thursday, January 23, 2025, at 5:30 PM

City Commission Chambers – 105 S. 2ND Street, Flagler Beach, FL 32136

Present: Mayor Patti King, Chair Scott Spradley, Vice-Chair James Sherman, Commissioners Rick Belhumeur, Eric Cooley and Jane Mealy, City Attorney D. Andrew Smith, III, City Manager Dale L. Martin, and City Clerk Penny Overstreet.

1. **Call the meeting to order:** Chair Spradley called the meeting to order at 5:30 p.m. and announced the Veranda Bay items have been pulled by the applicant to return to the Commission at a later date.
2. **Pledge of Allegiance followed by a moment of silence to honor our Veterans, members of the Armed Forces and First Responders.** Commissioner Sherman led the pledge to the flag.
3. **Proclamations and Awards**
   a. Certificate of Appreciation to John Timmins for his generous donation of time and supplies to repair equipment at Palmetto Park. Mayor King announced Commissioner Sherman will deliver the certificate to Mr. Timmins.
4. **Deletions and changes to the agenda:** None.
5. **Public comments regarding items not on the agenda.** There were no comments received.
6. **Consent Agenda**
   a. Approve the minutes of the January 9, 2025, Regular Meeting. Motion by Commissioner Mealy, seconded by Commissioner Belhumeur to approve the consent agenda. The motion carried unanimously.
7. **General Business**
   a. Resolution 2025-02. A Resolution by the City Commission of the City of Flagler Beach, Florida, approving a proposal from Connect Consulting, Inc, in an amount not to exceed $61,890 for the evaluation of Well #11 in relation to the increased saltwater intrusion, providing for conflict and an effective date. Attorney Smith read the title of the resolution into the record. Commissioner Cooley asked why the City of Palm Coast is noted in the packet. City Clerk Overstreet clarified; the City is piggybacking a contract made by Palm Coast with Connect Consulting. Motion by Commissioner Belhumeur, seconded by Commissioner Sherman to approve Resolution 2025-02. Public comment was opened. No comments were received. Public comment was closed. The motion carried unanimously, after a roll call vote.
   b. Resolution 2025-06. A Resolution by the City Commission of the City of Flagler Beach, to award Bid No. FB-24-2307 Project # 260 Pier Construction to Vecellio & Grogan in an amount not to exceed $14,142,027; providing for conflict and an effective date. Attorney Smith read the title of the resolution into the record. Commissioner Mealy asked Mr. Perdomo, Project Manager, Moffat and Nichol, questions regarding the unit price breakdown. Mr. Perdomo spoke about the difference in the mobilization line item and the trestle construction. Commissioner Cooley reported this is the same company that constructed the Jax Beach Pier. Commissioner Sherman inquired about the timeline. Mr. Perdomo responded Vecellio estimates construction to begin in March or at the latest April. Motion by Commissioner Mealy, seconded by Commissioner Sherman to approve Resolution 2025-06. Public comment was opened. Paul Eik inquired when final completion of the Pier would be and does the Commission expect impacts to the summer tourist season. How will this impact traffic on A1A and

Moody Boulevard and will there be impact to streets and parking. Mr. Perdomo responded there is a contractual timeline for the contractor. The goal has been July 04, 2026, which may be too ambitious. We and the contractor understand, and we will do everything we can to meet the July 4 deadline. Parking will be restricted to South A1A from 3rd to 5th Streets. East of A1A spaces will be used as a work zone. Chairman Spradley reported the construction of the hotel is estimated to conclude in April or May and will open parking spaces in the downtown area. Mr. Perdomo added there is intent to provide beach access underneath the pier and that will be done safely. There will be restriction zones for public safety to be managed by the contractor. Commissioner Cooley asked for standard protocol to keep surfers out of construction areas. There area in question is not different than the one already specified and marked by the City. There will have to be collaboration between contractor and the police to enforce those construction areas. Mayor King reported regarding parking, by the time of construction the S. 8th Street Parking Lot will be completed. Commissioner Cooley asked about the timing of the building of the promenade. Mr. Martin asked the Commission if they have a preference of when the geotechnical boring for the pier will be done during the day or night. Mayor King asked if this would be a noisy event. Mr. Perdomo reported it is not a noise event. It was the consensus of the Commission to leave it to the Contractor's discretion. Mr. Perdomo reported that the intent is to have the Beach Walk final design done by early November. The building portion Phase I could be completed around the same time as the completion of the pier. Commissioner Mealy asked if this works with the TDC Grant. Mr. Martin responded in the affirmative. Commissioner Cooley asked about the time of the construction of the promenade. Mr. Perdomo responded, Phase 2 (construction of the promenade), the City should expect a four month to six-month period for construction and completion towards the latter part of 2026. The motion carried unanimously, after a roll call vote.

c. Resolution 2025-07. A Resolution by the City Commission of the City of Flagler Beach, Florida, retroactively approving Change Orders No. 1 through No. 8 for the Wickline Improvements Project 539 and proposed Change Order No. 9 from R&K Roofing in a total amount of $20,866.80; providing for conflict and an effective date. Attorney Smith read the title of the resolution into the record. Mr. Martin requested Change Order 9, Section 2, be removed from the resolution. He asked the Commission to approve all but Section 2 of the Resolution. Commissioner Cooley asked Mr. Martin how this happened. Mr. Martin explained the line item in the budget was for $110,000. The Commission's approval was not to exceed $65,000. The purchase order was put into the system as $110,000. It was not caught by the departments involved. Commissioner Cooley spoke about the history of the finances that have gone into the Wickline Center. Motion by Commissioner Mealy, seconded by Commissioner Sherman, to approve Resolution 2025-07 minus Section 2. Public comment was opened. No comments were received. Public comment was closed. The motion carried unanimously, after a roll call vote.

8. Public Hearings – No hearings.

9. Staff Reports

a. Attorney Smith reported on the foreclosure items that went before the Magistrate on Wednesday. The magistrate granted the City permission to proceed. Attorney Smith will be presenting the orders to the Commission at a future date.

The magistrate asked the City to defer the case involving the partially built condos on Clubhouse Drive for 120 days due to the fact the bank took title of the property, and the condos are to be demolished in the next two weeks. The bank will be coming before the Commission to ask for a waiver or reduction of the fine incurred by the previous owner, Butler and Butler.

He spoke of the Moms for Liberty Case which has to do with how to enforce decorum in meetings. Court found strike down decorum rules that required statements to be addressed to the Chair. In this case, it was not that the City had rules of decorum in place but how those rules were enforced.

Commissioner Sherman asked if there was a way to secure the single family home that will be under foreclosure. Attorney Smith reported there are steps necessary to do it and he will talk to Code Enforcement about it.

b. City Manager: Summarized events: He will be leaving on Tuesday for meetings in Tallahassee with Mr. Fernandez and will be returning to the office on Wednesday. Mr. Fernandez is working on meetings with Representative Grecko, Senator Leek and DEP officials. He reported two long-time employees will be leaving the City on Friday, January 31st: Chief Bobby Pace and Bill Clemence. Mr. Martin will be giving more details about the retirement events as they are known. The Joint Municipalities meeting will be held on February 5th. The parking lot improvements at S. 8th and S. Central are under construction. He will be presenting a change order to the Commission for the parking contractor to continue to the 2nd parking lot on S. 5thStreet. Mr. Martin is working on getting appraisals for vacant lots on S. Daytona for the City to possibly use for stormwater infrastructure and is also in the process of getting appraisals for the golf course.

c. City Clerk Overstreet reported scheduling for the next Joint Municipalities Meeting which will be held in July or August. Possible dates are July 2, July 9, July 17, July 23, July 30 and August 27th. She will be sending an email to the officials to get their feedback. Three candidates have qualified for the Commission seats: John Cunningham, Jane Mealy, and James Sherman.

Chief Doughney attended the FDOT Meeting/Crosswalk initiative for Flagler County. He suggested the following crosswalks to look at: Pier Crosswalk, S. 8th and A1A, N. 4th and A1A, SR 100 and A1A, John Anderson and SR 100 and the lack of a crosswalk from Connecticut Avenue and SR 100. Chief Doughney asked FDOT to look at where the crosswalk opposite the Hotel would be located. Commissioner Sherman commented the same program was done in Volusia County and was very successful. Commissioner Cooley asked if there are any potential study regarding the crosswalk on SR 100. Chief Doughney reported they are looking at that crosswalk and potentially relocating the crosswalk once the hotel is completed. Chief Doughney reported that the Department made 65 DUI arrests in 2024. Florida Highway Patrol made 80 DUI arrests within the City limits of Flagler Beach.

10. Commission Comments

a. Commission comments, including reports from meetings attended.

Mayor King updated the Commission on the Centennial Planning. We are putting together a preliminary schedule of events to be published soon. Plan on Aprill 16th, Wednesday evening for a birthday celebration. Mayor King reported she hosted the Florida League of Mayors.

Commissioner Belhumeur reported the call for TPO projects for this year has started and will end in March. He would like to see a reconfiguration of Flagler Avenue and A1A. Mr. Martin is looking for someone to draw up some plans to present. He was glad to see the 8th Street parking lot coming to conclusion and thought it looked good. Commissioner Belhumeur asked for better distribution of the trash cans in the downtown area. Mr. Martin reported the Sanitation Supervisor is looking at inventorying them and relocating where needed. He asked for an update on the fuel depot. Mr. Martin said the Building Inspector is in the process of getting quotes.

Commissioner Sherman reported walking the City with Daryl Reynolds and picking up litter around the City. He reported the large volume of cigarette butts and plastic toothpicks. He hoped the Downtown Playbook group could get involved. Commissioner Sherman wants a PSA about Elevate Florida Residential Mitigation Program. He asked to have a workshop between the contractors and commission about revisiting the building code ordinance and how we are building in the AE flood zone.

Commissioner Cooley spoke of the TDC meeting; a good take away from the meeting was according to a survey: CRA district is the top visited point of interest in the county. He expressed his concern about the CRA's appearance. There is a workshop about Beach Renourishment Funding to take place on February 5, 2025. Flagler County Cultural Council is looking for a representative. They need a

representative from the City. Mayor King volunteered. Turtle Trail within the County is getting some traction. Commission Cooley suggested one for the Beach Walk and suggested artists Bill Stead or Stewart Maxy. He suggested adding this topic to a future workshop.

Commissioner Mealy spoke at Legislative Delegation and attended the Family Life Center meeting. She reported on the Citizens' Academy and was grateful to all that spoke to the group. Commissioner Mealy asked about the raising home applications; all submitted last year but were denied because the City did not submit proper paperwork? Mr. Martin to let her know what took place.

She received information from VCARD about flood mitigation. She suggested inviting FCARD to a workshop. Commissioner Cooley felt there were simple changes to the ordinances that might help.

Chairman Spradley will be resuming his Saturday Townhall at his office Saturday, June 25, 2025.

b. Public comments regarding items not on the agenda. No comments were received.

11. Adjournment: Motion by Commissioner Sherman to adjourn the meeting at 6:52 p.m.

_____

Attest: Scott Spradley, Chair

_____

Penny Overstreet, City Clerk

	STAFF REPORT
	Regular City Commission Meeting
	February 13, 2025
To:	Elected Officials
From:	Drew Smith, City Attorney
Date:	January 28, 2025
Item Name:	Acceptance of dedicated infrastructure.

Background: On January 31, 2007, the City entered into a Settlement Agreement with Flagler County, the City of Palm Coast, and the Gardens at Hammock Beach Property Owners Association (the "Settlement Agreement"). The Settlement Agreement resolved disputes between the parties related to provision of water and sewer services and the project then known as "The Gardens" and now known as "Veranda Bay" was included in the City's service area. As part of the settlement agreement, the Gardens at Hammock Beach Property Owners Association agreed to transfer certain water and sewer infrastructure to the City upon completion.

The successor in interest to Gardens at Hammock Beach Property Owners Association is Gardens at Hammock Beach Community Development District (the "CDD"). On August 2, 2024, the CDD recorded a Specialty Warranty Deed to transfer the subject infrastructure which is attached to this agenda item City staff have reviewed the infrastructure being dedicated to the City and has no concerns regarding its acceptance.

This infrastructure discussed herein is related to that portion of the development already approved by Flagler County and under construction and this acceptance has no relationship to the annexation and development discussions with Veranda Bay.

The City Commission is requested to approve acceptance of the Specialty Warranty Deed attached hereto as Exhibit "A" and authorize the Mayor to sign the formal acceptance of same attached hereto as Exhibit "B."

Fiscal Impact: The Finance Director will file form DR-504 with the County Property Appraiser to exempt the two parcels from Ad Valorem taxes.

Staff Recommendation: Accept the conveyance and authorize Mayor to sign Exhibit "B"

Attachments: Special Warranty Deed and Acknowledgement and acceptance**.**

Instrument No: 2024033026 8/2/2024 4:25 PM BK: 2890 PG: 1207 PAGES: 2 DOCTAX PD $0.70 -
RECORDED IN THE OFFICIAL RECORDS OF Tom Bexley, Clerk of the Circuit Court & Comptroller Flagler, FL

PREPARED BY:
Michael D. Chiumento III, Esq.
Chiumento Law, PLLC
145 City Place, Suite 301
Palm Coast, FL 32164
Attn: Caroline McNeil

RETURN TO:
City of Flagler Beach
P.O. Box 70
Flagler Beach, FL 32136

Property Appraiser Parcel ID No.
13-12-31-7201-00000-1A0A
38-12-31-7220-00000-2A0B

NOTE TO RECORDER: This deed is a conveyance of unencumbered property for no consideration and is exempt from documentary stamp tax pursuant to Florida Administrative Code Rule 12B- 4.014(2)(b). Minimum documentary stamp tax of $0.70 is being paid herein.

Unofficial Copy

SPECIAL WARRANTY DEED

THIS SPECIAL WARRANTY DEED is made and entered into as of this ____ day of May, 2024 by **GARDENS AT HAMMOCK BEACH COMMUNITY DEVELOPMENT DISTRICT**, a community development district authorize and created pursuant to Chapter 190, Florida Statutes, (hereinafter called the "Grantor"), whose mailing address is 219 East Livingston Street, Orlando, FL 32801 to **CITY OF FLAGLER BEACH, FLORIDA, a municipal corporation existing under the laws of the State of Florida** (hereinafter called the "Grantee"), whose mailing address is P.O. Box 70, Flagler Beach, FL 32136.

Wherever used herein, the terms "Grantor" and "Grantee" shall be deemed to include the parties to this Special Warranty Deed and the successors and assigns of each corporation or entity. The singular shall be deemed to include the plural and vice versa, where the context so permits.

WITNESSETH, that Grantor, for and in consideration of the sum of Ten and No/100 Dollars ($10.00) and other valuable consideration, receipt whereof is hereby acknowledged, hereby grants, bargains, sells, aliens, remises, releases, conveys and confirms unto the Grantee, all of that certain land situated in Flagler County, Florida, to-wit:

Parcel 1A-A, VERANDA BAY PHASE 1A, according to plat or map thereof, as recorded in Plat Book 40, Pages 59 through 64, Public Records of Flagler County, Florida;

AND

Parcel 2A-B, VERANDA BAY PHASE 2A, according to plat or map thereof, as recorded in Plat Book 40, Pages 65 through 70, Public Records of Flagler County, Florida;

(collectively the "Property").

TOGETHER with all rights, privileges, easements, tenements, hereditaments, and appurtenances thereto belonging or in anywise appertaining to the Property.

TO HAVE AND TO HOLD, the same in fee simple forever.

AND the Grantor hereby covenants with the Grantee that Grantor is lawfully seized of the Property in fee simple; that the Grantor has good right and lawful authority to sell and convey the Property; and hereby warrants the title to the Property and will defend the Property against the lawful claims of all persons claiming by, through or under said Grantor, but against none other.

SUBJECT TO taxes for the year of recording, covenants, restrictions, easements, reservations and limitations of record, if any.

IN WITNESS WHEREOF, the said Grantor has caused this instrument to be executed in its name, the day and year first above written.

Unofficial Copy

Signed, Sealed and Delivered
in the presence of:

Print Name: Victoria A Taylor
Witness Address: 1 Hammock Beach Pkwy
Palm Coast FL 32137

Print Name: Danielle M. Ferguson
Witness Address: 1 Hammock Beach Pkwy
Palm Coast FL 32137

GARDENS AT HAMMOCK BEACH COMMUNITY DEVELOPMENT DISTRICT, a community development district authorized and created pursuant to Chapter 190, Florida Statutes

By: _____
Clint Smith, Chairman

STATE OF FLORIDA
COUNTY OF FLAGLER

The foregoing instrument was acknowledged before me by (✓) physical presence or (__) online notarization this 21 day of May, 2024 by **CLINT SMITH,** as Chairman of **GARDENS AT HAMMOCK BEACH COMMUNITY DEVELOPMENT DISTRICT**, a community development district authorized and created pursuant to Chapter 190, Florida Statutes, who (✓) is personally known to me or (__) has produced _____ as identification.

Notary Public, State of Florida

DANIELLE M. FERGUSON
Commission # HH 176415
Expires January 13, 2026
Bonded Thru Troy Fain Insurance 800-385-7019

EXHIBIT "B"

ACKNOWLEDGEMENT AND ACCEPTANCE

As duly authorized and directed by the City Commission of the City of Flagler Beach, the Mayor of the City of Flagler Beach, by her execution as memorialized below, hereby acknowledges and accepts that conveyance of real property from **GARDENS AT HAMMOCK BEACH COMMUNITY DEVELOPMENT DISTRICT** (Grantor) to the **CITY OF FLAGLER BEACH** (Grantee), as set forth and contemplated via the Special Warranty Deed to which this instrument is attached, on behalf of the City of FLAGLER BEACH.

GRANTEE:

CITY OF FLAGLER BEACH, FLORIDA, a municipal corporation

By:_____
Patti King, Mayor

ATTEST:

_____
Penny Overstreet, City Clerk

STATE OF FLORIDA
COUNTY OF ORANGE

The foregoing instrument was acknowledged before me this _____ day of _____, 2025, [_] in person or [_] by online notarization by Patti King, as Mayor of the City of Flagler Beach, a Florida Municipal Corporation, on behalf of same. She [_] is personally known to me, or produced _____ as identification.

(Affix Notary Stamp/Seal Below)

_____
NOTARY PUBLIC

Print Name:_____

My Commission Expires:_____

City of Flagler Beach
General Fund & Building Fund
Revenue and Expense by Department
For the 3 months ended December 31, 2024

General Fund & Building Fund

	12/31/2023			*12/31/2024*			
	Budget + Amendments	**Actual Revenue / Expense (YTD)**	**Percent**	**Budget + Amendments**	**Actual Revenue / Expense (YTD)**	**Percent**	**Budget Variance Favorable (Unfavorable)**
Beginning Fund Balance - As of 9/30		$ 9,361,327		$ 9,625,192	$ 9,625,192		
Revenue:							
Property Tax, Sales & Use Tax - Dept 3100	$ 6,991,791	$ 4,790,728	69%	$ 7,707,318	$ 2,429,506	32%	$ (5,277,812)
License and Permits - Dept 3200	$ 231,550	$ 36,191	16%	$ 254,950	$ 46,995	18%	$ (207,955)
Intergovernmental - Dept 3300	$ 781,676	$ 163,098	21%	$ 773,311	$ 174,427	23%	$ (598,884)
Other local sources (Charges for services/ Fines and Forfeitures/ Misc Revenue) Depts 3400-3600	$ 475,115	$ 112,427	24%	$ 642,100	$ 278,130	43%	$ (363,970)
Encumbered to Fund Balance/Transfer from Capital Dept 3800	$ 1,673,900	$ -	0%	$ 1,908,600	$ -	0%	$ (1,908,600)
License & Permits - Building Fund - Dept 3200	$ 554,000	$ 194,536	35%	$ 609,200	$ 176,939	29%	$ (432,261)
Misc. Revenue - Building Fund - Dept 3600	$ 35,000	$ 16,340	47%	$ 10,000	$ 3,100	31%	$ (6,900)
Transfer from Fund Balance Building Fund - Dept 3800	$ 66,760	$ -	0%	$ 275,471	$ -	0%	$ (275,471)
Total Revenues	$ 10,809,791	$ 5,313,321	49%	$ 12,180,950	$ 3,109,096	26%	$ (9,071,854)
Expenditures:							
Commission	$ 190,325	$ 28,926	15%	$ 113,866	$ 21,130	19%	$ 92,736
Executive	$ 217,487	$ 35,162	16%	$ 237,286	$ 75,614	32%	$ 161,672
City Clerk	$ 407,473	$ 102,410	25%	$ 271,836	$ 73,255	27%	$ 198,581
Human Resources	$ 183,346	$ 24,137	13%	$ 174,443	$ 37,148	21%	$ 137,295
Finance	$ 349,318	$ 74,715	21%	$ 387,687	$ 65,072	17%	$ 322,615
Legal	$ 225,500	$ 16,002	7%	$ 233,500	$ 27,825	12%	$ 205,676
Facilities	$ 954,466	$ 129,620	14%	$ 754,298	$ 217,021	29%	$ 537,277
General Government	$ 1,149,493	$ 449,878	39%	$ 655,063	$ 390,113	60%	$ 264,950
Police	$ 2,740,829	$ 634,610	23%	$ 2,852,096	$ 725,147	25%	$ 2,126,949
Victim's Advocate	$ 140,383	$ 30,400	22%	$ 146,238	$ 33,612	23%	$ 112,626
Fire	$ 1,511,988	$ 361,374	24%	$ 1,453,392	$ 452,434	31%	$ 1,000,958
Planning & Zoning	$ 420,794	$ 32,515	8%	$ 422,736	$ 74,190	18%	$ 348,547
Fund Expense - Transfer to Capital/Contingency	$ -	$ -	0%	$ 2,205,569	$ -	0%	$ 2,205,569
Information Technology	$ -	$ -	0%	$ 272,915	$ 93,097	34%	$ 179,818
Roads & Streets	$ 699,325	$ 52,309	7%	$ 573,949	$ 77,842	14%	$ 496,106
Library	$ 205,521	$ 38,515	19%	$ 197,949	$ 70,101	35%	$ 127,848
Museum	$ 9,300	$ 455	5%	$ 8,560	$ 752	9%	$ 7,808
Beach	$ 418,134	$ 39,308	9%	$ -	$ -	0%	$ -
Recreation	$ 149,508	$ 30,744	21%	$ 495,956	$ 97,757	20%	$ 398,200
Building Fund - Dept 5242	$ 629,760	$ 117,055	19%	$ 894,671	$ 131,273	15%	$ 763,398
Total Expenditures	$ 10,602,951	$ 2,198,136	21%	$ 12,352,010	$ 2,663,381	22%	$ 9,688,629
Transfers out	$ -	$ -	0%	$ -	$ -	0%	$ -
Net Change in Fund Balance	$ 206,840	$ 3,115,185		$ (171,060)	$ 445,715		
Fund balance, Ending	$ 9,568,167	$ 12,476,512		$ 9,454,132	$ 10,070,907	*Unaudited*	
Restricted Reserves		$ 4,563,700			$ 4,609,400		
Emergency Fund Balance Policy - 25% General Fund Only		$ 2,074,050			$ 2,185,628		
Estimated Undesignated Fund Balance		$ 5,838,762			$ 3,275,879		

Summary Points:
1. Collected average 50.5% of property tax, sales & use tax revenue sources.
2. Pattern remains consistent for expenses (average: 21.5%).
3. Ending fund balance at the end of FY25 Q1 is estimated $3.2M.
4. Restricted Reserves - Various Reserve buckets approved by the City Commission. (Reserve buckets outlined in FY23 audit - page 13.)
5. Emergency Fund balance policy - Adopted YE23, requires 25% of General Fund budgeted operating expenses.

City of Flagler Beach
CRA Fund
Revenue and Expense by Department
For the 3 months ended December 31, 2024

CRA

	12/31/2023			*12/31/2024*			
	Budget + Amendments	**Actual Revenue / Expense (YTD)**	**Percent**	**Budget + Amendments**	**Actual Revenue / Expense (YTD)**	**Percent**	**Budget Variance Favorable (Unfavorable)**
Beginning Fund Balance - As of 9/30		$ 441,197		$ 629,566	$ 629,566		
Revenue:							
Property Tax, Sales & Use Tax - Dept 3100	$ 540,163	$ 324,578	60%	$ 607,777	$ 604,498	99%	$ (3,279)
License and Permits - Dept 3200	$ -	$ -	0%	$ 1,000	$ -	0%	$ (1,000)
Intergovernmental - Dept 3300	$ 170,000	$ -	0%	$ 170,000	$ -	0%	$ (170,000)
Transfer from Fund Balance/Interest Earned - Dept 3600	$ 476,246	$ -	0%	$ 285,000	$ 2,395	1%	$ -
Total Revenues	$ 1,186,409	$ 324,578	27%	$ 1,063,777	$ 606,893	57%	$ (456,884)
Expenditures:							
Fund Expense - Dept 5391	$ 226,969	$ 31,834	14%	$ 181,267	$ 1,029	1%	$ 180,238
Redevelopment Grants - Dept 5391	$ 118,892	$ 980	1%	$ 65,000	$ 5,000	8%	$ 60,000
Debt Service - Dept 5391	$ 74,196	$ -	0%	$ 74,779	$ -	0%	$ 74,779
Capital Improvements - Dept 5391	$ 766,352	$ 16,409	2%	$ 917,731	$ -	0%	$ 917,731
Total Expenditures	$ 1,186,409	$ 49,223	4%	$ 1,238,777	$ 6,029	0%	$ 1,232,748
Transfers out	$ -	$ -	0%	$ -	$ -	0%	$ -
Net Change in Fund Balance	$ (0)	$ 275,355		$ (175,000)	$ 600,865		
Fund balance, Ending	$ 441,197	$ 716,552		$ 454,566	$ 1,230,431	*Unaudited*	
Restricted Reserves		$ -			$ -		
Estimated Undesignated Fund Balance		$ 716,552			$ 1,230,431		

Summary Points:
1. Collected average 42% of property tax, sales & use tax revenue sources.
2. Expenses vary in each year, FY24 included capital projects in the cra fund, FY25 they are in the capital fund.
3. Ending FB at the end of FY25 Q1 is estimated $1.2M.

City of Flagler Beach
Utility and Impact Fees Fund
Revenue and Expense by Department
For the 3 months ended December 31, 2024

Utility and Impact Fee Fund

	12/31/2023			*12/31/2024*			
	Budget + Amendments	**Actual Revenue / Expense**	**Percent**	**Budget + Amendments**	**Actual Revenue / Expense (YTD)**	**Percent**	**Budget Variance Favorable (Unfavorable)**
Beginning Fund Balance - As of 9/30		$ 34,982,726		$ 39,439,788	$ 39,439,788		
Revenue:							
Impact & Utility Misc Revenue - Dept 3600	$ 1,768,535	$ 324,150	18%	$ 1,237,341	$ 272,823	22%	$ (964,518)
Charges for Services - Dept 3400	$ 6,375,100	$ 1,264,742	20%	$ 7,008,000	$ 1,270,647	18%	$ (5,737,353)
Grant Revenue - Dept 3300	$ 3,750,525	$ 43,987	1%	$ 5,426,936	$ -	0%	$ (5,426,936)
Fines - Dept 3500	$ 60,000	$ 16,962	28%	$ 65,000	$ 10,523	16%	$ (54,477)
Proceeds - SRF Loan - WWTP - Project 119	$ 6,325,000	$ -	0%	$ 25,000,000	$ -	0%	$ (25,000,000)
Transfer from Fund Balalnce - Dept 3800	$ 5,952,549	$ -	0%	$ 3,869,765	$ -	0%	$ (3,869,765)
Total Revenues	$ 24,231,709	$ 1,649,841	7%	$ 42,607,042	$ 1,553,994	4%	$ (41,053,048)
Expenditures:							
WTP - Dept 5331	$ 2,341,635	$ 236,568	10%	$ 3,374,672	$ 598,300	18%	$ 2,776,372
T&D - Water Transmission & Distribution - Dept 5332	$ 1,362,238	$ 76,647	6%	$ -	$ -	0%	$ -
WWTP - Dept 5351	$ 11,443,660	$ 106,438	1%	$ 29,055,493	$ 168,571	1%	$ 28,886,922
Sewer Collection - Dept 5352	$ 1,583,431	$ 620,077	39%	$ -	$ -	0%	$ -
Lift Station Maintenance - Dept 5353	$ 3,419,969	$ 178,660	5%	$ -	$ -	0%	$ -
Utility Maintenance - Dept 5354	$ -	$ -	0%	$ 4,183,961	$ 170,932	4%	$ 4,013,030
Utility & Impact Fees - Fund Expense - Dept 5391	$ 1,121,759	$ 477,899	43%	$ 1,381,144	$ 590,035	43%	$ 791,109
Utility Debt Service - Dept 5391	$ 511,682	$ -	0%	$ 979,148	$ -	0%	$ 979,148
Utility & Impact Fees - Capital Projects - Dept 5391	$ 2,000,000	$ -	0%	$ 719,355	$ 86,103	12%	$ 633,252
Utility & Impact - Depreciation - Dept 5391	$ -	$ 2,578	0%	$ 2,621,001	$ -	0%	$ 2,621,001
Impact - Reserve for Contingency - Dept 5391	$ -	$ -	0%	$ 928,739	$ -	0%	$ 928,739
Total Expenditures	$ 23,784,374	$ 1,698,869	7%	$ 43,243,513	$ 1,613,940	4%	$ 41,629,573
Net Change in Fund Balance	$ 447,335	$ (49,028)		$ (636,471)	$ (59,946)		
Fund balance, Ending	$ 35,430,061	$ 34,933,698		$ 38,803,317	$ 39,379,842	*Unaudited*	
Restricted Reserves		$ 26,910,700			$ 30,021,195		
Emergency Fund Balance Policy - 10%		$ 447,431			$ 772,455		
Estimated Undesignated Fund Balance		$ 7,575,567			$ 8,586,192		

Summary Points:
1. FY24 revenue was slightly higher than FY25 Q1 due to grant revenue collected.
2. FY24 total expenses were slightly higher than FY25 Q1. Budget is almost double in FY25 due to the new plant for the WWTP.
3. Ending FB at the end of FY25 Q1 is estimated $8.5M.
4. Emergency Fund balance policy - Adopted YE23, requires 10% of Utility budgeted operating expenses.
5. Florida rural water study to be presented at 3/13 commission meeting.

City of Flagler Beach
Pier Fund
Revenue and Expense by Department
For the 3 months ended December 31, 2024

Pier Fund

	12/31/2023			*12/31/2024*			
	Budget + Amendments	**Actual Revenue / Expense (YTD)**	**Percent**	**Budget + Amendments**	**Actual Revenue / Expense (YTD)**	**Percent**	**Budget Variance Favorable (Unfavorable)**
Beginning Fund Balance - As of 9/30		$ 1,782,512		$ 2,834,358	$ 2,834,358		
Revenue:							
Charges for service - Dept 3400	$ -	$ -	0%	$ -	$ -	0%	$ -
Intergovernmental - Dept 3300	$ -	$ (271,638)	0%	$ 17,557,955	$ -	0%	$ (17,557,955)
Miscellaneous - Dept 3600	$ 137,100	$ 22,350	16%	$ 150,000	$ 31,711	21%	$ (118,289)
Transfer from General Fund/Fund Balance - Dept 3800	$ 393,317	$ -	0%	$ 2,040,265	$ -	0%	$ (2,040,265)
Total Revenues	$ 530,417	$ (249,287)	-47%	$ 19,748,220	$ 31,711	0%	$ (19,716,509)
Expenditures:							
Operating - All - Dept 5725	$ 530,417	$ 69,847	13%	$ 150,000	$ 70,038	47%	$ 79,962
Capital Projects - Dept 5725	$ -	$ -	0%	$ 19,269,520	$ 7,560	0%	$ 19,261,960
Debt Principal and Interest - Dept 5725	$ -	$ -	0%	$ 198,400	$ -	0%	$ 198,400
Depreciation - Dept 5725	$ -	$ -	0%	$ 131,665	$ -	0%	$ 131,665
Total Expenditures	$ 530,417	$ 69,847	13%	$ 19,749,585	$ 77,598	0%	$ 19,671,987
Net Change in Fund Balance	$ -	$ (319,134)		$ (1,365)	$ (45,887)		
Fund balance, Ending	$ 1,782,512	$ 1,463,378		$ 2,832,993	$ 2,788,472	*Unaudited*	
Restricted Reserves		$ 1,993,400			$ 2,093,030		
Estimated Undesignated Fund Balance		$ (530,022)			$ 695,442		

Summary Points:
1. Revenues are inconsistent due to an accural completed in FY24, Q1. Q2 will show accurate revenue collections.
2. Expense budget varies with the addition of the pier project in FY25.
3. Ending FB at the end of Q1 is estimated $695K.

City of Flagler Beach
Sanitation Fund
Revenue and Expense by Department
For the 3 months ended December 31, 2024

Sanitation Fund

	12/31/2023			*12/31/2024*			
	Budget + Amendments	**Actual Revenue / Expense (YTD)**	**Percent**	**Budget + Amendments**	**Actual Revenue / Expense (YTD)**	**Percent**	**Budget Variance Favorable (Unfavorable)**
Beginning Fund Balance - As of 9/30		$ 1,744,870		$ 1,790,488	$ 1,790,488		
Revenue:							
Intergovernmental - Dept 3300	$ -	$ -	0%	$ -	$ 18,449	0%	$ 18,449
Charges for Services - Dept 3400	$ 1,565,000	$ 348,829	22%	$ 1,889,500	$ 327,553	17%	$ (1,561,947)
Fines - Dept 3500	$ 13,750	$ 3,942	29%	$ 15,000	$ 1,842	12%	$ (13,158)
Misc. - Dept 3600	$ 57,100	$ 11,539	20%	$ 76,500	$ 9,049	12%	$ (67,451)
Roll Off License - Dept 3670	$ 5,400	$ -	0%	$ 5,500	$ -	0%	$ (5,500)
Transfer from Fund Balalnce - Dept 3800	$ 219,986	$ -	0%	$ -	$ -	0%	$ -
Total Revenues	$ 1,861,236	$ 364,310	20%	$ 1,986,500	$ 356,894	18%	$ (1,629,606)
Expenditures:							
Refuse Collection - Dept 5341	$ 1,371,920	$ 268,502	20%	$ 1,545,376	$ 455,983	30%	$ 1,089,393
Capital Projects - Dept 5341	$ 283,000	$ 128,968	46%	$ 25,000	$ -		
Fund Expense - Dept 5391	$ 206,316	$ 73,091	35%	$ 219,626	$ 72,207	33%	$ 147,419
Depreciation - Dept 5391	$ -	$ -	0%	$ 196,498	$ -	0%	$ 196,498
Total Expenditures	$ 1,861,236	$ 470,561	25%	$ 1,986,500	$ 528,190	27%	$ 1,458,310
Net Change in Fund Balance	$ -	$ (106,251)		$ -	$ (171,296)		
Fund balance, Ending	$ 1,744,870	$ 1,638,619		$ 1,790,488	$ 1,619,192	*Unaudited*	
Restricted Reserves		$ 870,590			$ 957,600		
Emergency Fund Balance Policy - 10%		$ 157,674			$ 196,150		
Estimated Undesignated Fund Balance		$ 610,356			$ 465,442		

Summary Points:
1. Collected average 19% of revenues.
2. Pattern remains consistent for expenses (average: 26%)
3. Ending FB at the end of Q1 is estimated $465K.
4. Emergency Fund balance policy - Adopted YE23, requires 10% of budgeted operating expenses.
5. Fund analysis conducted by Stantec to be presented at 3/13 commission meeting.

City of Flagler Beach
Stormwater Fund
Revenue and Expense by Department
For the 3 months ended December 31, 2024

Stormwater Fund

	12/31/2023			*12/31/2024*			
	Budget + Amendments	**Actual Revenue / Expense (YTD)**	**Percent**	**Budget + Amendments**	**Actual Revenue / Expense (YTD)**	**Percent**	**Budget Variance Favorable (Unfavorable)**
Beginning Fund Balance - As of 9/30		$ 6,526,486		$ 6,664,224	$ 6,664,224		
Revenue:							
Intergovernmental - Dept 3300	$ 2,121,000	$ -	0%	$ 64,944	$ -	0%	$ (64,944)
Charges for Service - Dept 3400	$ 797,000	$ 166,948	21%	$ 1,182,000	$ 163,397	14%	$ (1,018,603)
Misc - Dept 3600	$ 5,800	$ 1,833	32%	$ 7,000	$ 7,794	111%	$ 794
Transfer from Fund Balance - Dept 3800	$ 1,055,018	$ -	0%	$ 136,648	$ -	0%	$ (136,648)
Total Revenues	$ 3,978,818	$ 168,782	4%	$ 1,390,592	$ 171,190	12%	$ (1,219,402)
Expenditures:							
Fund Expense - Dept 5391	$ 1,009,703	$ 91,515	9%	$ 523,305	$ 61,384	12%	$ 461,920
Capital Projects - Dept 5391	$ 2,851,667	$ 122,621	4%	$ 558,128	$ 36,358	7%	$ 521,771
Debt Principal and Interest - Dept 5391	$ 116,698	$ -	0%	$ 117,865	$ -	0%	$ 117,865
Depreciation - Dept 5391	$ -	$ -	0%	$ 195,107	$ -	0%	$ 195,107
Total Expenditures	$ 3,978,068	$ 214,136	5%	$ 1,394,405	$ 97,742	7%	$ 1,296,663
Net Change in Fund Balance	$ 750	$ (45,355)		$ (3,813)	$ 73,448		
Fund balance, Ending	$ 6,527,236	$ 6,481,131		$ 6,660,412	$ 6,737,673	*Unaudited*	
Restricted Reserves	$ -	$ 5,529,500		$ -	$ 5,554,025		
Emergency Fund Balance Policy - 10%		$ 84,750			$ 80,565		
Estimated Undesignated Fund Balance		$ 866,882			$ 1,103,083		

Summary Points
1. Actual revenue collected remains consistent for both FY's.
2. Pattern remains consistent for expenses (average: 6%).
3. Ending FB at the end of Q1 is estimated $1.1M.
4. Emergency Fund balance policy - Adopted YE23, requires 10% of budgeted operating expenses.

City of Flagler Beach
Capital Reserve Fund
Revenue and Expense by Fund
For the 3 months ended December 31, 2024

Capital Reserves Fund

	12/31/2023			*12/31/2024*			
	Budget + Amendments	**Actual Revenue / Expense (YTD)**	**Percent**	**Budget + Amendments**	**Actual Revenue / Expense**	**Percent**	**Budget Variance Favorable (Unfavorable)**
Beginning Fund Balance - As of 9/30		$ -		$ -	$ -		
Revenue:							
Misc. Revenue - Dept 3600	$ -	$ -	0%	$ 12,641	$ 12,641	100%	$ -
General Fund - Dept 3800	$ -	$ -	0%	$ 476,250	$ -	0%	$ (476,250)
CRA- Dept 3800	$ -	$ -	0%	$ 577,731	$ -	0%	$ (577,731)
Building Code - Dept 3800	$ -	$ -	0%	$ 18,750	$ -	0%	$ (18,750)
Total Revenues	$ -	$ -	0%	$ 1,085,372	$ 12,641	1%	$ (1,072,731)
Expenditures:							
General Fund - All Depts	$ -	$ -	0%	$ 488,891	$ 19,441	4%	$ 469,450
CRA	$ -	$ -	0%	$ 577,731	$ -	0%	$ 577,731
Building Code	$ -	$ -	0%	$ 18,750	$ -	0%	$ 18,750
Total Expenditures	$ -	$ -	0%	$ 1,085,372	$ 19,441	2%	$ 1,065,931
Transfers In	$ -	$ -	0%	$ -	$ -	0%	$ -
Net Change in Fund Balance	$ -	$ -		$ -	$ (6,800)		
Fund balance, Ending	$ -	$ -		$ -	$ (6,800)	*Unaudited*	

Summary Points:
1. Cap reserve is funded from a transfer from the GF / CRA / BC or reserves - generally completed at year end.
2. New Fund beginning FY25.
3. Contingency Funds for the capital reserves is recommended in future years for unforeseen capital projects.
4. Q1 expenses was a fire engine repair and replacement of an AC unit by facilities.
5. Detailed projects specified on FY25 capital plan - budget book.

City of Flagler Beach
Cash and Investments
For the 3 months ended December 31, 2024

Account		As of 12/31/2023	Rate	As of 12/31/2024	Rate	Dollar Change
Truist Depository		$ 9,370,280	0.75%	$ 5,572,950	1.93%	$ (3,797,330)
Florida Prime (SBA)		$ 10,463,182	1.40%	$ 15,116,113	4.87%	$ 4,652,931
Florida Municipal Investment Trust (FMIvT)		$ 8,210,585	2.50%	$ 8,566,807	-0.02%	$ 356,222
	Subtotal	$ 28,044,047		$ 29,255,870		$ 1,211,824
Police Pension Investments		$ 737,124	5.01%	$ 1,169,764	4.29%	$ 432,640
Fire Pension Investments		$ 374,036	5.01%	$ 569,827	4.27%	$ 195,791
	Subtotal	$ 1,111,160		$ 1,739,591		$ 628,431
	Total	$ 29,155,207		$ 30,995,462		$ 1,840,255

Pension Summary Points:
1. Cash shown excludes fixed income and equities, as these are investments and are not actual cash until the investment is sold.
2. Actual cash does earn interest, just not as much as if its invested.

STAFF REPORT

City Commission Regular Meeting

February 13, 2025

To:	Elected Officials
From:	Dale L. Martin, City Manager
Date:	February 7, 2025
Item Name:	Resolution 2025-08. A Resolution by the City of Flagler Beach, Florida, for Water, Sewer, Stormwater, and Sanitation Fee increases to provide revenues that will be sufficient to operate financially self-supporting Utilities; repealing Resolution 2023-21; providing for conflict and an effective date.

Background: Background: During the Budget Workshop and Budget Hearings, City Commission approved the increases to the
Utilities:

- Water and Sewer: base fees 3.5%, flow rates 3.5%
- Sanitation Rates: residential and commercial 3.5%
- Stormwater Fees: 37.2% increase ($5.42 per month increase; $14.58 to $20.00)

With those increases, a residential bill within the city limits will increase a total of $8.76 per month.

Water and Sewer

The Five-Year Capital Plan adopted with the 2024-2025 Budget shows a five- year total sum of $69,835,200 for the Utility Fund.

- In 2024-2025, 3.5% increase to all Service Fees was based on rate study performed by Raftelis (a rate consultant), this increase is 8% higher than the 3.24% increase which was recommended by the Public Service Commission.
- In 2024-2025, an 8.8% increase for growth and in 2025-2026, an 6.9% increase for growth was used to encompass the new development on Roberts Road and possible development along the John Anderson corridor.
- An assumption for the next five years is the ability to use $6.1 Million from Water and Sewer Impact Fees on projects that qualify, such as new wells and projects that support growth and increased capacity. City Staff will also continue to apply for grant funding for eligible projects.
- Comparing Flow Fees (Actual Water and Sewer Usage) to Operations illustrates a $1.1 million shortfall. One of the reasons is the high costs of repairs to our aging infrastructure. Repairs are considered part of operations as capital improvements are completed to facilities and infrastructure.

Water & Sewer Flow Rates

Ordinance 2008-01 provides for water and sewer rate increases based on the percentage change in the Gross Domestic Product Implicit Price Deflator as adopted by the Florida Public Service Commission (www.psc.state.fl.us). The result of that analysis is a 3.24% increase over 2023-24 figures. Water and Sewer Flow rates are an established fee to balance the costs of water production. City Staff increased the amount to 3.5%. Operations Cost is budgeted at $2.85 million; Water/Sewer flow revenues are budgeted at $2.96 million. City Staff will monitor expenses for operations closely.

Sanitation

Ordinance 2008-03 provides for solid waste collection fees to be adjusted annually based on the percentage change in the Gross Domestic Product Implicit Price Deflator as adopted by the Florida Public Service Commission. The increase of 3.5% to all Residential and Commercial Rates is insufficient to cover the daily operations of the fund. A thorough analysis of the fund will be conducted in Fiscal Year 24-25. Capital purchases for the five-year forecast are building improvements, a mechanic truck, and a Sanitation truck.

Stormwater

The City Commission has made stormwater improvements a priority. The City's stormwater consulting engineer has offered a series of recommended projects to address stormwater funding. The proposed monthly fee will provide funding for recommended and planned stormwater improvements.

Fiscal Impact: Residential users' monthly utility bills will increase by $8.76. Commercial rates are site-dependent as the type/level of Sanitation services varies.

Staff Recommendation: Staff recommends that the City Commission adopt Resolution 2025-08. For future year's, in order to align the review and consideration of utility rates with the annual budget, utility fees will be presented to the City Commission by no later than August 31.

Attachment:

Resolution 2025-08

RESOLUTION 2025-08

A RESOLUTION BY THE CITY COMMISSION OF THE CITY OF FLAGLER BEACH, FLORIDA, FOR WATER & SEWER, STORMWATER AND SANITATION FEE INCREASES TO PROVIDE REVENUES THAT WILL BE SUFFICIENT TO OPERATE FINANCIALLY SELF-SUPPORTING UTILITIES; REPEALING RESOLUTION 2023-21; PROVIDING FOR CONFLICT AND AN EFFECTIVE DATE.

WHEREAS, Section 5.03.39 and 5.03.56 of the Land Development Regulations require the rate schedules for Water and Sewer Services be adopted by resolution.

WHEREAS, Chapter 11, Section 11-13 requires the fees for solid waste collection be adopted by resolution of the City Commission.

WHEREAS, Section 5.03.123 (8) of the Land Development Regulations directs the city to analyze the Stormwater Fund for the cost of services and benefits provided, and the system and structure of fees, charges, fines and other revenues of the utility annually to ensure an equitable, adequate and stable utility rate and fee structure and to achieve a stable financial position for the utility.

WHEREAS, Section 5.03.126 of the Land Development Regulations set the initial fee for the Stormwater Rate at $4.00 in budget year 2004/05.

NOW THEREFORE BE IT RESOLVED BY THE CITY COMMISSION OF THE CITY OF FLAGLER BEACH, AS FOLLOWS:

SECTION 1. The Water and Sewer Base Fees should support the Capital Expenditures and Debt Service for the Utility Fund. The Water and Sewer Flows should support the operations of the Water and Wastewater Plants.

SECTION 2. The Stormwater Fees should support the expenses of the utility and provide for future infrastructure.

SECTION 3. The rates to be paid for Water and Sewer Services and Stormwater Fees shall be in accordance with “Exhibit A”, attached hereto and made a part hereof.

SECTION 4. The Sanitation Fees should support the expenses of the utility and provide for capital purchases.

SECTION 5. That the rates to be paid for Sanitation shall be in accordance with “Exhibit B”, attached hereto and made a part hereof.

SECTION 6. All Resolutions or parts thereof in conflict herewith be and the same are hereby repealed.

PASSED AND ADOPTED THIS 13th DAY OF FEBRUARY, 2025.

CITY OF FLAGLER BEACH, FLORIDA
CITY COMMISSION

ATTEST:

_____
Patti King, Mayor

_____
Penny Overstreet, City Clerk

Exhibit A
Exhibit B

Rate schedules for water as required by Appendix "A" Land Development Regulations, Section 5.03.00 shall be as follows:

SCHEDULE W1. CONNECTION CHARGES

Meter Size (inches)	Charge Inside City Limits	Charge when Developer-Installed Tap/Connection*	Charge Outside City Limits
5/8× ¾	$ 615.00	$ 399.75	$ 922.50
¾	$ 670.00	$ 435.50	$ 1,005.00
1	$ 765.00	$ 497.25	$ 1,147.50
1 ½	$ 950.00	Determined at time of connection	Determined at time of connection
2	$ 1,985.00	Determined at time of connection	Determined at time of connection
3	$ 4,475.00	Determined at time of connection	Determined at time of connection
4	$ 7,920.00	Determined at time of connection	Determined at time of connection
6	$ 12,075.00	Determined at time of connection	Determined at time of connection
8	$ 18,015.00	Determined at time of connection	Determined at time of connection

* For property in Rio Mar, Pebble Beach, Custers Palm Harbor Subdivision and Palma Vista Subdivision only on N. 12th Street, Water Connection =$265.00, as per development agreement. For property in Cedar Island Subdivision there are no water connection charges.

SCHEDULE W2. METER DEPOSITS

Meter Size (inches)	Owner's Deposit	Tenant's Deposit
5/8× ¾	$60.00	$250.00
¾	$60.00	$250.00
1	$150.00	$320.00
1 ½	$300.00	$750.00
2	$480.00	$1,300.00
3	$900.00	$2,400.00
4	$1,500.00	$3,700.00
6	$3,000.00	$6,200.00
8	$4,800.00	$8,700.00

SCHEDULE W3. MONTHLY CHARGES FOR WATER--RESIDENTIAL GALLONS USED

	Charges Inside City Limits		Charges Outside the City Limits	
Charge	Current Rate	**Proposed Rate (3.5% Increase)**	Current Rate	**Proposed Rate (3.5% Increase)**
Water Base	**39.67**	**41.06**	**59.51**	**61.59**
*Gallons 0-2000	**5.97**	**6.18**	**8.96**	**9.27**
*2001-8001	**9.36**	**9.69**	**14.05**	**14.54**
*8001-up	**11.28**	**11.67**	**16.91**	**17.50**

*__Note:__ Rates are per 1,000 gallons with first rate increase at 2,001 gallons, second rate increase at 8,001 gallons.

In circumstances whereby one water meter serves both residential and commercial activities, that meter shall be charged at the **Commercial** rate detailed below.

SCHEDULE W4. MONTHLY CHARGES FOR WATER--COMMERCIAL WITH VALID LOCAL BUSINESS TAX RECEIPT

	Charges Inside City Limits		Charges Outside the City Limits	
Charge with LBTR	Current Rate	**Proposed Rate (3.50% Increase)**	Current Rate	**Proposed Rate (3.50% Increase)**
Water Base	**39.67**	**41.06**	**59.51**	**61.59**
Plus Flow Charge per 1000 Gallons	**11.96**	**12.38**	**17.93**	**18.56**

SCHEDULE W5. MONTHLY CHARGES FOR IRRIGATION METERS

	Charges Inside City Limits	
Charge	Current Rate	**Proposed Rate (3.5% Increase)**
Water Base	**39.67**	**41.06**
*Gallons 0-2000	**5.97**	**6.18**
*2001-8001	**9.36**	**9.69**
*8001-up	**11.28**	**11.67**

*__Note:__ Rates are per 1,000 gallons with first rate increase at 2,001 gallons, second rate increase at 8,001 gallons

** Commercial businesses that provide tenant accommodations (apartment complexes, hotels, motels, etc.) will have a different water base rate, and will be determined after final review of total unit count.

SCHEDULE W6. MONTHLY PRIVATE FIRE PROTECTION (FIRE SPRINKLER SYSTEM) CHARGE PER CONNECTION TO CITY SYSTEM

Fire Line Size (inches)	Rate
4..	$135.00
6..	$195.00
8.	$295.00
10....	$350.00

SCHEDULE W7. CHARGES AND FEES

Account maintenance fee....	$25.00
Service turn-on (business hours)	$25.00
Service turnoff (business hours)	$25.00
Service turn-on before 7 a.m. or after 4 p.m. M-F or on Sat. or Sun.	$45.00
Remove meter....	$50.00
Reconnect charge....	$100.00
Meter exchange (customer request) ¾"	$50 + Cost of meter
Meter exchange (customer request) 1"	$50 + Cost of meter
Meter exchange (customer request) Larger than 1”	$50 + Cost of meter
Return check fee....	In accordance with FSS
Clearing around water meters	$50.00
Meter Re-Read Service Charge	$35.00

SCHEDULE W8. INTEREST

Penalties	10%
Compounded monthly	1.5% per month

SCHEDULE W9. DELINQUENT BILLS AND PENALTIES

These fees are a part of a consolidated statement for utility customers, which is generally paid by a single payment. If a partial payment is received, the payment shall be applied pro rata to each account billed on the consolidated statement in the proportion that an individual account bears to the total consolidated statement of all current charges for all accounts. Section 5.03.35 of the Land Development Regulations shall apply to all charges on this rate schedule.

Rate schedules for sewer as required by Appendix "A" Land Development Regulations, Section 5.03.56 shall be as follows:

SCHEDULE S1. CONNECTION CHARGES

System Type	Charge Inside City Limits	Charge when Developer-Installed Tap/Connection*	Charge Outside City Limits
Gravity	$1,200.00	$1,200.00	$1,600.00
Low Pressure	$1,200.00	$1,200.00	$1,600.00
Low Pressure Lambert Avenue	$1,200.00	N/A	$1,750.00

* For property in Cedar Island and Palma Vista Subdivision only on N. 12th Street, there is no sewer connection fee.

SCHEDULE S2. MONTHLY CHARGES FOR SEWER--RESIDENTIAL

	Charges Inside City Limits		Charges Outside the City Limits	
System Type	Current Rate	**Proposed Rate**	Current Rate	**Proposed Rate (3.50% Increase)**
Single Meter				
Sewer Base	**25.67**	**26.57**	**38.51**	**39.86**
Plus Flow Charge per 1000 Gallons	**7.95**	**8.23**	**11.91**	**12.33**
Multiple Users on Single Meter	-		-	-
Sewer Base	**25.54**	**26.43**	**38.32**	**39.66**
Plus Flow Charge per 1000 Gallons	**7.95**	**8.23**	**11.91**	**12.33**
Low Pressure	-		-	-
Sewer Base	**43.05**	**44.56**	**64.59**	**66.85**
Plus Flow Charge per 1000 Gallons	**11.91**	**12.33**	**17.87**	**18.50**

In circumstances whereby one meter serves residential activities, that meter shall be charged the residential rate, regardless of meter size.

In circumstances whereby one water meter serves both residential and commercial activities, that meter shall be charged at the **Commercial** rate detailed below.

*Utility Agreements for Cedar Island and Stonebridge Subdivisions require maintenance by home owners. Charges will be single meter rate.

SCHEDULE S3. MONTHLY CHARGES FOR SEWER—COMMERCIAL

The minimum monthly charge detailed immediately above applies to each water meter connection.

Meter Size (Inches)	Current Rate	**Proposed Rate**
5/8"		
Sewer Base	**62.62**	**64.81**
Plus Flow Charge per 1000 Gallons	**7.95**	**8.23**
3/4"		
Sewer Base	**62.62**	**64.81**
Plus Flow Charge per 1000 Gallons	**7.95**	**8.23**
1"		
Sewer Base	**90.60**	**93.77**
Plus Flow Charge per 1000 Gallons	**7.95**	**8.23**
1 1/2"		
Sewer Base	**177.93**	**184.16**
Plus Flow Charge per 1000 Gallons	**7.95**	**8.23**
2"		
Sewer Base	**321.19**	**332.43**
Plus Flow Charge per 1000 Gallons	**7.95**	**8.23**
3"		
Sewer Base	**894.33**	**925.63**
Plus Flow Charge per 1000 Gallons	**7.95**	**8.23**
4"		
Sewer Base	**1,181.00**	**1,222.34**
Plus Flow Charge per 1000 Gallons	**7.95**	**8.23**
6"		
Sewer Base	**1,280.74**	**1,325.57**
Plus Flow Charge per 1000 Gallons	**7.95**	**8.23**
8"	-	
Sewer Base	**1,423.99**	**1,473.83**
Plus Flow Charge per 1000 Gallons	**7.95**	**8.23**

** Commercial businesses that provide tenant accommodations (apartment complexes, hotels, motels, etc.) will have a different sewer base rate, and will be determined after final review of total unit count.

SCHEDULE S4. INTEREST

Compounded monthly....	1.5% per month

SCHEDULE S5. DELINQUENT BILLS AND PENALTIES

These fees are a part of a consolidated statement for utility customers, which is generally paid by a single payment. If a partial payment is received, the payment shall be applied pro rata to each account billed on the consolidated statement in the proportion that an individual account bears to the total consolidated statement of all current charges for all accounts. Sections 5.03.35 and 5.03.64 of the Land Development Regulations shall apply to all charges on this rate schedule.

STORMWATER FEE SCHEDULE

Fees are based on ERU (Equivalent Residential Unit) of 2,049 square feet

Current Rate per ERU: $14.58

Proposed Rate per ERU: $20.00

Fee Schedule - Solid Waste Collection

Residential Service

Per single family residential unit: $24.61

Residential Recycle Fee: $2.41

Commerical Service

Tote Service (Tippy Carts)			
Number of Totes (65-gallons)	Weekly Pickup		
	2x	3x	4x
1	38.17	58.43	78.70
2	78.70	119.22	159.74
3	119.22	180.00	240.79
4	159.74	240.78	321.84
5	200.27	301.62	402.89

Weekly Pickup						
Container Sizes	2	3	4	5	6	Special Pickup Each
2	164.92	248.55	332.19	415.82	499.46	42.75
4	332.19	514.35	696.42	856.27	1,068.08	79.39
6	499.46	765.21	1,031.00	1,296.71	1,562.47	116.03
8	666.69	1,016.11	1,365.50	1,714.93	2,064.27	152.67

Special Pickup Service - Appliances & Furniture (New)

Per ordinance 2024-15, there will be a fee assessed for appliance and/or furniture pickup and applies to both commercial and residential accounts.

Special pickups for appliances and furniture must be paid for with utility billing before item is picked up.

The fees will be as follows:

Appliance (stove, fridge, oven, etc.): $50.00
Small pile- any **one** of the following items (list is not exhaustive and intended as examples) dresser, side table, love seat, mattress, etc.): $100.00

Large pile - **anymore than two** of the following items (list is not exhaustive and intended as examples) bed, mattress, couch, side table, dresser, dining table, etc.): $200.00

Special Pickup Service - Garbage & Recycling

The cost for a special pickup service for garbage or recycling shall be in accordance with the commercial container special pickup fee schedule.

The cost for a special pickup service for yard waste shall be $193.15 for a full load and $96.58 for a partial load, per pick up.

Recycled Glass

By The Bag: Clean Glass

25 Pound Bag (Plus Tax)	$30.00
25 Pound Bag of Sand - with Glass Purchase	No Charge

In Bulk by the Bag: - Clean Glass

1 - 5 Bags (Plus Tax)	$30.00

6 - 10 Bags (Plus Tax) ea.	$26.00
11 - 20 Bags (Plus Tax) ea.	$22.00

Bulk by Cubic Yard: Dirty Glass

1/2 Cubic Yard (Plus Tax) - 162 Sq Ft	$50.00
1 Cubic Yard (Plus Tax) - 324 Sq Ft	$100.00

NOTE: Coverage is Approximate and Estimated at (1) inch of Thickness

Glass sand is provided with any purchase free of charge

Applying to all Service

1. In the event of vacancies or nonpayment of fees, rules and policies existing for nonpayment of water or sewer bills will apply.
2. All fees due the city shall be included in the city utility bill which is rendered monthly. No discounts shall be allowed for prompt payment thereof.
3. The fact that any place of abode or any place of business is occupied shall be prima facie evidence that garbage, yard waste, or recycling is being produced and accumulated upon such premises, and the fees for collection and disposal thereof are due to the City. No credit shall be given when a home or business is vacant.
4. All solid waste collection fees shall constitute, and are hereby imposed as a special assessment lien against the real property aforesaid; and, until fully paid and discharged, shall remain liens equally in rank and dignity with city ad valorem taxes, and superior in rank and dignity to all other liens, encumbrances, titles and claims in, to or against the real property involved. Such special assessment liens for service charges shall be enforced by any of the methods provided for by law.

STAFF REPORT

City Commission Regular Meeting

February 13, 2025

To: Elected Officials

From: Dale L. Martin, City Manager

Date: February 7, 2025

Item Name: Resolution 2025-04. A Resolution by the City Commission of the City of Flagler Beach to award Bid No. FB-24-0111 Project # 238 Wastewater Sludge Management Improvements to McMahan Construction Co., Inc. in an amount not to exceed $2,992,000; providing for conflict and an effective date.

Background: The City of Flagler Beach's Wastewater Treatment Plant (WWTP) has been using drying beds (i.e., sand beds in concrete block structures) for the last forty-five years to dispose of sludge, the by-product of the wastewater treatment process. This is an antiquated technology that is significantly impacted by weather conditions since it requires sunlight, low humidity, and the absence of rain to air dry and dewater the sludge in a reasonable period of time. The technology is also very labor intensive, requiring staff to hand shovel the sludge out of the drying beds and into roll-off dumpsters. Additionally, the current sludge management system is highly susceptible to overflow conditions (which has, in part, led to the current Consent Order between the Department of Environmental Protection and the City). The proposed project will construct sludge management system improvements (commonly referred to as a "screw press") at the Flagler Beach Wastewater Treatment Plant (WWTP).

The Project, long anticipated and included in the Five-Year Capital Plan as part of the City's 2024/2025 budget., was bid in accordance with the City procurement ordinance. The bids were publicly opened on December 6, 2024. Four bids received (see attached bid tab) that ranged from a low of $2,992,000 to a high of $4,491,000.
City staff have determined that the lowest responsive bidder is McMahan Construction Co., Inc. (Deland, FL). Mead & Hunt staff (City engineering consultant) have reviewed and checked the submitted references and advised City staff of their recommendations.

Fiscal Impact: Funding for the Project will be drawn from the City's grant awarded by the Department of Environmental Protection (DEP; $850,000), reserves previously allocated for the screw press acquisition/construction ($375,000), the 2024/2025 budget appropriation ($1,287,000), and Utility Reserves ($893,000). The City funds expended will satisfy the City's required matching contribution to realize the full extent of the DEP grant (the City had previously expended $413,000 to acquire the screw press equipment).

Staff Recommendation: Staff recommends approval of Resolution 2025-04, awarding the contract for Wastewater Sludge Management Improvements to McMahan Construction Co., Inc. in an amount not to exceed $2,992,000.

Attachment:

Resolution 2025-06

RESOLUTION 2025-04

A RESOLUTION BY THE CITY COMMISSION OF THE CITY OF FLAGLER BEACH TO AWARD BID NO. FB-24-0111 PROJECT # 238 WASTEWATER SLUDGE MANAGEMENT IMPROVEMENTS TO MCMAHAN CONSTRUCTION CO., INC. IN AN AMOUNT NOT TO EXCEED $2,992,000; PROVIDING FOR CONFLICT AND AN EFFECTIVE DATE.

WHEREAS, the City owns, operates, and maintains a Wastewater Treatment Plant to enhance environmental and public safety. The current facility, located at 2000 Avenue A, Flagler Beach, Florida, is approximately fifty years old and utilizes older, inefficient treatment and disposal systems; and,

WHEREAS, in collaboration with State and regional agencies, the City has designed improvements to the Wastewater Treatment Plant which will increase the facility's capacity and improve the treatment of wastewater; and,

WHEREAS, the State Department of Environmental Protection has provided funding ($850,000) to support the acquisition and installation of de-watering equipment as part of the wastewater treatment process; and,

WHEREAS, the City acquired the de-watering equipment in September, 2024, and subsequently solicited proposals for the construction of a facility to house and operate the de-watering equipment; and,

WHEREAS, the City, after receiving four proposals, opened those proposals on December 6, 2024 (see Exhibit A); and,

WHEREAS, City staff reviewed the proposals and offered an appropriate recommendation to the City Commission;

NOW THEREFORE BE IT RESOLVED BY THE CITY COMMISSION OF THE CITY OF FLAGLER BEACH, AS FOLLOWS:

SECTION 1. The City of Flagler Beach City Commission awards Bid No FB-24-0111 (Wastewater Sludge Management Improvements) to McMahan Construction Co., in an amount not to exceed $2,992,000.

SECTION 2. The City Commission directs the City Manager to ensure that all necessary reporting related to Departmental of Environmental Protection is completed in a complete and timely manner.

SECTION 3. All resolutions or parts of resolutions in conflict herewith are hereby repealed.

SECTION 4. This Resolution shall become effective immediately upon passage as provided by law.
PASSED AND ADOPTED THIS 13th DAY OF FEBRUARY, 2025.

CITY OF FLAGLER BEACH, FLORIDA
CITY COMMISSION

ATTEST:

_____
Patti King, Mayor

_____
Penny Overstreet, City Clerk

Attachments
Exhibit A- Bid Tabulation
Exhibit B- Submission (portion), McMahan Construction (December 6, 2024)

Bid Tabulation

Bid Number FB-240111

Bid Name WWTF Sludge Management Improvements

23 Planholder(s) found

SupplierName	Bids	Email	Address1	Address2	City	State	PostalCode	Phone
AMCON Development Group, LLC		mitch@amconpro.com	1170 Tree Swallow Drive		Winter Springs	FL	32708	4077600030
Barney's Pumps, Inc.		pearcer@barneyspumps.com	PO Box 3529		Lakeland	FL	33812	8636658500
Consolidated Pipe and Supply, Inc.		jcobb@consolidatedpipe.com	1205 Hilltop Parkway		Birmingham	AL	35204	(205) 323-7261
ConstructConnect		content@constructconnect.com	3825 Edwards Rd	Suite 800	Cincinnati	OH	45209	8772271680
Dodge Data		dodge.docs@construction.com	4300 Beltway Place, Ste 150		Arlington	TX	76018	4133767032
Electrical Design Associates, Inc.		sbailey@baileyengineering.com	7284 West Palmetto Park Rd	Suite 302-S	Boca Raton	FL	33433	5618195556
Envirosales of Florida, Inc.		karen@envirosalesofflorida.com	8124 Hampshire Dr.		Sebring	FL	33876	8636556017
Florida Design Contractors		bids@floridadesigncontractors.com	1326 South Killian Drive		West Palm Beach	FL	33403	5618451233
JCA Surety Group		jb@jcasurety.com	1602 Georgia Blvd		Winter Park	FL	32803	4075754361
L7 Construction, Inc.	**$3,577,000.00**	blefever@L7constructs.com	275 Hunt Park Cove		Longwood	FL	32750	3219729325
Lads Constrction Services LLC		jeffrey@ladsconstructionllc.com	6 MAPLE STREET		Flagler Beach	FL	32136	(386) 793-4342
Lawrence Lee Construction Services, Inc.		GS@LawrenceLeeConstruction.com	800 SE Lincoln Ave		Stuart	FL	34994	5615789892
McMahan Construction Co., Inc.	**$2,992,000.00**	dkellogg@mcmahanfl.com	123 E. Indiana Ave		Deland	FL	32724	3867341071
MTS Environmental		bbierhorst@mts-florida.com	27237 Fordham Dr		Wesley Chapel	FL	33543	8139294454
MTS Environmental		mtsenvironmental@bellsouth.net	3102 Sawgrass Village circle		Ponte VEdra Beach	FL	32082	9042738600
Onvia, Inc. - Content Department		sourcingsupport@deltek.com	509 Olive Way, Suite 400		Seattle	WA	98101	2063739500
R.J. Sullivan Corp		jbuckwalter@rjsullivancorp.com	2001 NW 22nd St		Pompano Beach	FL	33069	9549750388
RCM Utilities, LLC		execassist@rcmutilities.com	100 W. Mills Ave		Eustis	FL	32726	3525612990
Sawcross, Inc.	**$3,763,000.00**	markh@sawcross.com	10970 New Berlin Road		Jacksonville	FL	32226-2270	9047517500
SGS Contracting Services, Inc.		seth@sgscsi.com	PO Box 908		High Springs	FL	32655	3527456950
SOUTHEASTERN PUMP		jbrodeur@sepump.com	1354 SW 12th Ave		Pompano Beach	FL	33069	9547818400
Southeastern Surveying and Mapping Corp		marketing@ssmc.us	6500 All American Blvd		Orlando	FL	32810	4072928580
Star Controls Inc		sales@star-controls.com	11555 Heron Bay Blvd	Suite #200	Coral Springs	FL	33076	9546030491
Razorback, LLC	**$4,491,000.00**	anthony@razorbackllc.com	177 Anclote Rd		Tarpon Springs	FL	34689	7279389500

ARTICLE 5 – BASIS OF BID

5.01 Bidder will complete the Work in accordance with the Contract Documents for the following price(s):

Lump Sum Bid Price	$ 2,992,000.00

Total of All Lump Sums $ 2,992,000.00

FLAGLER BEACH WWTF SLUDGE MANAGEMENT SYSTEM IMPROVEMENTS			
ITEM NO.	DESCRIPTION	UNIT	TOTAL COST
1	Mobilization, Demobilization, Bonds, Insurance, Contractor's trailer(s), all temporary facilities, and miscellaneous items	LS	$60,000.00
2	Survey, Layout, and As-Built Information	LS	$10,000.00
3	Preconstruction High Definition (HD) Recording	LS	$5,000.00
4	3D High Definition Laser Survey	LS	$16,000.00
5	Project Cash Allowance	LS	$100,000.00
6	Indemnification	LS	$1,000.00
7	Sludge Dewatering System	LS	$1,750,000.00
8	Electrical, Controls & Instrumentation	LS	$1,000,000.00
9	SCADA System Modifications	LS	$50,000.00
TOTAL BASE BID LUMP SUM AMOUNT:			$2,992,000.00

Bidder acknowledges that (1) each Bid Unit Price includes an amount considered by Bidder to be adequate to cover Contractor's overhead and profit for each separately identified item, and (2) estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all unit price Bid items will be based on actual quantities, determined as provided in the Contract Documents.

ARTICLE 6 – TIME OF COMPLETION

6.01 Bidder agrees that the Work will be substantially complete and will be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before the dates or within the number of calendar days indicated in the Agreement.

6.02 Bidder accepts the provisions of the Agreement as to liquidated damages.

ARTICLE 7 – ATTACHMENTS TO THIS BID

7.01 The following documents are submitted with and made a condition of this Bid:

A. Required Bid security;

B. List of Proposed Subcontractors;

C. List of Proposed Suppliers;

D. List of Project References;

E. Evidence of authority to do business in the state of the Project; or a written covenant to obtain such license within the time for acceptance of Bids;

F. Required Bidder Qualification Statement with supporting Attachments A through O

G. Submit sealed bids including one original copy, four (4) identical paper copies, and one (1) electronic copy in pdf format on USB or CD.

ARTICLE 8 – DEFINED TERMS

8.01 The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions.

REMAINDER OF PAGE INTETNIONALLY LEFT BLANK

ARTICLE 9 – BID SUBMITTAL

BIDDER: *[Indicate correct name of bidding entity]*

McMahan Construction Co., Inc.
123 E. Indiana Ave.
DeLand, FL 32724
Incorporated State of Florida 1980

McMahan Construction Co., Inc.

By:
[Signature] John Justus Jr.

[Printed name] John Justus, Jr., Executive Vice President

(If Bidder is a corporation, a limited liability company, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest:
[Signature] Sherry Phillips

[Printed name] Sherry Phillips

Title: Corporate Secretary

Submittal Date: December 6, 2024

Address for giving notices:

McMahan Construction Co., Inc.

P.O. Box 223

DeLand, FL 32721-0223

Telephone Number: (386) 734-1071

Fax Number: (386) 738-2692

Contact Name: John Justus, Jr., Executive Vice President

Contact e-mail address: jjustus@mcmahanfl.com

Bidder's License No.: CGC #059437 & CUC #057309

END OF SECTION

Executed in 2 Counterparts
Bid No. FB-240111

SECTION 00 43 00
BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we, McMahan Construction Co., Inc. as Principal and Berkley Insurance Company of the City of Greenwich State of CT, a corporation existing under the laws of the State of Florida, as Surety, are held and firmly bound unto the* hereinafter called the Owner, in the sum of Five Percent of Amount Bid----------Dollars ($------5%------) lawful money of the United States of America, for the payment of which sum well and truly to be made, we bind ourselves our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

The condition of this obligation is such that whereas the Principal has submitted the accompanying Proposal or Bid, for the construction of:

CITY OF FLAGLER BEACH WASTEWATER TREATMENT PLANT SLUDGE MANAGEMENT IMPROVEMENTS

NOW, THEREFORE, if the Principal shall not withdraw said Bid within sixty (60) days after the opening of the same and in the event of the acceptance of his proposal by the Owner, shall, within the period specified therefore, enter into a written contract with the Owner in accordance with the Bid as accepted, and give bond with good and sufficient surety or sureties, as may be required, for the faithful performance and proper fulfillment of such contract, or in the event of the withdrawal of said Bid within the period specified, of the failure to enter into such contract and give bonds within the time specified, if the Principal shall pay the Owner the difference between the amount specified in said Bid and the amount for which the Owner may procure the required work, if the latter amount be in excess of the former, then the above obligation shall be void and of no effect, otherwise to remain in full force and virtue.

*City of Flagler Beach, 105 S. 2nd Street, Flagler Beach, FL 32136

IN WITNESS WHEREOF, the above bounden parties have executed this instrument under their several seals this 6th day of December, 2024 the name and corporate seal of each corporate body being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

IN PRESENCE OF:

N/A

N/A

N/A

N/A
Witness

N/A (Seal)

N/A (Seal)

N/A (Seal)
Individual or Partner

McMahan Construction Co., Inc.

123 E. Indiana Avenue, DeLand, FL 32724
Address

McMahan Construction Co., Inc.
Corporate Principal

ATTEST:
Sherry Phillips, Corp. Sec.

Exec. Vice President
John Justus, Jr.

AFFIX CORPORATE SEAL

Berkley Insurance Company

475 Steamboat Road, Greenwich, CT 06830
Address

By
Jeffrey W. Reich

AFFIX CORPORATE SEAL

Berkley Insurance Company
Corporate Surety

ATTEST:
Sophia Golecki, Witness

*Attorney-In-Fact & FL Licensed Resident Agent
Title Inquiries: 407-786-7770

END OF SECTION

POWER OF ATTORNEY
BERKLEY INSURANCE COMPANY
WILMINGTON, DELAWARE

KNOW ALL MEN BY THESE PRESENTS, that BERKLEY INSURANCE COMPANY (the "Company"), a corporation duly organized and existing under the laws of the State of Delaware, having its principal office in Greenwich, CT, has made, constituted and appointed, and does by these presents make, constitute and appoint: ***Kim E. Niv; Jeffrey W. Reich; Lisa A. Roseland; Susan L. Reich; Teresa L. Durham; Cheryl A. Foley; Sarah K. O'Linn; Robert P. O'Linn; Emily J. Golecki; or Nathan K. Reich of Florida Surety Bonds, Inc. of Maitland, FL*** its true and lawful Attorney-in-Fact, to sign its name as surety only as delineated below and to execute, seal, acknowledge and deliver any and all bonds and undertakings, with the exception of Financial Guaranty Insurance, providing that no single obligation shall exceed **Fifty Million and 00/100 U.S. Dollars (U.S.$50,000,000.00),** to the same extent as if such bonds had been duly executed and acknowledged by the regularly elected officers of the Company at its principal office in their own proper persons.

This Power of Attorney shall be construed and enforced in accordance with, and governed by, the laws of the State of Delaware, without giving effect to the principles of conflicts of laws thereof. This Power of Attorney is granted pursuant to the following resolutions which were duly and validly adopted at a meeting of the Board of Directors of the Company held on January 25, 2010:

RESOLVED, that, with respect to the Surety business written by Berkley Surety, the Chairman of the Board, Chief Executive Officer, President or any Vice President of the Company, in conjunction with the Secretary or any Assistant Secretary are hereby authorized to execute powers of attorney authorizing and qualifying the attorney-in-fact named therein to execute bonds, undertakings, recognizances, or other suretyship obligations on behalf of the Company, and to affix the corporate seal of the Company to powers of attorney executed pursuant hereto; and said officers may remove any such attorney-in-fact and revoke any power of attorney previously granted; and further

RESOLVED, that such power of attorney limits the acts of those named therein to the bonds, undertakings, recognizances, or other suretyship obligations specifically named therein, and they have no authority to bind the Company except in the manner and to the extent therein stated; and further

RESOLVED, that such power of attorney revokes all previous powers issued on behalf of the attorney-in-fact named; and further

RESOLVED, that the signature of any authorized officer and the seal of the Company may be affixed by facsimile to any power of attorney or certification thereof authorizing the execution and delivery of any bond, undertaking, recognizance, or other suretyship obligation of the Company; and such signature and seal when so used shall have the same force and effect as though manually affixed. The Company may continue to use for the purposes herein stated the facsimile signature of any person or persons who shall have been such officer or officers of the Company, notwithstanding the fact that they may have ceased to be such at the time when such instruments shall be issued.

IN WITNESS WHEREOF, the Company has caused these presents to be signed and attested by its appropriate officers and its corporate seal hereunto affixed this 23rd day of October, 2023.

Attest:

By _____
Ira S. Lederman
Executive Vice President & Secretary

Berkley Insurance Company

By _____
Jeffrey M. Hafter
Senior Vice President

STATE OF CONNECTICUT)
) ss:
COUNTY OF FAIRFIELD)

Sworn to before me, a Notary Public in the State of Connecticut, this 23rd day of October, 2023, by Ira S. Lederman and Jeffrey M. Hafter who are sworn to me to be the Executive Vice President and Secretary, and the Senior Vice President, respectively, of Berkley Insurance Company.

MARIA C RUNDBAKEN
NOTARY PUBLIC
CONNECTICUT
MY COMMISSION EXPIRES
APRIL 30, 2024

_____
Notary Public, State of Connecticut

CERTIFICATE

I, the undersigned, Assistant Secretary of BERKLEY INSURANCE COMPANY, DO HEREBY CERTIFY that the foregoing is a true, correct and complete copy of the original Power of Attorney; that said Power of Attorney has not been revoked or rescinded and that the authority of the Attorney-in-Fact set forth therein, who executed the bond or undertaking to which this Power of Attorney is attached, is in full force and effect as of this date.

Given under my hand and seal of the Company, this 6th day of DECEMBER, 2024.

_____
Vincent P. Forte

ARTICLE 1 – BID RECIPIENT

1.01 This Bid is submitted to:

City of Flagler Beach
105 S 2nd Street
Flagler Beach, FL 32136

1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

ARTICLE 2 – BIDDER'S ACKNOWLEDGEMENTS

2.01 Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for 60 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

ARTICLE 3 – BIDDER'S REPRESENTATIONS

3.01 In submitting this Bid, Bidder represents that:

A. Bidder has examined and carefully studied the Bidding Documents, and any data and reference items identified in the Bidding Documents, and hereby acknowledges receipt of the following Addenda:

Addendum No.	Addendum, Date
1	11/20/24
2	11/21/24

B. Bidder has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfied itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

C. Bidder is familiar with and has satisfied itself as to all Laws and Regulations that may affect cost, progress, and performance of the Work.

D. Bidder has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings.

E. Bidder has considered the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and any Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance

of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder; and (3) Bidder's safety precautions and programs.

F. Bidder agrees, based on the information and observations referred to in the preceding paragraph, that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents.

G. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.

H. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and confirms that the written resolution thereof by Engineer is acceptable to Bidder.

I. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work.

J. The submission of this Bid constitutes an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, and that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

ARTICLE 4 – BIDDER'S CERTIFICATION

4.01 Bidder certifies that:

A. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation;

B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;

C. Bidder has not solicited or induced any individual or entity to refrain from bidding; and

D. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 4.01.D:

1. "corrupt practice" means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the bidding process;

2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;

3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels; and

4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the e execution of the Contract.

ARTICLE 5 – BASIS OF BID

5.01 Bidder will complete the Work in accordance with the Contract Documents for the following price(s):

Lump Sum Bid Price	$ 2,992,000.00

Total of All Lump Sums $ 2,992,000.00

FLAGLER BEACH WWTF SLUDGE MANAGEMENT SYSTEM IMPROVEMENTS			
ITEM NO.	DESCRIPTION	UNIT	TOTAL COST
1	Mobilization, Demobilization, Bonds, Insurance, Contractor's trailer(s), all temporary facilities, and miscellaneous items	LS	$60,000.00
2	Survey, Layout, and As-Built Information	LS	$10,000.00
3	Preconstruction High Definition (HD) Recording	LS	$5,000.00
4	3D High Definition Laser Survey	LS	$16,000.00
5	Project Cash Allowance	LS	$100,000.00
6	Indemnification	LS	$1,000.00
7	Sludge Dewatering System	LS	$1,750,000.00
8	Electrical, Controls & Instrumentation	LS	$1,000,000.00
9	SCADA System Modifications	LS	$50,000.00
TOTAL BASE BID LUMP SUM AMOUNT:			$2,992,000.00

Bidder acknowledges that (1) each Bid Unit Price includes an amount considered by Bidder to be adequate to cover Contractor's overhead and profit for each separately identified item, and (2) estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all unit price Bid items will be based on actual quantities, determined as provided in the Contract Documents.

ARTICLE 6 – TIME OF COMPLETION

6.01 Bidder agrees that the Work will be substantially complete and will be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before the dates or within the number of calendar days indicated in the Agreement.

6.02 Bidder accepts the provisions of the Agreement as to liquidated damages.

ARTICLE 7 – ATTACHMENTS TO THIS BID

7.01 The following documents are submitted with and made a condition of this Bid:

A. Required Bid security;

B. List of Proposed Subcontractors;

C. List of Proposed Suppliers;

D. List of Project References;

E. Evidence of authority to do business in the state of the Project; or a written covenant to obtain such license within the time for acceptance of Bids;

F. Required Bidder Qualification Statement with supporting Attachments A through O

G. Submit sealed bids including one original copy, four (4) identical paper copies, and one (1) electronic copy in pdf format on USB or CD.

ARTICLE 8 – DEFINED TERMS

8.01 The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions.

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ARTICLE 9 – BID SUBMITTAL

BIDDER: *[Indicate correct name of bidding entity]*

McMahan Construction Co., Inc.
123 E. Indiana Ave.
DeLand, FL 32724
Incorporated State of Florida 1980

McMahan Construction Co., Inc.

By:
[Signature] John Justus Jr.

[Printed name] John Justus, Jr., Executive Vice President

(If Bidder is a corporation, a limited liability company, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest:
[Signature] Sherry Phillips

[Printed name] Sherry Phillips

Title: Corporate Secretary

Submittal Date: December 6, 2024

Address for giving notices:

McMahan Construction Co., Inc.

P.O. Box 223

DeLand, FL 32721-0223

Telephone Number: (386) 734-1071

Fax Number: (386) 738-2692

Contact Name: John Justus, Jr., Executive Vice President

Contact e-mail address: jjustus@mcmahanfl.com

Bidder's License No.: CGC #059437 & CUC #057309

END OF SECTION

2024 FLORIDA PROFIT CORPORATION ANNUAL REPORT

DOCUMENT# F02227

Entity Name: MCMAHAN CONSTRUCTION CO., INC.

Current Principal Place of Business:

123 E INDIANA AVE
DELAND, FL 32724

Current Mailing Address:

PO BOX 223
DELAND, FL 32721-0223 US

FEI Number: 59-2036678

FILED
Jan 11, 2024
Secretary of State
3653028878CC

Certificate of Status Desired: Yes

Name and Address of Current Registered Agent:

KELLOGG, DEAN
123 E INDIANA AVENUE
DELAND, FL 32724 US

The above named entity submits this statement for the purpose of changing its registered office or registered agent, or both, in the State of Florida.

SIGNATURE: DEAN KELLOGG 01/11/2024

Electronic Signature of Registered Agent — Date

Officer/Director Detail :

Title	VP
Name	JUSTUS, JOHN JR.
Address	123 E. INDIANA AVE.
City-State-Zip:	DELAND FL 32724

Title	ST
Name	PHILLIPS, SHERRY
Address	123 E INDIANA AVE
City-State-Zip:	DELAND FL 32724

Title	PRESIDENT
Name	KELLOGG, DEAN
Address	123 E. INDIANA AVE
City-State-Zip:	DELAND FL 32724

I hereby certify that the information indicated on this report or supplemental report is true and accurate and that my electronic signature shall have the same legal effect as if made under oath; that I am an officer or director of the corporation or the receiver or trustee empowered to execute this report as required by Chapter 607, Florida Statutes; and that my name appears above, or on an attachment with all other like empowered.

SIGNATURE: SHERRY PHILLIPS ST 01/11/2024

Electronic Signature of Signing Officer/Director Detail — Date

SECTION 00 01 50
FLORIDA TRENCH SAFETY ACT

Bidder acknowledges that he is solely responsible for complying with the Florida Trench Safety Act (ACT) and Occupational Safety and Health Administrations excavation safety standard 29 CFR 1926.650.

Bidder further acknowledges that included in the various items of the proposal and in the Total Bid Price are costs for complying with the Florida Trench Safety Act (90-96, Laws of Florida) effective October 1, 1990 and the Occupational Safety and Health Administrations excavation safety standard.

Name: McMahan Construction Co., Inc.

Authorized Signature: _____
John Justus, Jr.

Date: December 6, 2024

Title: Executive Vice President

END OF SECTION

SECTION 00 11 53
REQUEST FOR QUALIFICATION FORMS

Project Name: **CITY OF FLAGLER BEACH WWTF SLUDGE MANAGEMENT IMPROVEMENTS**

City Project No.: 238

Company Name: McMahan Construction Co., Inc.

Contact Name: John Justus, Jr., Executive Vice President

E-mail Address: jjustus@mcmahanfl.com

Mailing Address: 123 E. Indiana Ave.
DeLand, FL 32724

Phone Number: (386) 734-1071

Fax Number: (386) 738-2692

Contractor License Number: CGC #059437 & CUC #057309

The CITY will post addenda information at Onvia DemandStar, Inc., at the following web address: www.demandstar.com. For technical assistance with this website, please contact Onvia Services at 1-800-711-1712. All Bidders should check the Onvia DemandStar website at least seven (7) calendar days before the date fixed to verify information regarding Addenda. Failure to do so could result in rejection of the submittal as unresponsive. Bidders shall sign, date, and return all addenda with their bid. It is the sole responsibility of the Bidder to ensure he/she obtains information related to Addenda. Oral and other interpretations or clarifications will be without legal effect.

The following Addenda were received:

Addendum No. 1 Date Received 11/20/24

Addendum No. 2 Date Received 11/21/24

Addendum No. _____ Date Received _____

Addendum No. _____ Date Received _____

Addendum No. _____ Date Received _____

Addendum No. _____ Date Received _____

The Bidder acknowledges the receipt, execution, and return of the following attachments:

- Attachment A: Certificate of Corporation
- Attachment B: Contractor Questionnaire
- Attachment C: Required Disclosure
- Attachment D: Bidder Information
- Attachment E: Experience of Bidder
- Attachment F: Sworn Statement Under section 287.133(3) (a), Florida Statutes, on Public Entity Crimes
- Attachment G: Affidavit of Non-Collusion
- Attachment H: Certification of Non-Segregated Facilities
- Attachment I: Drug-Free Work Place
- Attachment J: Conflict of Interest Statement
- Attachment K: Compliance with Public Records Law
- Attachment L: Americans with Disabilities Act Affidavit
- Attachment M: Additional Procurement Clauses
- Attachment N: List of Proposed Subcontractors/Suppliers
- Attachment O: List of Licenses and Certifications

Authorized Signature: _____

John Justus, Jr.

Date: December 6, 2024

Title: Executive Vice President

ACKNOWLEDGEMENT

STATE OF FLORIDA

COUNTY OF VOLUSIA

Sworn to (or affirmed) and subscribed before me by means of

online notarization ☐ *OR* physical presence ☒

this 6th day of December, 2024.

Personally Known ☒ *OR* Produced identification ☐

Type of Identification Produced: _____

_____

Signature of Notary Public

Print, Type or Stamp Commissioned Name of Notary Public below:

Mary L. Thomas

NOTARY PUBLIC STATE OF FLORIDA
MARY L. THOMAS
MY COMMISSION # HH261932
EXPIRES: May 08, 2026

END OF SECTION

REQUEST FOR QUALIFICATION FORMS

ATTACHMENT A

CERTIFICATE OF CORPORATION

Please include a copy of your Certificate of Corporation from the State of Florida with this attachment.

STATE OF FLORIDA

COUNTY OF VOLUSIA

I HEREBY CERTIFY that a meeting of the Board of Directors of McMahan Construction Co., Inc., a corporation under the laws of the State of Florida, was held on December 6, 2024. The following resolution was duly passed and adopted:

"RESOLVED, that John Justus, Jr. as Executive Vice President of the corporation is hereby authorized to execute the Contract dated _____, 20____, between The City of Flagler Beach, a municipal corporation and this corporation, and that execution thereof, attested by the Secretary of the corporation and with corporate seal affixed, shall be the official act and deed of this corporation."

I further certify that said resolution is now in full force and effect.

IN WITNESS THEREOF, I have hereunto set my hand and affixed the official seal of the corporation

This 6th day of December, 2024.

Sherry Phillips

Corporate Secretary Sherry Phillips

END OF ATTACHMENT A

SECTION 00 11 53
REQUEST FOR QUALIFICATION FORMS

ATTACHMENT B

CONTRACTOR QUESTIONNAIRE

DATE: December 6, 2024

NAME OF BIDDER: McMahan Construction Co., Inc.

BUSINESS ADDRESS: 123 E. Indiana Avenue, DeLand, FL 32724

PHONE NUMBER: (386) 734-1071

CONTRACTOR'S FL LICENSE #: CGC #059437 & CUC #057309 (John Justus, Jr.)

EXPIRATION DATE: August 31, 2026

The undersigned warrants the truth and accuracy of all statements and answers herein contained. Include additional sheets as necessary.

1. How many years has your organization been in business as a General Contractor?

   58 Years

2. How many years has your organization been in business as a Subcontractor?

   58 Years

3. Name of Superintendent and length of time with your company?

   Donnie Ramsey, 41 Years

4. Describe in detail and give the date and owner, including phone numbers and contact person(s), of the last five (5) projects that you have completed similar in type, size, and nature as the project proposed? PLEASE SEE ATTACHED SIMILAR PROJECT LIST FOR MORE DETAIL

Main Water Plant Greensand Filter - City of Orange City 2023-2024: John Peters, Eng. Svcs. Director (386) 851-7525

Rehab of Glencoe Well Sites No. 2 & No. 3 - UCNSB 2021-2023: Darren Phegley, P.E., Const. Sup. (386) 424-3072

Yankee Lake WRF Repair & Rehab - Seminole County 2022-2022: Michael Boggs, Project Manager (407) 665-2026

NW Reclaimed Water Storage Tank & Pump Station - City of DeLand 2021-2022: Jim Ailes, Utilities Dir. (386) 626-7253

Well No. 48 Outfitting at Magdalena WTP No. 16 - City of Deltona 2020-2021: Phyllis Wallace (386) 878-8973

5. Have you ever failed, or been alleged to have failed, to complete work awarded to you? If so, please list the project and explain the reasons why?

No

6. Have you ever failed, or been alleged to have failed, to complete work within the Contract Time? If so, please list the project and explain the reasons why?

No

7. Have you ever been assessed liquidated damages, or had liquidated damages assessed against you? If so, please list the project and explain the reasons why?

No

8. Have you ever had a bond or letter of credit called by the owner of a project? If so, when?

No

9. Have you personally inspected the site of the proposed Work? Describe, in full, any anticipated problems with the site and your proposed solutions?

Yes, no problems anticipated

Bidder Name: McMahan Construction Co., Inc.

Signature: _____
John Justus, Jr.

Title: Executive Vice President

Attach the corporate information sheet from the Florida Department of State, Division of Corporation's, web site.

Sworn and subscribed to before me this 6th day of December, 2024,
in the State of FLORIDA, County of VOLUSIA.

_____
Notary Public Mary L. Thomas

MARY L. THOMAS
MY COMMISSION # HH261932
EXPIRES: May 08, 2026

My Commission Expires: May 8, 2026

END OF ATTATCHMENT B

SECTION 00 11 53
REQUEST FOR QUALIFICATION FORMS

ATTACHMENT C

REQUIRED DISCLOSURE

The following disclosure is of all material facts pertaining to any felony conviction or any pending felony charges in the last three (3) years in this State or any other state of the United States against (1) the Bidder, (2) any business entity related to or affiliated with the Bidder or (3) any present or former owner of the Bidder or of any such related or affiliated entity. This disclosure shall not apply to any person or entity which is only a stockholder, which person or entity owns twenty percent (20%) or less of the outstanding shares of the Bidder whose stock is publicly owned and traded:

N/A

Bidder Name: McMahan Construction Co., Inc.

Signature: _____
John Justus, Jr.

Title: Executive Vice President

Date: December 6, 2024

END OF ATTACHMENT C

SECTION 00 11 53
REQUEST FOR QUALIFICATION FORMS

ATTACHMENT D BIDDER INFORMATION

List the full legal name of each officer of the Corporation.

President: Dean Kellogg

Signature: _____ Date: December 6, 2024

Executive **Vice-President:** John Justus, Jr.

Signature: _____ Date: December 6, 2024

Secretary: Sherry Phillips

Signature: _____ Date: December 6, 2024

Treasurer: Sherry Phillips

Signature: _____ Date: December 6, 2024

List the Corporate Officer that will sign the contract: John Justus, Jr., Executive Vice President

END OF ATTACHMENT D

SECTION 00 11 53
REQUEST FOR QUALIFICATION FORMS

ATTACHMENT E
EXPERIENCE OF BIDDER

Bidder Name: McMahan Construction Co., Inc.

Authorized Signature: _____ Date: December 6, 2024

John Justus, Jr., Executive Vice President

Is your company currently involved in any active litigation? ____Yes _X_No

If Yes, explain: _____

_____

_____

_____

Has your company ever been sued? ____Yes _X_No

If Yes, explain and/or submit court decision or judgment, as applicable: _____

_____

_____

_____

The Bidder must demonstrate the successful completion of three (3) projects of similar complexity, nature, size, and dollar amount of Wastewater Treatment Plant Improvements. Any material misrepresentation, as determined by the City of Flagler Beach, shall result in disqualification.

On the following pages, provide the requested information regarding experience within the past five (5) years on three (3) projects as listed above.

Project #1:

Contract Date: October 14, 2021

Contract Amount: $ 1,078,000.00

Project Name: Rehabilitation of Glencoe Well Sites No. 2 and No. 3

Project Location: 2640 Paige Avenue, New Smyrna Beach, FL 32168

General Scope of Work: Demo existing well house. Furnish & install new discharge assembly to existing well heads, including air release valve, swing check valve with limit switch, isolation valve, etc. sample taps & reinstall salvaged flow meters, site work, etc...

Client Name and Address: New Smyrna Beach Utilities
200 Canal Street
New Smyrna Beach, FL 32168

Client Contact Phone: (386) 424-3072

Client Contact Email: dphegley@nsbufl.com

Was the project completed on schedule? X Yes ____No

Total Amount of Change Orders: $ 0

Reasons for Change Orders: N/A

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Project #2:

Contract Date: September 20, 2021

Contract Amount: $ 762,300.02

Project Name: Yankee Lake WRF Repair & Rehabilitation

Project Location: 501 Yankee Lake Road, Sanford, FL 32771

General Scope of Work: Replace 2 existing buried manholes, recoat 4 existing manholes, remove & replace 2 existing anoxic tank mixers with new units, remove & replace portion of above ground piping & instrumentation, remove & replace digester sludge loading system. Provide 4 support slabs and new internal recycling pipe, etc...

Client Name and Address: Seminole County
1101 East First Street
Sanford, FL 32771

Client Contact Phone: (407) 665-2026

Client Contact Email: mboggs@seminolecountyfl.gov

Was the project completed on schedule? X Yes ____ No

Total Amount of Change Orders: $ 63,300.02

Reasons for Change Orders: Additional coatings at headworks structure, plug valves at digestor tanks, chainwheel operators, & headworks structure work items.

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Project #3:

Contract Date: April 19, 2021

Contract Amount: $ 2,924,000.00

Project Name: NW Reclaimed Water Storage Tank & Pump Station

Project Location: 1395 N. Stone Street, DeLand, FL 32720

General Scope of Work: Construction of a new 2.0 MG reclaimed water storage tank, hi-service pump station and related site improvements on a City owned site in the City's NW service area.

Client Name and Address: City of DeLand
1102 S. Garfield Ave.
DeLand, FL 32724

Client Contact Phone: (386) 626-7253

Client Contact Email: ailesj@deland.org

Was the project completed on schedule? X Yes ____ No

Total Amount of Change Orders: $ 0

Reasons for Change Orders: N/A

END OF ATTACHMENT E

ATTACHMENT F
SWORN STATEMENT UNDER SECTION 287.133(3) (a), FLORIDA STATUTES, ON PUBLIC ENTITY CRIMES

THIS FORM MUST BE SIGNED IN THE PRESENCE OF A NOTARY PUBLIC OR OTHER OFFICER AUTHORIZED TO ADMINISTER OATHS.

This sworn statement is submitted to: **The City of Flagler Beach** (Public entity)

By: John Justus, Jr., Executive Vice President
(Individual's name and title)

For: McMahan Construction Co., Inc.
(Name of entity submitting sworn statement)

Whose business address is: 123 E. Indiana Avenue
DeLand, FL 32724

Federal Employer Identification Number (FEIN): 59-2036678

(If the entity has no FEIN, include the Social Security Number of the individual signing this sworn statement)

1. I understand that a "public entity crime" as defined in Section 287.133(1)(g), Florida Statutes, means a violation of any State or Federal law by a person with respect to and directly related to the transaction of business with any public entity or with an agency or political subdivision of any other state or with the United States, including, but not limited to, any bid or contract for goods or services to be provided to any public entity or an agency or political subdivision of any other state or of the United States and involving antitrust, fraud, theft, bribery, collusion, racketeering, conspiracy, or material misrepresentation.
2. I understand that "convicted" or "conviction" as defined in Paragraph 287.133(1) (b), Florida Statutes, means a finding of guilt or a conviction of a public entity crimes, with or without an adjudication of guilt, in any Federal or state trial court of record relating to charges brought by indictment or information after July 1, 1989, as a result of a jury verdict, non-jury trial, or entry of a plea of guilty or nolo contendere.

3. I understand that an "affiliate" as defined in Section 287.133(1)(a), Florida Statutes, means: A predecessor or successor of a person convicted of a public entity crime: or an entity under the control of any natural person who is active in the management of the entity and how has been convicted of a public entity crime. The term "affiliate" includes those officers, directors, executives, partners, shareholders, employees, members, and agents who are active in the management of an affiliate. The ownership by one (1) person of shares constituting a controlling interest in another person, or a pooling of equipment or income among persons when not for fair market value under an arm's length agreement, shall be a prima facie case that one person controls another person. A person who knowingly enters into a joint venture with a person who has been convicted of a public entity crime in Florida during the preceding thirty-six (36) months shall be considered an affiliate.
4. I understand that a "person" as defined in Section 287.133(1) (e), Florida Statutes, means any natural person or entity organized under the laws of any state or of the United States with the legal power to enter into a binding contract and which bids or applies to bid on contracts for the provision of goods or services let by a public entity, or which otherwise transacts or applies to transact business with a public entity. The term "person" includes those officers, directors, executives, partners, shareholders, employees, members, and agents who are active in management of an entity.

Based on information and belief, the statement which I have marked below is true in relation to the entity submitting this sworn statement. (Indicate which statement applies.)

__X__ Neither the entity submitting this sworn statement, nor any officers, directors, executives, partners, shareholders, employees, members, or agent who is active in management of the entity, nor the affiliate of the entity, has been charged with and convicted of a public entity crime subsequent to July 1, 1989.

_____ The entity submitting this sworn statement, or one or more of the officers, directors, executives, partners, shareholders, employees, members or agents who are active in management of the entity, or an affiliate of the entity, has been charged with and convicted of a public entity crime subsequent to July 1, 1989.

_____ The entity submitting this sworn statement, or one or more of the officers, directors, executives, partners, shareholders, employees, members or agents who are active in management of the entity, or an affiliate of the entity, has been charged with and convicted of a public entity crime subsequent to July 1, 1989.

However, there has been a subsequent proceeding before an Administrative Law Jury of the State of Florida, Division of Administrative Hearings and the Final Order entered by the Administrative Law Jury

determined that it was not in the public interest to place the entity submitting this sworn statement on the convicted vendor list. (Attach a copy of the final order.)

I UNDERSTAND THAT THE SUBMISSION OF THIS FORM TO THE CITY OF FLAGLER IS FOR THE CITY ONLY AND, THAT THIS FORM IS VALID THROUGH DECEMBER 31, OF THE CALENDAR YEAR IN WHICH IT IS FILED. I ALSO UNDERSTAND THAT I AM REQUIRED TO INFORM THE CITY PRIOR TO ENTERING IN TO A CONTRACT IN EXCESS OF THE THRESHOLD AMOUNT PROVIDED IN SECTION 287.017, FLORIDA STATUES, FOR CATEGORY TWO OF ANY CHANGE IN THE INFORMATION CONTAINED IN THIS FORM.

Signature: _____
John Justus, Jr.

Date: December 6, 2024

State of: FLORIDA

County of: VOLUSIA

ACKNOWLEDGEMENT

STATE OF FLORIDA

COUNTY OF VOLUSIA

Sworn to (or affirmed) and subscribed before me by means of

online notarization ☐ *OR* physical presence ☒

this 6th day of December, 2024.

Personally Known ☒ *OR* Produced identification ☐

Type of Identification Produced: _____

_____
Signature of Notary Public

Print, Type or Stamp Commissioned Name of Notary Public below:

Mary L. Thomas

NOTARY PUBLIC STATE OF FLORIDA
MARY L. THOMAS
MY COMMISSION # HH261932
EXPIRES: May 08, 2026

END OF ATTACHMENT F

SECTION 00 11 53
REQUEST FOR QUALIFICATION FORMS

ATTACHMENT G AFFIDAVIT OF NON-COLLUSION

The undersigned bidder or agent, being duly sworn on oath, says that he/she has not, nor has any other member, representative, or agent of the firm, company, corporation or partnership represented by him, entered into any combination, collusion or agreement with any person relative to the price to be bid by anyone at such letting nor to prevent any person from bidding nor to include anyone to refrain from bidding, and that this bid is made without reference to any other bid and without any agreement, understanding or combination with any other person in reference to such bidding. He/She further says that no person or persons, firms, or corporation has, have or will receive directly or indirectly, any rebate, fee gift, commission or thing of value on account of such sale.

OATH AND AFFIRMATION

I HEREBY AFFIRM UNDER THE PENALTIES FOR PERJURY THAT THE FACTS AND INFORMATION CONTAINED IN THE FOREGOING BID FOR PUBLIC WORKS ARE TRUE AND CORRECT.

Dated this 6th day of December, 20 24.

McMahan Construction Co., Inc.
(Bidder Name)

Executive Vice President
(Title)

(Signature) John Justus, Jr.

ACKNOWLEDGEMENT

STATE OF FLORIDA
COUNTY OF VOLUSIA

Sworn to (or affirmed) and subscribed before me by means of
online notarization ☐ *OR* physical presence ☒
this 6th day of December, 20 24.
Personally Known ☒ *OR* Produced identification ☐
Type of Identification Produced: _____

Signature of Notary Public
Print, Type or Stamp Commissioned Name of Notary Public below:
Mary L. Thomas

MARY L. THOMAS
MY COMMISSION # HH261932
EXPIRES: May 08, 2026

END OF ATTACHMENT G

SECTION 00 11 53
REQUEST FOR QUALIFICATION FORMS

ATTACHMENT H
CERTIFICATION OF NON-SEGREGATED FACILITIES

The Bidder certifies that they do not maintain or provide for their employees any segregated facilities at any of his establishments, and that they do not permit their employees to perform their services at any location, under their control, where segregated facilities are maintained. The Bidder certifies further that they will not maintain or provide for their employees any segregated facilities at any location under their control where segregated facilities are maintained. The Bidder agrees that a breach of this certification will be a violation of the Equal Opportunity clause in any contract resulting from acceptance of this Bid. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, time clocks, locker rooms and other storage and dressing areas, parking lots, drinking fountains, recreation or entertainment area, transportation and housing facilities provided for employees which are segregated by explicit directive, or are in fact segregated on the basis of race, color, religious disability or national origin, because of habit, local custom, or otherwise. The Bidder agrees that (except where they have obtained identical certifications from proposed subcontractors for specific time periods) they will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity clause, and that he will retain such certifications in his files.

The nondiscriminatory guidelines as promulgated in Section 202, Executive Order 11246, and as amended by Executive Order 11375 and as amended, relative to Equal Opportunity for all persons and implementations of rules and regulations prescribed by the United States Secretary of Labor are incorporated herein.

Name: McMahan Construction Co., Inc.

Signature: _____
John Justus, Jr.

Date: December 6, 2024

Title: Executive Vice President

Official Address: 123 E. Indiana Avenue

DeLand, FL 32724

END OF ATTACHMENT H

SECTION 00 11 53
REQUEST FOR QUALIFICATION FORMS

ATTACHMENT I DRUG-FREE WORK PLACE

The undersigned vendor in accordance with Florida Statute 287.087 hereby certifies that

McMahan Construction Co., Inc. does hereby: (Name of Business)

1. Publish a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the workplace and specifying the actions that will be taken against employees for violations of such prohibition.
2. Inform employees about the dangers of drug abuse in the workplace, the business's policy of maintaining a drug-free workplace, any available drug counseling, rehabilitation, and employee assistance programs, and the penalties that may be imposed upon employees for drug abuse violations.
3. Give each employee engaged in providing the commodities or contractual services that are proposed a copy of the statement specified in subsection (1).
4. In the statement specified in subsection (1), notify the employees that, as a condition of working on the commodities or contractual services that are under proposal, the employee will propose by the terms of the statement and will notify the employer of any conviction of, or plea of guilty or nolo contender to, any violation of Chapter 893, Florida Statutes, or of any controlled substance law of the United States or any state, for a violation occurring in the workplace no later than five (5) days after such conviction.
5. Impose a sanction on, or require the satisfactory participation in a drug abuse assistance or rehabilitation program if such is available in the employee's community, by any employee who is so convicted.
6. Make a good faith effort to continue to maintain a drug-free workplace through implementation of the matters set forth above.

As the person authorized to sign the statement, I certify that this firm complies fully with the above requirements.

Name: John Justus, Jr.

Signature:

Date: December 6, 2024

Title: Executive Vice President

END OF ATTACHMENT I

SECTION 00 11 53
REQUEST FOR QUALIFICATION FORMS

ATTACHMENT J CONFLICT OF INTEREST STATEMENT

Before me, the undersigned authority, personally appeared John Justus, Jr., who was duly sworn, deposes, and states:

1. I am the Executive Vice President of McMahan Construction Co., Inc. with a local office in DeLand, FL and principal office in DeLand, FL.
2. The above-named entity is submitting an Expression of Interest for the City of Flagler Beach project described as bid number FB-240111.
3. The Affiant has made diligent inquiry and provides the information contained in this Affidavit based upon his own knowledge.
4. The Affiant states that only one submittal for the above project is being submitted and that the above-named entity has no financial interest in other entities submitting proposals for the same project.
5. Neither the Affiant nor the above-named entity has directly or indirectly entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive pricing in connection with the entity's submittal for the above project. This statement restricts the discussion of pricing data until the completion of negotiations and execution of the Agreement for this project.
6. Neither the entity nor its affiliates, nor any one associated with them, is presently suspended or otherwise ineligible from participating in contract lettings by any local, state, or federal agency.
7. Neither the entity, nor its affiliates, nor any one associated with them have any potential conflict of interest due to any other clients, contracts, or property interests for this project.
8. I certify that no member of the entity's ownership, management, or staff has a vested interest in any aspect of or Department of the City of Flagler Beach.
9. I certify that no member of the entity's ownership or management is presently applying for an employee position or actively seeking an elected position with City of Flagler Beach.
10. In the event that a conflict of interest is identified in the provision of services, I, on behalf of the above-named entity, will immediately notify the City of Flagler Beach in writing.

Signature of Affiant John Justus, Jr., Executive Vice President

END OF ATTACHMENT J

STATE OF FLORIDA

COUNTY OF VOLUSIA

The foregoing instrument was acknowledged before me this 6th day of December, 2024,

by John Justus, Jr. (Officer Name) of McMahan Construction Co., Inc. (Company)

on behalf of the company. He/She is personally known to me or has produced _____ identification.

Notary Public: Mary L. Thomas My Commission Expires: May 8, 2026

MARY L. THOMAS
MY COMMISSION # HH261932
EXPIRES: May 08, 2026

END OF ATTACHMENT J

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SECTION 00 11 53
REQUEST FOR QUALIFICATION FORMS

ATTACHMENT K
COMPLIANCE WITH THE PUBLIC RECORDS LAW

Upon award recommendation or thirty (30) days after receiving submittals, they become "public records" and shall be subject to public disclosure consistent with Chapter 119, Florida Statutes. Proposers must invoke the exemptions to disclosure provided by law in the response to the solicitation, and must identify the data or other materials to be protected, and must state the reasons why such exclusion from public disclosure is necessary.

If the company submits information exempt from public disclosure, the company must identify with specificity which pages/paragraphs of their bid/proposal package are exempt from the Public Records Act, identifying the specific exemption section that applies to each. The protected information must be submitted to the City of Flagler Beach in a separate envelope marked accordingly.

Company Name: McMahan Construction Co., Inc.

Authorized representative Printed Name: John Justus, Jr., Executive Vice President

Authorized Representative Signature: 

Date: December 6, 2024

END OF ATTACHMENT K

SECTION 00 11 53
REQUEST FOR QUALIFICATION FORMS

ATTACHMENT L
AMERICANS WITH DISABILITIES ACT AFFIDAVIT

The undersigned CONTRACTOR swears that the information herein contained is true and correct and that none of the information supplied was for the purpose of defrauding the CITY.

The CONTRACTOR will not discriminate against any employee or applicant for employment because of physical or mental handicap in regard to any position for which the employee or applicant for employment is qualified. The CONTRACTOR agrees to comply with the rules, regulations and relevant orders issued pursuant to the Americans with Disabilities Act (ADA), 42 USC s. 12101 et seq. It is understood that in no event shall the CITY be held liable for the actions or omissions of the CONTRACTOR or any other party or parties to the Agreement for failure to comply with the ADA. The CONTRACTOR agrees to hold harmless and indemnify the CITY, its agents, officers or employees from any and all claims, demands, debts, liabilities or causes of action of every kind or character, whether in law or equity, resulting from the CONTRACTOR's acts or omissions in connection with the ADA.

Name: John Justus, Jr.

Authorized Signature: _____

Date: December 6, 2024

Title: Executive Vice President

Affix Corporate Seal:

STATE OF FLORIDA

COUNTY OF VOLUSIA

The foregoing instrument was acknowledged before me this 6th day of December, 2024,

by John Justus, Jr. of McMahan Construction Co., Inc.
(Officer Name) (Company)

on behalf of the company. He/~~She~~ is personally known to me or has produced _____ identification.

Notary Public: _____
Mary L. Thomas
My Commission Expires: May 8, 2026

MARY L. THOMAS
MY COMMISSION # HH261932
EXPIRES: May 08, 2026

END OF ATTACHMENT L

REQUEST FOR QUALIFICATION FORMS

ATTACHMENT M
ADDITIONAL PROCUREMENT CLAUSES

TERMINATION FOR CAUSE AND CONVENIENCE

1. Contractor shall be considered in material default of the Agreement and such default shall be considered cause for the City to terminate the Agreement, in whole or in part, as further set forth in this Section 17, if Contractor: (i) fails to begin the Work under the Contract Documents within the time specified herein; (ii) fails to properly and timely perform the Work as directed by the City or as provided for in the approved Progress Schedule; (iii) performs the Work unsuitably or neglects or refuses to remove materials or to correct or replace such Work as may be rejected as unacceptable or unsuitable; (iv) discontinues the prosecution of the Work; (v) fails to resume Work which has been suspended within a reasonable time after being notified to resume Work; (vi) becomes insolvent or is declared bankrupt, or commits any act of bankruptcy; (vii) allows any final judgment to stand against it unsatisfied for more than ten (10) days; (viii) makes an assignment for the benefit of creditors; (ix) fails to obey any applicable codes, laws, ordinances, rules or regulations with respect to the Work; and/or (x) materially breaches any other provision of the Contract Documents.

2. City shall notify Contractor in writing of Contractor's default(s). If the City determines that Contractor has not remedied and cured the default(s) within seven (7) calendar days following receipt by Contractor of said written notice, then the City, at its option, without releasing or waiving its rights and remedies against the Contractor's sureties and without prejudice to any other right or remedy it may be entitled to hereunder or by law, may terminate all or any portion of the Work and any materials, tools, equipment, and appliances of Contractor, take assignments of any of Contractor's subcontracts and purchase orders, and complete all or any portion of Contractor's Work by whatever means, method or agency which the City, in its sole discretion, may choose.

3. If the City deems any of the foregoing remedies necessary, Contractor agrees that it shall not be entitled to receive any further payments hereunder until after the Project is completed. All monies expended and all of the costs, losses, damages, and extra expenses, including all management, administrative and other overhead and other direct and indirect expenses (including attorneys' fees) or damages incurred by the City incident to such completion, shall be deducted from the Contract Amount, and if such expenditures exceed the unpaid balance of the Contract Amount, Contractor agrees to pay promptly to City, on demand, the full amount of such excess, including costs of collection, attorneys' fee (including appeals) and interest thereon at the maximum legal rate of interest until paid. If the unpaid balance of the Contract Amount exceeds all such costs, expenditures and damages incurred by the City to complete the Work, such excess shall be paid to the Contractor. The amount to be paid to the Contractor or the City, as the case may be, and this obligation for payment shall survive termination of the Agreement.

4. The liability of Contractor hereunder shall extend to and include the full amount of any and all sums paid, expenses and losses incurred, damages sustained, and obligations assumed by the City in good faith under the belief that such payments or assumptions were necessary or required, in completing the Work and providing labor, materials, equipment, supplies, and other items therefore or re-letting the Work, in settlement, discharge or compromise of any claims, demands, suits and judgments pertaining to or arising out of the Work hereunder.

5. If, after notice of termination of Contractor's right to proceed pursuant to this Section 17, it is determined for any reason that Contractor was not in default, or that its default was excusable, or that the City is not entitled to the remedies against Contractor provided herein, then Contractor's remedies against the City shall be the same as and

limited to those afforded Contractor below under Subsection 18.1, below, regarding termination of the Agreement for convenience.

DEBARMENT AND SUSPENSION

1. The City shall have the right to terminate the Agreement without cause upon seven (7) calendar days written notice to Contractor. In the event of such termination for convenience, Contractor's recovery against City shall be limited to (i) that portion of the Contract Amount earned through the date of termination; (ii) any retainage withheld up to the date of termination, and (iii) actual out-of-pocket costs arising directly and solely from termination of this Agreement not to exceed under any circumstance five percent (5%) of that portion of the Contract Amount earned through the date of termination. Contractor shall not be entitled to any other or further recovery against the City, including, but not limited to, damages or any anticipated profit on portions of the Work not performed.

2. The City shall have the right to suspend all or any portions of the Work upon giving Contractor two (2) calendar days' prior written notice of such suspension. If all or any portion of the Work is so suspended, Contractor's sole and exclusive remedy shall be to seek an extension of time to its schedule in accordance with the procedures set forth in the Contract Documents. In no event shall the Contractor be entitled to any additional compensation or damages. Provided, however, if the ordered suspension exceeds three (3) months, the Contractor shall have the right to terminate the Agreement with respect to that portion of the Work which is subject to the ordered suspension.

BYRD ANTI-LOBBYING AMENDMENT

Contractors who apply or bid for an award of more than $100,000 shall file the required certification. Each tier certifies to the tier above that it will not and has not used federally appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, officer or employee of Congress, or an employee of a Member of Congress in connection with obtaining any federal contract, grant, or any other award covered by 31 U.S.C. § 1352. Each tier shall also disclose any lobbying with non-federal funds that takes place in connection with obtaining any federal award. Such disclosures are forwarded from tier to tier up to the recipient who in turn will forward the certification(s) to the federal awarding agency."

CERTIFICATION

The undersigned certifies, to the best of his or her knowledge and belief, that:
No federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any federal contract, the making of any federal grant, the making of any federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any federal contract, grant, loan, or cooperative agreement.

If any funds other than federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this federal contract, grant, loan, or

cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, Title 31, U.S.C. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure."

"The Contractor, CPH, LLC, certifies or affirms the truthfulness and accuracy of each statement of its certification and disclosure, if any. In addition, the Contractor understands and agrees that the provisions of 31 U.S.C. Chap. 38, Administrative Remedies for False Claims and Statements, apply to this certification and disclosure, if any.

Prohibition on Contracting for Covered Telecommunications Equipment or Services

(a) *Definitions.* As used in this clause, the terms backhaul; covered foreign country; covered telecommunications equipment or services; interconnection arrangements; roaming; substantial or essential component; and telecommunications equipment or services have the meaning as defined in FEMA Policy 405-143-1, Prohibitions on Expending FEMA Award Funds for Covered Telecommunications Equipment or Services (Interim), as used in this clause—

(b) *Prohibitions.*

(1) Section 889(b) of the John S. McCain National Defense Authorization Act for Fiscal Year 2019, Pub. L. No. 115-232, and 2 C.F.R. § 200.216 prohibit the head of an executive agency on or after Aug.13, 2020, from obligating or expending grant, cooperative agreement, loan, or loan guarantee funds on certain telecommunications products or from certain entities for national security reasons.

(2) Unless an exception in paragraph (c) of this clause applies, the contractor and its subcontractors may not use grant, cooperative agreement, loan, or loan guarantee funds from the Federal Emergency Management Agency to:

(i) Procure or obtain any equipment, system, or service that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology of any system;

(ii) Enter into, extend, or renew a contract to procure or obtain any equipment, system, or service that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology of any system;

(iii) Enter into, extend, or renew contracts with entities that use covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system; or

(iv) Provide, as part of its performance of this contract, subcontract, or other contractual instrument, any equipment, system, or service that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system.

(c) *Exceptions.*

(1) This clause does not prohibit contractors from providing—

(i) A service that connects to the facilities of a third-party, such as backhaul, roaming, or interconnection arrangements; or

(ii) Telecommunications equipment that cannot route or redirect user data traffic or permit visibility into any user data or packets that such equipment transmits or otherwise handles.

(2) By necessary implication and regulation, the prohibitions also do not apply to:
(i) Covered telecommunications equipment or services that: i. Are *not used* as a substantial or essential component of any system; *and*

(ii). Are *not used* as critical technology of any system.

(Iii) Other telecommunications equipment or services that are not considered covered telecommunications equipment or services.

(d) *Reporting requirement.*

(1) In the event the contractor identifies covered telecommunications equipment or services used as a substantial or essential component of any system, or as critical technology as part of any system, during contract performance, or the contractor is notified of such by a subcontractor at any tier or by any other source, the contractor shall report the information in paragraph (d)(2) of this clause to the recipient or subrecipient, unless elsewhere in this contract are established procedures for reporting the information.

(2) The Contractor shall report the following information pursuant to paragraph (d)(1) of this clause: (i) Within one business day from the date of such identification or notification: The contract number; the order number(s), if applicable; supplier name; supplier unique entity identifier (if known); supplier Commercial and Government Entity (CAGE) code (if known); brand; model number (original equipment manufacturer number, manufacturer part number, or wholesaler number); item description; and any readily available information about mitigation actions undertaken or recommended.

(ii) Within 10 business days of submitting the information in paragraph (d)(2)(i) of this clause: Any further available information about mitigation actions undertaken or recommended. In addition, the contractor shall describe the efforts it undertook to prevent use or submission of covered telecommunications equipment or services, and any additional efforts that will be incorporated to prevent future use or submission of covered telecommunications equipment or services.

(e) *Subcontracts.*

The Contractor shall insert the substance of this clause, including this paragraph (e), in all subcontracts and other contractual instruments."

Domestic Preferences for Procurements

As appropriate, and to the extent consistent with law, the contractor should, to the greatest extent practicable, provide a preference for the purchase, acquisition, or use of goods, products, or materials produced in the United States. This includes, but is not limited to iron, aluminum, steel, cement, and other manufactured products.

For purposes of this clause:
Produced in the United States means, for iron and steel products, that all manufacturing processes, from the initial melting stage through the application of coatings, occurred in the United States.

Manufactured products mean items and construction materials composed in whole or in part of non-ferrous metals such as aluminum; plastics and polymer-based products such as polyvinyl chloride pipe; aggregates such as concrete; glass, including optical fiber; and lumber."
Copyright and Data Rights

The Contractor grants to the City of Flagler Beach, a paid-up, royalty-free, nonexclusive, irrevocable, worldwide license in data first produced in the performance of this contract to reproduce, publish, or otherwise use, including prepare derivative works, distribute copies to the public, and perform publicly and display publicly such data. For data required by the contract but not first produced in the performance of this contract, the Contractor will identify such data and grant to the City of Flagler Beach or acquires on its behalf a license of the same scope as for data first produced in the performance of this contract. Data, as used herein, shall include any work subject to copyright under 17 U.S.C. § 102, for example, any written reports or literary works, software and/or source code, music, choreography, pictures or images, graphics, sculptures, videos, motion pictures or other audiovisual works, sound and/or video recordings, and architectural works. Upon or before the completion of this contract, the Contractor will deliver to the City of Flagler Beach data first produced in the performance of this contract and data required by the contract but not first produced in the performance of this contract in formats acceptable by the City of Flagler Beach.

BABAA

The Build America, Buy America Act, enacted as part of the Infrastructure Investment and Jobs Act on November 15, 2021, focuses on maximizing the federal government's use of services, goods, products, and materials produced and offered in the United States. BABAA requires that all iron, steel, manufactured products, and construction materials used in federally funded projects for infrastructure must be produced in the United States. USDA is working with OMB Made in America Office to coordinate compliance with these procurement requirements.

By May 14, 2022, agencies and staff offices were required to ensure new USDA Financial Assistance awards and funding amendments to existing awards, in accordance with applicable legal requirements, comply with section 70914 of the Act by the incorporation of a BABAA preference in the terms and conditions. The OMB Memorandum M-22-11, Initial Implementation Guidance on Application of Buy America Preference in Federal Financial Assistance Programs for Infrastructure, Appendix I, provides an Example of Award Term – Required Use of American, Iron, Steel, Manufactured Products, and Construction Materials.

END OF ATTACHMENT M

REQUEST FOR QUALIFICATION FORMS

ATTACHMENT N
LIST OF PROPOSED SUBCONTRACTORS/SUPPLIERS

All subcontractors and major materials suppliers are subject to approval of Owner. In the table below, list all subcontractors and manufacturers of materials and/or equipment that are proposed to be utilized by the Contractor in the performance of this work. Use additional sheets as necessary.

Company Name	Description	Contact Name, Phone, and Email
Brevard Constructors	Metal Building	Marty Gordon (321) 269-2929 martygordon@brevardconstructors.com
Shine & Company	Electrical	Charles Watson (386) 454-2034 charles@shinecompanyinc.com
MTS Environmental, Inc.	Seepex Pumps	Bob Bierhorst (813) 760-5508 bbierhorst@mts-florida.com
MTS Environmental, Inc.	Chemical Feed System	Bob Bierhorst (813) 760-5508 bbierhorst@mts-florida.com
Exceletech, LLC	Painting & Coatings	Ben Muzia (352) 874-3639 ben@excelcoatings.com

END OF ATTACHMENT N

SECTION 00 11 53
REQUEST FOR QUALIFICATION FORMS
ATTACHMENT O
LIST OF LICENSES and CERTIFICATIONS

License/Cert. Name	Number	Issuing Authority	Expiration Date
General Contractor John Justus, Jr.	#059437	State of Florida	August 31, 2026
Underground Utility John Justus, Jr.	#057309	State of Florida	August 31, 2026
General Contractor Dean Kellogg	#1532692	State of Florida	August 31, 2026
Building Contractor Dean Kellogg	#1259026	State of Florida	August 31, 2026
Pollutant Storage John Justus, Jr.	#1257015	State of Florida	August 31, 2026

END OF ATTACHMENT O

City of Flagler Beach
105 S. 2nd Street
Flagler Beach, Florida 32136
(386) 517 – 2000 ext. 233

ADDENDUM NO. 1

RESPONSE TO INQUIRIES RECEIVED
Waste water Treatment Facility Sludge Management Improvements
Bid Number FB-240111
November 25, 2024

To All Plan Holders:

The following changes, clarifications and additions are hereby made a part of the bidding and contract documents for the above referenced project, and prepared by the City of Flagler Beach as fully completely as if the same were fully set forth therein.

Response to Questions received at the Pre-bid Meeting and before the deadline of 5:00 p.m. Friday, November 22, 2024. Questions are in **Bold** and responses are in *Italics.*

1. **For the underground conduit duct bank, the drawings show it as direct bury while the specs call for it to be concrete encased. Please confirm which is required.** *They shall be concrete encased.*
2. **Would you provide the sign-in sheet and any agenda/notes for the pre-bid meeting?** *The sign in sheet and any notes will be provided.*
3. **Are the building department fees going to be paid through the project allowance?** *Contractor is responsible for building dept. fees.*
4. **Spec 01010, 1.01, E mentions FPL fees to be paid for by the Contractor. It does not appear there is any FPL work in this project. Please confirm.** *We are going to have the power pole removed, so there should not be any FPL fees.*
5. **Please confirm the PWTech Press has been purchased and provided by Flagler County. Therefore, we do not need to include pricing for purchasing the press in our bid.** *Yes, it has been purchased.*
6. **Spec "05XXX – Prefabricated Metal Building" is missing from the bid documents.** *The table of contents has been revised and is attached as exhibit "A" to this Addenda.*
7. **Spec "11XXX – Submersible mixers" is missing from the bid documents.** *The table of contents has been revised and is attached as exhibit "A" to this Addenda.*
8. **The 100 days for substantial completion and 130 days for final completion is not enough time to complete this project. Submittals, approvals, and material deliveries will be in the 90-to-100-day range. Then the work in the field must be completed. Can the tie for constriction be extended?** *We can extend substantial completion to 180 days and final at 210 days.*

9. **Drawing D1.0, and other drawings, show an existing overhead power line and pole that is in conflict with the new structure location. Please address what to do with the existing utility line.** *The city will have the pole removed and will not be in the scope.*

10. **On Drawing C1.1 regarding the manholes. For manhole #5 is the flow line elevation to the NW, as SW is indicated? Is there only that one opening for that #5 manhole. For manhole #8, is that a doghole style manhole? Please provide more details as to how to insert the manhole, if it is tying into an existing line.** *The manholes, piping between manholes, and asphalt paving will be removed from this scope.*

11. **On drawing C1.1 the pipe schedule #11 suggests 8" schedule 80 PVC. Between manhole 6 and 7 with the ductile fitting is C900 acceptable to use?** *TBD*

12. **On drawing C1.1 fitting schedule #24, please confirm that the wye is 8x8x8 to match the incoming pipe from the wye. Also can a Ductile Iron fitting be used for the #31 MJ 45 bend, again seen as #42 on drawing M1.1?** *TBD*

13. **On drawing C1.1 on the 20" effluent line, is there a shut off to prevent backflow while making the tie in connection? How long can the 20" effluent be out of service to complete the rerouting of the pipe?** *The 20" effluent line needs to remain in place. Remove the relocation of the 20" effluent line from the scope.*

14. **On Drawing M1.2 what happens at the end of the bisulfate discharge pipe? Capped, connected to by others?** *The bisulfite tank will not be included in this scope, not any of the associated piping.*

15. **On drawing I4.0 the descriptions say Bisulfite while other drawings say Bisulfate. Are these chemical terms the same, and interchangeable, or the same product at a different stage of the process?** *The plans should read Bisulfite.*

16. **Does this project require Davis Bacon wages with certified payroll documentation?** *YES*

17. **Are there any special funding requirements, like USA Domestic only, AIS, or MBE/DBE?** *NO*

18. **The contract time shows 100 days for substantial completion per spec -00 26 00-4.02. The equipment and metal building materials may take that long just to fabricate & ship. Can the contract time be extended to accommodate the long lead equipment deliveries?** *See #8*

19. **Are the building permit fees waived by the City? If the contractor has to pay the permit fees, can there be an allowance for that on the bid form?** *See #3*

20. **Is there an engineer's cost estimate for this project?** *That information is not released until after the bid opening.*

21. **How long can the 20" effluent discharge line on sheet C1.1 be shutdown to tie in the new 20" gate valves and cut in the 20" 45' bend on the new 20" effluent line?** *The 20" effluent discharge line needs to remain in place and will be removed from the scope of this bid.*

22. **How long can the sludge line on sheet C1.1 be shutdown to tie in the 8"x4" tee & 8" plug valve for the new feed line to the presses?** *The sludge line is already turned off with a gate valve upstream.*

23. **How long can the sludge line on sheet C1.1 be shutdown to install the new 8" gate valve and the new seepex pump?** *The sludge line is already turned off and not an issue.*

24. **At manhole #8, how long can the existing drain line be shutdown to install the manhole?** *All manholes and associated piping will be removed from this bid.*

25. **Does the City intend to direct purchase through the contactor any of the equipment and materials on this project in order to save the sales tax?** *YES*

26. **The table of contents shows a spec 09090 Finish Schedule. We couldn't find that in the specs going from section 06702 to 09750. Can a finish schedule be provided to show what specifically gets painting/coatings?** *To be provided*

27. **Section 09090 – Finish Schedule is missing from the specifications. Please provide this section og the specifications.** *To be provided*

28. **Do you have soil borings for this project? If so, can we get a copy? If not, where is the water table on site? We need this to determine if any dewatering will be required for this project and to know if dewatering will be required to obtain compaction under the structures.** *We do not have any soil borings.*

Disclaimer: It is the sole responsibility of bidder to confirm that all addenda have been received prior to submitting bid and acknowledge such in bid documents

END OF ADDENDUM 1

City of Flagler Beach
105 S. 2nd Street
Flagler Beach, Florida 32136
(386) 517 – 2000 ext. 233

ADDENDUM NO. 2

Additional and Revised Documents
Waste water Treatment Facility Sludge Management Improvements
Bid Number FB-240111
November 21, 2024

To All Plan Holders:

The following changes, clarifications and additions are hereby made a part of the bidding and contract documents for the above referenced project, and prepared by the City of Flagler Beach as fully completely as if the same were fully set forth therein.

Attached to this Addendum are revised and additional items for the bid package.

Exhibit "A": Revised Table of Contents to Volume 2 Technical Sections

Exhibit "B": Proposal/Scope from PW Tech on the Screw Press

Exhibit "C": Geotechnical Evaluation performed by Universal Engineering Services

Exhibit "D": Revised Drawings Sheet M2.0 and Sheet S1.1

Exhibit "E": Sign in Sheets from Pre-bid Meeting

Response to additional question:

The bid submission deadline will not be extended and stands as 2:00 PM, Friday, December 6, 2024.

Disclaimer: It is the sole responsibility of bidder to confirm that all addenda have been received prior to submitting bid and acknowledge such in bid documents

END OF ADDENDUM 2

ACORD®

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)
11/01/2024

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER	CONTACT NAME: Jamie Hanrahan	
Brown & Brown Insurance Services, Inc. P.O. Box 2412 Daytona Beach FL 32115-2415	PHONE (A/C, No, Ext): (386) 239-8882	FAX (A/C, No): (386) 323-9198
	E-MAIL ADDRESS: Jamie.Hanrahan@bbrown.com	

INSURED	INSURER(S) AFFORDING COVERAGE	NAIC #
MCMAHAN CONSTRUCTION CO INC P O BOX 223 DELAND FL 32721-0223	INSURER A : Berkley Assurance Company	39462
	INSURER B : Auto Owners Insurance Company	18988
	INSURER C : Travelers Excess and Surplus Lines Company	29696
	INSURER D : XL Specialty Insurance Company	37885
	INSURER E : Westchester Surplus Lines Ins	10172
	INSURER F : American Interstate Insurance Company	31895

COVERAGES **CERTIFICATE NUMBER:** 2024-25 **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	☒ COMMERCIAL GENERAL LIABILITY ☐ CLAIMS-MADE ☒ OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: ☐ POLICY ☒ PRO-JECT ☐ LOC ☐ OTHER:			CT20240242-01	11/01/2024	11/01/2025	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG $	$ 1,000,000 $ 100,000 $ 5,000 $ 1,000,000 $ 2,000,000 $ 2,000,000 $
B	AUTOMOBILE LIABILITY ☒ ANY AUTO ☐ OWNED AUTOS ONLY ☐ SCHEDULED AUTOS ☐ HIRED AUTOS ONLY ☐ NON-OWNED AUTOS ONLY			50-921-676-00	11/01/2024	11/01/2025	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident) PIP	$ 1,000,000 $ $ $ $ 10,000
C	☒ UMBRELLA LIAB ☒ OCCUR ☒ EXCESS LIAB ☐ CLAIMS-MADE ☐ DED ☒ RETENTION $ 10,000			CUP-7S407360-24-NF	11/01/2024	11/01/2025	EACH OCCURRENCE AGGREGATE COMPLETED OPS AG	$ 4,000,000 $ 4,000,000 $ 4,000,000
F	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) Y/N ☐ If yes, describe under DESCRIPTION OF OPERATIONS below	N/A		AVWCFL3233612024	01/01/2024	01/01/2025	☒ PER STATUTE ☐ OTH-ER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	 $ 1,000,000 $ 1,000,000 $ 1,000,000
D	EQUIPMENT FLOATER INSTALLATION/ BUILDERS RISK			UM00031576MA24A	11/01/2024	11/01/2025	RENTED EQUIPMENT INSTALLATION	500,000 2,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

SEE NOTES FOR POLICY COVERAGE FORMS FOR INFORMATION

CERTIFICATE HOLDER

MCMAHAN CONSTRUCTION CO INC
PO BOX 223
DELAND FL 32721-0223

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

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AGENCY CUSTOMER ID: _____

LOC #: _____

ADDITIONAL REMARKS SCHEDULE

AGENCY		NAMED INSURED
Brown & Brown Insurance Services, Inc.		MCMAHAN CONSTRUCTION CO INC
POLICY NUMBER		
CARRIER	NAIC CODE	EFFECTIVE DATE:

ADDITIONAL REMARKS

THIS ADDITIONAL REMARKS FORM IS A SCHEDULE TO ACORD FORM,

FORM NUMBER: 25 **FORM TITLE:** Certificate of Liability Insurance: Notes

CURRENT BLANKET POLICY FORMS

GENERAL LIABILITY
1.) VCAS 2036 1112 (PER PROJECT AGGREGATE)
2.) CG2010 1219 - ADDITIONAL INSURED OWNERS, LESSEES OR CONTRACTORS(ADDITIONAL INSURED-ONGOING OPERATIONS)
3.) CG2037 1219 - ADDITIONAL INSURED- OWNERS, LESSEES OR CONTRACTORS-COMPLETED OPERATIONS
4.) CG2034 1219 - ADDITIONAL INSURED -LESSOR OF LEASED EQUIPMENT - AUTOMATIC STATUS WHEN REQUIRED IN A LEASE AGREEMENT
5) VCAS 2035 1110 - (PRIMARY & NON-CONTRIBUTORY)
6.) CG2404 1219 - (WAIVER OF SUBROGATION)
7.) VCAS 99 90 04 18 (NOTICE OF CANCELLATION TO OTHERS)

AUTO LIABILITY
1.) 58504 0115 - (ADDITIONAL INSURED)
2.) 58583 0115 - (WAIVER OF SUBROGATION)

UMBRELLA
1.) EU0001 0716 - EXCESS FOLLOW-FORM AND UMBRELLA LIABILITY INSURANCE (ADDITIONAL INSURED, PRIMARY & NON-CONTRIBUTORY, WAIVER OF SUBROGATION)
2.) IL T4 00 0519 - DESIGNATED PERSON OR ORGANIZATION - CANCELLATION OR NON RENEWAL
THE UMBRELLA APPLIES IN EXCESS OF THE GENERAL LIABILITY, AUTO LIABILITY, & EMPLOYERS LIABILITY.

EQUIPMENT
1.) CO 1072 04 02 - (BLANKET LOSS PAYEE)

ADDITIONAL POLICIES:

POLLUTION LIABILITY
POLICY # G70918687 005
INSURER E-WESTCHESTER SURPLUS LINES INS-
EFF 1/1/24-1/1/26
LIMIT: $2,000,000 OCCURRENCE
$2,000,000 AGGREGATE

1.) ENV 3250 12 18 - ADDITIONAL INSURED ENDORSEMENT - ONGOING WORK OR OPERATIONS (BLANKET)
2.) ENV 3251 12 18 - ADDITIONAL INSURED ENDORSEMENT - PRODUCTS-COMPLETED OPERATIONS HAZARD (BLANKET)
3.) ENV 3253 12 18 - PRIMARY AND NON-CONTRIBUTORY - OTHER INSURANCE (BLANKET)
4.) ENV 3143 03 05 - WAIVER OF TRANSFER OF RIGHTS OF RECOVERY AGAINST OTHERS TO US

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Ron DeSantis, Governor

Melanie S. Griffin, Secretary

Florida dbpr

STATE OF FLORIDA
DEPARTMENT OF BUSINESS AND PROFESSIONAL REGULATION

CONSTRUCTION INDUSTRY LICENSING BOARD

THE GENERAL CONTRACTOR HEREIN IS CERTIFIED UNDER THE PROVISIONS OF CHAPTER 489, FLORIDA STATUTES

JUSTUS, JOHN EDWARD JR

MC MAHAN CONSTRUCTION CO INC
123 E INDIANA AVENUE
DELAND FL 32724

LICENSE NUMBER: CGC059437

EXPIRATION DATE: AUGUST 31, 2026

Always verify licenses online at MyFloridaLicense.com

ISSUED: 07/08/2024

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Ron DeSantis, Governor

Melanie S. Griffin, Secretary

Florida dbpr

STATE OF FLORIDA
DEPARTMENT OF BUSINESS AND PROFESSIONAL REGULATION

CONSTRUCTION INDUSTRY LICENSING BOARD

THE UNDERGROUND UTILITY & EXCAVATION CO HEREIN IS CERTIFIED UNDER THE PROVISIONS OF CHAPTER 489, FLORIDA STATUTES

JUSTUS, JOHN EDWARD JR

MC MAHAN CONSTRUCTION CO INC
123 E INDIANA AVENUE
DELAND FL 32724

LICENSE NUMBER: CUC057309

EXPIRATION DATE: AUGUST 31, 2026

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ISSUED: 07/08/2024

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Ron DeSantis, Governor

Melanie S. Griffin, Secretary

Florida dbpr

STATE OF FLORIDA
DEPARTMENT OF BUSINESS AND PROFESSIONAL REGULATION

CONSTRUCTION INDUSTRY LICENSING BOARD

THE POLLUTANT STORAGE SYSTEMS CONTRACTOR HEREIN IS CERTIFIED UNDER THE PROVISIONS OF CHAPTER 489, FLORIDA STATUTES

JUSTUS, JOHN EDWARD JR

MCMAHAN CONSTRUCTION CO., INC.
123 EAST INDIANA AVENUE
DELAND FL 32724

LICENSE NUMBER: PCC1257015

EXPIRATION DATE: AUGUST 31, 2026

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ISSUED: 07/08/2024

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"The Athens of Florida"

City of DeLand
Business Tax Receipt
120 S. Florida Avenue
DeLand Florida 32720-5422
(386) 626-7007

BTR-1905

2024 - 2025

Receipt Holder: Sherry Vaughn
123 E Indiana Ave
DeLand, Fl 32724

DBA: McMahan Construction Co., Inc
Business: McMahan Construction
Service Address: 123 E Indiana Ave
Business Type: Commercial
Description: Gen.Contractor/Bldg Contractor

DESCRIPTION	FEE
Gen.Contractor/Bldg Contractor	$112.50

VALID
October 1, 2024 - September 30, 2025

This Business Tax Receipt is only a tax and not a license to operate a business. An Annual Fire Safety Permit might be required.

The City of DeLand MUST be notified in writing if you decide not to operate your business within the city limits of DeLand.

State of Florida
Department of State

I certify from the records of this office that MCMAHAN CONSTRUCTION CO., INC. is a corporation organized under the laws of the State of Florida, filed on November 1, 1980.

The document number of this corporation is F02227.

I further certify that said corporation has paid all fees due this office through December 31, 2024, that its most recent annual report/uniform business report was filed on January 11, 2024, and that its status is active.

I further certify that said corporation has not filed Articles of Dissolution.

Given under my hand and the Great Seal of the State of Florida at Tallahassee, the Capital, this the Eleventh day of January, 2024

GREAT SEAL OF THE STATE OF FLORIDA
IN GOD WE TRUST

Secretary of State

Tracking Number: 3653028878CC

To authenticate this certificate,visit the following site,enter this number, and then follow the instructions displayed.

https://services.sunbiz.org/Filings/CertificateOfStatus/CertificateAuthentication

Dean Kellogg — President & Safety Coordinator

Professional Experience:

2008 - Present	*Vice President & Utility Division Project Manager,* McMahan Construction Co., Inc., Responsibilities include estimation, jobsite management, budget controls, project completion from start to finish, and contract scheduling.
2003 – 2007	*Commercial Division Project Manager*, McMahan Construction Co., Inc., Responsibilities included estimation, jobsite management, budget controls, project completion from start to finish, and contract scheduling.

License:

2008 - Present	State of Florida Certified Building Contractor License No. CBC 1259026

Education:

2003	Appalachian State College - Boone, NC Bachelor of Science Degree in Business Management & Computer Information Systems

Projects have included:

- **2019, Breakaway Trails Ground Storage Tank & Pump Station – Ormond Beach, FL**; Owner: City of Ormond Beach; Architect: Mead & Hunt; Contract Amount: $2,912,000.00
- **2018, Valor Blvd. Reuse Storage Tank & P.S – Daytona Beach, FL**; Owner: City of Daytona Beach; Architect: McKim & Creed; Contract Amount: $3,744,885.33
- **2017, Southern Wellfield Expansion – Palm Coast, FL**; Owner: City of Palm Coast; Architect: McKim & Creed; Contract Amount: $1,364,878.28
- **2016, Ft. Florida Rd. Water Main Extension – DeBary, FL**; Owner: City of DeBary; Architect: CPH Engineers, Inc.; Contract Amount: $497,834.00
- **2016, Sperling Sports Complex Reclaim – DeLand, FL**; Owner: City of DeLand; Architect: Quentin L. Hampton & Associates, Inc.; Contract Amount: $430,232.00
- **2015, N. Peninsula Force Main Ext., LS Install. & WWTP Abandonment – Ormond Beach, FL**; Owner: Volusia County; Architect: Quentin L. Hampton & Associates, Inc.; Contract Amount: $1,138,694.45
- **2014, S. Peninsula 2" Water Main – Ormond Beach, FL**; Owner: City of Ormond Beach; Architect: Quentin L. Hampton & Associates, Inc.; Contract Amount: $891,593.25
- **2011, Volusia County Fairgrounds Storage Tank & Pump Station – DeLand, FL**; Owner: City of DeLand; Architect: Quentin L. Hampton & Associates, Inc.; Contract Amount: $1,036,000.00
- **2009, Tomoka Woods WTP & Wells – DeLand, FL**; Owner: City of DeLand; Architect: Quentin L. Hampton & Associates, Inc.; Contract Amount: $2,849,000.00

John Justus, Jr. — Executive Vice President

Professional Experience:

1987 – Present	*Executive Vice President,* McMahan Construction Co., Inc., Manager of Water and Wastewater Division. Responsibilities include estimation, jobsite management, budget controls, project completion from start to finish, and contract scheduling.
1986	*Assistant Project Developer,* Anglin Construction, Inc. Summer internship.
1984 & 1985	*Assistant Estimator,* Russell & Axon Engineers, Inc. Summer internship.

License:

2000 – Present	State of Florida Certified Underground Utility Contractor License No. CU-C057309
1997 – Present	State of Florida Certified General Contractor License No. CG-C059437

Education:

1998	University of Central Florida Orlando, FL Master's Degree in Business Administration.
1987	University of Florida Gainesville, FL Bachelor of Science Degree in Building Construction.
1981 – 1983	University of South Florida Tampa, FL Studied Civil Engineering

Projects have included:

- **2023, Rehabilitation of Glencoe Well Sites – New Smyrna Beach, FL**; Owner: New Smyrna Beach Utilities; Engineer: CPH Engineers, Inc.; Contract Amount: $1,078,000.00
- **2023, Yankee Lake WRF Repair & Rehab - Sanford**; Owner: Seminole County; Engineer: CDM Smith; Contract Amount: $762,300.02
- **2023, Potable Water Well #15 – Flagler Beach**; Owner: City of Flagler Beach; Engineer: Mead & Hunt; Contract Amount: $560,500.00
- **2023, NW Reclaimed Water Storage Tank & Pump Station – DeLand, FL**; Owner: City of DeLand; Engineer: Mead & Hunt; Contract Amount: $2,924,000.00
- **2021, WTP Improvements & New Potable Well #2 – Astatula, FL**; Owner: Town of Astatula; Engineer: Saltus Engineering, Inc.; Contract Amount: $546,035.70
- **2021, South Beach Pump Station Upgrades – New Smyrna Beach, FL**; Owner: New Smyrna Beach Utilities; Engineer: ERS Engineering, Inc.; Contract Amount: $894,151.04
- **2021, Well No. 48 Outfitting at Magdalena WTP No. 16 – Deltona, FL**; Owner: City of Deltona; Engineer: Tetra Tech; Contract Amount: $596,000.00
- **2021, WRF Improvements – Casselberry, FL**; Owner: City of Casselberry; Engineer: Hazen and Sawyer; Contract Amount: $1,577,705.00
- **2018, Alexander Ave. Reclaimed Water Augmentation Facility – Deltona, FL**; Owner: City of Deltona; Engineer: Tetra Tech; Contract Amount: $10,094,069.97

Donnie Ramsey — Project Coordinator

Work Experience:

2004 – Present	*Project Coordinator for Water and Wastewater Division*, McMahan Construction Co., Inc., DeLand Supervision of water and wastewater crews, coordination of all projects including installation of mechanical equipment, pumps, mechanical pipe, building tanks, control rooms, office buildings and chlorination pumps and piping.
1997 – 2004	*Superintendent,* McMahan Construction Co., Inc., DeLand Jobsite management, scheduling and quality control.
1992 – 1997	*Foreman,* McMahan Construction Co., Inc., DeLand Supervision of water and wastewater crew.
1985 – 1992	*Equipment Operator,* McMahan Construction Co., Inc., DeLand
1983 – 1985	*Driver,* McMahan Construction Co., Inc., DeLand

Licenses and Certifications:

- First Aid Certification
- CPR Certification
- Confined Space Entry Certification
- FMOT Work Zone Level III Certification
- Hazard Communication Training Certification

Projects have included:

- **2023, Rehabilitation of Glencoe Well Sites – New Smyrna Beach, FL**; Owner: New Smyrna Beach Utilities; Engineer: CPH Engineers, Inc.; Contract Amount: $1,078,000.00
- **2023, Yankee Lake WRF Repair & Rehab - Sanford**; Owner: Seminole County; Engineer: CDM Smith; Contract Amount: $762,300.02
- **2023, Potable Water Well #15 – Flagler Beach**; Owner: City of Flagler Beach; Engineer: Mead & Hunt; Contract Amount: $560,500.00
- **2023, NW Reclaimed Water Storage Tank & Pump Station – DeLand, FL**; Owner: City of DeLand; Engineer: Mead & Hunt; Contract Amount: $2,924,000.00
- **2021, WTP Improvements & New Potable Well #2 – Astatula, FL**; Owner: Town of Astatula; Engineer: Saltus Engineering, Inc.; Contract Amount: $546,035.70
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- **2018, Alexander Ave. Reclaimed Water Augmentation Facility – Deltona, FL**; Owner: City of Deltona; Engineer: Tetra Tech; Contract Amount: $10,094,069.97

McMAHAN CONSTRUCTION CO., INC.
RECENT CONTRACT HISTORY
Plant Division

Year	Job #	Name/Description	Contract Amount	Owner Contact/Phone #	Engineer Contact/Phone #
2021	1237	REHABILITATION OF GLENCOE WELL SITES NO. 2 & NO. 3 - UCNSB	$ 1,078,000.00	NEW SMYRNA BEACH UTILITIES 200 Canal Street, New Smyrna Beach, FL 32168 Darren Phegley, P.E. (386) 424-3072 dphegley@nsbufl.com	CPH ENGINEERS, INC. 500 W. Fulton St., Sanford, FL 32771 Rocco Nasso, P.E. (407) 322-6841 / (407) 330-0639 Fax rnasso@cphcorp.com
2021	1238	INDIAN HARBOR ESTATES PUMP STATION - OAK HILL * We are Sub to Metro Equipment Services, Inc.	$ 1,447,287.87	CITY OF OAK HILL 234 US Hwy 1, Oak Hill, FL 32759 Kohn Evans, City Administrator (386) 345-3522 evansk@oakhillfl.com	MEAD & HUNT, INC. 4401 Eastport Parkway, Port Orange, FL 32127 Brad Blaise, P.E. (386) 761-6810 / (386) 761-3977 Fax brad.blais@meadhunt.com
2022	1239	WRF SOUTH REUSE PUMP STATION - DeLAND	$ 2,683,000.00	CITY OF DELAND 1102 S. Garfield Ave., DeLand, FL 32724 Jim Ailes, Utilities Director (386) 626-7250 ailesj@deland.org	MEAD & HUNT 4401 Eastport Parkway, Port Orange, FL 32127 Brad Blaise, P.E. (386) 761-6810 / (386) 761-3977 Fax brad.blais@meadhunt.com
2022	1240	METAL WALKWAY GRATING REPLACEMENT and CONCRETE REPAIR at WATER TREATMENT PLANT - EDGEWATER	$ 115,000.00	CITY OF EDGEWATER 104 North Riverside, Edgewater, FL 32132 Robert Polizzi, Jr., Water Plant Manager (386) 424-2400 xt. 4031 rpolizzi@cityofedgewater.org	CITY OF EDGEWATER ENVIRONMENTAL SERVICES 409 Mango Tree Drive, Edgewater, FL 32132 Randy Coslow, P.E. - City Engineer (386) 424-2400 xt. 4007 rcoslow@cityofedgewater.org
2022	1241	WRF EAST MASTER LIFT STATION UPGRADES - PORT ORANGE	$ 4,058,000.00	CITY OF PORT ORANGE 1000 City Center Circle, Port Orange, FL 32129 Junos Reed, Engineering & Construction Manager (386) 506-5754 jreed@port-orange.org	KIMLEY HORN 189 S. Orange Ave., Suite 1000, Orlando, FL 32801 Rhea Dorris (407) 898-1511 / (407) 761-4229 Cell rhea.dorris@kimley-horn.com
2022	1242	FISHER WWTF IMPROVEMENTS-MLE IMPROVEMENTS - DELTONA	$ 1,182,500.00	CITY OF DELTONA 255 Enterprise Road, Deltona, FL 32725 Jim Parrish (386) 878-8973 / (386) 878-8971 Fax jparrish@deltonafl.gov	KIMLEY-HORN and ASSOCIATES, INC. 189 S. Orange Ave., Suite 1000, Orlando, FL 32801 Steve Romano, P.E. (407) 427-1673 steve.romano@kimley-horn.com
2022	1243	MAIN WATER PLANT GREENSAND FILTER - ORANGE CITY	$ 3,109,000.00	CITY OF ORANGE CITY 205 E. Graves Ave., Orange City, FL 32763 Mariluz Diaz, P.E., BSCE - Construction Engineer (386) 775-5472 mdiaz@orangecityfl.gov	Florida Rural Water Association c/o Arminius Consultants 2501 Bayfront Parkway, Orlando, FL 32806 John Hermann - Arminius Consultants (321) 315-7674 John.Hermann@arminconsult.net
2024	1244	FT. SMITH PUMP STATION MODIFICATIONS - DELTONA	$ 687,000.00	CITY OF DELTONA 2345 Providence Blvd., Deltona, FL 32725 Phyllis Wallace, Interim Public Works Director (407) 963-0143 (cell) pwallace@deltonafl.gov	MEAD & HUNT 4401 Eastport Parkway, Port Orange, FL 32127 Brad Blais, P.E.. (386) 761-6810 / (386) 761-3977 Fax brad.blais@meadhunt.com
2024	1245	POTABLE WATER WELL #16 - FLAGLER BEACH	$ 881,760.00	CITY OF FLAGLER BEACH P.O. Box 70, Flagler Beach, FL 32136 Jim Ramer, Project Coordinator (386) 517-2042 jramer@cityofflaglerbeach.com	MEAD & HUNT 4401 Eastport Parkway, Port Orange, FL 32127 David King, P.E. (386) 761-6810 / (386) 761-3977 Fax david.king@meadhunt.com
2024	1246	MASTER PUMP STATION ODOR CONTROL REPLACEMENT - DAYTONA BEACH SHORES	$ 568,000.00	CITY OF DAYTONA BEACH SHORES 2990 S. Atlantic Avenue, Daytona Beach Shores, FL 32118 Stuart Cruz (386) 763-5361 scruz@cityofdbs.org	McKIM & CREED 139 Executive Circle, Suite 201, Daytona Beach, FL 32114 Charles Hill, P.E. (386) 274-2828 / (386) 274-1393 chill@mckimcreed.com
2024	1247	RIVER BOOSTER PUMP STATION - DeLAND	$ 1,539,000.00	CITY OF DELAND 1102 S. Garfield Ave., DeLand, FL 32724 Jim Ailes, Utilities Director (386) 626-7250 ailesj@deland.org	MEAD & HUNT 4401 Eastport Parkway, Port Orange, FL 32127 Matt Guzinski, P.E. (386) 761-6810 / (386) 761-3977 Fax matt.guzinski@meadhunt.com

McMAHAN CONSTRUCTION CO., INC.
RECENT CONTRACT HISTORY
Plant Division

Year	Job #	Name/Description	Contract Amount	Owner Contact/Phone #	Engineer Contact/Phone #
2019	1227	FLAGLER BEACH WWTP IMP PHASE III - FLAGLER BEACH	$ 441,068.30	CITY OF FLAGLER BEACH P.O. Box 70, Flagler Beach, FL 32136 Jim Ramer, Dir. Of Water Facilities jramer@cityofflaglerbeach.com (386) 517-2000 xt. 243 / (386) 517-2008 Fax	MEAD & HUNT 4401 Eastport Parkway, Port Orange, FL 32127 Brad Blais, P.E. (386) 761-6810 / (386) 761-3977 Fax brad blais@meadhunt.com
2019	1228	WTP CHEMICAL FEED SYSTEM UPGRADES - ORMOND BEACH	$ 46,916.00	CITY OF ORMOND BEACH 22 South Beach Street, Ormond Beach, FL 32174 George Lavatelli, P.E. (386) 676-3584 / (386) 676-3294 Fax george lavatelli@ormondbeach.org	CITY OF ORMOND BEACH 22 South Beach Street, Ormond Beach, FL 32174 George Lavatelli, P.E. (386) 676-3584 / (386) 676-3294 Fax george lavatelli@ormondbeach.org
2019	1229	WRF IMPROVEMENTS - CASSELBERRY	$ 1,577,705.00	CITY OF CASSELBERRY 95 Triplet Lake Drive, Casselberry, FL 32707 Tara Lamoureux, P.E., Utilities Director (407) 262-7700 Ext. 1228 (407) 367-2762 Fax tlamoureux@casselberry.org	HAZEN AND SAWYER 919 Lake Baldwin Lane, Suite 200, Orlando, FL 32814 Frederick R. Holmes, P.E. (407) 367-2626 / (407) 367-2627 Fax fholmes@hazenandsawyer.com
2020	1230	WELL NO. 48 OUTFITTING AT MAGDALENA WTP NO. 16 - DELTONA	$ 596,000.00	CITY OF DELTONA 2345 Providence Blvd., Deltona, FL 32725 John Peters, Public Works Director (386) 878-8973 / (386) 878-8971 Fax jpeters@deltonafl.gov	TETRA TECH 201 East Pine St., Suite 1000, Orlando, FL 32801 Robert Smith, P.E. (407) 839-3955 / (407) 839-3790 Fax scott.smith@tetratech.com
2020	1231	SOUTH BEACH PUMP STATION UPGRADES - UCNSB	$ 894,151.04	UTILITIES COMMISSION CITY OF NEW SMYRNA BEACH 200 Canal Street, New Smyrna Beach, FL 32168 Darren Pheglev, P.E. - Construction Supervisor (386) 424-3072 dpheglev@ucnsb.org	ERS ENGINEERING, INC. 5775 Timuquana Rd., Jacksonville, FL 32210 Derek Wainscott, P.E. (904) 777-3089 / (904) 777-3726 Fax dwainscott@ersengineering.com
2020	1232	WTP IMPROVEMENTS & NEW POTABLE WELL #2 - ASTATULA	$ 546,035.70	TOWN OF ASTATULA 25009 County Road 561, Astatula, FL 34705 Graham Wells (352) 742-1100 / (352) 742-1970 Fax gwells@astatula.org	SALTUS ENGINEERING, INC. P.O. Box 8969, Fleming Island, FL 32006 David Bolam, P.E. (904) 742-6545 dbengineering@msn.com
2021	1233	KMART PUMP STATION IMPROVEMENTS - DeLAND	$ 357,990.00	CITY OF DELAND 1102 S. Garfield Ave., DeLand, FL 32724 Keith Riger, P.E. (386) 626-7197	MEAD & HUNT 4401 Eastport Parkway, Port Orange, FL 32127 Brad Blaise, P.E. (386) 761-6810 / (386) 761-3977 Fax
2021	1234	NW RECLAIMED WATER STORAGE TANK & PUMP STATION - DeLAND	$ 2,924,000.00	CITY OF DELAND 1102 S. Garfield Ave., DeLand, FL 32724 Keith Riger, P.E. (386) 626-7197	MEAD & HUNT 4401 Eastport Parkway, Port Orange, FL 32127 Brad Blaise, P.E. (386) 761-6810 / (386) 761-3977 Fax
2021	1235	POTABLE WATER WELL #15 - Flagler Beach	$ 560,500.00	CITY OF FLAGLER BEACH P.O. Box 70, Flagler Beach, FL 32136 Jim Ramer, Project Coordinator (e-mail) (386) 517-2042 (386) 517-2008 Fax	MEAD & HUNT 4401 Eastport Parkway, Port Orange, FL 32127 Andrew Giannini, P.E. (386) 761-6810 / (386) 761-3977 Fax andrew giannini@meadhunt.com
2021	1236	YANKEE LAKE WRF REPAIR & REHABILITATION - SEMINOLE COUNTY	$ 762,300.02	SEMINOLE COUNTY 1101 East First Street, Sanford, FL 32771 Michael Boggs, Project Manager (407) 665-2041 mboggs@seminolecountyfl.gov	CDM SMITH 101 Southhall Lane, Suite 200, Maitland, FL 32751 Vipin Pangasa, P.E. - Project Manager (407) 660-2552 pangasav@cdmsmith.com

McMAHAN CONSTRUCTION CO., INC.
RECENT CONTRACT HISTORY
Plant Division

Year	Job #	Name/Description	Contract Amount	Owner Contact/Phone #	Engineer Contact/Phone #
2016	1218	LIFT STATION #2 UPGRADES - UCNSB	$ 601,602.40	UTILITIES COMMISSION CITY OF NEW SMYRNA BEACH 200 Canal Street, New Smyrna Beach, FL 32168 Dana Hale, P.E. (386) 424-3037	ERS ENGINEERING 5775 Timuquana Rd., Jacksonville, FL 32210 Eric Shultz, P.E. (307) 777-3089
2016	2161	AND NEW RAW WATER MAIN, PHASE 2 - PALM COAST	$ 1,364,878.28	CITY OF PALM COAST 160 Lake Ave., Palm Coast, FL 32164 Mary Kronenberg (386) 986-2306	McKIM & CREED 160 Cypress Point Pkwy., Suite C214 Palm Coast, FL 32164 Scott Spooner, P.E. (386) 274-2828
2017	1219	VALOR BLVD. REUSE STORAGE TANK & P.S. - DAYTONA BEACH	$ 3,744,885.33	CITY OF DAYTONA BEACH 301 S. Ridgewood Ave., Daytona Beach, FL 32114 Nichole Lloyd (386) 671-8813 / lloydnichole@codb.us	McKIM & CREED 139 Executive Circle, Suite 201, Daytona Beach, FL 32114 Mark Ralph, P.E. (386) 274-2828 / (386) 274-1393
2017	1220	ALEXANDER AVE. RECLAIMED WATER AUGMENTATION FACILITY, Deltona	$ 10,094,069.97	CITY OF DELTONA 2345 Providence Blvd., Deltona, FL 32725 Glenn Whitcomb, Public Works Director (386) 804-0174/ (386) 878-8971 Fax jpeters@deltonafl.gov	TETRA TECH 201 East Pine St., Suite 1000, Orlando, FL 32801 Rasesh Shah, P.E. (407) 839-3955 / (407) 839-3790 Fax
2018	1222	FLAGLER BEACH WELL #12R (we are sub to Connect Consulting)	$ 114,000.00	CITY OF FLAGLER BEACH P.O. Box 70, Flagler Beach, FL 32136 Fred Griffith, City Engineer fgriffith@cityoflaglerbeach.com (386) 517-2000 xt. 243 / (386) 517-2008 Fax	MEAD & HUNT 4401 Eastport Parkway, Port Orange, FL 32127 Kevin Lee, P.E. (386) 761-6810 / (386) 761-3977 Fax
2018	1223	DELTONA NORTH WTP IMP.	$ 1,998,128.00	COUNTY OF VOLUSIA 123 West Indiana Ave., DeLand, FL 32720 Dr. Erin Reed (386) 943-7027	CDM SMITH 101 Southhall Lane, Suite 200, Maitland, FL 32751 David Prah (407) 660-2552
2018	1224	ATC Campus Thermal Energy Storage (TES) Tank & Site Work - Daytona State College *We are sub to Crom Corp.*	$ 172,256.00	DAYTONA STATE COLLEGE 1200 W. International Speedway Blvd., Building 5 Daytona Beach, FL 32114 (386) 506-3059	SGM Engineering, Inc. 935 Lake Baldwin Lane, Orlando, FL 32814 (407) 767-5188 / (407) 767-5772 Fax
2019	1225	DELTONA LAKES WWTP BARSCREEN REPLACEMENT - DELTONA	$ 106,135.00	CITY OF DELTONA 2345 Providence Blvd., Deltona, FL 32725 John Peters, Public Works Director (386) 878-8973 / (386) 878-8971 Fax jpeters@deltonafl.gov	MEAD & HUNT 4401 Eastport Parkway, Port Orange, FL 32127 Brad Blais, P.E. (386) 761-6810 / (386) 761-3977 Fax brad.blais@meadhunt.com
2019	1226	BREAKAWAY TRAILS GROUND STORAGE TANK & PUMP STATION - Ormond Beach	$ 2,912,000.00	CITY OF ORMOND BEACH 22 South Beach Street, Ormond Beach, FL 32174 Shawn Finley (386) 615-7049 / Fax (386) 676-3321 shawn.finley@ormondbeach.org	MEAD & HUNT 4401 Eastport Parkway, Port Orange, FL 32127 Brad Blais, P.E. (386) 761-6810 / Fax (386) 761-3977

E-Verify

E-VERIFY IS A SERVICE OF DHS AND SSA

Company ID Number: 1724662

THE E-VERIFY MEMORANDUM OF UNDERSTANDING FOR EMPLOYERS

ARTICLE I PURPOSE AND AUTHORITY

The parties to this agreement are the Department of Homeland Security (DHS) and McMahan (Employer). The purpose of this agreement is to set forth terms and conditions which the Employer will follow while participating in E-Verify.

E-Verify is a program that electronically confirms an employee's eligibility to work in the United States after completion of Form I-9, Employment Eligibility Verification (Form I-9). This Memorandum of Understanding (MOU) explains certain features of the E-Verify program and describes specific responsibilities of the Employer, the Social Security Administration (SSA), and DHS.

Authority for the E-Verify program is found in Title IV, Subtitle A, of the Illegal Immigration Reform and Immigrant Responsibility Act of 1996 (IIRIRA), Pub. L. 104-208, 110 Stat. 3009, as amended (8 U.S.C. § 1324a note). The Federal Acquisition Regulation (FAR) Subpart 22.18, "Employment Eligibility Verification" and Executive Order 12989, as amended, provide authority for Federal contractors and subcontractors (Federal contractor) to use E-Verify to verify the employment eligibility of certain employees working on Federal contracts.

ARTICLE II RESPONSIBILITIES

A. RESPONSIBILITIES OF THE EMPLOYER

1. The Employer agrees to display the following notices supplied by DHS in a prominent place that is clearly visible to prospective employees and all employees who are to be verified through the system:

   a. Notice of E-Verify Participation

   b. Notice of Right to Work

2. The Employer agrees to provide to the SSA and DHS the names, titles, addresses, and telephone numbers of the Employer representatives to be contacted about E-Verify. The Employer also agrees to keep such information current by providing updated information to SSA and DHS whenever the representatives' contact information changes.

3. The Employer agrees to grant E-Verify access only to current employees who need E-Verify access. Employers must promptly terminate an employee's E-Verify access if the employer is separated from the company or no longer needs access to E-Verify.

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4. The Employer agrees to become familiar with and comply with the most recent version of the E-Verify User Manual.

5. The Employer agrees that any Employer Representative who will create E-Verify cases will complete the E-Verify Tutorial before that individual creates any cases.

a. The Employer agrees that all Employer representatives will take the refresher tutorials when prompted by E-Verify in order to continue using E-Verify. Failure to complete a refresher tutorial will prevent the Employer Representative from continued use of E-Verify.

6. The Employer agrees to comply with current Form I-9 procedures, with two exceptions:

a. If an employee presents a "List B" identity document, the Employer agrees to only accept "List B" documents that contain a photo. (List B documents identified in 8 C.F.R. § 274a.2(b)(1)(B)) can be presented during the Form I-9 process to establish identity.) If an employee objects to the photo requirement for religious reasons, the Employer should contact E-Verify at 888-464-4218.

b. If an employee presents a DHS Form I-551 (Permanent Resident Card), Form I-766 (Employment Authorization Document), or U.S. Passport or Passport Card to complete Form I-9, the Employer agrees to make a photocopy of the document and to retain the photocopy with the employee's Form I-9. The Employer will use the photocopy to verify the photo and to assist DHS with its review of photo mismatches that employees contest. DHS may in the future designate other documents that activate the photo screening tool.

Note: Subject only to the exceptions noted previously in this paragraph, employees still retain the right to present any List A, or List B and List C, document(s) to complete the Form I-9.

7. The Employer agrees to record the case verification number on the employee's Form I-9 or to print the screen containing the case verification number and attach it to the employee's Form I-9.

8. The Employer agrees that, although it participates in E-Verify, the Employer has a responsibility to complete, retain, and make available for inspection Forms I-9 that relate to its employees, or from other requirements of applicable regulations or laws, including the obligation to comply with the anti-discrimination requirements of section 274B of the INA with respect to Form I-9 procedures.

a. The following modified requirements are the only exceptions to an Employer's obligation to not employ unauthorized workers and comply with the anti-discrimination provision of the INA: (1) List B identity documents must have photos, as described in paragraph 6 above; (2) When an Employer confirms the identity and employment eligibility of newly hired employee using E-Verify procedures, the Employer establishes a rebuttable presumption that it has not violated section 274A(a)(1)(A) of the Immigration and Nationality Act (INA) with respect to the hiring of that employee; (3) If the Employer receives a final nonconfirmation for an employee, but continues to employ that person, the Employer must notify DHS and the Employer is subject to a civil money penalty between $550 and $1,100 for each failure to notify DHS of continued employment following a final nonconfirmation; (4) If the Employer continues to employ an employee after receiving a final nonconfirmation, then the Employer is subject to a rebuttable presumption that it has knowingly

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employed an unauthorized alien in violation of section 274A(a)(1)(A); and (5) no E-Verify participant is civilly or criminally liable under any law for any action taken in good faith based on information provided through the E-Verify.

b. DHS reserves the right to conduct Form I-9 compliance inspections, as well as any other enforcement or compliance activity authorized by law, including site visits, to ensure proper use of E-Verify.

9. The Employer is strictly prohibited from creating an E-Verify case before the employee has been hired, meaning that a firm offer of employment was extended and accepted and Form I-9 was completed. The Employer agrees to create an E-Verify case for new employees within three Employer business days after each employee has been hired (after both Sections 1 and 2 of Form I-9 have been completed), and to complete as many steps of the E-Verify process as are necessary according to the E-Verify User Manual. If E-Verify is temporarily unavailable, the three-day time period will be extended until it is again operational in order to accommodate the Employer's attempting, in good faith, to make inquiries during the period of unavailability.

10. The Employer agrees not to use E-Verify for pre-employment screening of job applicants, in support of any unlawful employment practice, or for any other use that this MOU or the E-Verify User Manual does not authorize.

11. The Employer must use E-Verify for all new employees. The Employer will not verify selectively and will not verify employees hired before the effective date of this MOU. Employers who are Federal contractors may qualify for exceptions to this requirement as described in Article II.B of this MOU.

12. The Employer agrees to follow appropriate procedures (see Article III below) regarding tentative nonconfirmations. The Employer must promptly notify employees in private of the finding and provide them with the notice and letter containing information specific to the employee's E-Verify case. The Employer agrees to provide both the English and the translated notice and letter for employees with limited English proficiency to employees. The Employer agrees to provide written referral instructions to employees and instruct affected employees to bring the English copy of the letter to the SSA. The Employer must allow employees to contest the finding, and not take adverse action against employees if they choose to contest the finding, while their case is still pending. Further, when employees contest a tentative nonconfirmation based upon a photo mismatch, the Employer must take additional steps
(see Article III.B. below) to contact DHS with information necessary to resolve the challenge.

13. The Employer agrees not to take any adverse action against an employee based upon the employee's perceived employment eligibility status while SSA or DHS is processing the verification request unless the Employer obtains knowledge (as defined in 8 C.F.R. § 274a.1(l)) that the employee is not work authorized. The Employer understands that an initial inability of the SSA or DHS automated verification system to verify work authorization, a tentative nonconfirmation, a case in continuance
(indicating the need for additional time for the government to resolve a case), or the finding of a photo mismatch, does not establish, and should not be interpreted as, evidence that the employee is not work authorized. In any of such cases, the employee must be provided a full and fair opportunity to contest the finding, and if he or she does so, the employee may not be terminated or suffer any adverse employment consequences based upon the employee's perceived employment eligibility status

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(including denying, reducing, or extending work hours, delaying or preventing training, requiring an employee to work in poorer conditions, withholding pay, refusing to assign the employee to a Federal contract or other assignment, or otherwise assuming that he or she is unauthorized to work) until and unless secondary verification by SSA or DHS has been completed and a final nonconfirmation has been issued. If the employee does not choose to contest a tentative nonconfirmation or a photo mismatch or if a secondary verification is completed and a final nonconfirmation is issued, then the Employer can find the employee is not work authorized and terminate the employee's employment. Employers or employees with questions about a final nonconfirmation may call E-Verify at 1-888-464-4218 (customer service) or 1-888-897-7781 (worker hotline).

14. The Employer agrees to comply with Title VII of the Civil Rights Act of 1964 and section 274B of the INA as applicable by not discriminating unlawfully against any individual in hiring, firing, employment eligibility verification, or recruitment or referral practices because of his or her national origin or citizenship status, or by committing discriminatory documentary practices. The Employer understands that such illegal practices can include selective verification or use of E-Verify except as provided in part D below, or discharging or refusing to hire employees because they appear or sound "foreign" or have received tentative nonconfirmations. The Employer further understands that any violation of the immigration-related unfair employment practices provisions in section 274B of the INA could subject the Employer to civil penalties, back pay awards, and other sanctions, and violations of Title VII could subject the Employer to back pay awards, compensatory and punitive damages. Violations of either section 274B of the INA or Title VII may also lead to the termination of its participation in E-Verify. If the Employer has any questions relating to the anti-discrimination provision, it should contact OSC at 1-800-255-8155 or 1-800-237-2515 (TDD).

15. The Employer agrees that it will use the information it receives from E-Verify only to confirm the employment eligibility of employees as authorized by this MOU. The Employer agrees that it will safeguard this information, and means of access to it (such as PINS and passwords), to ensure that it is not used for any other purpose and as necessary to protect its confidentiality, including ensuring that it is not disseminated to any person other than employees of the Employer who are authorized to perform the Employer's responsibilities under this MOU, except for such dissemination as may be authorized in advance by SSA or DHS for legitimate purposes.

16. The Employer agrees to notify DHS immediately in the event of a breach of personal information. Breaches are defined as loss of control or unauthorized access to E-Verify personal data. All suspected or confirmed breaches should be reported by calling 1-888-464-4218 or via email at E-Verify@uscis.dhs.gov. Please use "Privacy Incident – Password" in the subject line of your email when sending a breach report to E-Verify.

17. The Employer acknowledges that the information it receives from SSA is governed by the Privacy Act (5 U.S.C. § 552a(i)(1) and (3)) and the Social Security Act (42 U.S.C. 1306(a)). Any person who obtains this information under false pretenses or uses it for any purpose other than as provided for in this MOU may be subject to criminal penalties.

18. The Employer agrees to cooperate with DHS and SSA in their compliance monitoring and evaluation of E-Verify, which includes permitting DHS, SSA, their contractors and other agents, upon

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reasonable notice, to review Forms I-9 and other employment records and to interview it and its employees regarding the Employer's use of E-Verify, and to respond in a prompt and accurate manner to DHS requests for information relating to their participation in E-Verify.

19. The Employer shall not make any false or unauthorized claims or references about its participation in E-Verify on its website, in advertising materials, or other media. The Employer shall not describe its services as federally-approved, federally-certified, or federally-recognized, or use language with a similar intent on its website or other materials provided to the public. Entering into this MOU does not mean that E-Verify endorses or authorizes your E-Verify services and any claim to that effect is false.

20. The Employer shall not state in its website or other public documents that any language used therein has been provided or approved by DHS, USCIS or the Verification Division, without first obtaining the prior written consent of DHS.

21. The Employer agrees that E-Verify trademarks and logos may be used only under license by DHS/USCIS (see M-795 (Web)) and, other than pursuant to the specific terms of such license, may not be used in any manner that might imply that the Employer's services, products, websites, or publications are sponsored by, endorsed by, licensed by, or affiliated with DHS, USCIS, or E-Verify.

22. The Employer understands that if it uses E-Verify procedures for any purpose other than as authorized by this MOU, the Employer may be subject to appropriate legal action and termination of its participation in E-Verify according to this MOU.

B. RESPONSIBILITIES OF FEDERAL CONTRACTORS

1. If the Employer is a Federal contractor with the FAR E-Verify clause subject to the employment verification terms in Subpart 22.18 of the FAR, it will become familiar with and comply with the most current version of the E-Verify User Manual for Federal Contractors as well as the E-Verify Supplemental Guide for Federal Contractors.

2. In addition to the responsibilities of every employer outlined in this MOU, the Employer understands that if it is a Federal contractor subject to the employment verification terms in Subpart 22.18 of the FAR it must verify the employment eligibility of any "employee assigned to the contract" (as defined in FAR 22.1801). Once an employee has been verified through E-Verify by the Employer, the Employer may not create a second case for the employee through E-Verify.

a. An Employer that is not enrolled in E-Verify as a Federal contractor at the time of a contract award must enroll as a Federal contractor in the E-Verify program within 30 calendar days of contract award and, within 90 days of enrollment, begin to verify employment eligibility of new hires using E-Verify. The Employer must verify those employees who are working in the United States, whether or not they are assigned to the contract. Once the Employer begins verifying new hires, such verification of new hires must be initiated within three business days after the hire date. Once enrolled in E-Verify as a Federal contractor, the Employer must begin verification of employees assigned to the contract within 90 calendar days after the date of enrollment or within 30 days of an employee's assignment to the contract, whichever date is later.

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b. Employers enrolled in E-Verify as a Federal contractor for 90 days or more at the time of a contract award must use E-Verify to begin verification of employment eligibility for new hires of the Employer who are working in the United States, whether or not assigned to the contract, within three business days after the date of hire. If the Employer is enrolled in E-Verify as a Federal contractor for 90 calendar days or less at the time of contract award, the Employer must, within 90 days of enrollment, begin to use E-Verify to initiate verification of new hires of the contractor who are working in the United States, whether or not assigned to the contract. Such verification of new hires must be initiated within three business days after the date of hire. An Employer enrolled as a Federal contractor in E-Verify must begin verification of each employee assigned to the contract within 90 calendar days after date of contract award or within 30 days after assignment to the contract, whichever is later.

c. Federal contractors that are institutions of higher education (as defined at 20 U.S.C. 1001(a)), state or local governments, governments of Federally recognized Indian tribes, or sureties performing under a takeover agreement entered into with a Federal agency under a performance bond may choose to only verify new and existing employees assigned to the Federal contract. Such Federal contractors may, however, elect to verify all new hires, and/or all existing employees hired after November 6, 1986. Employers in this category must begin verification of employees assigned to the contract within 90 calendar days after the date of enrollment or within 30 days of an employee's assignment to the contract, whichever date is later.

d. Upon enrollment, Employers who are Federal contractors may elect to verify employment eligibility of all existing employees working in the United States who were hired after November 6, 1986, instead of verifying only those employees assigned to a covered Federal contract. After enrollment, Employers must elect to verify existing staff following DHS procedures and begin

E-Verify verification of all existing employees within 180 days after the election.

e. The Employer may use a previously completed Form I-9 as the basis for creating an E-Verify case for an employee assigned to a contract as long as:

i. That Form I-9 is complete (including the SSN) and complies with Article II.A.6,

ii. The employee's work authorization has not expired, and

iii. The Employer has reviewed the Form I-9 information either in person or in communications with the employee to ensure that the employee's Section 1, Form I-9 attestation has not changed (including, but not limited to, a lawful permanent resident alien having become a naturalized U.S. citizen).

f. The Employer shall complete a new Form I-9 consistent with Article II.A.6 or update the previous Form I-9 to provide the necessary information if:

i. The Employer cannot determine that Form I-9 complies with Article II.A.6,

ii. The employee's basis for work authorization as attested in Section 1 has expired or changed, or

iii. The Form I-9 contains no SSN or is otherwise incomplete.

Note: If Section 1 of Form I-9 is otherwise valid and up-to-date and the form otherwise complies with

E-Verify

E-VERIFY IS A SERVICE OF DHS AND SSA

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Article II.C.5, but reflects documentation (such as a U.S. passport or Form I-551) that expired after completing Form I-9, the Employer shall not require the production of additional documentation, or use the photo screening tool described in Article II.A.5, subject to any additional or superseding instructions that may be provided on this subject in the E-Verify User Manual.

g. The Employer agrees not to require a second verification using E-Verify of any assigned employee who has previously been verified as a newly hired employee under this MOU or to authorize verification of any existing employee by any Employer that is not a Federal contractor based on this Article.

3. The Employer understands that if it is a Federal contractor, its compliance with this MOU is a performance requirement under the terms of the Federal contract or subcontract, and the Employer consents to the release of information relating to compliance with its verification responsibilities under this MOU to contracting officers or other officials authorized to review the Employer's compliance with Federal contracting requirements.

C. RESPONSIBILITIES OF SSA

1. SSA agrees to allow DHS to compare data provided by the Employer against SSA's database. SSA sends DHS confirmation that the data sent either matches or does not match the information in SSA's database.

2. SSA agrees to safeguard the information the Employer provides through E-Verify procedures. SSA also agrees to limit access to such information, as is appropriate by law, to individuals responsible for the verification of Social Security numbers or responsible for evaluation of E-Verify or such other persons or entities who may be authorized by SSA as governed by the Privacy Act (5 U.S.C. § 552a), the Social Security Act (42 U.S.C. 1306(a)), and SSA regulations (20 CFR Part 401).

3. SSA agrees to provide case results from its database within three Federal Government work days of the initial inquiry. E-Verify provides the information to the Employer.

4. SSA agrees to update SSA records as necessary if the employee who contests the SSA tentative nonconfirmation visits an SSA field office and provides the required evidence. If the employee visits an SSA field office within the eight Federal Government work days from the date of referral to SSA, SSA agrees to update SSA records, if appropriate, within the eight-day period unless SSA determines that more than eight days may be necessary. In such cases, SSA will provide additional instructions to the employee. If the employee does not visit SSA in the time allowed, E-Verify may provide a final nonconfirmation to the employer.

Note: If an Employer experiences technical problems, or has a policy question, the employer should contact E-Verify at 1-888-464-4218.

D. RESPONSIBILITIES OF DHS

1. DHS agrees to provide the Employer with selected data from DHS databases to enable the Employer to conduct, to the extent authorized by this MOU:

a. Automated verification checks on alien employees by electronic means, and

E-Verify

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b. Photo verification checks (when available) on employees.

2. DHS agrees to assist the Employer with operational problems associated with the Employer's participation in E-Verify. DHS agrees to provide the Employer names, titles, addresses, and telephone numbers of DHS representatives to be contacted during the E-Verify process.

3. DHS agrees to provide to the Employer with access to E-Verify training materials as well as an E-Verify User Manual that contain instructions on E-Verify policies, procedures, and requirements for both SSA and DHS, including restrictions on the use of E-Verify.

4. DHS agrees to train Employers on all important changes made to E-Verify through the use of mandatory refresher tutorials and updates to the E-Verify User Manual. Even without changes to E-Verify, DHS reserves the right to require employers to take mandatory refresher tutorials.

5. DHS agrees to provide to the Employer a notice, which indicates the Employer's participation in E-Verify. DHS also agrees to provide to the Employer anti-discrimination notices issued by the Office of Special Counsel for Immigration-Related Unfair Employment Practices (OSC), Civil Rights Division, U.S. Department of Justice.

6. DHS agrees to issue each of the Employer's E-Verify users a unique user identification number and password that permits them to log in to E-Verify.

7. DHS agrees to safeguard the information the Employer provides, and to limit access to such information to individuals responsible for the verification process, for evaluation of E-Verify, or to such other persons or entities as may be authorized by applicable law. Information will be used only to verify the accuracy of Social Security numbers and employment eligibility, to enforce the INA and Federal criminal laws, and to administer Federal contracting requirements.

8. DHS agrees to provide a means of automated verification that provides (in conjunction with SSA verification procedures) confirmation or tentative nonconfirmation of employees' employment eligibility within three Federal Government work days of the initial inquiry.

9. DHS agrees to provide a means of secondary verification (including updating DHS records) for employees who contest DHS tentative nonconfirmations and photo mismatch tentative nonconfirmations. This provides final confirmation or nonconfirmation of the employees' employment eligibility within 10 Federal Government work days of the date of referral to DHS, unless DHS determines that more than 10 days may be necessary. In such cases, DHS will provide additional verification instructions.

ARTICLE III
REFERRAL OF INDIVIDUALS TO SSA AND DHS

A. REFERRAL TO SSA

1. If the Employer receives a tentative nonconfirmation issued by SSA, the Employer must print the notice as directed by E-Verify. The Employer must promptly notify employees in private of the finding and provide them with the notice and letter containing information specific to the employee's E-Verify case.

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The Employer also agrees to provide both the English and the translated notice and letter for employees with limited English proficiency to employees. The Employer agrees to provide written referral instructions to employees and instruct affected employees to bring the English copy of the letter to the SSA. The Employer must allow employees to contest the finding, and not take adverse action against employees if they choose to contest the finding, while their case is still pending.

2. The Employer agrees to obtain the employee's response about whether he or she will contest the tentative nonconfirmation as soon as possible after the Employer receives the tentative nonconfirmation. Only the employee may determine whether he or she will contest the tentative nonconfirmation.

3. After a tentative nonconfirmation, the Employer will refer employees to SSA field offices only as directed by E-Verify. The Employer must record the case verification number, review the employee information submitted to E-Verify to identify any errors, and find out whether the employee contests the tentative nonconfirmation. The Employer will transmit the Social Security number, or any other corrected employee information that SSA requests, to SSA for verification again if this review indicates a need to do so.

4. The Employer will instruct the employee to visit an SSA office within eight Federal Government work days. SSA will electronically transmit the result of the referral to the Employer within 10 Federal Government work days of the referral unless it determines that more than 10 days is necessary.

5. While waiting for case results, the Employer agrees to check the E-Verify system regularly for case updates.

6. The Employer agrees not to ask the employee to obtain a printout from the Social Security Administration number database (the Numident) or other written verification of the SSN from the SSA.

B. REFERRAL TO DHS

1. If the Employer receives a tentative nonconfirmation issued by DHS, the Employer must promptly notify employees in private of the finding and provide them with the notice and letter containing information specific to the employee's E-Verify case. The Employer also agrees to provide both the English and the translated notice and letter for employees with limited English proficiency to employees. The Employer must allow employees to contest the finding, and not take adverse action against employees if they choose to contest the finding, while their case is still pending.

2. The Employer agrees to obtain the employee's response about whether he or she will contest the tentative nonconfirmation as soon as possible after the Employer receives the tentative nonconfirmation. Only the employee may determine whether he or she will contest the tentative nonconfirmation.

3. The Employer agrees to refer individuals to DHS only when the employee chooses to contest a tentative nonconfirmation.

4. If the employee contests a tentative nonconfirmation issued by DHS, the Employer will instruct the





Company ID Number: 1724662

employee to contact DHS through its toll-free hotline (as found on the referral letter) within eight Federal Government work days.

5. If the Employer finds a photo mismatch, the Employer must provide the photo mismatch tentative nonconfirmation notice and follow the instructions outlined in paragraph 1 of this section for tentative nonconfirmations, generally.

6. The Employer agrees that if an employee contests a tentative nonconfirmation based upon a photo mismatch, the Employer will send a copy of the employee's Form I-551, Form I-766, U.S. Passport, or passport card to DHS for review by:

a. Scanning and uploading the document, or

b. Sending a photocopy of the document by express mail (furnished and paid for by the employer).

7. The Employer understands that if it cannot determine whether there is a photo match/mismatch, the Employer must forward the employee's documentation to DHS as described in the preceding paragraph. The Employer agrees to resolve the case as specified by the DHS representative who will determine the photo match or mismatch.

8. DHS will electronically transmit the result of the referral to the Employer within 10 Federal Government work days of the referral unless it determines that more than 10 days is necessary.

9. While waiting for case results, the Employer agrees to check the E-Verify system regularly for case updates.

ARTICLE IV
SERVICE PROVISIONS

A. NO SERVICE FEES

1. SSA and DHS will not charge the Employer for verification services performed under this MOU. The Employer is responsible for providing equipment needed to make inquiries. To access E-Verify, an Employer will need a personal computer with Internet access.

ARTICLE V
MODIFICATION AND TERMINATION

A. MODIFICATION

1. This MOU is effective upon the signature of all parties and shall continue in effect for as long as the SSA and DHS operates the E-Verify program unless modified in writing by the mutual consent of all parties.

2. Any and all E-Verify system enhancements by DHS or SSA, including but not limited to E-Verify checking against additional data sources and instituting new verification policies or procedures, will be covered under this MOU and will not cause the need for a supplemental MOU that outlines these changes.

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B. TERMINATION

1. The Employer may terminate this MOU and its participation in E-Verify at any time upon 30 days prior written notice to the other parties.

2. Notwithstanding Article V, part A of this MOU, DHS may terminate this MOU, and thereby the Employer's participation in E-Verify, with or without notice at any time if deemed necessary because of the requirements of law or policy, or upon a determination by SSA or DHS that there has been a breach of system integrity or security by the Employer, or a failure on the part of the Employer to comply with established E-Verify procedures and/or legal requirements. The Employer understands that if it is a Federal contractor, termination of this MOU by any party for any reason may negatively affect the performance of its contractual responsibilities. Similarly, the Employer understands that if it is in a state where E-Verify is mandatory, termination of this by any party MOU may negatively affect the Employer's business.

3. An Employer that is a Federal contractor may terminate this MOU when the Federal contract that requires its participation in E-Verify is terminated or completed. In such cases, the Federal contractor must provide written notice to DHS. If an Employer that is a Federal contractor fails to provide such notice, then that Employer will remain an E-Verify participant, will remain bound by the terms of this MOU that apply to non-Federal contractor participants, and will be required to use the E-Verify procedures to verify the employment eligibility of all newly hired employees.

4. The Employer agrees that E-Verify is not liable for any losses, financial or otherwise, if the Employer is terminated from E-Verify.

ARTICLE VI
PARTIES

A. Some or all SSA and DHS responsibilities under this MOU may be performed by contractor(s), and SSA and DHS may adjust verification responsibilities between each other as necessary. By separate agreement with DHS, SSA has agreed to perform its responsibilities as described in this MOU.

B. Nothing in this MOU is intended, or should be construed, to create any right or benefit, substantive or procedural, enforceable at law by any third party against the United States, its agencies, officers, or employees, or against the Employer, its agents, officers, or employees.

C. The Employer may not assign, directly or indirectly, whether by operation of law, change of control or merger, all or any part of its rights or obligations under this MOU without the prior written consent of DHS, which consent shall not be unreasonably withheld or delayed. Any attempt to sublicense, assign, or transfer any of the rights, duties, or obligations herein is void.

D. Each party shall be solely responsible for defending any claim or action against it arising out of or related to E-Verify or this MOU, whether civil or criminal, and for any liability wherefrom, including (but not limited to) any dispute between the Employer and any other person or entity regarding the applicability of Section 403(d) of IIRIRA to any action taken or allegedly taken by the Employer.

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E. The Employer understands that its participation in E-Verify is not confidential information and may be disclosed as authorized or required by law and DHS or SSA policy, including but not limited to, Congressional oversight, E-Verify publicity and media inquiries, determinations of compliance with Federal contractual requirements, and responses to inquiries under the Freedom of Information Act (FOIA).

F. The individuals whose signatures appear below represent that they are authorized to enter into this MOU on behalf of the Employer and DHS respectively. The Employer understands that any inaccurate statement, representation, data or other information provided to DHS may subject the Employer, its subcontractors, its employees, or its representatives to: (1) prosecution for false statements pursuant to 18 U.S.C. 1001 and/or; (2) immediate termination of its MOU and/or; (3) possible debarment or suspension.

G. The foregoing constitutes the full agreement on this subject between DHS and the Employer.

To be accepted as an E-Verify participant, you should only sign the Employer's Section of the signature page. If you have any questions, contact E-Verify at 1-888-464-4218.

E-Verify

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Approved by:

Employer McMahan Construction Co., Inc.	
Name (Please Type or Print) Lisa A Dean	Title
Signature Electronically Signed	Date 08/09/2021
Department of Homeland Security – Verification Division	
Name (Please Type or Print) USCIS Verification Division	Title
Signature Electronically Signed	Date 08/09/2021

E-Verify

E-VERIFY IS A SERVICE OF DHS AND SSA

Company ID Number: 1724662

Information Required for the E-Verify Program Information relating to your Company:	
Company Name	McMahan Construction Co., Inc.
Company Facility Address	123 E Indiana Ave Deland, FL 32724
Company Alternate Address	PO Box 223 Deland, FL 32721
County or Parish	VOLUSIA
Employer Identification Number	592036678
North American Industry Classification Systems Code	238
Parent Company	
Number of Employees	10 to 19
Number of Sites Verified for	1 site(s)

E-Verify

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Are you verifying for more than 1 site? If yes, please provide the number of sites verified for in each State:

FL	1

E-Verify

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Information relating to the Program Administrator(s) for your Company on policy questions or operational problems:

Name	Sherry Vaughn
Phone Number	3867341071
Fax	
Email	svaughn@mcmahanfl.com

E-Verify

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Company ID Number: 1724662

This list represents the first 20 Program Administrators listed for this company.

CONTRACT DOCUMENTS FOR

CITY OF FLAGLER BEACH
WWTF SLUDGE MANAGEMENT IMPROVEMENTS

2000 AVENUE A
CITY PROJECT NO: 238

CITY INVITATION TO BID NO: FB-240111

NOVEMBER 2024

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SECTION 00 01 01

CONTRACT DOCUMENTS FOR

CITY OF FLAGLER BEACH

3580 SOUTH CENTRAL AVENUE
CITY PROJECT NO: 238

CITY INVITATION TO BID NO: FB-240111

NOVEMBER 2024

VOLUME 1
DIVISION 00

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DIVISION 00

BIDDING REQUIREMENTS, CONTRACT DOCUMENTS, AND FORMS

CITY OF FLAGLER BEACH
WWTF SLUDGE MANAGEMENT IMPROVEMENTS
2000 AVENUE A
CITY PROJECT NO: 238
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SECTION	TITLE
DIVISION 00	**BIDDING DOCUMENTS, CONTRACT DOCUMENTS AND FORMS**
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00 01 07	CERTIFICATIONS PAGE
00 01 50	FLORIDA TRENCH SAFETY ACT
00 11 13	ADVERTISEMENT FOR BIDS
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00 21 13	INSTRUCTIONS TO BIDDERS
00 22 13	STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT
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00 64 25	CERTIFICATE OF SUBSTANTIAL COMPLETION

SECTION 00 01 07
CERTIFICATIONS PAGE

CITY OF FLAGLER BEACH
WWTF SLUDGE MANAGEMENT IMPROVEMENTS
2000 AVENUE A
CITY PROJECT NO: 238
CITY INVITATION TO BID NO: FB-240111

The Technical Specifications are certified as follows:

Civil Engineer
Divisions 1-3, 9, and 11
CPH, LLC
500 West Fulton Street
Sanford, Florida 32771
Ph. 407-322-6841

_____
Rocco R. Nasso, P.E. No. 64727

Electrical Engineer
Division 13 and 16
Bailey Engineering Consultants, Inc. 1
0620 Griffin Rd #202,
Cooper City, Florida 33328
Ph. 954-448-7930

_____
Stephen E. Bailey, P.E. No. 42461

The above certification(s) apply to the technical specifications referenced in the preceding technical specifications index only, as listed under each Division indicated above. Additional information provided within the Appendix may contain information prepared by other professionals. These items are not covered under the above registered professionals' signature and seal.

END OF SECTION

SECTION 00 31 32
GEOTECHNICAL DATA

PART 1 GENERAL

1.01 Description

The Contractor shall examine the project area and contact the City should it feel site soils and subsurface investigations are necessary to construct the proposed improvements as required by the contract documents.

PART 2 PRODUCTS – Not Used

PART 3 EXECUTION – Not Used

END OF SECTION

SECTION 00 01 50
FLORIDA TRENCH SAFETY ACT

Bidder acknowledges that he is solely responsible for complying with the Florida Trench Safety Act (ACT) and Occupational Safety and Health Administrations excavation safety standard 29 CFR 1926.650.

Bidder further acknowledges that included in the various items of the proposal and in the Total Bid Price are costs for complying with the Florida Trench Safety Act (90-96, Laws of Florida) effective October 1, 1990 and the Occupational Safety and Health Administrations excavation safety standard.

Name: _____

Authorized Signature: _____

Date: _____

Title: _____

END OF SECTION

CITY OF FLAGLER BEACH

ADVERTISEMENT FOR BID NO. FB-240111
CITY OF FLAGLER BEACH WWTF SLUDGE MANAGEMENT IMPROVEMENTS
City Project No. 238

NOTICE IS HEREBY GIVEN THAT THE CITY OF FLAGER BEACH IS ISSUING THIS INVITATION TO BID (ITB) TO SOLICIT COMPETITIVE SEALED BIDS FROM LICENSED AND INSURED CONTRACTORS FOR THE CITY OF FLAGLER BEACH WWTF SLDUGE MANAGEMENT IMPROVEMENTS PROJECT ACCORDING TO THE SCOPE OF WORK SEPCIFICATIONS. BIDS WILL BE RECEIVED FOR A SINGLE PRIME CONTRACT. BIDS SHALL BE ON A LUMP SUM AS INDICATED IN THE BID FORM.

IT IS THE INTENT AND PURPOSE OF THE CITY OF FLAGER BEACH THAT THIS INVITATION TO BID (ITB) PROMOTES COMPETITIVE SELECTION. IT IS THE BIDDER'S RESPONSIBILITY TO ADVISE THE FINANCE DIRECTOR IF ANY LANGUAGE, REQUIREMENTS, ETC., OR ANY COMBINATION THEREOF, INADVERTENTLY RESTRICTS OR LIMITS THE REQUIREMENTS STATED IN THIS ITB.

All applicants must be properly licensed and show proof of insurance, licenses, and certificates as required by all local, State of Florida, and Federal agencies. Successful applicants will obtain all required permitting as previously stated.

Interested contractors may secure the, bid forms and other pertinent information by visiting the city website bid page: http://www.cityofflaglerbeach.com/Bids.aspx.or the website www.demandstar.com Bid packages also may be obtained by contacting the City Clerk, Penny Overstreet at 386-517-2000 ext. 233 or poverstreet@cityofflaglerbeach.com

For further information, contact: Penny Overstreet, City Clerk
Preferred method of contact email: poverstreet@cityofflaglerbeach.com (386) 517-2000, ext. 233

Sealed Bids must be addressed to the attention of **Penny Overstreet, City Clerk**. Sealed Bids must be received on or before **2:00 PM, December 6, 2024.**

No bids will be accepted after this deadline.

Sealed Bids must have the project title and bid number on outside of package. The City of Flagler Beach reserves the right to reject any and all Bids, to award all or segments of the project, and to waive any informality in Bids received, as may be in the best interest of the City.

MAILING ADDRESS:
105 S. 2nd Street
Flagler Beach, FL 32136

WALK-IN DELIVERY ADDRESS:
105 S 2nd Street
Flagler Beach, FL 32136

Date of Distribution:	**Friday November 8, 2024**
Non-Mandatory Pre-Bid Meeting:	**Wednesday November 13, 2024**
Last Date of Inquiries:	**Tuesday November 19, 2024**
Last Date for Addenda if Needed:	**Friday November 22, 2024**
BIDS DUE BY:	**Friday December 6, 2024** after which time they will be publicly opened and read aloud.
Commission Meeting:	**Thursday January 9, 2024**

END INVITATION TO BID

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SECTION 00 11 53
REQUEST FOR QUALIFICATION FORMS

Project Name: **CITY OF FLAGLER BEACH WWTF SLUDGE MANAGEMENT IMPROVEMENTS**

City Project No.: 238

Company Name: _____

Contact Name: _____

E-mail Address: _____

Mailing Address: _____

_____

Phone Number: _____

Fax Number: _____

Contractor License Number: _____

The CITY will post addenda information at Onvia DemandStar, Inc., at the following web address: www.demandstar.com. For technical assistance with this website, please contact Onvia Services at 1-800-711-1712. All Bidders should check the Onvia DemandStar website at least seven (7) calendar days before the date fixed to verify information regarding Addenda. Failure to do so could result in rejection of the submittal as unresponsive. Bidders shall sign, date, and return all addenda with their bid. It is the sole responsibility of the Bidder to ensure he/she obtains information related to Addenda. Oral and other interpretations or clarifications will be without legal effect.

The following Addenda were received:

Addendum No._____ Date Received_____

Addendum No._____ Date Received_____

Addendum No._____ Date Received_____

Addendum No._____ Date Received_____

Addendum No._____ Date Received_____

Addendum No._____ Date Received_____

The Bidder acknowledges the receipt, execution, and return of the following attachments:

- Attachment A: Certificate of Corporation
- Attachment B: Contractor Questionnaire
- Attachment C: Required Disclosure
- Attachment D: Bidder Information
- Attachment E: Experience of Bidder
- Attachment F: Sworn Statement Under section 287.133(3) (a), Florida Statutes, on Public Entity Crimes
- Attachment G: Affidavit of Non-Collusion
- Attachment H: Certification of Non-Segregated Facilities
- Attachment I: Drug-Free Work Place
- Attachment J: Conflict of Interest Statement
- Attachment K: Compliance with Public Records Law
- Attachment L: Americans with Disabilities Act Affidavit
- Attachment M: Additional Procurement Clauses
- Attachment N: List of Proposed Subcontractors/Suppliers
- Attachment O: List of Licenses and Certifications

Authorized Signature: _____

Date: _____

Title: _____

ACKNOWLEDGEMENT

STATE OF FLORIDA

COUNTY OF _____

_____

Signature of Notary Public

Print, Type or Stamp Commissioned Name of Notary Public below:

Sworn to (or affirmed) and subscribed before me by means of

online notarization ☐ *OR* physical presence ☐

this _____ day of _____, 20____.

Personally Known ☐ *OR* Produced identification ☐

Type of Identification Produced:_____

END OF SECTION

REQUEST FOR QUALIFICATION FORMS

ATTACHMENT A

CERTIFICATE OF CORPORATION

Please include a copy of your Certificate of Corporation from the State of Florida with this attachment.

STATE OF FLORIDA

COUNTY OF_____

I HEREBY CERTIFY that a meeting of the Board of Directors of _____ , a corporation under the laws of the State of _____ , was held on _____ , 20_____. The following resolution was duly passed and adopted:

"RESOLVED, that _____as _____President of the corporation is hereby authorized to execute the Contract dated _____ , 20 _____, between The City of Flagler Beach, a municipal corporation and this corporation, and that execution thereof, attested by the Secretary of the corporation and with corporate seal affixed, shall be the official act and deed of this corporation."

I further certify that said resolution is now in full force and effect.

IN WITNESS THEREOF, I have hereunto set my hand and affixed the official seal of the corporation

This _____ day of _____, 20____ .

_____

Corporate Secretary

END OF ATTACHMENT A

SECTION 00 11 53
REQUEST FOR QUALIFICATION FORMS

ATTACHMENT B

CONTRACTOR QUESTIONNAIRE

DATE: _____

NAME OF BIDDER: _____

BUSINESS ADDRESS: _____

PHONE NUMBER: _____

CONTRACTOR'S FL LICENSE #: _____

EXPIRATION DATE: _____

The undersigned warrants the truth and accuracy of all statements and answers herein contained. Include additional sheets as necessary.

1. How many years has your organization been in business as a General Contractor?

_____

_____

_____

2. How many years has your organization been in business as a Subcontractor?

_____

_____

_____

3. Name of Superintendent and length of time with your company?

_____

_____

_____

4. Describe in detail and give the date and owner, including phone numbers and contact person(s), of the last five (5) projects that you have completed similar in type, size, and nature as the project proposed?

5. Have you ever failed, or been alleged to have failed, to complete work awarded to you? If so, please list the project and explain the reasons why?

6. Have you ever failed, or been alleged to have failed, to complete work within the Contract Time? If so, please list the project and explain the reasons why?

7. Have you ever been assessed liquidated damages, or had liquidated damages assessed against you? If so, please list the project and explain the reasons why?

8. Have you ever had a bond or letter of credit called by the owner of a project? If so, when?

9. Have you personally inspected the site of the proposed Work? Describe, in full, any anticipated problems with the site and your proposed solutions?

_____

_____

_____

Bidder Name: _____

Signature: _____

Title: _____

Attach the corporate information sheet from the Florida Department of State, Division of Corporation's, web site.

Sworn and subscribed to before me this _____day of _____, 20____,

in the State of _____, County of _____.

_____

Notary Public

My Commission Expires: _____

END OF ATTATCHMENT B

SECTION 00 11 53
REQUEST FOR QUALIFICATION FORMS

ATTACHMENT C

REQUIRED DISCLOSURE

The following disclosure is of all material facts pertaining to any felony conviction or any pending felony charges in the last three (3) years in this State or any other state of the United States against (1) the Bidder, (2) any business entity related to or affiliated with the Bidder or (3) any present or former owner of the Bidder or of any such related or affiliated entity. This disclosure shall not apply to any person or entity which is only a stockholder, which person or entity owns twenty percent (20%) or less of the outstanding shares of the Bidder whose stock is publicly owned and traded:

Bidder Name: _____

Signature: _____

Title: _____

Date: _____

END OF ATTACHMENT C

SECTION 00 11 53
REQUEST FOR QUALIFICATION FORMS

ATTACHMENT D BIDDER INFORMATION

List the full legal name of each officer of the Corporation.

President: _____

Signature: _____Date: _____

Vice-President: _____

Signature: _____Date: _____

Secretary: _____

Signature: _____Date: _____

Treasurer: _____

Signature: _____Date: _____

List the Corporate Officer that will sign the contract: _____

END OF ATTACHMENT D

SECTION 00 11 53
REQUEST FOR QUALIFICATION FORMS

ATTACHMENT E
EXPERIENCE OF BIDDER

Bidder Name: _____

Authorized Signature: _____Date: _____

Is your company currently involved in any active litigation? _____Yes _____No

If Yes, explain: _____

_____

_____

_____

Has your company ever been sued? _____Yes _____No

If Yes, explain and/or submit court decision or judgment, as applicable: _____

_____

_____

_____

The Bidder must demonstrate the successful completion of three (3) projects of similar complexity, nature, size, and dollar amount of Wastewater Treatment Plant Improvements. Any material misrepresentation, as determined by the City of Flagler Beach, shall result in disqualification.

On the following pages, provide the requested information regarding experience within the past five (5) years on three (3) projects as listed above.

Project #1:

Contract Date: _____

Contract Amount: $ _____

Project Name: _____

Project Location: _____

General Scope of Work: _____

_____

Client Name and Address: _____

_____

_____

Client Contact Phone: _____

Client Contact Email: _____

Was the project completed on schedule? _____Yes _____No

Total Amount of Change Orders: $_____

Reasons for Change Orders: _____

_____

_____

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Project #2:

Contract Date: _____

Contract Amount: $ _____

Project Name: _____

Project Location: _____

General Scope of Work: _____

_____

Client Name and Address: _____

_____

_____

Client Contact Phone: _____

Client Contact Email: _____

Was the project completed on schedule? _____Yes _____No

Total Amount of Change Orders: $_____

Reasons for Change Orders: _____

_____

_____

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Project #3:

Contract Date: _____

Contract Amount: $ _____

Project Name: _____

Project Location: _____

General Scope of Work: _____

_____

Client Name and Address: _____

_____

_____

Client Contact Phone: _____

Client Contact Email: _____

Was the project completed on schedule? _____Yes _____No

Total Amount of Change Orders: $_____

Reasons for Change Orders: _____

END OF ATTACHMENT E

ATTACHMENT F
SWORN STATEMENT UNDER SECTION 287.133(3) (a), FLORIDA STATUTES, ON PUBLIC ENTITY CRIMES

THIS FORM MUST BE SIGNED IN THE PRESENCE OF A NOTARY PUBLIC OR OTHER OFFICER AUTHORIZED TO ADMINISTER OATHS.

This sworn statement is submitted to: **The City of Flagler Beach** (Public entity)

By: _____
(Individual's name and title)

For: _____
(Name of entity submitting sworn statement)

Whose business address is: _____

_____

Federal Employer Identification Number (FEIN): _____

(If the entity has no FEIN, include the Social Security Number of the individual signing this sworn statement)

1. I understand that a "public entity crime" as defined in Section 287.133(1)(g), Florida Statutes, means a violation of any State or Federal law by a person with respect to and directly related to the transaction of business with any public entity or with an agency or political subdivision of any other state or with the United States, including, but not limited to, any bid or contract for goods or services to be provided to any public entity or an agency or political subdivision of any other state or of the United States and involving antitrust, fraud, theft, bribery, collusion, racketeering, conspiracy, or material misrepresentation.
2. I understand that "convicted" or "conviction" as defined in Paragraph 287.133(1) (b), Florida Statutes, means a finding of guilt or a conviction of a public entity crimes, with or without an adjudication of guilt, in any Federal or state trial court of record relating to charges brought by indictment or information after July 1, 1989, as a result of a jury verdict, non-jury trial, or entry of a plea of guilty or nolo contendere.

3. I understand that an "affiliate" as defined in Section 287.133(1)(a), Florida Statutes, means: A predecessor or successor of a person convicted of a public entity crime: or an entity under the control of any natural person who is active in the management of the entity and how has been convicted of a public entity crime. The term "affiliate" includes those officers, directors, executives, partners, shareholders, employees, members, and agents who are active in the management of an affiliate. The ownership by one (1) person of shares constituting a controlling interest in another person, or a pooling of equipment or income among persons when not for fair market value under an arm's length agreement, shall be a prima facie case that one person controls another person. A person who knowingly enters into a joint venture with a person who has been convicted of a public entity crime in Florida during the preceding thirty-six (36) months shall be considered an affiliate.
4. I understand that a "person" as defined in Section 287.133(1) (e), Florida Statutes, means any natural person or entity organized under the laws of any state or of the United States with the legal power to enter into a binding contract and which bids or applies to bid on contracts for the provision of goods or services let by a public entity, or which otherwise transacts or applies to transact business with a public entity. The term "person" includes those officers, directors, executives, partners, shareholders, employees, members, and agents who are active in management of an entity.

Based on information and belief, the statement which I have marked below is true in relation to the entity submitting this sworn statement. (Indicate which statement applies.)

_____Neither the entity submitting this sworn statement, nor any officers, directors, executives, partners, shareholders, employees, members, or agent who is active in management of the entity, nor the affiliate of the entity, has been charged with and convicted of a public entity crime subsequent to July 1, 1989.

_____The entity submitting this sworn statement, or one or more of the officers, directors, executives, partners, shareholders, employees, members or agents who are active in management of the entity, or an affiliate of the entity, has been charged with and convicted of a public entity crime subsequent to July 1, 1989.

_____The entity submitting this sworn statement, or one or more of the officers, directors, executives, partners, shareholders, employees, members or agents who are active in management of the entity, or an affiliate of the entity, has been charged with and convicted of a public entity crime subsequent to July 1, 1989.

However, there has been a subsequent proceeding before an Administrative Law Jury of the State of Florida, Division of Administrative Hearings and the Final Order entered by the Administrative Law Jury

determined that it was not in the public interest to place the entity submitting this sworn statement on the convicted vendor list. (Attach a copy of the final order.)

I UNDERSTAND THAT THE SUBMISSION OF THIS FORM TO THE CITY OF FLAGLER IS FOR THE CITY ONLY AND, THAT THIS FORM IS VALID THROUGH DECEMBER 31, OF THE CALENDAR YEAR IN WHICH IT IS FILED. I ALSO UNDERSTAND THAT I AM REQUIRED TO INFORM THE CITY PRIOR TO ENTERING IN TO A CONTRACT IN EXCESS OF THE THRESHOLD AMOUNT PROVIDED IN SECTION 287.017, FLORIDA STATUES, FOR CATEGORY TWO OF ANY CHANGE IN THE INFORMATION CONTAINED IN THIS FORM.

Signature: _____

Date: _____

State of: _____

County of: _____

ACKNOWLEDGEMENT

STATE OF FLORIDA

COUNTY OF _____

_____

Signature of Notary Public

Print, Type or Stamp Commissioned Name of Notary Public below:

Sworn to (or affirmed) and subscribed before me by means of

online notarization ☐ *OR* physical presence ☐

this _____ day of _____, 20____.

Personally Known ☐ *OR* Produced identification ☐

Type of Identification Produced:_____

END OF ATTACHMENT F

SECTION 00 11 53
REQUEST FOR QUALIFICATION FORMS

ATTACHMENT G AFFIDAVIT OF NON-COLLUSION

The undersigned bidder or agent, being duly sworn on oath, says that he/she has not, nor has any other member, representative, or agent of the firm, company, corporation or partnership represented by him, entered into any combination, collusion or agreement with any person relative to the price to be bid by anyone at such letting nor to prevent any person from bidding nor to include anyone to refrain from bidding, and that this bid is made without reference to any other bid and without any agreement, understanding or combination with any other person in reference to such bidding. He/She further says that no person or persons, firms, or corporation has, have or will receive directly or indirectly, any rebate, fee gift, commission or thing of value on account of such sale.

OATH AND AFFIRMATION

I HEREBY AFFIRM UNDER THE PENALTIES FOR PERJURY THAT THE FACTS AND INFORMATION CONTAINED IN THE FOREGOING BID FOR PUBLIC WORKS ARE TRUE AND CORRECT.

Dated this _____day of _____, 20 ____.

_____

(Bidder Name)

_____

(Title)

_____

(Signature)

ACKNOWLEDGEMENT

STATE OF FLORIDA

COUNTY OF _____

_____

Signature of Notary Public

Print, Type or Stamp Commissioned Name of Notary Public below:

Sworn to (or affirmed) and subscribed before me by means of

online notarization ☐ *OR* physical presence ☐

this _____ day of _____, 20____.

Personally Known ☐ *OR* Produced identification ☐

Type of Identification Produced:_____

END OF ATTACHMENT G

SECTION 00 11 53
REQUEST FOR QUALIFICATION FORMS

ATTACHMENT H
CERTIFICATION OF NON-SEGREGATED FACILITIES

The Bidder certifies that they do not maintain or provide for their employees any segregated facilities at any of his establishments, and that they do not permit their employees to perform their services at any location, under their control, where segregated facilities are maintained. The Bidder certifies further that they will not maintain or provide for their employees any segregated facilities at any location under their control where segregated facilities are maintained. The Bidder agrees that a breach of this certification will be a violation of the Equal Opportunity clause in any contract resulting from acceptance of this Bid. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, time clocks, locker rooms and other storage and dressing areas, parking lots, drinking fountains, recreation or entertainment area, transportation and housing facilities provided for employees which are segregated by explicit directive, or are in fact segregated on the basis of race, color, religious disability or national origin, because of habit, local custom, or otherwise. The Bidder agrees that (except where they have obtained identical certifications from proposed subcontractors for specific time periods) they will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity clause, and that he will retain such certifications in his files.

The nondiscriminatory guidelines as promulgated in Section 202, Executive Order 11246, and as amended by Executive Order 11375 and as amended, relative to Equal Opportunity for all persons and implementations of rules and regulations prescribed by the United States Secretary of Labor are incorporated herein.

Name: _____

Signature: _____

Date: _____

Title: _____

Official Address: _____

_____

END OF ATTACHMENT H

SECTION 00 11 53
REQUEST FOR QUALIFICATION FORMS

ATTACHMENT I DRUG-FREE WORK PLACE

The undersigned vendor in accordance with Florida Statute 287.087 hereby certifies that

_____does hereby: (Name of Business)

1. Publish a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the workplace and specifying the actions that will be taken against employees for violations of such prohibition.

2. Inform employees about the dangers of drug abuse in the workplace, the business's policy of maintaining a drug-free workplace, any available drug counseling, rehabilitation, and employee assistance programs, and the penalties that may be imposed upon employees for drug abuse violations.

3. Give each employee engaged in providing the commodities or contractual services that are proposed a copy of the statement specified in subsection (1).

4. In the statement specified in subsection (1), notify the employees that, as a condition of working on the commodities or contractual services that are under proposal, the employee will propose by the terms of the statement and will notify the employer of any conviction of, or plea of guilty or nolo contender to, any violation of Chapter 893, Florida Statutes, or of any controlled substance law of the United States or any state, for a violation occurring in the workplace no later than five (5) days after such conviction.

5. Impose a sanction on, or require the satisfactory participation in a drug abuse assistance or rehabilitation program if such is available in the employee's community, by any employee who is so convicted.

6. Make a good faith effort to continue to maintain a drug-free workplace through implementation of the matters set forth above.

As the person authorized to sign the statement, I certify that this firm complies fully with the above requirements.

Name: _____

Signature: _____

Date: _____

Title: _____

END OF ATTACHMENT I

SECTION 00 11 53
REQUEST FOR QUALIFICATION FORMS

ATTACHMENT J CONFLICT OF INTEREST STATEMENT

Before me, the undersigned authority, personally appeared _____, who was duly sworn, deposes, and states:

1. I am the _____of _____with a local office in _____and principal office in _____.
2. The above-named entity is submitting an Expression of Interest for the City of Flagler Beach project described as bid number _____.
3. The Affiant has made diligent inquiry and provides the information contained in this Affidavit based upon his own knowledge.
4. The Affiant states that only one submittal for the above project is being submitted and that the above-named entity has no financial interest in other entities submitting proposals for the same project.
5. Neither the Affiant nor the above-named entity has directly or indirectly entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive pricing in connection with the entity's submittal for the above project. This statement restricts the discussion of pricing data until the completion of negotiations and execution of the Agreement for this project.
6. Neither the entity nor its affiliates, nor any one associated with them, is presently suspended or otherwise ineligible from participating in contract lettings by any local, state, or federal agency.
7. Neither the entity, nor its affiliates, nor any one associated with them have any potential conflict of interest due to any other clients, contracts, or property interests for this project.
8. I certify that no member of the entity's ownership, management, or staff has a vested interest in any aspect of or Department of the City of Flagler Beach.
9. I certify that no member of the entity's ownership or management is presently applying for an employee position or actively seeking an elected position with City of Flagler Beach.
10. In the event that a conflict of interest is identified in the provision of services, I, on behalf of the above-named entity, will immediately notify the City of Flagler Beach in writing.

_____

Signature of Affiant

END OF ATTACHMENT J

STATE OF _____

COUNTY OF_____

The foregoing instrument was acknowledged before me this _____day of_____, 20____,

by _____of _____
(Officer Name) (Company)

on behalf of the company. He/She is personally known to me or has produced
_____identification.

Notary Public: _____ My Commission Expires: _____

END OF ATTACHMENT J

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SECTION 00 11 53
REQUEST FOR QUALIFICATION FORMS

ATTACHMENT K
COMPLIANCE WITH THE PUBLIC RECORDS LAW

Upon award recommendation or thirty (30) days after receiving submittals, they become "public records" and shall be subject to public disclosure consistent with Chapter 119, Florida Statutes. Proposers must invoke the exemptions to disclosure provided by law in the response to the solicitation, and must identify the data or other materials to be protected, and must state the reasons why such exclusion from public disclosure is necessary.

If the company submits information exempt from public disclosure, the company must identify with specificity which pages/paragraphs of their bid/proposal package are exempt from the Public Records Act, identifying the specific exemption section that applies to each. The protected information must be submitted to the City of Flagler Beach in a separate envelope marked accordingly.

Company Name: _____

Authorized representative Printed Name: _____

Authorized Representative Signature: _____

Date: _____

END OF ATTACHMENT K

SECTION 00 11 53
REQUEST FOR QUALIFICATION FORMS

ATTACHMENT L
AMERICANS WITH DISABILITIES ACT AFFIDAVIT

The undersigned CONTRACTOR swears that the information herein contained is true and correct and that none of the information supplied was for the purpose of defrauding the CITY.

The CONTRACTOR will not discriminate against any employee or applicant for employment because of physical or mental handicap in regard to any position for which the employee or applicant for employment is qualified. The CONTRACTOR agrees to comply with the rules, regulations and relevant orders issued pursuant to the Americans with Disabilities Act (ADA), 42 USC s. 12101 et seq. It is understood that in no event shall the CITY be held liable for the actions or omissions of the CONTRACTOR or any other party or parties to the Agreement for failure to comply with the ADA. The CONTRACTOR agrees to hold harmless and indemnify the CITY, its agents, officers or employees from any and all claims, demands, debts, liabilities or causes of action of every kind or character, whether in law or equity, resulting from the CONTRACTOR's acts or omissions in connection with the ADA.

Name: _____

Authorized Signature: _____

Date: _____

Title: _____

Affix Corporate Seal:

STATE OF _____

COUNTY OF_____

The foregoing instrument was acknowledged before me this _____day of_____, 20____,

by _____of _____
(Officer Name) (Company)

on behalf of the company. He/She is personally known to me or has produced
_____identification.

Notary Public: _____

My Commission Expires: _____

END OF ATTACHMENT L

REQUEST FOR QUALIFICATION FORMS

ATTACHMENT M
ADDITIONAL PROCUREMENT CLAUSES

TERMINATION FOR CAUSE AND CONVENIENCE

1. Contractor shall be considered in material default of the Agreement and such default shall be considered cause for the City to terminate the Agreement, in whole or in part, as further set forth in this Section 17, if Contractor: (i) fails to begin the Work under the Contract Documents within the time specified herein; (ii) fails to properly and timely perform the Work as directed by the City or as provided for in the approved Progress Schedule; (iii) performs the Work unsuitably or neglects or refuses to remove materials or to correct or replace such Work as may be rejected as unacceptable or unsuitable; (iv) discontinues the prosecution of the Work; (v) fails to resume Work which has been suspended within a reasonable time after being notified to resume Work; (vi) becomes insolvent or is declared bankrupt, or commits any act of bankruptcy; (vii) allows any final judgment to stand against it unsatisfied for more than ten (10) days; (viii) makes an assignment for the benefit of creditors; (ix) fails to obey any applicable codes, laws, ordinances, rules or regulations with respect to the Work; and/or (x) materially breaches any other provision of the Contract Documents.

2. City shall notify Contractor in writing of Contractor's default(s). If the City determines that Contractor has not remedied and cured the default(s) within seven (7) calendar days following receipt by Contractor of said written notice, then the City, at its option, without releasing or waiving its rights and remedies against the Contractor's sureties and without prejudice to any other right or remedy it may be entitled to hereunder or by law, may terminate all or any portion of the Work and any materials, tools, equipment, and appliances of Contractor, take assignments of any of Contractor's subcontracts and purchase orders, and complete all or any portion of Contractor's Work by whatever means, method or agency which the City, in its sole discretion, may choose.

3. If the City deems any of the foregoing remedies necessary, Contractor agrees that it shall not be entitled to receive any further payments hereunder until after the Project is completed. All monies expended and all of the costs, losses, damages, and extra expenses, including all management, administrative and other overhead and other direct and indirect expenses (including attorneys' fees) or damages incurred by the City incident to such completion, shall be deducted from the Contract Amount, and if such expenditures exceed the unpaid balance of the Contract Amount, Contractor agrees to pay promptly to City, on demand, the full amount of such excess, including costs of collection, attorneys' fee (including appeals) and interest thereon at the maximum legal rate of interest until paid. If the unpaid balance of the Contract Amount exceeds all such costs, expenditures and damages incurred by the City to complete the Work, such excess shall be paid to the Contractor. The amount to be paid to the Contractor or the City, as the case may be, and this obligation for payment shall survive termination of the Agreement.

4. The liability of Contractor hereunder shall extend to and include the full amount of any and all sums paid, expenses and losses incurred, damages sustained, and obligations assumed by the City in good faith under the belief that such payments or assumptions were necessary or required, in completing the Work and providing labor, materials, equipment, supplies, and other items therefore or re-letting the Work, in settlement, discharge or compromise of any claims, demands, suits and judgments pertaining to or arising out of the Work hereunder.

5. If, after notice of termination of Contractor's right to proceed pursuant to this Section 17, it is determined for any reason that Contractor was not in default, or that its default was excusable, or that the City is not entitled to the remedies against Contractor provided herein, then Contractor's remedies against the City shall be the same as and

limited to those afforded Contractor below under Subsection 18.1, below, regarding termination of the Agreement for convenience.

DEBARMENT AND SUSPENSION

1. The City shall have the right to terminate the Agreement without cause upon seven (7) calendar days written notice to Contractor. In the event of such termination for convenience, Contractor's recovery against City shall be limited to (i) that portion of the Contract Amount earned through the date of termination; (ii) any retainage withheld up to the date of termination, and (iii) actual out-of-pocket costs arising directly and solely from termination of this Agreement not to exceed under any circumstance five percent (5%) of that portion of the Contract Amount earned through the date of termination. Contractor shall not be entitled to any other or further recovery against the City, including, but not limited to, damages or any anticipated profit on portions of the Work not performed.

2. The City shall have the right to suspend all or any portions of the Work upon giving Contractor two (2) calendar days' prior written notice of such suspension. If all or any portion of the Work is so suspended, Contractor's sole and exclusive remedy shall be to seek an extension of time to its schedule in accordance with the procedures set forth in the Contract Documents. In no event shall the Contractor be entitled to any additional compensation or damages. Provided, however, if the ordered suspension exceeds three (3) months, the Contractor shall have the right to terminate the Agreement with respect to that portion of the Work which is subject to the ordered suspension.

BYRD ANTI-LOBBYING AMENDMENT

Contractors who apply or bid for an award of more than $100,000 shall file the required certification. Each tier certifies to the tier above that it will not and has not used federally appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, officer or employee of Congress, or an employee of a Member of Congress in connection with obtaining any federal contract, grant, or any other award covered by 31 U.S.C. § 1352. Each tier shall also disclose any lobbying with non-federal funds that takes place in connection with obtaining any federal award. Such disclosures are forwarded from tier to tier up to the recipient who in turn will forward the certification(s) to the federal awarding agency."

CERTIFICATION

The undersigned certifies, to the best of his or her knowledge and belief, that:
No federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any federal contract, the making of any federal grant, the making of any federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any federal contract, grant, loan, or cooperative agreement.

If any funds other than federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this federal contract, grant, loan, or

cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, Title 31, U.S.C. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure."

"The Contractor, CPH, LLC, certifies or affirms the truthfulness and accuracy of each statement of its certification and disclosure, if any. In addition, the Contractor understands and agrees that the provisions of 31 U.S.C. Chap. 38, Administrative Remedies for False Claims and Statements, apply to this certification and disclosure, if any.

Prohibition on Contracting for Covered Telecommunications Equipment or Services

(a) *Definitions.* As used in this clause, the terms backhaul; covered foreign country; covered telecommunications equipment or services; interconnection arrangements; roaming; substantial or essential component; and telecommunications equipment or services have the meaning as defined in FEMA Policy 405-143-1, Prohibitions on Expending FEMA Award Funds for Covered Telecommunications Equipment or Services (Interim), as used in this clause—

(b) *Prohibitions.*

(1) Section 889(b) of the John S. McCain National Defense Authorization Act for Fiscal Year 2019, Pub. L. No. 115-232, and 2 C.F.R. § 200.216 prohibit the head of an executive agency on or after Aug.13, 2020, from obligating or expending grant, cooperative agreement, loan, or loan guarantee funds on certain telecommunications products or from certain entities for national security reasons.

(2) Unless an exception in paragraph (c) of this clause applies, the contractor and its subcontractors may not use grant, cooperative agreement, loan, or loan guarantee funds from the Federal Emergency Management Agency to:

(i) Procure or obtain any equipment, system, or service that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology of any system;

(ii) Enter into, extend, or renew a contract to procure or obtain any equipment, system, or service that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology of any system;

(iii) Enter into, extend, or renew contracts with entities that use covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system; or

(iv) Provide, as part of its performance of this contract, subcontract, or other contractual instrument, any equipment, system, or service that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system.

(c) *Exceptions.*

(1) This clause does not prohibit contractors from providing—

(i) A service that connects to the facilities of a third-party, such as backhaul, roaming, or interconnection arrangements; or

(ii) Telecommunications equipment that cannot route or redirect user data traffic or permit visibility into any user data or packets that such equipment transmits or otherwise handles.

(2) By necessary implication and regulation, the prohibitions also do not apply to:
(i) Covered telecommunications equipment or services that: i. Are *not used* as a substantial or essential component of any system; *and*

(ii). Are *not used* as critical technology of any system.

(Iii) Other telecommunications equipment or services that are not considered covered telecommunications equipment or services.

(d) *Reporting requirement.*

(1) In the event the contractor identifies covered telecommunications equipment or services used as a substantial or essential component of any system, or as critical technology as part of any system, during contract performance, or the contractor is notified of such by a subcontractor at any tier or by any other source, the contractor shall report the information in paragraph (d)(2) of this clause to the recipient or subrecipient, unless elsewhere in this contract are established procedures for reporting the information.

(2) The Contractor shall report the following information pursuant to paragraph (d)(1) of this clause: (i) Within one business day from the date of such identification or notification: The contract number; the order number(s), if applicable; supplier name; supplier unique entity identifier (if known); supplier Commercial and Government Entity (CAGE) code (if known); brand; model number (original equipment manufacturer number, manufacturer part number, or wholesaler number); item description; and any readily available information about mitigation actions undertaken or recommended.

(ii) Within 10 business days of submitting the information in paragraph (d)(2)(i) of this clause: Any further available information about mitigation actions undertaken or recommended. In addition, the contractor shall describe the efforts it undertook to prevent use or submission of covered telecommunications equipment or services, and any additional efforts that will be incorporated to prevent future use or submission of covered telecommunications equipment or services.

(e) *Subcontracts.*

The Contractor shall insert the substance of this clause, including this paragraph (e), in all subcontracts and other contractual instruments."

Domestic Preferences for Procurements

As appropriate, and to the extent consistent with law, the contractor should, to the greatest extent practicable, provide a preference for the purchase, acquisition, or use of goods, products, or materials produced in the United States. This includes, but is not limited to iron, aluminum, steel, cement, and other manufactured products.

For purposes of this clause:
Produced in the United States means, for iron and steel products, that all manufacturing processes, from the initial melting stage through the application of coatings, occurred in the United States.

Manufactured products mean items and construction materials composed in whole or in part of non-ferrous metals such as aluminum; plastics and polymer-based products such as polyvinyl chloride pipe; aggregates such as concrete; glass, including optical fiber; and lumber."
Copyright and Data Rights

The Contractor grants to the City of Flagler Beach, a paid-up, royalty-free, nonexclusive, irrevocable, worldwide license in data first produced in the performance of this contract to reproduce, publish, or otherwise use, including prepare derivative works, distribute copies to the public, and perform publicly and display publicly such data. For data required by the contract but not first produced in the performance of this contract, the Contractor will identify such data and grant to the City of Flagler Beach or acquires on its behalf a license of the same scope as for data first produced in the performance of this contract. Data, as used herein, shall include any work subject to copyright under 17 U.S.C. § 102, for example, any written reports or literary works, software and/or source code, music, choreography, pictures or images, graphics, sculptures, videos, motion pictures or other audiovisual works, sound and/or video recordings, and architectural works. Upon or before the completion of this contract, the Contractor will deliver to the City of Flagler Beach data first produced in the performance of this contract and data required by the contract but not first produced in the performance of this contract in formats acceptable by the City of Flagler Beach.

BABAA

The Build America, Buy America Act, enacted as part of the Infrastructure Investment and Jobs Act on November 15, 2021, focuses on maximizing the federal government's use of services, goods, products, and materials produced and offered in the United States. BABAA requires that all iron, steel, manufactured products, and construction materials used in federally funded projects for infrastructure must be produced in the United States. USDA is working with OMB Made in America Office to coordinate compliance with these procurement requirements.

By May 14, 2022, agencies and staff offices were required to ensure new USDA Financial Assistance awards and funding amendments to existing awards, in accordance with applicable legal requirements, comply with section 70914 of the Act by the incorporation of a BABAA preference in the terms and conditions. The OMB Memorandum M-22-11, Initial Implementation Guidance on Application of Buy America Preference in Federal Financial Assistance Programs for Infrastructure, Appendix I, provides an Example of Award Term – Required Use of American, Iron, Steel, Manufactured Products, and Construction Materials.

END OF ATTACHMENT M

REQUEST FOR QUALIFICATION FORMS

ATTACHMENT N
LIST OF PROPOSED SUBCONTRACTORS/SUPPLIERS

All subcontractors and major materials suppliers are subject to approval of Owner. In the table below, list all subcontractors and manufacturers of materials and/or equipment that are proposed to be utilized by the Contractor in the performance of this work. Use additional sheets as necessary.

Company Name	Description	Contact Name, Phone, and Email

END OF ATTACHMENT N

SECTION 00 11 53
REQUEST FOR QUALIFICATION FORMS
ATTACHMENT O
LIST OF LICENSES and CERTIFICATIONS

License/Cert. Name	Number	Issuing Authority	Expiration Date

END OF ATTACHMENT O

SECTION 00 21 13
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ARTICLE 1 – DEFINED TERMS

1.01 Terms used in these Instructions to Bidders have the meanings indicated in the General Conditions and Supplementary Conditions. Additional terms used in these Instructions to Bidders have the meanings indicated below:

A. *Issuing Office* – The office from which the Bidding Documents are to be issued.

NOTE(S) TO USER:

1. *In addition to terms specifically defined, terms with initial capital letters in the Bidding Requirements include references to identified articles and paragraphs, and the titles of other documents or forms.*
2. *Additional defined terms applicable to the Bidding Requirements should be included here and should be used uniformly throughout the Bidding Requirements with initial capitals. Additional defined terms applicable to the Contract Documents should be included in the Supplementary Conditions. Note the difference in the meanings of the terms "Bidding Requirements" and "Bidding Documents," as defined in the General Conditions, Paragraph 1.01.A.*
3. *It is strongly recommended that the Issuing Office be identified in the invitation to bid or advertisement. See EJCDC® C-111, Suggested Advertisement for Bids for Construction Contracts. If not, it should be identified in these Instructions.*

ARTICLE 2 – COPIES OF BIDDING DOCUMENTS

2.01 Complete sets of the Bidding Documents may be obtained from the Issuing Office as stated in the advertisement or invitation to bid.

2.02 Complete sets of Bidding Documents shall be used in preparing Bids; neither Owner nor Engineer assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.

2.03 Owner and Engineer, in making copies of Bidding Documents available on the above terms, do so only for the purpose of obtaining Bids for the Work and do not authorize or confer a license for any other use.

ARTICLE 3 – QUALIFICATIONS OF BIDDERS

3.01 To demonstrate Bidder's qualifications to perform the Work, Bidder shall submit all qualification forms listed below which are included in the bid documents:

A. Attachment A - Certificate of Corporation

B. Attachment B – Contractor Questionnaire

C. Attachment C - Required Disclosure

D. Attachment D - Bidder Information

E. Attachment E - Experience of Bidder

F. Attachment F – Sworn Statement Under Section 287.133(3) (A), Florida Statutes, on Public Entity Crimes

G. Attachment G - Affidavit of Non-Collusion

H. Attachment H - Certification of Non-Segregated Facilities

I. Attachment I - Drug-Free Workplace

J. Attachment J - Conflict of Interest Statement

K. Attachment K - Compliance with Public Records Law

L. Attachment L - Americans with Disabilities Act Affidavit

M. Attachment M - List of Licenses and Certifications

N. Attachment N - List of Proposed Subcontractors/Suppliers

O. Attachment O - List of Proposed Equipment

3.02 A Bidder's failure to submit required qualification information shall disqualify Bidder from receiving an award of the Contract.

3.03 No requirement in this Article 3 to submit information will prejudice the right of Owner to seek additional pertinent information regarding Bidder's qualifications.

3.04 Bidder is advised to carefully review those portions of the Bid Form requiring Bidder's representations and certifications.

ARTICLE 4 – SITE AND OTHER AREAS; EXISTING SITE CONDITIONS; EXAMINATION OF SITE; OWNER'S SAFETY PROGRAM; OTHER WORK AT THE SITE

4.01 *Site and Other Areas*

A. The Site is identified in the Bidding Documents. By definition, the Site includes rights-of-way, easements, and other lands furnished by Owner for the use of the Contractor. Any additional lands required for temporary construction facilities, construction equipment, or storage of materials and equipment, and any access needed for such additional lands, are to be obtained and paid for by Contractor.

4.02 *Existing Site Conditions*

A. Subsurface and Physical Conditions; Hazardous Environmental Conditions

1. The Supplementary Conditions identify:

a. those reports known to Owner of explorations and tests of subsurface conditions at or adjacent to the Site.

b. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities).

c. reports and drawings known to Owner relating to Hazardous Environmental

Conditions that have been identified at or adjacent to the Site.

d. Technical Data contained in such reports and drawings.

2. The Technical Data contained therein upon whose accuracy Bidder is entitled to rely, as provided in the General Conditions, has been identified and established in the Supplementary Conditions. Bidder is responsible for any interpretation or conclusion Bidder draws from any Technical Data or any other data, interpretations, opinions, or information contained in such reports or shown or indicated in such drawings. If the Supplementary Conditions do not identify Technical Data, the default definition Technical Data set forth in Article 1 of the General Conditions will apply.

3. Geotechnical Baseline Report: The Bidding Documents contain a Geotechnical Baseline Report (GBR). The GBR describes certain select subsurface conditions that are anticipated to be encountered by Contractor during construction in specified locations ("Baseline Conditions"). The GBR is a Contract Document.

The Baseline Conditions in the GBR are intended to reduce uncertainty and the degree of contingency in submitted Bids. However, Bidders cannot rely solely on the Baseline Conditions. Bids should be based on a comprehensive approach that includes an independent review and analysis of the GBR, all other Contract Documents, Technical Data, other available information, and observable surface conditions. Not all potential subsurface conditions are baselined.

Nothing in the GBR is intended to relieve Bidders of the responsibility to make their own determinations regarding construction costs, bidding strategies, and Bid prices, nor of the responsibility to select and be responsible for the means, methods, techniques, sequences, and procedures of construction, and for safety precautions and programs incident thereto.

B. Underground Facilities: Information and data shown or indicated in the Bidding Documents with respect to existing Underground Facilities at or adjacent to the Site are set forth in the Contract Documents and are based upon information and data furnished to Owner and Engineer by owners of such Underground Facilities, including Owner, or others.

C. Adequacy of Data: Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to subsurface conditions, other physical conditions, and Underground Facilities, and possible changes in the Bidding Documents due to differing or unanticipated subsurface or physical conditions appear in Paragraphs 5.03, 5.04, and 5.05 of the General Conditions. Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to a Hazardous Environmental Condition at the Site, if any, and possible changes in the Contract Documents due to any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work, appear in Paragraph 5.06 of the General Conditions.

4.03 *Site Visit and Testing by Bidders*

A. Bidder shall conduct the required Site visit during normal working hours, and shall not disturb any ongoing operations at the Site.

B. Bidder is not required to conduct any subsurface testing, or exhaustive investigations of Site conditions.

C. On request, and to the extent Owner has control over the Site, and schedule permitting, the Owner will provide Bidder access to the Site to conduct such additional examinations, investigations, explorations, tests, and studies as Bidder deems necessary for preparing and submitting a successful Bid. Owner will not have any obligation to grant such access if doing so is not practical because of existing operations, security or safety concerns, or restraints on Owner's authority regarding the Site.

D. Bidder shall comply with all applicable Laws and Regulations regarding excavation and location of utilities, obtain all permits, and comply with all terms and conditions established by Owner or by property owners or other entities controlling the Site with respect to schedule, access, existing operations, security, liability insurance, and applicable safety programs.

E. Bidder shall fill all holes and clean up and restore the Site to its former condition upon completion of such explorations, investigations, tests, and studies.

4.04 *Owner's Safety Program*

A. Site visits and work at the Site may be governed by an Owner safety program. As the General Conditions indicate, if an Owner safety program exists, it will be noted in the Supplementary Conditions.

4.05 *Other Work at the Site*

A. Reference is made to Article 8 of the Supplementary Conditions for the identification of the general nature of other work of which Owner is aware (if any) that is to be performed at the Site by Owner or others (such as utilities and other prime contractors) and relates to the Work contemplated by these Bidding Documents. If Owner is party to a written contract for such other work, then on request, Owner will provide to each Bidder access to examine such contracts (other than portions thereof related to price and other confidential matters), if any.

ARTICLE 5 – BIDDER'S REPRESENTATIONS

5.01 It is the responsibility of each Bidder before submitting a Bid to:

A. examine and carefully study the Bidding Documents, and any data and reference items identified in the Bidding Documents;

B. visit the Site, conduct a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfy itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work;

C. become familiar with and satisfy itself as to all Laws and Regulations that may affect cost, progress, and performance of the Work;

D. carefully study all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings

relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings;

E. consider the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and the Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder; and (3) Bidder's safety precautions and programs;

agree, based on the information and observations referred to in the preceding paragraph, that at the time of submitting its Bid no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of its Bid for performance of the Work the price bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents;

F. become aware of the general nature of the work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents;

G. promptly give Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder discovers in the Bidding Documents and confirm that the written resolution thereof by Engineer is acceptable to Bidder;

H. determine that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work; and

I. agree that the submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

ARTICLE 6 – PRE-BID CONFERENCE

6.01 There will be a Non-Mandatory Pre-Bid Meeting on **Wednesday November 13, 2024** at 10:00 am eastern standard time. Meeting to be held at City Hall in the CC chambers:

105 S. Second Street
Flagler Beach, FL 32136

ARTICLE 7 – INTERPRETATIONS AND ADDENDA

7.01 All questions about the meaning or intent of the Bidding Documents are to be submitted to the City Clerk's office in writing (via email):

Penny Overstreet
Email: poverstreet@cityofflaglerbeach.com

Interpretations or clarifications considered necessary in response to such questions will be issued by

Addenda delivered to all parties recorded as having received the Bidding Documents. The last day to submit questions is **Monday November 19, 2024**. Questions received after that date and time may not be answered. Only questions answered by Addenda will be binding. Oral, emailed and other interpretations or clarifications will be without legal effect.

7.02 Addenda may be issued to clarify, correct, supplement, or change the Bidding Documents.

ARTICLE 8 – BID SECURITY

8.01 A Bid must be accompanied by Bid security made payable to Owner in an amount of five (5) percent of Bidder's maximum Bid price (determined by adding the base bid and all alternates) and in the form of a certified check, bank money order, or a Bid bond (on the form included in the Bidding Documents) issued by a surety meeting the requirements of Paragraphs 6.01 and 6.02 of the General Conditions.

8.02 The Bid security of the apparent Successful Bidder will be retained until Owner awards the contract to such Bidder, and such Bidder has executed the Contract Documents, furnished the required contract security, and met the other conditions of the Notice of Award, whereupon the Bid security will be released. If the Successful Bidder fails to execute and deliver the Contract Documents and furnish the required contract security within 15 days after the Notice of Award, Owner may consider Bidder to be in default, annul the Notice of Award, and the Bid security of that Bidder will be forfeited. Such forfeiture shall be Owner's exclusive remedy if Bidder defaults.

8.03 The Bid security of other Bidders that Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earlier of seven days after the Effective Date of the Contract or 61 days after the Bid opening, whereupon Bid security furnished by such Bidders will be released.

8.04 Bid security of other Bidders that Owner believes do not have a reasonable chance of receiving the award will be released within seven days after the Bid opening.

ARTICLE 9 – CONTRACT TIMES

9.01 The number of days within which, or the dates by which the Work is to be substantially completed, and completed and ready for final payment, are set forth in the Agreement.

ARTICLE 10 – LIQUIDATED DAMAGES

10.01 Provisions for liquidated damages, if any, for failure to timely attain a Milestone, Substantial Completion, or completion of the Work in readiness for final payment, are set forth in the Agreement.

ARTICLE 11 – SUBSTITUTE AND "OR-EQUAL" ITEMS

11.01 The Contract for the Work, as awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents without consideration during the bidding and Contract award process of possible substitute or "or-equal" items. In cases in which the Contract allows the Contractor to request that Engineer authorize the use of a substitute or "or-equal" item of material or equipment, application for such acceptance may not be made to and will not be considered by

Engineer until after the Effective Date of the Contract.

11.02 All prices that Bidder sets forth in its Bid shall be based on the presumption that the Contractor will furnish the materials and equipment specified or described in the Bidding Documents, as supplemented by Addenda. Any assumptions regarding the possibility of post-Bid approvals of "or-equal" or substitution requests are made at Bidder's sole risk.

ARTICLE 12 – SUBCONTRACTORS, SUPPLIERS, AND OTHERS

12.01 A Bidder shall be prepared to retain specific Subcontractors, Suppliers, or other individuals or entities for the performance of the Work if required by the Bidding Documents (most commonly in the Specifications) to do so. If a prospective Bidder objects to retaining any such Subcontractor, Supplier, or other individual or entity, and the concern is not relieved by an Addendum, then the prospective Bidder should refrain from submitting a Bid.

12.02 Subsequent to the submittal of the Bid, Owner may not require the Successful Bidder or Contractor to retain any Subcontractor, Supplier, or other individual or entity against which Contractor has reasonable objection.

12.03 The apparent Successful Bidder, and any other Bidder so requested, shall within five days after Bid opening, submit to Owner a list of the Subcontractors or Suppliers proposed. If requested by Owner, such list shall be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor, Supplier, or other individual or entity. If Owner or Engineer, after due investigation, has reasonable objection to any proposed Subcontractor, Supplier, individual, or entity, Owner may, before the Notice of Award is given, request apparent Successful Bidder to submit an acceptable substitute, in which case apparent Successful Bidder shall submit a substitute, Bidder's Bid price will be increased (or decreased) by the difference in cost occasioned by such substitution, and Owner may consider such price adjustment in evaluating Bids and making the Contract award.

12.04 If apparent Successful Bidder declines to make any such substitution, Owner may award the Contract to the next lowest Bidder that proposes to use acceptable Subcontractors, Suppliers, or other individuals or entities. Declining to make requested substitutions will constitute grounds for forfeiture of the Bid security of any Bidder. Any Subcontractor, Supplier, individual, or entity so listed and against which Owner or Engineer makes no written objection prior to the giving of the Notice of Award will be deemed acceptable to Owner and Engineer subject to subsequent revocation of such acceptance as provided in Paragraph 7.06 of the General Conditions.

ARTICLE 13 – PREPARATION OF BID

13.01 The Bid Form is included with the Bidding Documents.

A. All blanks on the Bid Form shall be completed in ink and the Bid Form signed in ink. Erasures or alterations shall be initialed in ink by the person signing the Bid Form. A Bid price shall be indicated for each section, Bid item, alternate, adjustment unit price item, and unit price item listed therein.

B. If the Bid Form expressly indicates that submitting pricing on a specific alternate item is optional, and Bidder elects to not furnish pricing for such optional alternate item, then Bidder may enter the words "No Bid" or "Not Applicable."

13.02 A Bid by a corporation shall be executed in the corporate name by a corporate officer (whose title must appear under the signature), accompanied by evidence of authority to sign. The corporate address and state of incorporation shall be shown.

13.03 A Bid by a partnership shall be executed in the partnership name and signed by a partner (whose title must appear under the signature), accompanied by evidence of authority to sign. The partnership's address for receiving notices shall be shown.

13.04 A Bid by a limited liability company shall be executed in the name of the firm by a member or other authorized person and accompanied by evidence of authority to sign. The state of formation of the firm and the firm's address for receiving notices shall be shown.

13.05 A Bid by an individual shall show the Bidder's name and address for receiving notices.

13.06 A Bid by a joint venture shall be executed by an authorized representative of each joint venturer in the manner indicated on the Bid Form. The joint venture's address for receiving notices shall be shown.

13.07 All names shall be printed in ink below the signatures.

13.08 The Bid shall contain an acknowledgment of receipt of all Addenda, the numbers of which shall be filled in on the Bid Form.

13.09 Postal and e-mail addresses and telephone number for communications regarding the Bid shall be shown.

13.10 The Bid shall contain evidence of Bidder's authority and qualification to do business in the state where the Project is located, or Bidder shall covenant in writing to obtain such authority and qualification prior to award of the Contract and attach such covenant to the Bid. Bidder's state contractor license number, if any, shall also be shown on the Bid Form.

ARTICLE 14 – BASIS OF BID

14.01 *Lump Sum*

A. Bidders shall submit a Bid on a lump sum for portions not specifically listed in the unit price section of the Bid Form in Section 00 41 13.

14.02 *Unit Price*

A. Bidders shall submit a Bid on a unit price basis for each item of Work listed in the unit price section of the Bid Form Section 00 41 13.

B. The "Bid Price" (sometimes referred to as the extended price) for each unit price Bid item will be the product of the "Estimated Quantity" (which Owner or its representative has set forth in the Bid Form) for the item and the corresponding "Bid Unit Price" offered by the Bidder. The total of all unit price Bid items will be the sum of these "Bid Prices"; such total will be used by Owner for Bid comparison purposes. The final quantities and Contract Price will be determined in accordance with Paragraph 13.03 of the General Conditions.

C. Discrepancies between the multiplication of units of Work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.

ARTICLE 15 – SUBMITTAL OF BID

15.01 A Bid shall be received no later than the date and time prescribed and at the place indicated in the advertisement or invitation to bid and shall be enclosed in a plainly marked package with the Project title (and, if applicable, the designated portion of the Project for which the Bid is submitted), the name and address of Bidder, and shall be accompanied by the Bid security and other required documents. If a Bid is sent by mail or other delivery system, the sealed envelope containing the Bid shall be enclosed in a separate package plainly marked on the outside with the notation "BID ENCLOSED."

15.02 Bids received after the date and time prescribed for the opening of bids, or not submitted at the correct location or in the designated manner, will not be accepted and will be returned to the Bidder unopened.

15.03 A Bid shall be received no later than the date and time prescribed and at the place indicated in the advertisement or invitation to bid and shall be enclosed in a plainly marked package with the Project title (and, if applicable, the designated portion of the Project for which the Bid is submitted), the name and address of Bidder, and shall be accompanied by the Bid security and other required documents. If a Bid is sent by mail or other delivery system, the sealed envelope containing the Bid shall be enclosed in a separate package plainly marked on the outside with the notation "BID ENCLOSED."

15.04 Bids received after the date and time prescribed for the opening of bids, or not submitted at the correct location or in the designated manner, will not be accepted and will be returned to the Bidder unopened.

ARTICLE 16 – MODIFICATION AND WITHDRAWAL OF BID

16.01 A Bid may be withdrawn by an appropriate document duly executed in the same manner that a Bid must be executed and delivered to the place where Bids are to be submitted prior to the date and time for the opening of Bids. Upon receipt of such notice, the unopened Bid will be returned to the Bidder

16.02 If a Bidder wishes to modify its Bid prior to Bid opening, Bidder must withdraw its initial Bid in the manner specified in Paragraph 16.01 and submit a new Bid prior to the date and time for the opening of Bids.

16.03 If within 24 hours after Bids are opened any Bidder files a duly signed written notice with Owner and promptly thereafter demonstrates to the reasonable satisfaction of Owner that there was a material and substantial mistake in the preparation of its Bid, that Bidder may withdraw its Bid, and the Bid security will be returned. Thereafter, if the Work is rebid, that Bidder will be disqualified from further bidding on the Work.

ARTICLE 17 – OPENING OF BIDS

17.01 Bids will be opened at the time and place indicated in the advertisement or invitation to bid and, unless obviously non-responsive, read aloud publicly. An abstract of the amounts of the base Bids and major alternates, if any, will be made available to Bidders after the opening of Bids.

ARTICLE 18 – BIDS TO REMAIN SUBJECT TO ACCEPTANCE

18.01 All Bids will remain subject to acceptance for the period of time stated in the Bid Form, but Owner may, in its sole discretion, release any Bid and return the Bid security prior to the end of this period.

ARTICLE 19 – EVALUATION OF BIDS AND AWARD OF CONTRACT

19.01 Owner reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. Owner will reject the Bid of any Bidder that Owner finds, after reasonable inquiry and evaluation, to not be responsible. If Bidder purports to add terms or conditions to its Bid, takes exception to any provision of the Bidding Documents, or attempts to alter the contents of the Contract Documents for purposes of the Bid, then the Owner will reject the Bid as nonresponsive; provided that Owner also reserves the right to waive all minor informalities not involving price, time, or changes in the Work.

19.02 If Owner awards the contract for the Work, such award shall be to the responsible Bidder submitting the lowest responsive Bid.

19.03 Evaluation of Bids

A. In evaluating Bids, Owner will consider whether or not the Bids comply with the prescribed requirements, and such alternates, unit prices, and other data, as may be requested in the Bid Form or prior to the Notice of Award.

B. For the determination of the apparent low Bidder when unit price bids are submitted, Bids will be compared on the basis of the total of the products of the estimated quantity of each item and unit price Bid for that item, together with any lump sum items.

19.04 In evaluating whether a Bidder is responsible, Owner will consider the qualifications of the Bidder and may consider the qualifications and experience of Subcontractors and Suppliers proposed for those portions of the Work for which the identity of Subcontractors and Suppliers must be submitted as provided in the Bidding Documents.

19.05 Owner may conduct such investigations as Owner deems necessary to establish the responsibility, qualifications, and financial ability of Bidders and any proposed Subcontractors or Suppliers.

ARTICLE 20 – BONDS AND INSURANCE

20.01 Article 6 of the General Conditions, as may be modified by the Supplementary Conditions, sets forth Owner's requirements as to performance and payment bonds and insurance. When the Successful Bidder delivers the Agreement (executed by Successful Bidder) to Owner, it shall be accompanied by required bonds and insurance documentation.

ARTICLE 21 – SIGNING OF AGREEMENT

21.01 When Owner issues a Notice of Award to the Successful Bidder, it shall be accompanied by the unexecuted counterparts of the Agreement along with the other Contract Documents as identified in the Agreement. Within 15 days thereafter, Successful Bidder shall execute and deliver the

required number of counterparts of the Agreement (and any bonds and insurance documentation required to be delivered by the Contract Documents) to Owner. Within ten days thereafter, Owner shall deliver one fully executed counterpart of the Agreement to Successful Bidder, together with printed and electronic copies of the Contract Documents as stated in Paragraph 2.02 of the General Conditions.

ARTICLE 22 – ALIEN WORKERS

22.01 The City of Flagler Beach does not award publicly funded Contracts to those who knowingly employ unauthorized alien workers in violation of section 274A of the Immigration and Naturalization Act. 8 United States Code §132a. Such employment deprives legal workers of job opportunities. Violation of section 274A shall be grounds for unilateral cancellation of the Contract, Agreement, Bid or Quote for purchase of services and goods by the City of Flagler Beach.

ARTICLE 23 – E-VERIFY

23.01 The Contractor shall utilize the U.S. Department of Homeland Security's E-Verify system, in accordance with the terms governing use of the system, to confirm the employment eligibility of all persons employed by the Contractor during the term of the Contract to perform employment duties within Florida and all persons, including subcontractors, assigned by the Contractor to perform work pursuant to the Contract with the Department.

END OF SECTION

SECTION 00 22 13
STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

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ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

A. Wherever used in the Bidding Requirements or Contract Documents, a term printed with initial capital letters, including the term's singular and plural forms, will have the meaning indicated in the definitions below. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.

1. *Addenda*—Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.

2. *Agreement*—The written instrument, executed by Owner and Contractor, that sets forth the Contract Price and Contract Times, identifies the parties and the Engineer, and designates the specific items that are Contract Documents.

3. *Application for Payment*—The form acceptable to Engineer which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.

4. *Bid*—The offer of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

5. *Bidder*—An individual or entity that submits a Bid to Owner.

6. *Bidding Documents*—The Bidding Requirements, the proposed Contract Documents, and all Addenda.

7. *Bidding Requirements*—The advertisement or invitation to bid, Instructions to Bidders, Bid Bond or other Bid security, if any, the Bid Form, and the Bid with any attachments.

8. *Change Order*—A document which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, or other revision to the Contract, issued on or after the Effective Date of the Contract.

9. *Change Proposal*—A written request by Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment in Contract Price or Contract Times, or both; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; challenging a set-off against payments due; or seeking other relief with respect to the terms of the Contract.

10. *Claim*—(a) A demand or assertion by Owner directly to Contractor, duly submitted in compliance with the procedural requirements set forth herein: seeking an adjustment of Contract Price or Contract Times, or both; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; contesting Engineer's decision regarding a Change Proposal; seeking resolution of a contractual issue that Engineer has declined to

11. address; or seeking other relief with respect to the terms of the Contract; or (b) a demand or assertion by Contractor directly to Owner, duly submitted in compliance with the procedural requirements set forth herein, contesting Engineer's decision regarding a Change Proposal; or seeking resolution of a contractual issue that Engineer has declined to address. A demand for money or services by a third party is not a Claim.

12. *Constituent of Concern*—Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to (a) the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. §§9601 et seq. ("CERCLA"); (b) the Hazardous Materials Transportation Act, 49 U.S.C. §§5101 et seq.; (c) the Resource Conservation and Recovery Act, 42 U.S.C. §§6901 et seq. ("RCRA"); (d) the Toxic Substances Control Act, 15 U.S.C. §§2601 et seq.; (e) the Clean Water Act, 33 U.S.C. §§1251 et seq.; (f) the Clean Air Act, 42 U.S.C. §§7401 et seq.; or (g) any other federal, state, or local statute, law, rule, regulation, ordinance, resolution, code, order, or decree regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.

13. *Contract*—The entire and integrated written contract between the Owner and Contractor concerning the Work.

14. *Contract Documents*—Those items so designated in the Agreement, and which together comprise the Contract.

15. *Contract Price*—The money that Owner has agreed to pay Contractor for completion of the Work in accordance with the Contract Documents.

16. *Contract Times*—The number of days or the dates by which Contractor shall: (a) achieve Milestones, if any; (b) achieve Substantial Completion; and (c) complete the Work.

17. *Contractor*—The individual or entity with which Owner has contracted for performance of the Work.

18. *Cost of the Work*—See Paragraph 13.01 for definition.

19. *Drawings*—The part of the Contract that graphically shows the scope, extent, and character of the Work to be performed by Contractor.

20. *Effective Date of the Contract*—The date, indicated in the Agreement, on which the Contract becomes effective.

21. *Engineer*—The individual or entity named as such in the Agreement.

22. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but does not change the Contract Price or the Contract Times.

23. *Hazardous Environmental Condition*—The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated in the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, does not establish a Hazardous Environmental Condition.

24. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.

25. *Liens*—Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.

26. *Milestone*—A principal event in the performance of the Work that the Contract requires Contractor to achieve by an intermediate completion date or by a time prior to Substantial Completion of all the Work.

27. *Notice of Award*—The written notice by Owner to a Bidder of Owner's acceptance of the Bid.

28. *Notice to Proceed*—A written notice by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work.

29. *Owner*—The individual or entity with which Contractor has contracted regarding the Work, and which has agreed to pay Contractor for the performance of the Work, pursuant to the terms of the Contract.

30. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor's plan to accomplish the Work within the Contract Times.

31. *Project*—The total undertaking to be accomplished for Owner by engineers, contractors, and others, including planning, study, design, construction, testing, commissioning, and start-up, and of which the Work to be performed under the Contract Documents is a part.

32. *Project Manual*—The written documents prepared for, or made available for, procuring and constructing the Work, including but not limited to the Bidding Documents or other construction procurement documents, geotechnical and existing conditions information, the Agreement, bond forms, General Conditions, Supplementary Conditions, and Specifications. The contents of the Project Manual may be bound in one or more volumes.

33. *Resident Project Representative*—The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative or "RPR" includes any assistants or field staff of Resident Project Representative.

34. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and that establish the standards by which such portion of the Work will be judged.

35. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer's review of the submittals and the performance of related construction activities.

36. *Schedule of Values*—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

37. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information that are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work. Shop Drawings, whether approved or not, are not Drawings and are not Contract Documents.

38. *Site*—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements, and such other lands furnished by Owner which are designated for the use of Contractor.

39. *Specifications*—The part of the Contract that consists of written requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable to the Work.

40. *Subcontractor*—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work.

41. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion thereof.

42. *Successful Bidder*—The Bidder whose Bid the Owner accepts, and to which the Owner makes an award of contract, subject to stated conditions.

43. *Supplementary Conditions*—The part of the Contract that amends or supplements these General Conditions.

44. *Supplier*—A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or a Subcontractor.

45. *Technical Data*—Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (a) subsurface conditions at the Site, or physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities) or (b) Hazardous Environmental Conditions at the Site. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then the data contained in boring logs, recorded measurements of subsurface water levels, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical or environmental report prepared for the Project and made available to Contractor are hereby defined as Technical Data with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06.

46. *Underground Facilities*—All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including but not limited to those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, fiber optic transmissions, cable television, water, wastewater, storm

47. water, other liquids or chemicals, or traffic or other control systems.

48. *Unit Price Work*—Work to be paid for on the basis of unit prices.

49. *Work*—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction; furnishing, installing, and incorporating all materials and equipment into such construction; and may include related services such as testing, start-up, and commissioning, all as required by the Contract Documents.

50. *Work Change Directive*—A written directive to Contractor issued on or after the Effective Date of the Contract, signed by Owner and recommended by Engineer, ordering an addition, deletion, or revision in the Work.

1.02 *Terminology*

A. The words and terms discussed in the following paragraphs are not defined but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.

B. *Intent of Certain Terms or Adjectives*:

1. The Contract Documents include the terms “as allowed,” “as approved,” “as ordered,” “as directed” or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives “reasonable,” “suitable,” “acceptable,” “proper,” “satisfactory,” or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Article 10 or any other provision of the Contract Documents.

C. *Day*:

1. The word “day” means a calendar day of 24 hours measured from midnight to the next midnight.

D. *Defective*:

1. The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it:

a. does not conform to the Contract Documents; or

b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or

c. has been damaged prior to Engineer’s recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 15.03 or 15.04).

E. *Furnish, Install, Perform, Provide*:

1. The word "furnish," when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.

2. The word "install," when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.

3. The words "perform" or "provide," when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.

4. If the Contract Documents establish an obligation of Contractor with respect to specific services, materials, or equipment, but do not expressly use any of the four words "furnish," "install," "perform," or "provide," then Contractor shall furnish and install said services, materials, or equipment complete and ready for intended use.

F. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2 – PRELIMINARY MATTERS

2.01 *Delivery of Bonds and Evidence of Insurance*

A. *Bonds*: When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.

B. *Evidence of Contractor's Insurance*: When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner, with copies to each named insured and additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract), the certificates and other evidence of insurance required to be provided by Contractor in accordance with Article 6.

C. *Evidence of Owner's Insurance*: After receipt of the executed counterparts of the Agreement and all required bonds and insurance documentation, Owner shall promptly deliver to Contractor, with copies to each named insured and additional insured (as identified in the Supplementary Conditions or otherwise), the certificates and other evidence of insurance required to be provided by Owner under Article 6.

2.02 *Copies of Documents*

A. Owner shall furnish to Contractor four printed copies of the Contract (including one fully executed counterpart of the Agreement), and one copy in electronic portable document format (PDF). Additional printed copies will be furnished upon request at the cost of reproduction.

B. Owner shall maintain and safeguard at least one original printed record version of the

C. Contract, including Drawings and Specifications signed and sealed by Engineer and other design professionals. Owner shall make such original printed record version of the Contract available to Contractor for review. Owner may delegate the responsibilities under this provision to Engineer.

2.03 *Before Starting Construction*

A. *Preliminary Schedules*: Within 10 days after the Effective Date of the Contract (or as otherwise specifically required by the Contract Documents), Contractor shall submit to Engineer for timely review:

1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract;

2. a preliminary Schedule of Submittals; and

3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.04 *Preconstruction Conference; Designation of Authorized Representatives*

A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in Paragraph 2.03.A, procedures for handling Shop Drawings, Samples, and other submittals, processing Applications for Payment, electronic or digital transmittals, and maintaining required records.

B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit and receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.05 *Initial Acceptance of Schedules*

A. At least 10 days before submission of the first Application for Payment a conference, attended by Contractor, Engineer, and others as appropriate, will be held to review for acceptability to Engineer as provided below the schedules submitted in accordance with Paragraph 2.03.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to Contractor until acceptable schedules are submitted to Engineer.

1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing,

scheduling, or progress of the Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefor.

2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.

3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to the component parts of the Work.

2.06 *Electronic Transmittals*

A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may transmit, and shall accept, Project-related correspondence, text, data, documents, drawings, information, and graphics, including but not limited to Shop Drawings and other submittals, in electronic media or digital format, either directly, or through access to a secure Project website.

B. If the Contract does not establish protocols for electronic or digital transmittals, then Owner, Engineer, and Contractor shall jointly develop such protocols.

C. When transmitting items in electronic media or digital format, the transmitting party makes no representations as to long term compatibility, usability, or readability of the items resulting from the recipient's use of software application packages, operating systems, or computer hardware differing from those used in the drafting or transmittal of the items, or from those established in applicable transmittal protocols.

ARTICLE 3 – DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 *Intent*

A. The Contract Documents are complementary; what is required by one is as binding as if required by all.

B. It is the intent of the Contract Documents to describe a functionally complete project (or part thereof) to be constructed in accordance with the Contract Documents.

C. Unless otherwise stated in the Contract Documents, if there is a discrepancy between the electronic or digital versions of the Contract Documents (including any printed copies derived from such electronic or digital versions) and the printed record version, the printed record version shall govern.

D. The Contract supersedes prior negotiations, representations, and agreements, whether written or oral.

E. Engineer will issue clarifications and interpretations of the Contract Documents as provided herein.

3.02 *Reference Standards*

A. Standards Specifications, Codes, Laws and Regulations

1. Reference in the Contract Documents to standard specifications, manuals, reference standards, or codes of any technical society, organization, or association, or to Laws or

Regulations, whether such reference be specific or by implication, shall mean the standard specification, manual, reference standard, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Contract if there

2. were no Bids), except as may be otherwise specifically stated in the Contract Documents.

3. No provision of any such standard specification, manual, reference standard, or code, or any instruction of a Supplier, shall be effective to change the duties or responsibilities of Owner, Contractor, or Engineer, or any of their subcontractors, consultants, agents, or employees, from those set forth in the part of the Contract Documents prepared by or for Engineer. No such provision or instruction shall be

effective to assign to Owner, Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the part of the Contract Documents prepared by or for Engineer.

3.03 *Reporting and Resolving Discrepancies*

A. *Reporting Discrepancies*:

1. *Contractor's Verification of Figures and Field Measurements*: Before undertaking each part of the Work, Contractor shall carefully study the Contract Documents, and check and verify pertinent figures and dimensions therein, particularly with respect to applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy that Contractor discovers, or has actual knowledge of, and shall not proceed with any Work affected thereby until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract Documents issued pursuant to Paragraph 11.01.

2. *Contractor's Review of Contract Documents*: If, before or during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation, (b) actual field conditions, (c) any standard specification, manual, reference standard, or code, or (d) any instruction of any Supplier, then Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 7.15) until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract Documents issued pursuant to Paragraph 11.01.

3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof.

B. *Resolving Discrepancies*:

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the part of the Contract Documents prepared by or for Engineer shall take

precedence in resolving any conflict, error, ambiguity, or discrepancy between such provisions of the Contract Documents and:

a. the provisions of any standard specification, manual, reference standard, or code,

b. or the instruction of any Supplier (whether or not specifically incorporated by reference as a Contract Document); or

c. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 *Requirements of the Contract Documents*

A. During the performance of the Work and until final payment, Contractor and Owner shall submit to the Engineer all matters in question concerning the requirements of the Contract Documents (sometimes referred to as requests for information or interpretation—RFIs), or relating to the acceptability of the Work under the Contract Documents, as soon as possible after such matters arise. Engineer will be the initial interpreter of the requirements of the Contract Documents, and judge of the acceptability of the Work thereunder.

B. Engineer will, with reasonable promptness, render a written clarification, interpretation, or decision on the issue submitted, or initiate an amendment or supplement to the Contract Documents. Engineer's written clarification, interpretation, or decision will be final and binding on Contractor, unless it appeals by submitting a Change Proposal, and on Owner, unless it appeals by filing a Claim.

C. If a submitted matter in question concerns terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work under the Contract Documents, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, then Engineer will promptly give written notice to Owner and Contractor that Engineer is unable to provide a decision or interpretation. If Owner and Contractor are unable to agree on resolution of such a matter in question, either party may pursue resolution as provided in Article 12.

3.05 *Reuse of Documents*

A. Contractor and its Subcontractors and Suppliers shall not:

1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media editions, or reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer; or

2. have or acquire any title or ownership rights in any other Contract Documents, reuse any such Contract Documents for any purpose without Owner's express written consent, or violate any copyrights pertaining to such Contract Documents.

B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein shall preclude Contractor from retaining copies of the Contract Documents for record purposes.

ARTICLE 4 – COMMENCEMENT AND PROGRESS OF THE WORK

4.01 *Commencement of Contract Times; Notice to Proceed*

A. The Contract Times will commence to run on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Contract. In no event will the Contract Times commence to run later than the sixtieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Contract, whichever date is earlier.

4.02 *Starting the Work*

A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work shall be done at the Site prior to such date.

4.03 *Reference Points*

A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.04 *Progress Schedule*

A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.05 as it may be adjusted from time to time as provided below.

1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.05) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times.

2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 11.

B. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, or during any appeal process, except as permitted by Paragraph 16.04, or as Owner and Contractor may otherwise agree in writing.

4.05 *Delays in Contractor's Progress*

A. If Owner, Engineer, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Times and Contract Price. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.

B. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for

delay, disruption, or interference caused by or within the control of Contractor. Delay, disruption, and interference attributable to and within the control of a Subcontractor or Supplier shall be deemed to be within the control of Contractor.

C. If Contractor's performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of Owner, Contractor, and those for which they are responsible, then Contractor shall be entitled to an equitable adjustment in Contract Times. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays, disruption, and interference described in this paragraph. Causes of delay, disruption, or interference that may give rise to an adjustment in Contract Times under this paragraph include but are not limited to the following:

1. severe and unavoidable natural catastrophes such as fires, floods, epidemics, and earthquakes;
2. abnormal weather conditions;
3. acts or failures to act of utility owners (other than those performing other work at or adjacent to the Site by arrangement with the Owner, as contemplated in Article 8); and
4. acts of war or terrorism.

D. Delays, disruption, and interference to the performance or progress of the Work resulting from the existence of a differing subsurface or physical condition, an Underground Facility that was not shown or indicated by the Contract Documents, or not shown or indicated with reasonable accuracy, and those resulting from Hazardous Environmental Conditions, are governed by Article 5.

E. Paragraph 8.03 governs delays, disruption, and interference to the performance or progress of the Work resulting from the performance of certain other work at or adjacent to the Site.

F. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Contractor.

G. Contractor must submit any Change Proposal seeking an adjustment in Contract Price or Contract Times under this paragraph within 30 days of the commencement of the delaying, disrupting, or interfering event.

ARTICLE 5 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

5.01 *Availability of Lands*

A. Owner shall furnish the Site. Owner shall notify Contractor of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work.

B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which permanent improvements

are to be made and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.

C.Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

5.02 *Use of Site and Other Areas*

A. *Limitation on Use of Site and Other Areas*:

1. Contractor shall confine construction equipment, temporary construction facilities, the storage of materials and equipment, and the operations of workers to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and such other adjacent areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for (a) damage to the Site; (b) damage to any such other adjacent areas used for Contractor's operations; (c) damage to any other adjacent land or areas; and (d) for injuries and losses sustained by the owners or occupants of any such land or areas; provided that such damage or injuries result from the performance of the Work or from other actions or conduct of the Contractor or those for which Contractor is responsible.

2. If a damage or injury claim is made by the owner or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible, Contractor shall (a) take immediate corrective or remedial action as required by Paragraph 7.12, or otherwise; (b) promptly attempt to settle the claim as to all parties through negotiations with such owner or occupant, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or at law; and (c) to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claim, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused directly or indirectly, in whole or in part by, or based upon, Contractor's performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible.

B. *Removal of Debris During Performance of the Work*: During the progress of the Work the Contractor shall keep the Site and other adjacent areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.

C. *Cleaning*: Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site and adjacent areas all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not

designated for alteration by the Contract Documents.

D. *Loading of Structures*: Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent structures or land to stresses or pressures that will endanger them.

5.03 *Subsurface and Physical Conditions*

A. *Reports and Drawings*: The Supplementary Conditions identify:

1. those reports known to Owner of explorations and tests of subsurface conditions at or adjacent to the Site;

2. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities); and

3. Technical Data contained in such reports and drawings.

B. *Reliance by Contractor on Technical Data Authorized*: Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely upon the accuracy of the Technical Data (as defined in Article 1) contained in any geotechnical or environmental report prepared for the Project and made available to Contractor. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto; or

2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or

3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions, or information.

5.04 *Differing Subsurface or Physical Conditions*

A. *Notice by Contractor*: If Contractor believes that any subsurface or physical condition that is uncovered or revealed at the Site either:

1. is of such a nature as to establish that any Technical Data on which Contractor is entitled to rely as provided in Paragraph 5.03 is materially inaccurate; or

2. is of such a nature as to require a change in the Drawings or Specifications; or

3. differs materially from that shown or indicated in the Contract Documents; or

4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing

the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or performany Work in connection therewith (except with respect to an emergency) until receipt of a written statement permitting Contractor to do so.

B. *Engineer's Review*: After receipt of written notice as required by the preceding paragraph, Engineer will promptly review the subsurface or physical condition in question; determine the necessity of Owner's obtaining additional exploration or tests with respect to the condition; conclude whether the condition falls within any one or more of the differing site condition categories in Paragraph 5.04.A above; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the subsurface or physical condition in question and the need for any change in the Drawings or Specifications; and advise Owner in writing of Engineer's findings, conclusions, and recommendations.

C. *Owner's Statement to Contractor Regarding Site Condition*: After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the subsurface or physical condition in question, addressing the resumption of Work in connection with such condition, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations, in whole or in part.

D. *Possible Price and Times Adjustments*:

1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, or both, to the extent that the existence of a differing subsurface or physical condition, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

    a. such condition must fall within any one or more of the categories described in Paragraph 5.04.A;

    b. with respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03; and,

    c. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.

2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times with respect to a subsurface or physical condition if:

    a. Contractor knew of the existence of such condition at the time Contractor made a commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract, or otherwise; or

    b. the existence of such condition reasonably could have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas expressly required by the Bidding Requirements or Contract

Documents to be conducted by or for Contractor prior to Contractor's making such commitment; or

c. Contractor failed to give the written notice as required by Paragraph 5.04.A.

3. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, or both, then any such adjustment shall be set forth in a Change Order.

4. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, or both, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the subsurface or physical condition in question.

5.05 *Underground Facilities*

A. *Contractor's Responsibilities*: The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or adjacent to the Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

1. Owner and Engineer do not warrant or guarantee the accuracy or completeness of any such information or data provided by others; and

2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:

a. reviewing and checking all information and data regarding existing Underground Facilities at the Site;

b. locating all Underground Facilities shown or indicated in the Contract Documents as being at the Site;

c. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and

d. the safety and protection of all existing Underground Facilities at the Site, and repairing any damage thereto resulting from the Work.

B. *Notice by Contractor*: If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy, then Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer.

C. *Engineer's Review*: Engineer will promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the Underground Facility in question; determine the extent, if any, to which a change is required in the Drawings or Specifications

to reflect and document the consequences of the existence or location of the Underground Facility; and advise Owner in writing of Engineer's findings, conclusions, and recommendations. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

D. *Owner's Statement to Contractor Regarding Underground Facility*: After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the Underground Facility in question, addressing the resumption of Work in connection with such Underground Facility, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations in whole or in part.

E. *Possible Price and Times Adjustments*:

1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, or both, to the extent that any existing Underground Facility at the Site that was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:
   a. Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated the existence or actual location of the Underground Facility in question;
   b. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03;
   c. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times; and
   d. Contractor gave the notice required in Paragraph 5.05.B.
2. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, or both, then any such adjustment shall be set forth in a Change Order.
3. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, or both, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the Underground Facility in question.

5.06 *Hazardous Environmental Conditions at Site*

A. *Reports and Drawings*: The Supplementary Conditions identify:

1. those reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site; and
2. Technical Data contained in such reports and drawings.

B. *Reliance by Contractor on Technical Data Authorized*: Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to

such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely on the accuracy of the Technical Data (as defined in Article 1) contained in any geotechnical or environmental report prepared for the Project and made available to Contractor. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor and safety precautions and programs incident thereto; or
2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or
3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions or information.

C. Contractor shall not be responsible for removing or remediating any Hazardous Environmental Condition encountered, uncovered, or revealed at the Site unless such removal or remediation is expressly identified in the Contract Documents to be within the scope of the Work. Contractor shall be responsible for controlling, containing, and duly removing all Constituents of Concern brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible, and for any associated costs; and for the costs of removing and remediating any Hazardous Environmental Condition created by the presence of any such Constituents of Concern.

D. If Contractor encounters, uncovers, or reveals a Hazardous Environmental Condition whose removal or remediation is not expressly identified in the Contract Documents as being within the scope of the Work, or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, then Contractor shall immediately: (1) secure or otherwise isolate such condition; (2) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 7.15); and (3) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 5.06.F. If Contractor or anyone for whom Contractor is responsible created the Hazardous Environmental Condition in question, then Owner may remove and remediate the Hazardous Environmental Condition, and impose a set-off against payments to account for the associated costs.

E. Contractor shall not resume Work in connection with such Hazardous Environmental Condition or in any affected area until after Owner has obtained any required permits related thereto, and delivered written notice to Contractor either (1) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work, or (2) specifying any special conditions under which such Work may be resumed safely.

F. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if

any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, then within 30 days of Owner's written notice regarding the resumption of Work, Contractor may submit a Change Proposal, or Owner may impose a set-off.

G. If after receipt of such written notice Contractor does not agree to resume such Work based on a reasonable belief it is unsafe or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work, following the contractual change procedures in Article 11. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 8.

H. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition (1) was not shown or indicated in the Drawings, Specifications, or other Contract Documents, identified as Technical Data entitled to limited reliance pursuant to Paragraph 5.06.B, or identified in the Contract Documents to be included within the scope of the Work, and (2)

was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.I shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

I. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the failure to control, contain, or remove a Constituent of Concern brought to the Site by Contractor or by anyone for whom Contractor is responsible, or to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.J shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

J. The provisions of Paragraphs 5.03, 5.04, and 5.05 do not apply to the presence of Constituents of Concern or to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 6 – BONDS AND INSURANCE

6.01 *Performance, Payment, and Other Bonds*

A. Contractor shall furnish a performance bond and a payment bond, each in an amount at least equal to the Contract Price, as security for the faithful performance and payment of all of Contractor's obligations under the Contract. These bonds shall remain in effect until one year

after the date when final payment becomes due or until completion of the correction period specified in Paragraph 15.08, whichever is later, except as provided otherwise by Laws or Regulations, the Supplementary Conditions, or other specific provisions of the Contract. Contractor shall also furnish such other bonds as are required by the Supplementary Conditions or other specific provisions of the Contract.

B. All bonds shall be in the form prescribed by the Contract except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (as amended and supplemented) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. A bond signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority shall show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.

C. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds in the required amounts.

D. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or its right to do business is terminated in any state or jurisdiction where any part of the Project is located, or the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the bond and surety requirements above.

E. If Contractor has failed to obtain a required bond, Owner may exclude the Contractor from the Site and exercise Owner's termination rights under Article 16.

F. Upon request, Owner shall provide a copy of the payment bond to any Subcontractor, Supplier, or other person or entity claiming to have furnished labor or materials used in the performance of the Work.

6.02 *Insurance—General Provisions*

A. Owner and Contractor shall obtain and maintain insurance as required in this Article and in the Supplementary Conditions.

B. All insurance required by the Contract to be purchased and maintained by Owner or Contractor shall be obtained from insurance companies that are duly licensed or authorized, in the state or jurisdiction in which the Project is located, to issue insurance policies for the required limits and coverages. Unless a different standard is indicated in the Supplementary Conditions, all companies that provide insurance policies required under this Contract shall have an A.M. Best rating of A-VII or better.

C. Contractor shall deliver to Owner, with copies to each named insured and additional insured (as identified in this Article, in the Supplementary Conditions, or elsewhere in the Contract), certificates of insurance establishing that Contractor has obtained and is maintaining the policies, coverages, and endorsements required by the Contract. Upon request by Owner or any other insured, Contractor shall also furnish other evidence of such required insurance, including but not limited to copies of policies and endorsements, and documentation of applicable self-insured retentions and deductibles. Contractor may block out (redact) any

confidential premium or pricing information contained in any policy or endorsement furnished under this provision.

D. Owner shall deliver to Contractor, with copies to each named insured and additional insured (as identified in this Article, the Supplementary Conditions, or elsewhere in the Contract), certificates of insurance establishing that Owner has obtained and is maintaining the policies, coverages, and endorsements required of Owner by the Contract (if any). Upon request by Contractor or any other insured, Owner shall also provide other evidence of such required insurance (if any), including but not limited to copies of policies and endorsements, and documentation of applicable self-insured retentions and deductibles. Owner may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.

E. Failure of Owner or Contractor to demand such certificates or other evidence of the other party's full compliance with these insurance requirements, or failure of Owner or Contractor to identify a deficiency in compliance from the evidence provided, shall not be construed as a waiver of the other party's obligation to obtain and maintain such insurance.

F. If either party does not purchase or maintain all of the insurance required of such party by the Contract, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage.

G. If Contractor has failed to obtain and maintain required insurance, Owner may exclude the Contractor from the Site, impose an appropriate set-off against payment, and exercise Owner's termination rights under Article 16.

H. Without prejudice to any other right or remedy, if a party has failed to obtain required insurance, the other party may elect to obtain equivalent insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and the Contract Price shall be adjusted accordingly.

I. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests.

J. The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner and other individuals and entities in the Contract.

6.03 *Contractor's Insurance*

A. *Workers' Compensation*: Contractor shall purchase and maintain workers' compensation and employer's liability insurance for:

1. claims under workers' compensation, disability benefits, and other similar employee benefit acts.

2. United States Longshoreman and Harbor Workers' Compensation Act and Jones Act coverage (if applicable).

3. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees (by stop-gap endorsement in monopolist worker's compensation states).

4. Foreign voluntary worker compensation (if applicable).

B. *Commercial General Liability—Claims Covered*: Contractor shall purchase and maintain commercial general liability insurance, covering all operations by or on behalf of Contractor, on an occurrence basis, against:

1. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees.
2. claims for damages insured by reasonably available personal injury liability coverage.
3. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom.

C. *Commercial General Liability—Form and Content*: Contractor's commercial liability policy shall be written on a 1996 (or later) ISO commercial general liability form (occurrence form) and include the following coverages and endorsements:

1. Products and completed operations coverage:
   a. Such insurance shall be maintained for three years after final payment.
   b. Contractor shall furnish Owner and each other additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract) evidence of continuation of such insurance at final payment and three years thereafter.
2. Blanket contractual liability coverage, to the extent permitted by law, including but not limited to coverage of Contractor's contractual indemnity obligations in Paragraph 7.18.
3. Broad form property damage coverage.
4. Severability of interest.
5. Underground, explosion, and collapse coverage.
6. Personal injury coverage.
7. Additional insured endorsements that include both ongoing operations and products and completed operations coverage through ISO Endorsements CG 20 10 10 01 and CG 20 37 10 01 (together); or CG 20 10 07 04 and CG 20 37 07 04 (together); or their equivalent.
8. For design professional additional insureds, ISO Endorsement CG 20 32 07 04, "Additional Insured—Engineers, Architects or Surveyors Not Engaged by the Named Insured" or its equivalent.

D. *Automobile liability*: Contractor shall purchase and maintain automobile liability insurance against claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance, or use of any motor vehicle. The automobile liability policy shall be written on an occurrence basis.

E. *Umbrella or excess liability*: Contractor shall purchase and maintain umbrella or excess liability insurance written over the underlying employer's liability, commercial general liability, and automobile liability insurance described in the paragraphs above. Subject to industry-standard exclusions, the coverage afforded shall follow form as to each and every one of the underlying policies.

F. *Contractor's pollution liability insurance*: Contractor shall purchase and maintain a policy covering third-party injury and property damage claims, including clean-up costs, as a result of pollution conditions arising from Contractor's operations and completed operations. This insurance shall be maintained for no less than three years after final completion.

G. *Additional insureds*: The Contractor's commercial general liability, automobile liability, umbrella or excess, and pollution liability policies shall include and list as additional insureds Owner and Engineer, and any individuals or entities identified in the Supplementary Conditions; include coverage for the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of all such additional insureds; and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby (including as applicable those arising from both ongoing and completed operations) on a non-contributory basis. Contractor shall obtain all necessary endorsements to support these requirements.

H. *Contractor's professional liability insurance*: If Contractor will provide or furnish professional services under this Contract, through a delegation of professional design services or otherwise, then Contractor shall be responsible for purchasing and maintaining applicable professional liability insurance. This insurance shall provide protection against claims arising out of performance of professional design or related services, and caused by a negligent error, omission, or act for which the insured party is legally liable. It shall be maintained throughout the duration of the Contract and for a minimum of two years after

Substantial Completion. If such professional design services are performed by a Subcontractor, and not by Contractor itself, then the requirements of this paragraph may be satisfied through the purchasing and maintenance of such insurance by such Subcontractor.

I. *General provisions*: The policies of insurance required by this Paragraph 6.03 shall:

1. include at least the specific coverages provided in this Article.
2. be written for not less than the limits of liability provided in this Article and in the Supplementary Conditions, or required by Laws or Regulations, whichever is greater.
3. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed, or renewal refused until at least 10 days prior written notice has been given to Contractor. Within three days of receipt of any such written notice, Contractor shall provide a copy of the notice to Owner, Engineer, and each other insured under the policy.
4. remain in effect at least until final payment (and longer if expressly required in this Article) and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work as a warranty or correction obligation, or otherwise, or returning to the Site to conduct other tasks arising from the Contract Documents.
5. be appropriate for the Work being performed and provide protection from claims that may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable.

J. The coverage requirements for specific policies of insurance must be met by such policies, and not by reference to excess or umbrella insurance provided in other policies.

6.04 *Owner's Liability Insurance*

A. In addition to the insurance required to be provided by Contractor under Paragraph 6.03, Owner, at Owner's option, may purchase and maintain at Owner's expense Owner's own liability insurance as will protect Owner against claims which may arise from operations under the Contract Documents.

B. Owner's liability policies, if any, operate separately and independently from policies required to be provided by Contractor, and Contractor cannot rely upon Owner's liability policies for any of Contractor's obligations to the Owner, Engineer, or third parties.

6.05 *Property Insurance*

A. *Builder's Risk*: Unless otherwise provided in the Supplementary Conditions, Contractor shall purchase and maintain builder's risk insurance upon the Work on a completed value basis, in the amount of the full insurable replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:

1. include the Owner and Contractor as named insureds, and all Subcontractors, and any individuals or entities required by the Supplementary Conditions to be insured under such builder's risk policy, as insureds or named insureds. For purposes of the remainder of this Paragraph 6.05, Paragraphs 6.06 and 6.07, and any corresponding Supplementary Conditions, the parties required to be insured shall collectively be referred to as "insureds."

2. be written on a builder's risk "all risk" policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire; lightning; windstorm; riot; civil commotion; terrorism; vehicle impact; aircraft; smoke; theft; vandalism and malicious mischief; mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake; volcanic activity, and other earth movement; flood; collapse; explosion; debris removal; demolition occasioned by enforcement of Laws and Regulations; water damage (other than that caused by flood); and such other perils or causes of loss as may be specifically required by the Supplementary Conditions. If insurance against mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake; volcanic activity, and other earth movement; or flood, are not commercially available under builder's risk policies, by endorsement or otherwise, such insurance may be provided through other insurance policies acceptable to Owner and Contractor.

3. cover, as insured property, at least the following: (a) the Work and all materials, supplies, machinery, apparatus, equipment, fixtures, and other property of a similar nature that are to be incorporated into or used in the preparation, fabrication, construction, erection, or completion of the Work, including Owner-furnished or assigned property; (b) spare parts inventory required within the scope of the Contract; and (c) temporary works which are not intended to form part of the permanent constructed Work but which are intended to provide working access to the Site, or to

the Work under construction, or which are intended to provide temporary support for the Work under construction, including scaffolding, form work, fences, shoring, falsework, and temporary structures.

4. cover expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects).
5. extend to cover damage or loss to insured property while in temporary storage at the Site or in a storage location outside the Site (but not including property stored at the premises of a manufacturer or Supplier).
6. extend to cover damage or loss to insured property while in transit.
7. allow for partial occupation or use of the Work by Owner, such that those portions of the Work that are not yet occupied or used by Owner shall remain covered by the builder's risk insurance.
8. allow for the waiver of the insurer's subrogation rights, as set forth below.
9. provide primary coverage for all losses and damages caused by the perils or causes of loss covered.
10. not include a co-insurance clause.
11. include an exception for ensuing losses from physical damage or loss with respect to any defective workmanship, design, or materials exclusions.
12. include performance/hot testing and start-up.
13. be maintained in effect, subject to the provisions herein regarding Substantial Completion and partial occupancy or use of the Work by Owner, until the Work is complete.

B. *Notice of Cancellation or Change*: All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with this Paragraph 6.05 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 10 days prior written notice has been given to the purchasing policyholder. Within three days of receipt of any such written notice, the purchasing policyholder shall provide a copy of the notice to each other insured.

C. *Deductibles*: The purchaser of any required builder's risk or property insurance shall pay for costs not covered because of the application of a policy deductible.

D. *Partial Occupancy or Use by Owner*: If Owner will occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 15.04, then Owner (directly, if it is the purchaser of the builder's risk policy, or through Contractor) will provide notice of such occupancy or use to the builder's risk insurer. The builder's risk insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy; rather, those portions of the Work that are occupied or used by Owner may come off the builder's risk policy, while those portions of the Work not yet occupied or used by Owner shall remain covered by the builder's risk insurance.

E. *Additional Insurance*: If Contractor elects to obtain other special insurance to be included in

or supplement the builder's risk or property insurance policies provided under this Paragraph 6.05, it may do so at Contractor's expense.

F. *Insurance of Other Property*: If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, such as tools, construction equipment, or other personal property owned by Contractor, a Subcontractor, or an employee of Contractor or a Subcontractor, then the entity or individual owning such property item will be responsible for deciding whether to insure it, and if so in what amount.

6.06 *Waiver of Rights*

A. All policies purchased in accordance with Paragraph 6.05, expressly including the builder's risk policy, shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any insureds thereunder, or against Engineer or its consultants, or their officers, directors, members, partners, employees, agents, consultants, or subcontractors. Owner and Contractor waive all rights against each other and the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Engineer, its consultants, all Subcontractors, all individuals or entities identified in the Supplementary Conditions as insureds, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to

the proceeds of insurance held by Owner or Contractor as trustee or fiduciary, or otherwise payable under any policy so issued.

B. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, for:

1. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other perils whether or not insured by Owner; and

2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by Owner during partial occupancy or use pursuant to Paragraph 15.04, after Substantial Completion pursuant to Paragraph 15.03, or after final payment pursuant to Paragraph 15.06.

C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 6.06.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against Contractor, Subcontractors, or Engineer, or the officers, directors, members, partners, employees, agents, consultants, or subcontractors of each and any of them.

D. Contractor shall be responsible for assuring that the agreement under which a Subcontractor

performs a portion of the Work contains provisions whereby the Subcontractor waives all rights against Owner, Contractor, all individuals or entities identified in the Supplementary Conditions as insureds, the Engineer and its consultants, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by builder's risk insurance and any other property insurance applicable to the Work.

6.07 *Receipt and Application of Property Insurance Proceeds*

A. Any insured loss under the builder's risk and other policies of insurance required by Paragraph 6.05 will be adjusted and settled with the named insured that purchased the policy. Such named insured shall act as fiduciary for the other insureds, and give notice to such other insureds that adjustment and settlement of a claim is in progress. Any other insured may state its position regarding a claim for insured loss in writing within 15 days after notice of such claim.

B. Proceeds for such insured losses may be made payable by the insurer either jointly to multiple insureds, or to the named insured that purchased the policy in its own right and as fiduciary for other insureds, subject to the requirements of any applicable mortgage clause. A named insured receiving insurance proceeds under the builder's risk and other policies of insurance required by Paragraph 6.05 shall distribute such proceeds in accordance with such agreement as the parties in interest may reach, or as otherwise required under the dispute resolution provisions of this Contract or applicable Laws and Regulations.

C. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the money so received applied on account thereof, and the Work and the cost thereof covered by Change Order, if needed.

ARTICLE 7 – CONTRACTOR'S RESPONSIBILITIES

7.01 *Supervision and Superintendence*

A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction.

B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

7.02 *Labor; Working Hours*

A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the Site.

B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours, Monday through Friday. Contractor will not perform Work on a Saturday, Sunday, or any legal holiday. Contractor

may perform Work outside regular working hours or on Saturdays, Sundays, or legal holidays only with Owner's written consent, which will not be unreasonably withheld.

7.03 *Services, Materials, and Equipment*

A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start up, and completion of the Work, whether or not such items are specifically called for in the Contract Documents.

B. All materials and equipment incorporated into the Work shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications shall expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.

C. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

7.04 *"Or Equals"*

A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the Contract Price has been based upon Contractor furnishing such item as specified. The specification or description of such an item is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or equal" item is permitted, Contractor may request that Engineer authorize the use of other items of material or equipment, or items from other proposed suppliers under the circumstances described below.

1. If Engineer in its sole discretion determines that an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Engineer shall deem it an "or equal" item. For the purposes of this paragraph, a proposed item of material or equipment will be considered functionally equal to an item so named if:

a. in the exercise of reasonable judgment Engineer determines that:

1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;

2) it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole;

3) it has a proven record of performance and availability of responsive service; and

4) it is not objectionable to Owner.

b. Contractor certifies that, if approved and incorporated into the Work:

1) there will be no increase in cost to the Owner or increase in Contract Times; and

2) it will conform substantially to the detailed requirements of the item named in the Contract Documents.

B. *Contractor's Expense*: Contractor shall provide all data in support of any proposed "or equal" item at Contractor's expense.

C. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each "or-equal" request. Engineer may require Contractor to furnish additional data about the proposed "or-equal" item. Engineer will be the sole judge of acceptability. No "or-equal" item will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an "or-equal", which will be evidenced by an approved Shop Drawing or other written communication. Engineer will advise Contractor in writing of any negative determination.

D. *Effect of Engineer's Determination*: Neither approval nor denial of an "or-equal" request shall result in any change in Contract Price. The Engineer's denial of an "or-equal" request shall be final and binding, and may not be reversed through an appeal under any provision of the Contract Documents.

E. *Treatment as a Substitution Request*: If Engineer determines that an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item, Contractor may request that Engineer considered the proposed item as a substitute pursuant to Paragraph 7.05.

7.05 *Substitutes*

A. Unless the specification or description of an item of material or equipment required to be furnished under the Contract Documents contains or is followed by words reading that no substitution is permitted, Contractor may request that Engineer authorize the use of other items of material or equipment under the circumstances described below. To the extent possible such requests shall be made before commencement of related construction at the Site.

1. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is functionally equivalent to that named and an acceptable substitute therefor. Engineer will not accept requests for review of proposed substitute items of material or equipment from anyone other than Contractor.

2. The requirements for review by Engineer will be as set forth in Paragraph 7.05.B, as supplemented by the Specifications, and as Engineer may decide is appropriate under the circumstances.

3. Contractor shall make written application to Engineer for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application:

a. shall certify that the proposed substitute item will:

1) perform adequately the functions and achieve the results called for by the general design,

2) be similar in substance to that specified, and

3) be suited to the same use as that specified.

b. will state:

1) the extent, if any, to which the use of the proposed substitute item will necessitate a change in Contract Times,

2) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item, and

3) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty.

c. will identify:

1) all variations of the proposed substitute item from that specified, and

2) available engineering, sales, maintenance, repair, and replacement services.

d. shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including but not limited to changes in Contract Price, shared savings, costs of redesign, and claims of other contractors affected by any resulting change.

B. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each substitute request, and to obtain comments and direction from Owner. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No substitute will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an acceptable substitute. Engineer's determination will be evidenced by a Field Order or a proposed Change Order accounting for the substitution itself and all related impacts, including changes in Contract Price or Contract Times. Engineer will advise Contractor in writing of any negative determination.

C. *Special Guarantee*: Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.

D. *Reimbursement of Engineer's Cost*: Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.

E. *Contractor's Expense*: Contractor shall provide all data in support of any proposed substitute at Contractor's expense.

F. *Effect of Engineer's Determination*: If Engineer approves the substitution request, Contractor shall execute the proposed Change Order and proceed with the substitution. The Engineer's denial of a substitution request shall be final and binding, and may not be reversed through an appeal under any provision of the Contract Documents. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.05.D, by timely submittal of a Change Proposal.

7.06 *Concerning Subcontractors, Suppliers, and Others*

A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner.

B. Contractor shall retain specific Subcontractors, Suppliers, or other individuals or entities for the performance of designated parts of the Work if required by the Contract to do so.

C. Subsequent to the submittal of Contractor's Bid or final negotiation of the terms of the Contract, Owner may not require Contractor to retain any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against which Contractor has reasonable objection.

D. Prior to entry into any binding subcontract or purchase order, Contractor shall submit to Owner the identity of the proposed Subcontractor or Supplier (unless Owner has already deemed such proposed Subcontractor or Supplier acceptable, during the bidding process or otherwise). Such proposed Subcontractor or Supplier shall be deemed acceptable to Owner unless Owner raises a substantive, reasonable objection within five days.

E. Owner may require the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work. Owner also may require Contractor to retain specific replacements; provided, however, that Owner may not require a replacement to which Contractor has a reasonable objection. If Contractor has submitted the identity of certain Subcontractors, Suppliers, or other individuals or entities for acceptance by Owner, and Owner has accepted it (either in writing or by failing to make written objection thereto), then Owner may subsequently revoke the acceptance of any such Subcontractor, Supplier, or other individual or entity so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity.

F. If Owner requires the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, or both, with respect to the replacement; and Contractor shall initiate a Change Proposal for such adjustment within 30 days of Owner's requirement of replacement.

G. No acceptance by Owner of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of the right of Owner to the completion of the Work in accordance with the Contract Documents.

H. On a monthly basis Contractor shall submit to Engineer a complete list of all Subcontractors and Suppliers having a direct contract with Contractor, and of all other Subcontractors and Suppliers known to Contractor at the time of submittal.

I. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions.

J. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors, Suppliers, and all other individuals or entities performing or furnishing any of the Work.

K. Contractor shall restrict all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed herein.

L. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.

M. All Work performed for Contractor by a Subcontractor or Supplier shall be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer.

N. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor on account of Work performed for Contractor by the particular Subcontractor or Supplier.

O. Nothing in the Contract Documents:

1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier, or other individual or entity; nor
2. shall create any obligation on the part of Owner or Engineer to pay or to see to the payment of any money due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.

7.07 *Patent Fees and Royalties*

A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Engineer, its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by Owner in the Contract Documents.

B. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the

performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.

C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

7.08 *Permits*

A. Unless otherwise provided in the Contract Documents, Contractor shall obtain and pay for all construction permits and licenses. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of the submission of Contractor's Bid (or when Contractor became bound under a negotiated contract). Owner shall pay all charges of utility owners for connections for providing permanent service to the Work

7.09 *Taxes*

A. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

7.10 *Laws and Regulations*

A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.

B. If Contractor performs any Work or takes any other action knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all resulting costs and losses, and shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work or other action. It shall not be Contractor's responsibility to make certain that the Work described in the Contract Documents is in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.

C. Owner or Contractor may give notice to the other party of any changes after the submission of Contractor's Bid (or after the date when Contractor became bound under a negotiated contract) in Laws or Regulations having an effect on the cost or time of performance of the

Work, including but not limited to changes in Laws or Regulations having an effect on procuring permits and on sales, use, value-added, consumption, and other similar taxes. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times resulting from such changes, then within 30 days of such notice Contractor may submit a Change Proposal, or Owner may initiate a Claim.

7.11 *Record Documents*

A. Contractor shall maintain in a safe place at the Site one printed record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, written interpretations and clarifications, and approved Shop Drawings. Contractor shall keep such record documents in good order and annotate them to show changes made during construction. These record documents, together with all approved Samples, will be available to Engineer for reference. Upon completion of the Work, Contractor shall deliver these record documents to Engineer.

7.12 *Safety and Protection*

A. Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:

1. all persons on the Site or who may be affected by the Work;
2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and
3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, other work in progress, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.

B. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify Owner; the owners of adjacent property, Underground Facilities, and other utilities; and other contractors and utility owners performing work at or adjacent to the Site, when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.

C. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. The Supplementary Conditions identify any Owner's safety programs that are applicable to the Work.

D. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.

E. All damage, injury, or loss to any property referred to in Paragraph 7.12.A.2 or 7.12.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor at its expense (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).

F. Contractor's duties and responsibilities for safety and protection shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 15.06.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

G. Contractor's duties and responsibilities for safety and protection shall resume whenever Contractor or any Subcontractor or Supplier returns to the Site to fulfill warranty or correction obligations, or to conduct other tasks arising from the Contract Documents.

7.13 *Safety Representative*

A. Contractor shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

7.14 *Hazard Communication Programs*

A. Contractor shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

7.15 *Emergencies*

A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent threatened damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If Engineer determines that a change in the Contract Documents is required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.

7.16 *Shop Drawings, Samples, and Other Submittals*

A. *Shop Drawing and Sample Submittal Requirements*:

1. Before submitting a Shop Drawing or Sample, Contractor shall have:

a. reviewed and coordinated the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;

b. determined and verified all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;

c. determined and verified the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and

d. determined and verified all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.

2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review of that submittal, and that Contractor approves the submittal.

3. With each submittal, Contractor shall give Engineer specific written notice of any variations that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be set forth in a written communication separate from the Shop Drawings or Sample submittal; and, in addition, in the case of Shop Drawings by a specific notation made on each Shop Drawing submitted to Engineer for review and approval of each such variation.

B. *Submittal Procedures for Shop Drawings and Samples*: Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals. Each submittal will be identified as Engineer may require.

1. *Shop Drawings*:

a. Contractor shall submit the number of copies required in the Specifications.

b. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide and to enable Engineer to review the information for the limited purposes required by Paragraph 7.16.D.

2. *Samples*:

a. Contractor shall submit the number of Samples required in the Specifications.

b. Contractor shall clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the submittal for the limited purposes required by Paragraph 7.16.D.

3. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.

C. *Other Submittals*: Contractor shall submit other submittals to Engineer in accordance with the accepted Schedule of Submittals, and pursuant to the applicable terms of the Specifications.

D. *Engineer's Review*:

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with

the Schedule of Submittals acceptable to Engineer. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.

2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction or to safety precautions or programs incident thereto.

3. Engineer's review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

4. Engineer's review and approval of a Shop Drawing or Sample shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 7.16.A.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer will document any such approved variation from the requirements of the Contract Documents in a Field Order.

5. Engineer's review and approval of a Shop Drawing or Sample shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 7.16.A and B.

6. Engineer's review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, shall not, under any circumstances, change the Contract Times or Contract Price, unless such changes are included in a Change Order.

7. Neither Engineer's receipt, review, acceptance or approval of a Shop Drawing, Sample, or other submittal shall result in such item becoming a Contract Document.

8. Contractor shall perform the Work in compliance with the requirements and commitments set forth in approved Shop Drawings and Samples, subject to the provisions of Paragraph 7.16.D.4.

E. *Resubmittal Procedures*:

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals.

2. Contractor shall furnish required submittals with sufficient information and accuracy to obtain required approval of an item with no more than three submittals. Engineer will record Engineer's time for reviewing a fourth or subsequent submittal of a Shop Drawings, sample, or other item requiring approval, and Contractor shall be responsible for Engineer's charges to Owner for such time. Owner may impose a set- off against payments due to Contractor to secure reimbursement for such charges.

3. If Contractor requests a change of a previously approved submittal item, Contractor shall be responsible for Engineer's charges to Owner for its review time, and Owner may

impose a set-off against payments due to Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.

7.17 *Contractor's General Warranty and Guarantee*

A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective for a period of one year. The pump supplier shall provide a two-year warranty on the Pumps, Electrical Control Panel and any supplied appurtenances with the pump package that shall be transferred to the City. Engineer and its officers, directors, members, partners, employees, agents, consultants, and subcontractors shall be entitled to rely on Contractor's warranty and guarantee.

B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:

1. abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or

2. normal wear and tear under normal usage.

C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:

1. observations by Engineer;

2. recommendation by Engineer or payment by Owner of any progress or final payment;

3. the issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;

4. use or occupancy of the Work or any part thereof by Owner;

5. any review and approval of a Shop Drawing or Sample submittal;

6. the issuance of a notice of acceptability by Engineer;

7. any inspection, test, or approval by others; or

8. any correction of defective Work by Owner.

D. If the Contract requires the Contractor to accept the assignment of a contract entered into by Owner, then the specific warranties, guarantees, and correction obligations contained in the assigned contract shall govern with respect to Contractor's performance obligations to Owner for the Work described in the assigned contract.

7.18 *Indemnification*

A. To the fullest extent permitted by Laws and Regulations, and in addition to any other obligations of Contractor under the Contract or otherwise, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided

that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable.

B. In any and all claims against Owner or Engineer or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 7.18.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

C. The indemnification obligations of Contractor under Paragraph 7.18.A shall not extend to the liability of Engineer and Engineer's officers, directors, members, partners, employees, agents, consultants and subcontractors arising out of:

1. the preparation or approval of, or the failure to prepare or approve maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or

2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

7.19 *Delegation of Professional Design Services*

A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable Laws and Regulations.

B. If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.

C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.

D. Pursuant to this paragraph, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance

and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 7.16.D.1.

E. Contractor shall not be responsible for the adequacy of the performance or design criteria specified by Owner or Engineer.

ARTICLE 8 – OTHER WORK AT THE SITE

8.01 *Other Work*

A. In addition to and apart from the Work under the Contract Documents, the Owner may perform other work at or adjacent to the Site. Such other work may be performed by Owner's employees, or through contracts between the Owner and third parties. Owner may also arrange to have third-party utility owners perform work on their utilities and facilities at or adjacent to the Site.

B. If Owner performs other work at or adjacent to the Site with Owner's employees, or through contracts for such other work, then Owner shall give Contractor written notice thereof prior to starting any such other work. If Owner has advance information regarding the start of any utility work at or adjacent to the Site, Owner shall provide such information to Contractor.

C. Contractor shall afford each other contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected.

D. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 8, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

8.02 *Coordination*

A. If Owner intends to contract with others for the performance of other work at or adjacent to the Site, to perform other work at or adjacent to the Site with Owner's employees, or to arrange to have utility owners perform work at or adjacent to the Site, the following will be set forth in the Supplementary Conditions or provided to Contractor prior to the start of any such other work:

1. the identity of the individual or entity that will have authority and responsibility for coordination of the activities among the various contractors;

2. an itemization of the specific matters to be covered by such authority and responsibility; and

3. the extent of such authority and responsibilities.

B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

8.03 *Legal Relationships*

A. If, in the course of performing other work at or adjacent to the Site for Owner, the Owner's employees, any other contractor working for Owner, or any utility owner for whom the Owner is responsible causes damage to the Work or to the property of Contractor or its Subcontractors, or delays, disrupts, interferes with, or increases the scope or cost of the performance of the Work, through actions or inaction, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both. Contractor must submit any Change Proposal seeking an equitable adjustment in the Contract Price or the Contract Times under this paragraph within 30 days of the damaging, delaying, disrupting, or interfering event. The entitlement to, and extent of, any such equitable adjustment shall take into account information (if any) regarding such other work that was provided to Contractor in the Contract Documents prior to the submittal of the Bid or the final negotiation of the terms of the Contract. When applicable, any such equitable adjustment in Contract Price shall be conditioned on Contractor assigning to Owner all Contractor's rights against such other contractor or utility owner with respect to the damage, delay, disruption, or interference that is the subject of the adjustment. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.

B. Contractor shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of Owner, any other contractor, or any utility owner performing other work at or adjacent to the Site. If Contractor fails to take such measures and as a result damages, delays, disrupts, or interferes with the work of any such other contractor or utility owner, then Owner may impose a set-off against payments due to Contractor, and assign to such other contractor or utility owner the Owner's contractual rights against Contractor with respect to the breach of the obligations set forth in this paragraph.

C. When Owner is performing other work at or adjacent to the Site with Owner's employees, Contractor shall be liable to Owner for damage to such other work, and for the reasonable direct delay, disruption, and interference costs incurred by Owner as a result of Contractor's failure to take reasonable and customary measures with respect to Owner's other work. In response to such damage, delay, disruption, or interference, Owner may impose a set-off against payments due to Contractor.

D. If Contractor damages, delays, disrupts, or interferes with the work of any other contractor, or any utility owner performing other work at or adjacent to the Site, through Contractor's failure to take reasonable and customary measures to avoid such impacts, or if any claim arising out of Contractor's actions, inactions, or negligence in performance of the Work at or adjacent to the Site is made by any such other contractor or utility owner against Contractor, Owner, or Engineer, then Contractor shall (1) promptly attempt to settle the claim as to all

parties through negotiations with such other contractor or utility owner, or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law, and (2) indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claims, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such damage, delay, disruption, or interference.

ARTICLE 9 – OWNER'S RESPONSIBILITIES

9.01 *Communications to Contractor*

A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

9.02 *Replacement of Engineer*

A. Owner may at its discretion appoint an engineer to replace Engineer, provided Contractor makes no reasonable objection to the replacement engineer. The replacement engineer's status under the Contract Documents shall be that of the former Engineer.

9.03 *Furnish Data*

A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

9.04 *Pay When Due*

A. Owner shall make payments to Contractor when they are due as provided in the Agreement.

9.05 *Lands and Easements; Reports, Tests, and Drawings*

A. Owner's duties with respect to providing lands and easements are set forth in Paragraph 5.01.

B. Owner's duties with respect to providing engineering surveys to establish reference points are set forth in Paragraph 4.03.

C. Article 5 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of conditions at the Site, and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

9.06 *Insurance*

A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 6.

9.07 *Change Orders*

A. Owner's responsibilities with respect to Change Orders are set forth in Article 11.

9.08 *Inspections, Tests, and Approvals*

A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 14.02.B.

9.09 *Limitations on Owner's Responsibilities*

A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

9.10 *Undisclosed Hazardous Environmental Condition*

A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 5.06.

9.11 *Evidence of Financial Arrangements*

A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract Documents (including obligations under proposed changes in the Work).

9.12 *Safety Programs*

A. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed.

B. Owner shall furnish copies of any applicable Owner safety programs to Contractor.

ARTICLE 10 – ENGINEER'S STATUS DURING CONSTRUCTION

10.01 *Owner's Representative*

A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract.

10.02 *Visits to Site*

A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.

B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 10.08. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and

Regulations applicable to the performance of the Work.

10.03 *Project Representative*

A. If Owner and Engineer have agreed that Engineer will furnish a Resident Project Representative to represent Engineer at the Site and assist Engineer in observing the progress and quality of the Work, then the authority and responsibilities of any such Resident Project Representative will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in Paragraph 10.08. If Owner designates another representative or agent to represent Owner at the Site who is not Engineer's consultant, agent, or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.

10.04 *Rejecting Defective Work*

A. Engineer has the authority to reject Work in accordance with Article 14.

10.05 *Shop Drawings, Change Orders and Payments*

A. Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, are set forth in Paragraph 7.16.

B. Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, are set forth in Paragraph 7.19.

C. Engineer's authority as to Change Orders is set forth in Article 11.

D. Engineer's authority as to Applications for Payment is set forth in Article 15.

10.06 *Determinations for Unit Price Work*

A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor as set forth in Paragraph 13.03.

10.07 *Decisions on Requirements of Contract Documents and Acceptability of Work*

A. Engineer will render decisions regarding the requirements of the Contract Documents, and judge the acceptability of the Work, pursuant to the specific procedures set forth herein for initial interpretations, Change Proposals, and acceptance of the Work. In rendering such decisions and judgments, Engineer will not show partiality to Owner or Contractor, and will not be liable to Owner, Contractor, or others in connection with any proceedings, interpretations, decisions, or judgments conducted or rendered in good faith.

10.08 *Limitations on Engineer's Authority and Responsibilities*

A. Neither Engineer's authority or responsibility under this Article 10 or under any other provision of the Contract, nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer, shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the

safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.

D. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 15.06.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals, that the results certified indicate compliance with the Contract Documents.

E. The limitations upon authority and responsibility set forth in this Paragraph 10.08 shall also apply to the Resident Project Representative, if any.

10.09 *Compliance with Safety Program*

A. While at the Site, Engineer's employees and representatives will comply with the specific applicable requirements of Owner's and Contractor's safety programs (if any) of which Engineer has been informed.

ARTICLE 11 – AMENDING THE CONTRACT DOCUMENTS; CHANGES IN THE WORK

11.01 *Amending and Supplementing Contract Documents*

A. The Contract Documents may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.

1. *Change Orders*:

a. If an amendment or supplement to the Contract Documents includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order. A Change Order also may be used to establish amendments and supplements of the Contract Documents that do not affect the Contract Price or Contract Times.

b. Owner and Contractor may amend those terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, without the recommendation of the Engineer. Such an amendment shall be set forth in a Change Order.

2. *Work Change Directives*: A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the modification ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order, following negotiations by the parties as to the Work Change Directive's effect, if any, on the Contract Price and Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Contract Documents governing adjustments, expressly including Paragraph 11.04 regarding change of

Contract Price. Contractor must submit any Change Proposal seeking an adjustment of the Contract Price or the Contract Times, or both, no later than 30 days after the completion of the Work set out in the Work Change Directive. Owner must submit any Claim seeking an adjustment of the Contract Price or the Contract Times, or both, no later than 60 days after issuance of the Work Change Directive.

3. *Field Orders*: Engineer may authorize minor changes in the Work if the changes do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Such changes will be accomplished by a Field Order and will be binding on Owner and also on Contractor, which shall perform the Work involved promptly. If Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, then before proceeding with the Work at issue, Contractor shall submit a Change Proposal as provided herein.

11.02 *Owner-Authorized Changes in the Work*

A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work. Such changes shall be supported by Engineer's recommendation, to the extent the change involves the design (as set forth in the Drawings, Specifications, or otherwise), or other engineering or technical matters. Such changes may be accomplished by a Change Order, if Owner and Contractor have agreed as to the effect, if any, of the changes on Contract Times or Contract Price; or by a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved; or, in the case of a deletion in the Work, promptly cease construction activities with respect to such deleted Work. Added or revised Work shall be performed under the applicable conditions of the Contract Documents. Nothing in this paragraph shall obligate Contractor to undertake work that Contractor reasonably concludes cannot be performed in a manner consistent with Contractor's safety obligations under the Contract Documents or Laws and Regulations.

11.03 *Unauthorized Changes in the Work*

A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents, as amended, modified, or supplemented, except in the case of an emergency as provided in Paragraph 7.15 or in the case of uncovering Work as provided in Paragraph 14.05.

11.04 *Change of Contract Price*

A. The Contract Price may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Price shall comply with the provisions of Paragraph 11.06. Any Claim for an adjustment of Contract Price shall comply with the provisions of Article 12.

B. An adjustment in the Contract Price will be determined as follows:

1. where the Work involved is covered by unit prices contained in the Contract Documents, then by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 13.03); or

2. where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (which may include an allowance for

overhead and profit not necessarily in accordance with Paragraph 11.04.C.2); or

3. where the Work involved is not covered by unit prices contained in the Contract Documents and the parties do not reach mutual agreement to a lump sum, then on the basis of the Cost of the Work (determined as provided in Paragraph 13.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 11.04.C).

C. *Contractor's Fee*: When applicable, the Contractor's fee for overhead and profit shall be determined as follows:

1. a mutually acceptable fixed fee; or

2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:

a. for costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2, the Contractor's fee shall be 15 percent;

b. for costs incurred under Paragraph 13.01.B.3, the Contractor's fee shall be five percent;

c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 11.04.C.2.a and 11.04.C.2.b is that the Contractor's fee shall be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.A.1 and 13.01.A.2 by the Subcontractor that actually performs the Work, at whatever tier, and (2) with respect to Contractor itself and to any Subcontractors of a tier higher than that of the Subcontractor that actually performs the Work, a fee of five percent of the amount (fee plus underlying costs incurred) attributable to the next lower tier Subcontractor; provided, however, that for any such subcontracted work the maximum total fee to be paid by Owner shall be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the work;

d. no fee shall be payable on the basis of costs itemized under Paragraphs 13.01.B.4, 13.01.B.5, and 13.01.C;

e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and

f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 11.04.C.2.a through 11.04.C.2.e, inclusive.

11.05 *Change of Contract Times*

A. The Contract Times may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Times shall comply with the provisions of Paragraph 11.06. Any Claim for an adjustment in the Contract Times shall comply with the provisions of Article 12.

B. An adjustment of the Contract Times shall be subject to the limitations set forth in Paragraph 4.05, concerning delays in Contractor's progress.

11.06 *Change Proposals*

A. Contractor shall submit a Change Proposal to Engineer to request an adjustment in the Contract Times or Contract Price; appeal an initial decision by Engineer concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; contest a set-off against payment due; or seek other relief under the Contract. The Change Proposal shall specify any proposed change in Contract Times or Contract Price, or both, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents.

1. *Procedures*: Contractor shall submit each Change Proposal to Engineer promptly (but in no event later than 30 days) after the start of the event giving rise thereto, or after such initial decision. The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the Engineer and Owner within 15 days after the submittal of the Change Proposal. The supporting data shall be accompanied by a written statement that the supporting data are accurate and complete, and that any requested time or price adjustment is the entire adjustment to which Contractor believes it is entitled as a result of said event. Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal.

2. *Engineer's Action*: Engineer will review each Change Proposal and, within 30 days after receipt of the Contractor's supporting data, either deny the Change Proposal in whole, approve it in whole, or deny it in part and approve it in part. Such actions shall be in writing, with a copy provided to Owner and Contractor. If Engineer does not take action on the Change Proposal within 30 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of Engineer's inaction the Change Proposal is deemed denied, thereby commencing the time for appeal of the denial under Article 12.

3. *Binding Decision*: Engineer's decision will be final and binding upon Owner and Contractor, unless Owner or Contractor appeals the decision by filing a Claim under Article 12.

B. *Resolution of Certain Change Proposals*: If the Change Proposal does not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters, then Engineer will notify the parties that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice shall be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.

11.07 *Execution of Change Orders*

A. Owner and Contractor shall execute appropriate Change Orders covering:

1. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive;

2. changes in Contract Price resulting from an Owner set-off, unless Contractor has duly contested such set-off;

3. changes in the Work which are: (a) ordered by Owner pursuant to Paragraph 11.02, (b) required because of Owner's acceptance of defective Work under Paragraph 14.04 or Owner's correction of defective Work under Paragraph 14.07, or (c) agreed to by the parties, subject to the need for Engineer's recommendation if the change in the Work involves the design (as set forth in the Drawings, Specifications, or otherwise), or other engineering or technical matters; and

4. changes in the Contract Price or Contract Times, or other changes, which embody the substance of any final and binding results under Paragraph 11.06, or Article 12.

B. If Owner or Contractor refuses to execute a Change Order that is required to be executed under the terms of this Paragraph 11.07, it shall be deemed to be of full force and effect, as if fully executed.

11.08 *Notification to Surety*

A. If the provisions of any bond require notice to be given to a surety of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times), the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

ARTICLE 12 – CLAIMS

12.01 *Claims*

A. *Claims Process*: The following disputes between Owner and Contractor shall be submitted to the Claims process set forth in this Article:

1. Appeals by Owner or Contractor of Engineer's decisions regarding Change Proposals;

2. Owner demands for adjustments in the Contract Price or Contract Times, or other relief under the Contract Documents; and

3. Disputes that Engineer has been unable to address because they do not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters.

B. *Submittal of Claim*: The party submitting a Claim shall deliver it directly to the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto; in the case of appeals regarding Change Proposals within 30 days of the decision under appeal. The party submitting the Claim shall also furnish a copy to the Engineer, for its information only. The responsibility to substantiate a Claim shall rest with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, or both, Contractor shall certify that the Claim is made in good faith, that the supporting data are accurate and complete, and that to the best of Contractor's knowledge and belief the amount of time or money requested accurately reflects the full amount to which Contractor is entitled.

C. *Review and Resolution*: The party receiving a Claim shall review it thoroughly, giving full consideration to its merits. The two parties shall seek to resolve the Claim through the exchange of information and direct negotiations. The parties may extend the time for

resolving the Claim by mutual agreement. All actions taken on a Claim shall be stated in writing and submitted to the other party, with a copy to Engineer.

D. *Mediation*:

1. At any time after initiation of a Claim, Owner and Contractor may mutually agree to mediation of the underlying dispute. The agreement to mediate shall stay the Claim submittal and response process.

2. If Owner and Contractor agree to mediation, then after 60 days from such agreement, either Owner or Contractor may unilaterally terminate the mediation process, and the Claim submittal and decision process shall resume as of the date of the termination. If the mediation proceeds but is unsuccessful in resolving the dispute, the Claim submittal and decision process shall resume as of the date of the conclusion of the mediation, as determined by the mediator.

3. Owner and Contractor shall each pay one-half of the mediator's fees and costs.

E. *Partial Approval*: If the party receiving a Claim approves the Claim in part and denies it in part, such action shall be final and binding unless within 30 days of such action the other party invokes the procedure set forth in Article 17 for final resolution of disputes.

F. *Denial of Claim*: If efforts to resolve a Claim are not successful, the party receiving the Claim may deny it by giving written notice of denial to the other party. If the receiving party does not take action on the Claim within 90 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of the inaction, the Claim is deemed denied, thereby commencing the time for appeal of the denial. A denial of the Claim shall be final and binding unless within 30 days of the denial the other party invokes the procedure set forth in Article 17 for the final resolution of disputes.

G. *Final and Binding Results*: If the parties reach a mutual agreement regarding a Claim, whether through approval of the Claim, direct negotiations, mediation, or otherwise; or if a Claim is approved in part and denied in part, or denied in full, and such actions become final and binding; then the results of the agreement or action on the Claim shall be incorporated in a Change Order to the extent they affect the Contract, including the Work, the Contract Times, or the Contract Price.

ARTICLE 13 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

13.01 *Cost of the Work*

A. *Purposes for Determination of Cost of the Work*: The term Cost of the Work means the sum of all costs necessary for the proper performance of the Work at issue, as further defined below. The provisions of this Paragraph 13.01 are used for two distinct purposes:

1. To determine Cost of the Work when Cost of the Work is a component of the Contract Price, under cost-plus-fee, time-and-materials, or other cost-based terms; or

2. To determine the value of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price. When the value of any such adjustment is determined on the basis of Cost of the Work, Contractor is entitled only to those additional or incremental costs required because of the change in the Work or because of the event

giving rise to the adjustment.

B. *Costs Included*: Except as otherwise may be agreed to in writing by Owner, costs included in the Cost of the Work shall be in amounts no higher than those prevailing in the locality of the Project, shall not include any of the costs itemized in Paragraph 13.01.C, and shall include only the following items:

1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, and vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by Owner.

2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates, and refunds and returns from sale of surplus materials and equipment shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.

3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 13.01.

4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.

5. Supplemental costs including the following:
   a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.
   b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.
   c. Rentals of all construction equipment and machinery, and the parts thereof,

whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.

d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.

e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with Paragraph 6.05), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee.

g. The cost of utilities, fuel, and sanitary facilities at the Site.

h. Minor expenses such as communication service at the Site, express and courier services, and similar petty cash items in connection with the Work.

i. The costs of premiums for all bonds and insurance that Contractor is required by the Contract Documents to purchase and maintain.

C. *Costs Excluded*: The term Cost of the Work shall not include any of the following items:

1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expediters, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 13.01.B.1 or specifically covered by Paragraph 13.01.B.4. The payroll costs and other compensation excluded here are to be considered administrative costs covered by the Contractor's fee.

2. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.

3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.

4. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable,

including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.

5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraph 13.01.B.

D. *Contractor's Fee*: When the Work as a whole is performed on the basis of cost-plus, Contractor's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 11.04.C.

E. *Documentation*: Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

13.02 *Allowances*

A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.

B. *Cash Allowances*: Contractor agrees that:

1. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and

2. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.

C. *Contingency Allowance*: Contractor agrees that a contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.

D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

13.03 *Unit Price Work*

A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.

B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Payments to Contractor for Unit Price Work will be based on actual quantities.

C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.

D. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, subject to the provisions of the following paragraph.

E. Within 30 days of Engineer's written decision under the preceding paragraph, Contractor may submit a Change Proposal, or Owner may file a Claim, seeking an adjustment in the Contract Price if:

1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement;

2. there is no corresponding adjustment with respect to any other item of Work; and

3. Contractor believes that it is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price, and the parties are unable to agree as to the amount of any such increase or decrease.

ARTICLE 14 – TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

14.01 *Access to Work*

A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and authorities having jurisdiction will have access to the Site and the Work at reasonable times for their observation, inspection, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's safety procedures and programs so that they may comply therewith as applicable.

14.02 *Tests, Inspections, and Approvals*

A. Contractor shall give Engineer timely notice of readiness of the Work (or specific parts thereof) for all required inspections and tests, and shall cooperate with inspection and testing personnel to facilitate required inspections and tests.

B. Owner shall retain and pay for the services of an independent inspector, testing laboratory, or other qualified individual or entity to perform all inspections and tests expressly required by the Contract Documents to be furnished and paid for by Owner, except that costs incurred in connection with tests or inspections of covered Work shall be governed by the provisions of Paragraph 14.05.

C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.

D. Contractor shall be responsible for arranging, obtaining, and paying for all inspections and tests required:

1. by the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to Owner;
2. to attain Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work;
3. by manufacturers of equipment furnished under the Contract Documents;
4. for testing, adjusting, and balancing of mechanical, electrical, and other equipment to be incorporated into the Work; and
5. for acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work.

Such inspections and tests shall be performed by independent inspectors, testing laboratories, or other qualified individuals or entities acceptable to Owner and Engineer.

E. If the Contract Documents require the Work (or part thereof) to be approved by Owner, Engineer, or another designated individual or entity, then Contractor shall assume full responsibility for arranging and obtaining such approvals.

F. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation. Such uncovering shall be at Contractor's expense unless Contractor had given Engineer timely notice of Contractor's intention to cover the same and Engineer had not acted with reasonable promptness in response to such notice.

14.03 *Defective Work*

A. *Contractor's Obligation*: It is Contractor's obligation to assure that the Work is not defective for a period of one year. The pump supplier shall provide a two-year warranty on the Pumps, Electrical Control Panel and any supplied appurtenances with the pump package that shall be transferred to the City.

B. *Engineer's Authority*: Engineer has the authority to determine whether Work is defective, and to reject defective Work.

C. *Notice of Defects*: Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor.

D. *Correction, or Removal and Replacement*: Promptly after receipt of written notice of defective Work, Contractor shall correct all such defective Work, whether or not fabricated, installed, or completed, or, if Engineer has rejected the defective Work, remove it from the Project and replace it with Work that is not defective.

E. *Preservation of Warranties*: When correcting defective Work, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

F. *Costs and Damages*: In addition to its correction, removal, and replacement obligations with respect to defective Work, Contractor shall pay all claims, costs, losses, and damages arising

out of or relating to defective Work, including but not limited to the cost of the inspection, testing, correction, removal, replacement, or reconstruction of such defective Work, fines levied against Owner by governmental authorities because the Work is defective, and the costs of repair or replacement of work of others resulting from defective Work. Prior to final payment, if Owner and Contractor are unable to agree as to the measure of such claims, costs, losses, and damages resulting from defective Work, then Owner may impose a reasonable set-off against payments due under Article 15.

14.04 *Acceptance of Defective Work*

A. If, instead of requiring correction or removal and replacement of defective Work, Owner prefers to accept it, Owner may do so (subject, if such acceptance occurs prior to final payment, to Engineer's confirmation that such acceptance is in general accord with the design intent and applicable engineering principles, and will not endanger public safety). Contractor shall pay all claims, costs, losses, and damages attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness), and for the diminished value of the Work to the extent not otherwise paid by Contractor. If any such acceptance occurs prior to final payment, the necessary revisions in the Contract Documents with respect to the Work shall be incorporated in a Change Order. If the parties are unable to agree as to the decrease in the Contract Price, reflecting the diminished value of Work so accepted, then Owner may impose a reasonable set-off against payments due under Article 15. If the acceptance of defective Work occurs after final payment, Contractor shall pay an appropriate amount to Owner.

14.05 *Uncovering Work*

A. Engineer has the authority to require additional inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed.

B. If any Work is covered contrary to the written request of Engineer, then Contractor shall, if requested by Engineer, uncover such Work for Engineer's observation, and then replace the covering, all at Contractor's expense.

C. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, then Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, and provide all necessary labor, material, and equipment.

1. If it is found that the uncovered Work is defective, Contractor shall be responsible for all claims, costs, losses, and damages arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and pending Contractor's full discharge of this responsibility the Owner shall be entitled to impose a reasonable set-off against payments due under Article 15.

2. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, then Contractor may submit a Change Proposal within 30 days of the

determination that the Work is not defective.

14.06 *Owner May Stop the Work*

A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, then Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work shall not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

14.07 *Owner May Correct Defective Work*

A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace rejected Work as required by Engineer, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, then Owner may, after seven days written notice to Contractor, correct or remedy any such deficiency.

B. In exercising the rights and remedies under this Paragraph 14.07, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this paragraph.

C. All claims, costs, losses, and damages incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 14.07 will be charged against Contractor as set- offs against payments due under Article 15. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.

D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 14.07.

ARTICLE 15 – PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD

15.01 *Progress Payments*

A. *Basis for Progress Payments*: The Schedule of Values established as provided in Article 2 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed during the pay period, as determined under the provisions of Paragraph 13.03. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period.

B. *Applications for Payments*:

1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens, and evidence that the materials and equipment are covered by appropriate property insurance, a warehouse bond, or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.
2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.
3. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

C. *Review of Applications*:

1. Engineer will, within 10 business days after receipt of each Application for Payment, including each resubmittal, either indicate in writing a recommendation of payment and present the Application to Owner, or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.
2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:
    a. the Work has progressed to the point indicated;
    b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 13.03, and any other qualifications stated in the recommendation); and
    c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.
3. By recommending any such payment Engineer will not thereby be deemed to have represented that:
    a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in

progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract; or

b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.

4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:

a. to supervise, direct, or control the Work, or

b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or

c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or

d. to make any examination to ascertain how or for what purposes Contractor has used the money paid on account of the Contract Price, or

e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.

5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 15.01.C.2.

6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer's opinion to protect Owner from loss because:

a. the Work is defective, requiring correction or replacement;

b. the Contract Price has been reduced by Change Orders;

c. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;

d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible; or

e. Engineer has actual knowledge of the occurrence of any of the events that would constitute a default by Contractor and therefore justify termination for cause under the Contract Documents.

D. *Payment Becomes Due*:

1. Thirty (30) days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended (subject to any Owner set-offs) will become due, and when due will be paid by Owner to Contractor.

E. *Reductions in Payment by Owner*:

1. In addition to any reductions in payment (set-offs) recommended by Engineer, Owner is entitled to impose a set-off against payment based on any of the following:

a. claims have been made against Owner on account of Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages on account of Contractor's conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;

b. Contractor has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Site;

c. Contractor has failed to provide and maintain required bonds or insurance;

d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible;

e. Owner has incurred extra charges or engineering costs related to submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to manufacturing or assembly facilities;

f. the Work is defective, requiring correction or replacement;

g. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;

h. the Contract Price has been reduced by Change Orders;

i. an event that would constitute a default by Contractor and therefore justify a termination for cause has occurred;

j. liquidated damages have accrued as a result of Contractor's failure to achieve Milestones, Substantial Completion, or final completion of the Work;

k. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;

l. there are other items entitling Owner to a set off against the amount recommended.

2. If Owner imposes any set-off against payment, whether based on its own knowledge or on the written recommendations of Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action

and the specific amount of the reduction, and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, if Contractor remedies the reasons for such action. The reduction imposed shall be binding on Contractor unless it duly submits a Change Proposal contesting the reduction.

3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 15.01.C.1 and subject to interest as provided in the Agreement.

15.02 *Contractor's Warranty of Title*

A. Contractor warrants and guarantees that title to all Work, materials, and equipment furnished under the Contract will pass to Owner free and clear of (1) all Liens and other title defects, and (2) all patent, licensing, copyright, or royalty obligations, no later than seven days after the time of payment by Owner.

15.03 *Substantial Completion*

A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete and request that Engineer issue a certificate of Substantial Completion. Contractor shall at the same time submit to Owner and Engineer an initial draft of punch list items to be completed or corrected before final payment.

B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.

C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a preliminary certificate of Substantial Completion which shall fix the date of Substantial Completion. Engineer shall attach to the certificate a punch list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the preliminary certificate during which to make written objection to Engineer as to any provisions of the certificate or attached punch list. If, after considering the objections to the provisions of the preliminary certificate, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the preliminary certificate to Owner, notify Contractor in writing that the Work is not substantially complete, stating the reasons therefor. If Owner does not object to the provisions of the certificate, or if despite consideration of Owner's objections Engineer concludes that the Work is substantially complete, then Engineer will, within said 14 days, execute and deliver to Owner and Contractor a final certificate of Substantial Completion (with a revised punch list of items to be completed or corrected) reflecting such changes from the preliminary certificate as Engineer believes justified after consideration of any objections from Owner.

D. At the time of receipt of the preliminary certificate of Substantial Completion, Owner and Contractor will confer regarding Owner's use or occupancy of the Work following Substantial Completion, review the builder's risk insurance policy with respect to the end of the builder's risk coverage, and confirm the transition to coverage of the Work under a permanent property insurance policy held by Owner. Unless Owner and Contractor agree otherwise in writing, Owner shall bear responsibility for security, operation, protection of the Work, property insurance, maintenance, heat, and utilities upon Owner's use or occupancy of the Work.

E. After Substantial Completion the Contractor shall promptly begin work on the punch list of items to be completed or corrected prior to final payment. In appropriate cases Contractor may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.

F. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and

complete or correct items on the punch list.

15.04 *Partial Use or Occupancy*

A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:

1. At any time Owner may request in writing that Contractor permit Owner to use or occupy any such part of the Work that Owner believes to be substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 15.03.A through E for that part of the Work.

2. At any time Contractor may notify Owner and Engineer in writing that Contractor considers any such part of the Work substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.

3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 15.03 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 6.05 regarding builder's risk or other property insurance.

15.05 *Final Inspection*

A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work, or agreed portion thereof, is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

15.06 *Final Payment*

A. *Application for Payment*:

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, annotated record documents (as provided in Paragraph 7.11), and other documents, Contractor may make application for final payment.

2. The final Application for Payment shall be accompanied (except as previously delivered) by:

   a. all documentation called for in the Contract Documents;

   b. consent of the surety, if any, to final payment;

   c. satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to Owner free and clear of any Liens or other title defects, or will so pass upon final payment.

   d. a list of all disputes that Contractor believes are unsettled; and

   e. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of the Work, and of Liens filed in connection with the Work.

3. In lieu of the releases or waivers of Liens specified in Paragraph 15.06.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (a) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (b) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien, or Owner at its option may issue joint checks payable to Contractor and specified Subcontractors and Suppliers.

B. *Engineer's Review of Application and Acceptance*:

1. If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of final payment and present the Application for Payment to Owner for payment. Such recommendation shall account for any set-offs against payment that are necessary in Engineer's opinion to protect Owner from loss for the reasons stated above with respect to progress payments. At the same time Engineer will also give written notice to Owner and Contractor that the Work is acceptable, subject to the provisions of Paragraph 15.07. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

C. *Completion of Work*: The Work is complete (subject to surviving obligations) when it is ready for final payment as established by the Engineer's written recommendation of final payment.

D. *Payment Becomes Due*: Thirty days after the presentation to Owner of the final Application for Payment and accompanying documentation, the amount recommended by Engineer (less any further sum Owner is entitled to set off against Engineer's recommendation, including

but not limited to set-offs for liquidated damages and set-offs allowed under the provisions above with respect to progress payments) will become due and shall be paid by Owner to Contractor.

15.07 *Waiver of Claims*

A. The making of final payment will not constitute a waiver by Owner of claims or rights against Contractor. Owner expressly reserves claims and rights arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 15.05, from Contractor's failure to comply with the Contract Documents or the terms of any special guarantees specified therein, from outstanding Claims by Owner, or from Contractor's continuing obligations under the Contract Documents.

B. The acceptance of final payment by Contractor will constitute a waiver by Contractor of all claims and rights against Owner other than those pending matters that have been duly submitted or appealed under the provisions of Article 17.

15.08 *Correction Period*

A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents, or by any specific provision of the Contract Documents), any Work is found to be defective, or if the repair of any damages to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas used by Contractor as permitted by Laws and Regulations, is found to be defective, then Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:

1. correct the defective repairs to the Site or such other adjacent areas;
2. correct such defective Work;
3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and
4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others, or to other land or areas resulting therefrom.

B. If Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others).

C. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.

D. Where defective Work (and damage to other Work resulting therefrom) has been corrected

or removed and replaced under this paragraph, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

E. Contractor's obligations under this paragraph are in addition to all other obligations and warranties. The provisions of this paragraph shall not be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

ARTICLE 16 – SUSPENSION OF WORK AND TERMINATION

16.01 *Owner May Suspend Work*

A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by written notice to Contractor and Engineer. Such notice will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be entitled to an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension. Any Change Proposal seeking such adjustments shall be submitted no later than 30 days after the date fixed for resumption of Work.

16.02 *Owner May Terminate for Cause*

A. The occurrence of any one or more of the following events will constitute a default by Contractor and justify termination for cause:

1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the Progress Schedule);
2. Failure of Contractor to perform or otherwise to comply with a material term of the Contract Documents;
3. Contractor's disregard of Laws or Regulations of any public body having jurisdiction; or
4. Contractor's repeated disregard of the authority of Owner or Engineer.

B. If one or more of the events identified in Paragraph 16.02.A occurs, then after giving Contractor (and any surety) ten days written notice that Owner is considering a declaration that Contractor is in default and termination of the contract, Owner may proceed to:

1. declare Contractor to be in default, and give Contractor (and any surety) notice that the Contract is terminated; and
2. enforce the rights available to Owner under any applicable performance bond.

C. Subject to the terms and operation of any applicable performance bond, if Owner has terminated the Contract for cause, Owner may exclude Contractor from the Site, take possession of the Work, incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and complete the Work as Owner may deem expedient.

D. Owner may not proceed with termination of the Contract under Paragraph 16.02.B if Contractor within seven days of receipt of notice of intent to terminate begins to correct its failure to perform and proceeds diligently to cure such failure.

E. If Owner proceeds as provided in Paragraph 16.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds the cost to complete the Work, including all related claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals) sustained by Owner, such excess will be paid to Contractor. If the cost to complete the Work including such related claims, costs, losses, and damages exceeds such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this paragraph, Owner shall not be required to obtain the lowest price for the Work performed.

F. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue, or any rights or remedies of Owner against Contractor or any surety under any payment bond or performance bond. Any retention or payment of money due Contractor by Owner will not release Contractor from liability.

G. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 6.01.A, the provisions of that bond shall govern over any inconsistent provisions of Paragraphs 16.02.B and 16.02.D.

16.03 *Owner May Terminate For Convenience*

A. Upon seven days written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):

1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;

2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses; and

3. other reasonable expenses directly attributable to termination, including costs incurred to prepare a termination for convenience cost proposal.

B. Contractor shall not be paid on account of loss of anticipated overhead, profits, or revenue, or other economic loss arising out of or resulting from such termination.

16.04 *Contractor May Stop Work or Terminate*

A. If, through no act or fault of Contractor, (1) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (2) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (3) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven days written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the contract and recover from Owner payment on the same terms as provided in Paragraph

16.03.

B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, seven days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this paragraph are not intended to preclude Contractor from submitting a Change Proposal for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this paragraph.

ARTICLE 17 – FINAL RESOLUTION OF DISPUTES

17.01 *Methods and Procedures*

A. *Disputes Subject to Final Resolution*: The following disputed matters are subject to final resolution under the provisions of this Article:

1. A timely appeal of an approval in part and denial in part of a Claim, or of a denial in full; and

2. Disputes between Owner and Contractor concerning the Work or obligations under the Contract Documents, and arising after final payment has been made.

B. *Final Resolution of Disputes*: For any dispute subject to resolution under this Article, Owner or Contractor may:

1. elect in writing to invoke the dispute resolution process provided for in the Supplementary Conditions; or

2. agree with the other party to submit the dispute to another dispute resolution process; or

3. if no dispute resolution process is provided for in the Supplementary Conditions or mutually agreed to, give written notice to the other party of the intent to submit the dispute to a court of competent jurisdiction.

ARTICLE 18 – MISCELLANEOUS

18.01 *Giving Notice*

A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if delivered in person, by a commercial courier service or otherwise, to the individual or to a member of the firm or to an officer of the corporation for which it is intended; or

1. Delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the sender of the notice.

B. When any period of time is referred to in the Contract by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction,

such day will be omitted from the computation.

18.02 *Cumulative Remedies*

A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract. The provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

18.03 *Limitation of Damages*

A. With respect to any and all Change Proposals, Claims, disputes subject to final resolution, and other matters at issue, neither Owner nor Engineer, nor any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, shall be liable to Contractor for any claims, costs, losses, or damages sustained by Contractor on or in connection with any other project or anticipated project.

18.04 *No Waiver*

A. A party's non-enforcement of any provision shall not constitute a waiver of that provision, nor shall it affect the enforceability of that provision or of the remainder of this Contract.

18.05 *Survival of Obligations*

A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract, as well as all continuing obligations indicated in the Contract, will survive final payment, completion, and acceptance of the Work or termination or completion of the Contract or termination of the services of Contractor.

18.06 *Controlling Law*

A. This Contract is to be governed by the law of the state in which the Project is located.

18.07 *Headings*

A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

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SECTION 00 22 15

SUPPLEMENTARY CONDITIONS

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract, EJCDC® C-700 (2013 Edition). All provisions that are not so amended or supplemented remain in full force and effect.

The terms used in these Supplementary Conditions have the meanings stated in the General Conditions. Additional terms used in these Supplementary Conditions have the meanings stated below, which are applicable to both the singular and plural thereof.

The address system used in these Supplementary Conditions is the same as the address system used in the General Conditions, with the prefix "SC" added thereto.

ARTICLE 5 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

SC-5.06 Hazardous Environmental Conditions

SC 5.06 Delete Paragraphs 5.06.A and 5.06.B in their entirety and insert the following:

A. No reports or drawings related to Hazardous Environmental Conditions at the Site are known to Owner.

ARTICLE 6 – BONDS AND INSURANCE

SC-6.02 Insurance—General Provisions

SC-6.02 Add the following paragraph immediately after Paragraph 6.02.B:

1. Contractor may obtain worker's compensation insurance from an insurance company that has not been rated by A.M. Best, provided that such company (a) is domiciled in the state in which the project is located, (b) is certified or authorized as a worker's compensation insurance provider by the appropriate state agency, and (c) has been accepted to provide worker's compensation insurance for similar projects by the state within the last 12 months.

SC-6.03 Contractor's Liability Insurance

SC 6.03 Add the following new paragraph immediately after Paragraph 6.03.J:

K. The limits of liability for the insurance required by Paragraph 6.03 of the General Conditions shall provide coverage for not less than the following amounts or greater where required by Laws and Regulations:

1. Workers' Compensation, and related coverages under Paragraphs 6.03.A.1 and A.2 of the General Conditions:

State:	Statutory
Federal, if applicable (e.g., Longshoreman's):	Statutory
Jones Act coverage, if applicable:	
Bodily injury by accident, each accident	$ NA
Bodily injury by disease, aggregate	$ NA
Employer's Liability:	
Bodily injury, each accident	$ 500,000.00
Bodily injury by disease, each employee	$ 500,000.00
Bodily injury/disease aggregate	$ 1,000,000.00
Foreign voluntary worker compensation	Statutory

2. Contractor's Commercial General Liability under Paragraphs 6.03.B and 6.03.C of the General Conditions:

General Aggregate	$ 2,000,000.00
Products - Completed Operations Aggregate	$ 1,000,000.00
Personal and Advertising Injury	$ 1,000,000.00
Each Occurrence (Bodily Injury and Property Damage)	$ 1,000,000.00

3. Automobile Liability under Paragraph 6.03.D. of the General Conditions:

Bodily Injury:	
Each person	$ 500,000.00
Each accident	$ 1,000,000.00
Property Damage:	
Combined Single Limit of	$ 1,000,000.00

4.Excess or Umbrella Liability:

General Aggregate	**$**	**1,000,000.00**

5.Contractor's Professional Liability:

Each Claim	**$**	**1,000,000.00**
Annual Aggregate	**$**	**2,000,000.00**

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ARTICLE 7 – CONTRACTOR'S RESPONSIBILITIES

SC-7.02 Labor; Working Hours

SC-7.02.B. Amend the first and second sentences of Paragraph 7.02.B to state "…all Work at the Site shall be performed during regular working hours, 7:00 AM through 5:00 PM. Contractor will not perform Work on a Sunday or any legal holiday."

A. If the Owner has no objections to the Contractor working multiple shifts, weekends, and legal holidays, use the following:

SC-7.02.B. Delete Paragraph 7.02 B. in its entirety, and insert the following:

B. In the absence of any Laws or Regulations to the contrary, Contractor may perform the Work on holidays, during any or all hours of the day, and on any or all days of the week, at Contractor's sole discretion.

SC-7.02.C. Add the following new paragraph immediately after Paragraph 7.02.B:

Contractor shall be responsible for the cost of any overtime pay or other expense incurred by the Owner for Engineer's services (including those of the Resident Project Representative, if any), Owner's representative, and construction observation services, occasioned by the performance of Work on Saturday or as overtime on any regular work day. If Contractor is responsible but does not pay, or if the parties are unable to agree as to the amount owed, then Owner may impose a reasonable set-off against payments due under Article 15.

ARTICLE 10 – ENGINEER'S STATUS DURING CONSTRUCTION

SC-10.03 Project Representative

SC-10.03 Add the following new paragraphs immediately after Paragraph 10.03.A:

B. The Resident Project Representative (RPR) will be Engineer's representative at the Site, will act as directed by and under the supervision of Engineer, and will confer with Engineer regarding RPR's actions.

1. General: RPR's dealings in matters pertaining to the Work in general shall be with Engineer and Contractor. RPR's dealings with Subcontractors shall only be through or with the full knowledge and approval of Contractor. RPR shall generally communicate with Owner only with the knowledge of and under the direction of Engineer.

2. Schedules: Review the progress schedule, schedule of Shop Drawing and Sample submittals, and Schedule of Values prepared by Contractor and consult with Engineer concerning acceptability.

3. Conferences and Meetings: Attend meetings with Contractor, such as preconstruction conferences, progress meetings, job conferences, and other Project-related meetings, and prepare and circulate copies of minutes thereof.

4. **Liaison:**

   a. **Serve as Engineer's liaison with Contractor. Working principally through Contractor's authorized representative or designee, assist in providing information regarding the provisions and intent of the Contract Documents.**

   b. **Assist Engineer in serving as Owner's liaison with Contractor when Contractor's operations affect Owner's on-Site operations.**

   c. **Assist in obtaining from Owner additional details or information, when required for proper execution of the Work.**

5. **Interpretation of Contract Documents: Report to Engineer when clarifications and interpretations of the Contract Documents are needed and transmit to Contractor clarifications and interpretations as issued by Engineer.**

6. **Shop Drawings and Samples:**

   a. **Record date of receipt of Samples and Contractor-approved Shop Drawings.**

   b. **Receive Samples which are furnished at the Site by Contractor, and notify Engineer of availability of Samples for examination.**

   c. **Advise Engineer and Contractor of the commencement of any portion of the Work requiring a Shop Drawing or Sample submittal for which RPR believes that the submittal has not been approved by Engineer.**

7. **Modifications: Consider and evaluate Contractor's suggestions for modifications in Drawings or Specifications and report such suggestions, together with RPR's recommendations, if any, to Engineer. Transmit to Contractor in writing decisions as issued by Engineer.**

8. **Review of Work and Rejection of Defective Work:**

   a. **Conduct on-Site observations of Contractor's work in progress to assist Engineer in determining if the Work is in general proceeding in accordance with the Contract Documents.**

   b. **Report to Engineer whenever RPR believes that any part of Contractor's work in progress is defective, will not produce a completed Project that conforms generally to the Contract Documents, or will imperil the integrity of the design concept of the completed Project as a functioning whole as indicated in the Contract Documents, or has been damaged, or does not meet the requirements of any inspection, test or approval required to be made; and advise Engineer of that part of work in progress that RPR believes should be corrected or rejected or should be uncovered for observation, or requires special testing, inspection or approval.**

9. **Inspections, Tests, and System Start-ups:**

   a. **Verify that tests, equipment, and systems start-ups and operating and maintenance training are conducted in the presence of appropriate Owner's personnel, and that Contractor maintains adequate records thereof.**

   b. **Observe, record, and report to Engineer appropriate details relative to the test procedures and systems start-ups.**

10. **Records:**

   a. **Prepare a daily report or keep a diary or log book, recording Contractor's hours on the Site, Subcontractors present at the Site, weather conditions, data relative to questions of Change Orders, Field Orders, Work Change Directives, or changed conditions, Site visitors, deliveries of equipment or materials, daily activities, decisions, observations in general, and specific observations in more detail as in the case of observing test procedures; and send copies to Engineer.**

   b. **Record names, addresses, fax numbers, e-mail addresses, web site locations, and telephone numbers of all Contractors, Subcontractors, and major Suppliers of materials and equipment.**

   c. **Maintain records for use in preparing Project documentation.**

11. **Reports:**

   a. **Furnish to Engineer periodic reports as required of progress of the Work and of Contractor's compliance with the Progress Schedule and schedule of Shop Drawing and Sample submittals.**

   b. **Draft and recommend to Engineer proposed Change Orders, Work Change Directives, and Field Orders. Obtain backup material from Contractor.**

   c. **Immediately notify Engineer of the occurrence of any Site accidents, emergencies, acts of God endangering the Work, force majeure or delay events, damage to property by fire or other causes, or the discovery of any Constituent of Concern or Hazardous Environmental Condition.**

12. **Payment Requests: Review applications for payment with Contractor for compliance with the established procedure for their submission and forward with recommendations to Engineer, noting particularly the relationship of the payment requested to the Schedule of Values, Work completed, and materials and equipment delivered at the Site but not incorporated in the Work.**

13. **Certificates, Operation and Maintenance Manuals: During the course of the Work, verify that materials and equipment certificates, operation and maintenance manuals and other data required by the Contract Documents to be assembled and furnished by Contractor are applicable to the items actually installed and in accordance with the Contract Documents, and have**

these documents delivered to Engineer for review and forwarding to Owner prior to payment for that part of the Work.

14. Completion:

a. Participate in Engineer's visits to the Site to determine Substantial Completion, assist in the determination of Substantial Completion and the preparation of a punch list of items to be completed or corrected.

b. Participate in Engineer's final visit to the Site to determine completion of the Work, in the company of Owner and Contractor, and prepare a final punch list of items to be completed and deficiencies to be remedied.

c. Observe whether all items on the final list have been completed or corrected and make recommendations to Engineer concerning acceptance and issuance of the notice of acceptability of the work.

C. The RPR shall not:

1. Authorize any deviation from the Contract Documents or substitution of materials or equipment (including "or-equal" items).

2. Exceed limitations of Engineer's authority as set forth in the Contract Documents.

3. Undertake any of the responsibilities of Contractor, Subcontractors, or Suppliers.

4. Advise on, issue directions relative to, or assume control over any aspect of the means, methods, techniques, sequences or procedures of Contractor's work.

5. Advise on, issue directions regarding, or assume control over security or safety practices, precautions, and programs in connection with the activities or operations of Owner or Contractor.

6. Participate in specialized field or laboratory tests or inspections conducted off-site by others except as specifically authorized by Engineer.

7. Accept Shop Drawing or Sample submittals from anyone other than Contractor.

8. Authorize Owner to occupy the Project in whole or in part.

ARTICLE 13 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

SC-13.03 Unit Price Work

A. The following Supplementary Condition is typically called a "variation in estimated quantities (VEQ) clause" and facilitates administrative resolution of situations where actual quantities of unit price items differ materially from estimated quantities. Typically, the clause applies where the extended price (unit price times estimated quantity) of an item of the Unit Price Work is more than 5 percent of the Contract Price (based on estimated quantities), and the actual quantity of the units of work performed or furnished varies by more than a specified percent (typically 15 to 25 percent).

SC 13.03.E Delete Paragraph 13.03.E in its entirety and insert the following in its place:

E. The unit price of an item of Unit Price Work shall be subject to reevaluation and adjustment under the following conditions:

1. if the extended price of a particular item of Unit Price Work amounts to 5 percent or more of the Contract Price (based on estimated quantities at the time of Contract formation) and the variation in the quantity of that particular item of Unit Price Work actually furnished or performed by Contractor differs by more than 20 percent from the estimated quantity of such item indicated in the Agreement; and

2. if there is no corresponding adjustment with respect to any other item of Work; and

3. if Contractor believes that Contractor has incurred additional expense as a result thereof, Contractor may submit a Change Proposal, or if Owner believes that the quantity variation entitles Owner to an adjustment in the unit price, Owner may make a Claim, seeking an adjustment in the Contract Price.

ARTICLE 15 – PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD

SC-15.03 Substantial Completion

SC 15.03.B Add the following new subparagraph to Paragraph 15.03.B:

1. If some or all of the Work has been determined not to be at a point of Substantial Completion and will require re-inspection or re-testing by Engineer, the cost of such re-inspection or re-testing, including the cost of time, travel and living expenses, shall be paid by Contractor to Owner. If Contractor does not pay, or the parties are unable to agree as to the amount owed, then Owner may impose a reasonable set-off against payments due under Article 15.

ARTICLE 17 – FINAL RESOLUTION OF DISPUTES

SC-17.02 Add the following new paragraph immediately after Paragraph 17.01.

SC-17.02 Arbitration

A. All matters subject to final resolution under this Article will be decided by arbitration in accordance with the Florida Rules of Civil Procedure, subject to the conditions and limitations of this paragraph. This agreement to arbitrate and any other agreement or consent to arbitrate entered into will be specifically enforceable under the prevailing law of any court having jurisdiction.

B. The demand for arbitration will be filed in writing with the other party to the Contract and with the selected arbitrator or arbitration provider, and a copy will be sent to Engineer for information. The demand for arbitration will be made within the specific time required in this Article, or if no specified time is applicable within a reasonable time after the matter in question has arisen, and in no event shall any such demand be made after the date when institution of legal or

equitable proceedings based on such matter in question would be barred by the applicable statute of limitations. The demand for arbitration should include specific reference to Paragraph SC-17.02.D below.

C. No arbitration arising out of or relating to the Contract shall include by consolidation, joinder, or in any other manner any other individual or entity (including Engineer, and Engineer's consultants and the officers, directors, partners, agents, employees or consultants of any of them) who is not a party to this Contract unless:

1. the inclusion of such other individual or entity is necessary if complete relief is to be afforded among those who are already parties to the arbitration; and

2. such other individual or entity is substantially involved in a question of law or fact which is common to those who are already parties to the arbitration and which will arise in such proceedings.

D. The award rendered by the arbitrator(s) shall be consistent with the agreement of the parties, in writing, and include a concise breakdown of the award, and a written explanation of the award specifically citing the Contract provisions deemed applicable and relied on in making the award.

E. The award will be final. Judgment may be entered upon it in any court having jurisdiction thereof, and it will not be subject to modification or appeal, subject to provisions of the Laws and Regulations relating to vacating or modifying an arbitral award.

F. The fees and expenses of the arbitrators and any arbitration service shall be shared equally by Owner and Contractor.

END OF SECTION

SECTION 00 26 00 AGREEMENT
BETWEEN OWNER AND CONTRACTOR
FOR CONSTRUCTION CONTRACT

THIS AGREEMENT is by and between **The City of Flagler Beach** ("Owner") and _____ ("Contractor").

Owner and Contractor hereby agree as follows:

ARTICLE 1 – WORK

1.01 Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows: **CITY OF FLAGLER BEACH WWTF SLUDGE MANAGEMENT IMPROVEMENTS.**

ARTICLE 2 – THE PROJECT

2.01 The Project, of which the Work under the Contract Documents is a part, is generally described as follows: **CITY OF FLAGLER BEACH WWTF SLUDGE MANAGEMENT IMPROVEMENTS.**

ARTICLE 3 – ENGINEER

3.01 The part of the Project that pertains to the Work has been designed by CPH, LLC (the Engineer of Record). CPH will respond to any and all RFIs or other issues with the drawings and specifications if and when they arise.

3.02 The Owner plans to retain a different Engineer ("Engineer") to act as Owner's representative, assume all duties and responsibilities, and have the rights and authority assigned to Engineer in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.

ARTICLE 4 – CONTRACT TIMES

4.01 *Time of the Essence*

A. All time limits for Substantial Completion, and Final Completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.

4.02 *Contract Times: Days*

A. The Work will be substantially completed within one hundred (100) days after the date when the Contract Times commence to run as provided in Paragraph 4.01 of the General Conditions, and completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions within one hundred thirty (130) days after the date when the Contract Times commence to run.

4.03 *Liquidated Damages*

A. Contractor and Owner recognize that time is of the essence as stated in Paragraph 4.01 above and that Owner will suffer financial and other losses if the Work is not completed

and Milestones not achieved within the times specified in Paragraph 4.02 above, plus any extensions thereof allowed in accordance with the Contract. The parties also recognize

B. the delays, expense, and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty):

1. Substantial Completion: Contractor shall pay Owner $500.00 for each day that expires after the time (as duly adjusted pursuant to the Contract) specified in Paragraph 4.02.A above for Substantial Completion until the Work is substantially complete.

2. Completion of Remaining Work: After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Times (as duly adjusted pursuant to the Contract) for completion and readiness for final payment, Contractor shall pay Owner $1,000.00 for each day that expires after such time until the Work is completed and ready for final payment.

3. Liquidated damages for failing to timely attain Substantial Completion and final completion are not additive and will not be imposed concurrently.

ARTICLE 5 – CONTRACT PRICE

5.01 Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents the amounts that follow, subject to adjustment under the Contract:

A. For all Unit Price Work not included in the lump sum price, an amount equal to the sum of the extended prices (established for each separately identified item of Unit Price Work by multiplying the unit price times the actual quantity of that item): See chart in Section 00 41 13, Page 4 of 6 to be used in the bid package submittal.

ARTICLE 6 – PAYMENT PROCEDURES

6.01 *Submittal and Processing of Payments*

A. Contractor shall submit Applications for Payment in accordance with Article 15 of the General Conditions. Applications for Payment will be processed by Engineer as provided in the General Conditions.

6.02 *Progress Payments; Retainage*

A. Owner shall make progress payments on account of the Contract Price on the basis of Contractor's Applications for Payment on or about the 15th day of each month during performance of the Work as provided in Paragraph 6.02.A.1 below, provided that such Applications for Payment have been submitted in a timely manner and otherwise meet the requirements of the Contract. All such payments will be measured by the Schedule of Values established as provided in the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no Schedule of Values, as provided elsewhere in the Contract.

1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such amounts as Owner may withhold, including but not limited

to liquidated damages, in accordance with the Contract

a. 95 percent of Work completed (with the balance being retainage). If the Work has been 50 percent completed as determined by Engineer, and if the character and progress of the Work have been satisfactory to Owner and Engineer, then as long as the character and progress of the Work remain satisfactory to Owner and Engineer, there will be no additional retainage; and

B. Upon Substantial Completion, Owner shall pay an amount sufficient to increase total payments to Contractor to 100 percent of the Work completed, less such amounts set off by Owner pursuant to Paragraph 15.01.E of the General Conditions, and less 200 percent of Engineer's estimate of the value of Work to be completed or corrected as shown on the punch list of items to be completed or corrected prior to final payment.

6.03 *Final Payment*

A. Upon final completion and acceptance of the Work in accordance with Paragraph 15.06 of the General Conditions, Owner shall pay the remainder of the Contract Price as recommended by Engineer as provided in said Paragraph 15.06.

ARTICLE 7 – INTEREST

7.01 All amounts not paid when due shall bear interest at the rate of 3 percent per annum.

ARTICLE 8 – CONTRACTOR'S REPRESENTATIONS

8.01 In order to induce Owner to enter into this Contract, Contractor makes the following representations:

A. Contractor has examined and carefully studied the Contract Documents, and any data and reference items identified in the Contract Documents.

B. Contractor has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

C. Contractor is familiar with and is satisfied as to all Laws and Regulations that may affect cost, progress, and performance of the Work.

D. Contractor has carefully studied all reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings.

E. Contractor has considered the information known to Contractor itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and the Site-related reports and drawings identified in the Contract Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor; and (3) Contractor's safety precautions and programs.

F. Based on the information and observations referred to in the preceding paragraph, Contractor agrees that no further examinations, investigations, explorations, tests, studies, or data are

necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.

G. Contractor is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Contract Documents.

H. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.

I. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

J. Contractor's entry into this Contract constitutes an incontrovertible representation by Contractor that without exception all prices in the Agreement are premised upon performing and furnishing the Work required by the Contract Documents.

ARTICLE 9 – CONTRACT DOCUMENTS

9.01 *Contents*

A. The Contract Documents consist of the following:

1. This Agreement (pages 1 to 8, inclusive).
2. Bid Bond (pages 1 to 2, inclusive).
3. Performance bond (pages 1 to 3, inclusive).
4. Payment bond (pages 1 to 3, inclusive).
5. General Conditions (pages *i* to *v* and pages 1 to 67, inclusive).
6. Supplementary Conditions (pages 1 to 8, inclusive).
7. Specifications as listed in the table of contents of the Project Manual.
8. Issued Addenda
9. Exhibits to this Agreement (enumerated as follows):
   a. Contractor's Bid Form (pages *i* to *ii* and pages 1 to 6, inclusive).
10. The following which may be delivered or issued on or after the Effective Date of the Contract and are not attached hereto:
    a. Notice to Proceed.
    b. Work Change Directives.
    c. Change Orders.
    d. Field Orders.

B. The documents listed in Paragraph 9.01.A are attached to this Agreement (except as expressly noted otherwise above).

C. There are no Contract Documents other than those listed above in this Article 9.

D. The Contract Documents may only be amended, modified, or supplemented as provided in the General Conditions.

ARTICLE 10 – MISCELLANEOUS

10.01 *Terms*

A. Terms used in this Agreement will have the meanings stated in the General Conditions and the Supplementary Conditions. *Assignment of Contract*

B. Unless expressly agreed to elsewhere in the Contract, no assignment by a party hereto of any rights under or interests in the Contract will be binding on another party hereto without the written consent of the party sought to be bound; and, specifically but without limitation, money that may become due and money that is due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

10.02 *Successors and Assigns*

A. Owner and Contractor each binds itself, its successors, assigns, and legal representatives to the other party hereto, its successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

10.03 *Severability*

A. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon Owner and Contractor, who agree that the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

10.04 *Contractor's Certifications*

A. Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 10.05:

1. "corrupt practice" means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the bidding process or in the Contract execution;

2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner, (b) to establish Bid or Contract prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;

3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, non-competitive levels; and

4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

OWNER:	CONTRACTOR:
_____	_____
By: _____	By: _____
Title: _____	Title: _____
	(If Contractor is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)
Attest: _____	Attest: _____
Title: _____	Title: _____
Address for giving notices:	Address for giving notices:
_____	_____
_____	_____
_____	_____
	License No.: _____

(If Owner is a corporation, attach evidence of authority to sign. If Owner is a public body, attach evidence of authority to sign and resolution or other documents authorizing execution of this Agreement.)

END OF SECTION

SECTION 00 41 13 BID FORM

CITY OF FLAGLER BEACH
WWTF SLUDGE MANAGEMENT IMPROVEMENTS CITY PROJECT NO.: 238
CITY INVITATION TO BID NO: FB-240111

NOVEMBER 2024

INVITATION TO BID
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ARTICLE 1 – BID RECIPIENT

1.01 This Bid is submitted to:

City of Flagler Beach
105 S 2nd Street
Flagler Beach, FL 32136

1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

ARTICLE 2 – BIDDER'S ACKNOWLEDGEMENTS

2.01 Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for 60 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

ARTICLE 3 – BIDDER'S REPRESENTATIONS

3.01 In submitting this Bid, Bidder represents that:

A. Bidder has examined and carefully studied the Bidding Documents, and any data and reference items identified in the Bidding Documents, and hereby acknowledges receipt of the following Addenda:

Addendum No.	**Addendum, Date**

B. Bidder has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfied itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

C. Bidder is familiar with and has satisfied itself as to all Laws and Regulations that may affect cost, progress, and performance of the Work.

D. Bidder has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings.

E. Bidder has considered the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and any Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance

of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder; and (3) Bidder's safety precautions and programs.

F. Bidder agrees, based on the information and observations referred to in the preceding paragraph, that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents.

G. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.

H. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and confirms that the written resolution thereof by Engineer is acceptable to Bidder.

I. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work.

J. The submission of this Bid constitutes an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, and that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

ARTICLE 4 – BIDDER'S CERTIFICATION

4.01 Bidder certifies that:

A. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation;

B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;

C. Bidder has not solicited or induced any individual or entity to refrain from bidding; and

D. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 4.01.D:

1. "corrupt practice" means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the bidding process;

2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;

3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels; and

4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the e execution of the Contract.

ARTICLE 5 – BASIS OF BID

5.01 Bidder will complete the Work in accordance with the Contract Documents for the following price(s):

Lump Sum Bid Price	$

Total of All Lump Sums $_____

FLAGLER BEACH WWTF SLUDGE MANAGEMENT SYSTEM IMPROVEMENTS			
ITEM NO.	DESCRIPTION	UNIT	TOTAL COST
1	Mobilization, Demobilization, Bonds, Insurance, Contractor's trailer(s), all temporary facilities, and miscellaneous items	LS	
2	Survey, Layout, and As-Built Information	LS	
3	Preconstruction High Definition (HD) Recording	LS	
4	3D High Definition Laser Survey	LS	$16,000.00
5	Project Cash Allowance	LS	$100,000.00
6	Indemnification	LS	$1,000.00
7	Sludge Dewatering System	LS	
8	Electrical, Controls & Instrumentation	LS	
9	SCADA System Modifications	LS	
TOTAL BASE BID LUMP SUM AMOUNT:			

Bidder acknowledges that (1) each Bid Unit Price includes an amount considered by Bidder to be adequate to cover Contractor's overhead and profit for each separately identified item, and (2) estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all unit price Bid items will be based on actual quantities, determined as provided in the Contract Documents.

ARTICLE 6 – TIME OF COMPLETION

6.01 Bidder agrees that the Work will be substantially complete and will be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before the dates or within the number of calendar days indicated in the Agreement.

6.02 Bidder accepts the provisions of the Agreement as to liquidated damages.

ARTICLE 7 – ATTACHMENTS TO THIS BID

7.01 The following documents are submitted with and made a condition of this Bid:

A. Required Bid security;

B. List of Proposed Subcontractors;

C. List of Proposed Suppliers;

D. List of Project References;

E. Evidence of authority to do business in the state of the Project; or a written covenant to obtain such license within the time for acceptance of Bids;

F. Required Bidder Qualification Statement with supporting Attachments A through O

G. Submit sealed bids including one original copy, four (4) identical paper copies, and one (1) electronic copy in pdf format on USB or CD.

ARTICLE 8 – DEFINED TERMS

8.01 The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions.

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ARTICLE 9 – BID SUBMITTAL

BIDDER: *[Indicate correct name of bidding entity]*

_____

By:
[Signature] _____

[Printed name] _____
(If Bidder is a corporation, a limited liability company, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest:
[Signature] _____

[Printed name] _____

Title: _____

Submittal Date: _____

Address for giving notices:

_____

_____

_____

Telephone Number: _____

Fax Number: _____

Contact Name: _____

Contact e-mail address: _____

Bidder's License No.: _____

END OF SECTION

SECTION 00 43 00
BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we, _____ as Principal and _____of the City of _____State of _____, a corporation existing under the laws of the State of Florida, as Surety, are held and firmly bound unto the hereinafter called the Owner, in the sum of _____Dollars ($_____) lawful money of the United States of America, for the payment of which sum well and truly to be made, we bind ourselves our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

The condition of this obligation is such that whereas the Principal has submitted the accompanying Proposal or Bid, for the construction of:

CITY OF FLAGLER BEACH WASTEWATER TREATMENT PLANT SLUDGE MANAGEMENT IMPROVEMENTS

NOW, THEREFORE, if the Principal shall not withdraw said Bid within sixty (60) days after the opening of the same and in the event of the acceptance of his proposal by the Owner, shall, within the period specified therefore, enter into a written contract with the Owner in accordance with the Bid as accepted, and give bond with good and sufficient surety or sureties, as may be required, for the faithful performance and proper fulfillment of such contract, or in the event of the withdrawal of said Bid within the period specified, of the failure to enter into such contract and give bonds within the time specified, if the Principal shall pay the Owner the difference between the amount specified in said Bid and the amount for which the Owner may procure the required work, if the latter amount be in excess of the former, then the above obligation shall be void and of no effect, otherwise to remain in full force and virtue.

IN WITNESS WHEREOF, the above bounden parties have executed this instrument under their several seals this ___ day of _____, 20__, the name and corporate seal of each corporate body being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

IN PRESENCE OF:

_____ _____(Seal)

_____ _____(Seal)

_____ _____(Seal)
Individual or Partner

_____
Witness

_____

_____
Address

_____
Corporate Principal

ATTEST:

_____ _____
President AFFIX
CORPORATE SEAL

_____

_____
Address

By_____

AFFIX
CORPORATE SEAL

_____
Corporate Surety

ATTEST:

_____ _____
Title

END OF SECTION

SECTION 00 43 25
PERFORMANCE BOND

CONTRACTOR *(name and address)*:SURETY *(name and address of principal place of business)*:

_____

OWNER
City of Flagler Beach 105 S 2nd Street
Flagler Beach, FL 32137

CONSTRUCTION CONTRACT
Effective Date of the Agreement:
Amount:
Description: City of Flagler Beach Bid Number FB-240111 WWTF Sludge Management Improvements, 2000 Avenue A; Flagler Beach, FL 32771

BOND
Bond Number:
Date *(not earlier than the Effective Date of the Agreement of the Construction Contract)*:
Amount:
Modifications to this Bond Form: ☐ None ☐ See Paragraph 16

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL	**SURETY**
_____ *(seal)*	_____ *(seal)*
Contractor's Name and Corporate Seal	Surety's Name and Corporate Seal
By: _____	**By:** _____
Signature	Signature *(attach power of attorney)*
_____	_____
Print Name	Print Name
_____	_____
Title	Title
Attest: _____	**Attest:** _____
Signature	Signature
_____	_____
Title	Title

Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

2. If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Paragraph 3.

3. If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond shall arise after:

3.1 The Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice shall indicate whether the Owner is requesting a conference among the Owner, Contractor, and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Paragraph 3.1 shall be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor, and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default;

3.2 The Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and

3.3 The Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

4. Failure on the part of the Owner to comply with the notice requirement in Paragraph 3.1 shall not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

5. When the Owner has satisfied the conditions of Paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

5.1 Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;

5.2 Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;

5.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owners concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

5.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor, and with reasonable promptness under the circumstances:

5.4.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or

5.4.2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

6. If the Surety does not proceed as provided in Paragraph 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Paragraph 5.4, and the Owner refuses the payment or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

7. If the Surety elects to act under Paragraph 5.1, 5.2, or 5.3, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication for:

7.1 the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;

7.2 additional legal, design professional, and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 5; and

7.3 liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

8. If the Surety elects to act under Paragraph 5.1, 5.3, or 5.4, the Surety's liability is limited to the amount of this Bond.

9. The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced

10.

or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors, and assigns.

11. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.

12. Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum periods of limitations available to sureties as a defense in the jurisdiction of the suit shall be applicable.

13. Notice to the Surety, the Owner, or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears.

14. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted here from and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

15. Definitions

15.1 Balance of the Contract Price: The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made including allowance for the Contractor for any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

15.2 Construction Contract: The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

15.3 Contractor Default: Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

15.4 Owner Default: Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

15.5 Contract Documents: All the documents that comprise the agreement between the Owner and Contractor.

16. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

END OF SECTION

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SECTION 00 51 00
NOTICE OF AWARD

Date of Issuance: _____, 2024

Owner: City of Flagler Beach | Owner's Project No.: FB-240111

Engineer: TO BE DETERMINED | Engineer's Project No.: TO BE DETERMINED

Project: City of Flagler Beach
2000 Avenue A

TO BIDDER:

You are notified that Owner has accepted your Bid dated _____, 2024 for the above Contract, and that you are the Successful Bidder and are awarded a Contract for: **CITY OF FLAGLER BEACH WWTP SLUDGE MANAGEMENT IMPROVEMENTS.**

The Contract Price of the awarded Contract is: **$**_____

One (1) unexecuted counterparts of the Agreement accompany this Notice of Award and one copy of the Contract Documents has been made available to Bidder electronically.

☐ a set of the Drawings will be delivered separately from the other Contract Documents.

You must comply with the following conditions precedent within ten (10) days of the date of this Notice of Award:

1. Deliver to Owner Three (3) counterparts of the Agreement, fully executed by Bidder.
2. Deliver with the executed Agreement(s) the Contract security *[e.g., performance bond]* and insurance documentation as specified in the Instructions to Bidders and General Conditions, Articles 2 and 6.
3. Other conditions precedent (if any): *None*

Failure to comply with these conditions within the time specified will entitle Owner to consider you in default, annul this Notice of Award, and declare your Bid security forfeited.

Within ten days after you comply with the above conditions, Owner will return to you one fully executed counterpart of the Agreement, together with any additional copies of the Contract Documents as indicated in Paragraph 2.02 of the General Conditions.

Owner**:** City of Flagler Beach

_____
Authorized Signature

By:

Title:

Copy: Engineer

END OF SECTION

SECTION 00 51 20

NOTICE TO PROCEED

Owner:	City of Flagler Beach	Owner's Project No.:	FB-240111
Contractor:		Contractor's Project No.:	
Engineer:	TO BE DETERMINED	Engineer's Project No.:	TO BE DETERMINED
Project:	CITY OF FLAGLER BEACH WWTF SLUDGE MANAGEMENT IMPROVEMENTS		

Effective Date of Contract: **TBD _____, 2025**

TO CONTRACTOR:

Owner hereby notifies Contractor that the Contract Times under the above Contract will commence to run on _____, 2024.

On that date, Contractor shall start performing its obligations under the Contract Documents. No Work shall be done at the Site prior to such date. **In accordance with the Agreement, the number of calendar days to achieve Substantial Completion is One Hundred Thirty (130) and the number of days to achieve readiness for final payment is one hundred thirty (160).**

Before starting any Work at the Site, Contractor must comply with the following: NONE

Owner**:**

Authorized Signature

By:

Title:

Date Issued:

Copy: Engineer

END OF SECTION

SECTION 00 61 10

Work Change Directive No.

Date of Issuance: Effective Date:

Owner: City of Flagler Beach Owner's Contract No.: FB-240111

Contractor: Contractor's Project No.:

Engineer: TO BE DETERMINED Engineer's Project No.: TO BE DETERMINED

Project: CITY OF FLAGLER BEACH WWTF SLUDGE MANAGEMENT IMPROVEMENTS

Contractor is directed to proceed promptly with the following change(s):

Description:

Attachments: *[List documents supporting change]*

Purpose for Work Change Directive:

Directive to proceed promptly with the Work described herein, prior to agreeing to changes on Contract Price and Contract Time, is issued due to: *[check one or both of the following]*

Non-agreement on pricing of proposed change.

Necessity to proceed for schedule or other Project reasons.

Estimated Change in Contract Price and Contract Times (non-binding, preliminary):

Contract Price $ [increase] [decrease].

Contract Time days [increase] [decrease].

Basis of estimated change in Contract Price:

Lump Sum Unit Price

Cost of the Work Other

RECOMMENDED:	AUTHORIZED BY:	RECEIVED:
By:	By:	By:
Engineer (Authorized Signature)	Owner (Authorized Signature)	Contractor (Authorized Signature)
Title:	Title:	Title:
Date:	Date:	Date:

Approved by Funding Agency (if applicable)

By: Date:

Title:

SECTION 00 62 50
NOTICE OF ACCEPTABILITY OF WORK

PROJECT: CITY OF FLAGLER BEACH WWTF SLUDGE MANAGEMENT IMPROVEMENTS

OWNER: City of Flagler Beach

CONTRACTOR:

OWNER'S CONSTRUCTION CONTRACT IDENTIFICATION: FB-240111

EFFECTIVE DATE OF THE CONSTRUCTION CONTRACT: _____, 2024

ENGINEER: TO BE DETERMINED

NOTICE DATE:

To: **City of Flagler Beach**
Owner

And To: _____
Contractor

From: TO BE DETERMINED
Engineer

The Engineer hereby gives notice to the above Owner and Contractor that Engineer has recommended final payment of Contractor, and that the Work furnished and performed by Contractor under the above Construction Contract is acceptable, expressly subject to the provisions of the related Contract Documents, the Agreement between Owner and Engineer for Professional Services dated _____, 2024, and the following terms and conditions of this Notice:

CONDITIONS OF NOTICE OF ACCEPTABILITY OF WORK

The Notice of Acceptability of Work ("Notice") is expressly made subject to the following terms and conditions to which all those who receive said Notice and rely thereon agree:

1. This Notice is given with the skill and care ordinarily used by members of the engineering profession practicing under similar conditions at the same time and in the same locality.

2. This Notice reflects and is an expression of the Engineer's professional opinion.

3. This Notice is given as to the best of Engineer's knowledge, information, and belief as of the Notice Date.

4. This Notice is based entirely on and expressly limited by the scope of services Engineer has been employed by Owner to perform or furnish during construction of the Project (including observation of the Contractor's work) under Engineer's Agreement with Owner, and applies only to facts that are within Engineer's knowledge or could reasonably have been ascertained by Engineer as a result of carrying out the responsibilities specifically assigned to Engineer under such Agreement.

5. This Notice is not a guarantee or warranty of Contractor's performance under the Construction Contract, an acceptance of Work that is not in accordance with the related Contract Documents, including but not limited to defective Work discovered after final inspection, nor an assumption of responsibility for any failure of Contractor to furnish and perform the Work thereunder in accordance with the Construction Contract Documents, or to otherwise comply with the Construction Contract Documents or the terms of any special guarantees specified therein.

6. This Notice does not relieve Contractor of any surviving obligations under the Construction Contract, and is subject to Owner's reservations of rights with respect to completion and final payment.

by: _____

Title: Project Manager

Dated: 2024

END OF SECTION

SECTION 00 64 25
CERTIFICATE OF SUBSTANTIAL COMPLETION

Owner:	City of Flagler Beach	Owner's Contract No.:	FB-240111
Contractor:		Contractor's Project No.:	
Engineer:	TO BE DETERMINED	Engineer's Project No.:	

CITY OF FLAGLER BEACH WWTF SLUDGE MANAGEMENT IMPROVEMENTS

This [preliminary] [final] Certificate of Substantial Completion applies to:

☒ All Work ☐ The following specified portions of the Work:

_____, 2024

Date of Substantial Completion

The Work to which this Certificate applies has been inspected by authorized representatives of Owner, Contractor, and Engineer, and found to be substantially complete. The Date of Substantial Completion of the Work or portion thereof designated above is hereby established, subject to the provisions of the Contract pertaining to Substantial Completion. The date of Substantial Completion in the final Certificate of Substantial Completion marks the commencement of the contractual correction period and applicable warranties required by the Contract.

A punch list of items to be completed or corrected is attached to this Certificate. This list may not be all-inclusive, and the failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract.

The responsibilities between Owner and Contractor for security, operation, safety, maintenance, heat, utilities, insurance, and warranties upon Owner's use or occupancy of the Work shall be as provided in the Contract, except as amended as follows: *None.*

Amendments to Owner's responsibilities:
☒ None
☐ As follows

Amendments to Contractor's responsibilities:
☒ None
☐ As follows:

The following documents are attached to and made a part of this Certificate: No Documents Attached.

This Certificate does not constitute an acceptance of Work not in accordance with the Contract Documents, nor is it a release of Contractor's obligation to complete the Work in accordance with the Contract.

EXECUTED BY ENGINEER:	RECEIVED:	RECEIVED:
By: _____ (Authorized signature)	By: _____ Owner (Authorized Signature)	By: _____ Contractor (Authorized Signature)
Title: Project Manager	Title:	Title:
Date: _____, 2022	Date:	Date:

END OF VOLUME 1

SECTION 00 01 01

CONTRACT DOCUMENTS FOR

CITY OF FLAGLER BEACH

3580 SOUTH CENTRAL AVENUE
CITY PROJECT NO: 238

CITY INVITATION TO BID NO: FB-240111

NOVEMBER 2024

VOLUME 2
TECHNICAL SECTIONS

CITY OF FLAGLER BEACH
WWTF SLUDGE MANAGEMENT IMPROVEMENTS
2000 AVENUE A
CITY PROJECT NO: 238

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END OF TOC

THESE DOCUMENTS ARE ATTACHED AS INDIVIDUAL DOCUMENTS.

SECTION 01000

PROJECT REQUIREMENTS

1. GENERAL

1.01 Description

A. Scope of Work

1. The Work to be done consists of the furnishing of all labor, materials, and equipment, and the performance of all Work included in this Contract.

2. A summary of the Work associated with this Project is presented in Section 01010, *Summary of Work*.

B. Work Included in the Project

1. The Contractor shall furnish all labor, superintendence, materials, plant power, light, heat, fuel, water, tools, appliances, equipment, supplies, and means of construction necessary for proper performance and completion of the Work. The Contractor shall obtain and pay for all necessary local building permits except as provided in Section 01065, *Permits and Fees*. The Contractor shall perform and complete the Work in the manner best calculated to promote rapid construction consistent with safety of life and property and to the satisfaction of the Engineer, and in strict accordance with the Contract Documents.

2. ***The Contractor shall clean up the Work and maintain it during and after construction, until accepted, and shall do all Work and pay all costs incidental thereto***. The Contractor shall repair or restore all structures and property that may be damaged or disturbed during performance of the Work.

3. ***The cost of incidental Work described in these Project Requirements, for which there are no specific Contract Items, shall be considered as part of the general cost of doing the Work and shall be included in the prices for the various Contract Items. No additional payment will be made therefore***.

4. The Contractor shall provide and maintain such modern plant, tools, and equipment as may be necessary, in the opinion of the Engineer, to perform in a satisfactory and acceptable manner all the Work required by this Contract. Only equipment of established reputation and proven efficiency shall be used. The Contractor shall be solely responsible for the adequacy of his workmanship, materials, and equipment, prior approval of the Engineer notwithstanding.

5. The work shall be carried out in such a way as ***to limit interruption of operation of existing utilities and treatment facilities to less than four (4) hours during low demand periods (10 pm - 6 am)*** and absolutely no interruption of water, wastewater, reclaimed water or other service to the Owner's customers will be allowed. All required temporary power, control, bypasses, and other appurtenances shall be provided by the Contractor as part of the cost of performing the Work.

C. Public Utility Installations and Structures

1. Public utility installations and structures shall be understood to include all poles, tracks, pipes, wires, conduits, vaults, manholes, and all other appurtenances and facilities pertaining thereto whether owned or controlled by the Owner, other governmental bodies, or privately owned by individuals, firms, or corporations, used to serve the public with transportation, traffic control, gas, electricity, telephone, wastewater, drainage, water, or other public or private property which may be affected by the Work shall be deemed included hereunder.

2. The Contract Documents contain data relative to existing public utility installations and structures above and below the ground surface. These data are not guaranteed as to their completeness or accuracy and it is the responsibility of the Contractor to make his own investigations to inform himself fully of the character, condition, and extent of all such installations and structures as may be encountered and as may affect the construction operations.

3. ***The Contractor shall protect all public utility installations and structures from damage during the Work***. Access across any buried public utility installation or structure shall be made only in such locations and by means approved by the Engineer. The Contractor shall so arrange his operations as to avoid any damage to these facilities. All required protective devices and construction shall be provided by the Contractor at his expense. All existing public utilities damaged by the Contractor shall be repaired by the Contractor, at his expense. No separate payment shall be made for such protection or repairs to public utility installations or structures.

4. Public utility installations or structures owned or controlled by the Owner or other governmental body which are shown on the Contract Drawings to be removed, relocated, replaced, or rebuilt by the Contractor shall be considered as a part of the

general cost of doing the Work and shall be included in the prices bid for the various Contract Items. No separate payment shall be made therefor.

5. Where public utility installations of structures owned or controlled by the Owner or other governmental body are encountered during the course of the Work, and are not indicated on the Contract Drawings or in the Specifications, and when, in the opinion of the Engineer, removal, relocation, replacement, or rebuilding is necessary to complete the Work under this Contract, such Work shall be accomplished by the utility having jurisdiction, or such Work may be ordered, in writing by the Engineer, for the Contractor to accomplish. If such work is accomplished by the utility having jurisdiction it will be carried out expeditiously, and the Contractor shall give full cooperation to permit the utility to complete the removal, relocation, replacement, or rebuilding as required. If such work is accomplished by the Contractor, it will be paid for as extra work as provided in the Agreement.

6. The Contractor shall, at all times in performance of the Work, employ acceptable methods and exercise reasonable care and skill so as to avoid unnecessary delay, injury, damage, or destruction of public utility installations and structures; and shall, at all times in the performance of the Work, avoid unnecessary interference with, or interruption of, public utility services, and shall cooperate fully with the owners thereof to that end.

7. ***The Contractor shall give written notice to the Owner and other governmental utility departments and other owners of public utilities of the location of his proposed construction operations, at least seventy-two (72) hours in advance of breaking ground in any area or on any unit of the Work***.

8. The maintenance, repair, removal, relocation, or rebuilding of public utility installations and structures, when accomplished by the Contractor as herein provided, shall be done by methods approved by the owners of such utilities.

9. Contractor responsible for determining utilities that may be encountered in the area.

1.02 Drawings and Project Manual

A. Contract Drawings

1. When obtaining data and information from the Contract Drawings, figures shall be used in preference to scaled dimensions, and large-scale drawings in preference to small-scale drawings. Specifications shall generally supercede information given on the Contract Drawings but in all cases, the more stringent or costlier option shall be assumed to govern in the Bid. The Owner shall exercise his right, as a tax-exempt entity, to recover sales tax in accordance with Article 1.37 of Section 00100, *Instructions to Bidders*, Article 1.04 of Section 00300, *Bid Form*, and State Law.

B. Copies Furnished to the Contractor

1. After the Contract has been executed, the Contractor will be furnished one (1) complete set of Contract Drawing (22 inches by 34 inches) and Project Manuals (contract requirements and specifications) and all addenda, upon request.

C. Supplementary Drawings

1. When, in the opinion of the Engineer, it becomes necessary to explain more fully the Work to be done or to illustrate the Work further or to show any changes which may be required, drawings known as Supplementary Drawings, with specifications pertaining thereto, will be prepared by the Engineer, and the Contractor will be furnished one (1) complete set of reproducible Contract Drawings (22 inches by 34 inches) and one (1) reproducible copy of the specifications.

2. The Supplementary Drawings shall be binding upon the Contractor with the same force as the Contract Drawings. Where such Supplementary Drawings require either less or more than the estimated quantities of Work, credit to the Owner or compensation therefor to the Contractor shall be subject to the terms of the Agreement.

D. Contractor to Check Drawings and Data

1. ***The Contractor shall verify all dimensions, quantities, and details*** shown on the Contract Drawings, Supplementary Drawings, Schedules, Specifications, or other data received from the Engineer, and shall notify him of all errors, omissions, conflicts, and discrepancies found therein. Failure to discover or correct errors, conflicts, or discrepancies shall not relieve the Contractor of full responsibility for unsatisfactory work, faulty construction, or improper operation resulting therefrom, nor from rectifying such conditions at his own expense. The Contractor will not be allowed to take advantage of any errors or omissions, as full instructions will be furnished by the Engineer, should such errors or omissions be discovered.

2. All schedules are given for the convenience of the Engineer and the Contractor and are not guaranteed to be complete. The Contractor shall assume all responsibility or the making of estimates of the size, kind, and quality of materials and equipment included in work to be done under the Contract.

E. Specifications

1. The Technical Specifications consist of three (3) parts: General, Products, and Execution.

2. The General part of a Specification contains “General Requirements” which govern the Work.

3. The Products and Execution parts modify and supplement the General Requirements by detailed requirements for the Work and shall always govern whenever there appears to be a conflict.

F. Intent

1. ***All Work called for in the Specifications applicable to this Contract, but not shown on the Contract Drawings in their present form, or vice versa, shall be of like effect as if shown or mentioned in both***. Work not specified in either the Contract Drawings or in the Specifications, but involved in carrying out their intent or in the complete and proper execution of the Work, is required and shall be performed by the Contractor as though it were specifically delineated or described.

2. The apparent silence of the Specifications as to any detail, or the apparent omission from them of a detailed description concerning any work to be done and materials to be furnished, shall be regarded as meaning that only the best general practice is to prevail and that only material and workmanship of the best quality is to be used, the interpretation of these Specifications shall be made upon that basis.

1.03 Accident Prevention

A. Precautions shall be exercised at all times for the protection of person and property. The safety provisions of applicable laws, building and construction codes shall be observed.

B. The Contractor shall comply with the Trench Safety Act as listed in the Bid and the U.S. Department of Labor Safety and Health Regulations for construction promulgated under the Occupational Safety and Health Act of 1970 (PL 91-596), and under Hours and

Safety Standards Act Section 107 of the contract Work. Hours and Safety Standards Act (PL 91 - 54), except where state and local safety standards exceed the federal requirements and except where state safety standards have been approved by the Secretary of Labor in accordance with provisions of the Occupational Safety and Health Act, shall be complied with.

C. First Aid

1. The Contractor shall keep upon the site, at each location where work is in progress, a completely equipped first aid kit and shall provide ready access thereto at all times when workers are employed on the Project.

1.04 Materials and Equipment

A. Manufacturer

1. All transactions with the manufacturers or subcontractors shall be through the Contractor, unless the Contractor shall request and at the Engineer's option, that the manufacturer or subcontractor deal directly with the Engineer.

2. Any such transactions shall not in any way release the Contractor from his full responsibility under this Contract.

3. Any two (2) or more pieces of material or equipment of the same kind, type, or classification, and being used for identical types of service, shall be made by the same manufacturer.

B. Delivery

1. The Contractor shall deliver materials in ample quantities to ensure the most speedy and uninterrupted progress of the Work so as to complete the Work within the allotted Contract Time.

2. The Contractor shall also coordinate deliveries in order to avoid delay in, or impediment of, the progress of the work of any related Contractor.

C. Tools and Accessories

1. The Contractor shall, unless otherwise stated in the Contract Documents, furnish with each type, kind, or size of equipment, one (1) complete set of suitably marked

high grade special tools and appliances which may be needed to adjust, operate, maintain, or repair the equipment. Such tools and appliances shall be furnished in approved corrosion resistant thermoplastic cases, properly labeled (indelible and weatherproof) and equipped with good grade cylinder locks and duplicate keys.

2. Spare parts shall be furnished as specified herein, and in the individual equipment specification sections, and as recommended by the manufacturer necessary for the operation of the equipment, not including materials required for routine maintenance.

3. Each piece of equipment shall be provided with a substantial nameplate (indelible and weatherproof), securely fastened in place and clearly inscribed with the manufacturer's name, year of manufacture, serial number, weight, and principal rate data.

D. Service of the Manufacturer's Engineer

1. ***The Contract Prices for equipment shall include the cost of furnishing a competent and experienced engineer or superintendent*** who shall represent the manufacturer and shall assist the Contractor, when required, to install, adjust, test, and place in operation, the equipment in conformity with the Contract Documents.

2. After the equipment is placed in permanent operation by the Owner, such engineer or superintendent shall ***make all adjustments and tests required by the Engineer to prove that such equipment is in proper and satisfactory operating condition, and shall instruct such personnel*** as may be designated by the Owner in the proper operation and maintenance of such equipment.

1.05 Inspection and Testing

A. General

1. For tests specified to be made by the Contractor, the testing personnel shall make the necessary inspections and tests, and the reports thereof shall be in such form as will facilitate checking to determine compliance with the Contract Documents. An electronic copy (PDF) of the reports shall be submitted, and authoritative certification thereof must be furnished to the Engineer as a prerequisite for the acceptance of any material or equipment.

2. If, in the making of any test of any material or equipment, it is ascertained by the Engineer that the material or equipment does not comply with the Contract Documents, the Contractor will be notified thereof, and he will be directed to refrain from delivering said material or equipment, or to remove it promptly from the site or from the Work and replace it with acceptable material, without cost to the Owner.

3. Tests of electrical and mechanical equipment and appliances shall be conducted in accordance with the recognized test codes of the ANSI, ASME, or the IEEE, except as may otherwise be stated herein.

4. The Contractor shall be fully responsible for the proper operation of equipment during testing and instruction periods and shall neither have nor make any claim for damage which may occur to equipment prior to the time when the Owner formally takes over the operation thereof.

B. Costs

1. ***All inspection and testing of materials furnished under this Contract will be provided by the Contractor***, unless otherwise expressly specified.

2. ***The cost of shop and field tests of equipment and of certain other tests specifically called for in the Contract Documents shall be borne by the Contractor, and such costs shall be deemed to be included in the Contract Price***.

3. Materials and equipment submitted by the Contractor as the equivalent to those specifically named in the Contract may be tested by the Owner for compliance. The Contractor shall reimburse the Owner for the expenditures incurred in making such tests of materials and equipment which are rejected for non-compliance.

C. Certificate of Manufacture

1. ***The Contractor shall furnish to the Engineer authoritative evidence in the form of a certificate of manufacture*** that the materials to be used in the Work have been manufactured and tested in conformity with the Contract Documents.

2. An electronic certificate (PDF) shall be notarized and shall include copies of the results of physical tests and chemical analyses, where necessary, that have been made directly on the product or on similar products of the manufacturer.

D. Shop Tests

1. Each piece of equipment for which pressure, duty, capacity, rating, efficiency, performance, function, or special requirements are specified shall be tested in the shop of the maker in a manner which shall conclusively prove that its characteristics comply fully with the requirements of the Contract Documents. Shop tests, where specified, shall be witnessed by the Engineer.

2. An electronic copy (PDF) of the manufacturer's actual test data and interpreted results thereof, accompanied by a certificate of authenticity sworn to by a responsible official of the manufacturing company and/or independent laboratory, shall be submitted to the Engineer for approval.

3. ***The cost of shop tests and of furnishing manufacturer's preliminary and shop test data of operating equipment shall be borne by the Contractor***.

E. Start-up Tests

1. As soon as conditions permit, ***the Contractor shall furnish all labor, materials, and instruments and shall make start-up tests of equipment***.

2. If the start-up tests disclose any equipment furnished under this Contract which does not comply with the requirements of the Contract Documents, the Contractor shall, prior to demonstration tests, make all changes, adjustments, and replacements required. The furnishing Contractor shall assist in the start-up tests as applicable.

F. Demonstration Tests

1. ***Prior to Contractor's request for a Substantial Completion inspection, all equipment and piping installed under this Contract shall be subjected to demonstration tests as specified or required to prove compliance with the Contract Documents***.

2. The Contractor shall furnish labor, fuel, energy, water, and all other materials, equipment, and instruments necessary for all demonstration tests, at no additional cost to the Owner. The Contractor shall assist in the demonstration tests as applicable.

1.06 Lines and Grades

A. Grade

1. All work under this Contract shall be constructed in accordance with the lines and grades shown on the Contract Drawings, or as given by the Engineer. The full responsibility for keeping alignment and grade shall rest upon the Contractor.

2. The Engineer will establish bench marks and baseline controlling points. Reference marks for lines and grades as the Work progresses will be located by the Contractor to cause as little inconvenience to the prosecution of the Work as possible. The

Contractor shall so place excavation and other materials as to cause no inconvenience in the use of the reference marks provided. He shall remove any obstructions placed by him contrary to this provision.

B. Surveys

1. ***The Contractor shall furnish and maintain, at his own expense, stakes and other such materials***.

2. ***The Contractor shall check such reference marks*** by such means as he may deem necessary and, before using them, shall call the Engineer's attention to any inaccuracies.

3. ***The Contractor shall, at his own expense, establish all working or construction lines and grades as required from the reference marks*** set by the Engineer, and shall be solely responsible for the accuracy thereof. He shall, however, be subject to the check and review by the Engineer. Field engineering and surveying shall be in accordance with Section 01050, *Field Engineering*.

C. Safeguarding Marks

1. ***The Contractor shall safeguard all points, stakes, grade marks, monuments, and bench marks made or established on the Work***, bear the cost of re-establishing them if disturbed, and bear the entire expense of rectifying work improperly installed due to not maintaining or protecting or to removing without authorization such established points, stakes, and marks.

2. ***The Contractor shall safeguard all existing and known property corners, monuments, and marks*** adjacent to but not related to the Work and shall bear the cost of re-establishing them if disturbed or destroyed.

1.07 Adjacent Structures and Landscaping

A. Responsibility

1. ***The Contractor shall be entirely responsible and liable for all damage or injury as a result of his operations*** to all other adjacent public and private property, structures of any kind and appurtenances thereto met with during the progress of the work.

2. Protection of public and private property shall be provided by the Contractor as specified in the General and Supplementary Conditions and as specified herein.

3. The cost of protection, replacement in their original locations and conditions or payment of damages for injuries to such adjacent public and private property and structures affected by the work, whether or not shown on the Contract Drawings, and the removal, relocation and reconstruction of such items called for on the Contract Drawings or specified shall be included in the various Contract Items and no separate payments will be made therefor.

4. The Contractor is expressly advised that the protection of buildings, structures, tanks, pipelines, monitoring wells, etc. and related work adjacent and in the vicinity of his operations, wherever they may be, is solely his responsibility.

5. Conditional inspection of buildings or structures in the immediate vicinity of the project which may reasonably be expected to be affected by the Work shall be performed by and be the responsibility of the Contractor. Reference is made to the requirements of Section 00800, *Supplementary Conditions*, the pre-existing condition survey described in this section, Section 01380, *Construction Photographs*, and Section 01390, *Preconstruction Video Recording*.

6. The Contractor shall, before starting operations, make an examination of the adjacent structures, buildings, facilities, etc., and record by notes, measurements, photographs, etc., conditions which might be aggravated by open excavation and construction.

7. Repairs or replacement of all conditions disturbed by the construction shall be made to the satisfaction of the Engineer and to the satisfaction of the Owner. This does not preclude conforming to the requirements of the insurance underwriters. Copies of surveys, photographs, reports, etc., shall be given to the Owner.

8. Prior to the beginning of any excavations the Contractor shall advise the Engineer of all structures on which he intends to perform work or which performance of the project work will affect.

B. Protection of Trees

1. All trees and shrubs shall be adequately protected by the Contractor with boxes and otherwise and in accordance with ordinances governing the protection of trees.

2. Excavated materials shall be placed so as not to injure such trees or shrubs.

3. Trees or shrubs destroyed by negligence of the Contractor or his employees shall be replaced by him with new stock of similar size and age, at its proper season and ***at the sole expense of the Contractor***.

C. Lawn Areas

1. Lawn areas shall be left in as good condition as before the starting of the work.

2. ***Where sod is to be removed, it shall be carefully removed, and later replaced, or the area where sod has been removed shall be restored with new sod***.

D. Restoration of Fences

1. Any fence, or part thereof, that is damaged or removed during the course of the work shall be replaced or repaired by the Contractor and shall be left in as good a condition as before the starting of the work.

2. The manner in which the fence is repaired or replaced and the materials used in such work shall be subject to the approval of the Owner and Engineer.

3. The cost of all labor, materials, equipment, and work for the replacement or repair of any fence shall be deemed included in the appropriate Contract Item or items, or if no specific item is provided therefor, as part of the overhead cost of the work, and no additional payment will be made therefor.

1.08 Protection of Work and Public

A. Barriers and Lights

1. During the prosecution of the work, the Contractor shall put up and maintain at all times such barriers and lights as will effectually prevent accidents.

2. The Contractor shall provide suitable barricades, red lights, *danger* or *caution* or *street closed* signs and watchmen at all places where the work causes obstructions to the normal traffic or constitutes in any way a hazard to the public.

B. Noise

1. ***The Contractor shall eliminate noise to as great an extent as practicable at all times***. Air compressing equipment shall be equipped with silencers and the exhaust of all gasoline motors or other power equipment shall be provided with mufflers. The Contractor shall construct sound barriers as necessary to eliminate noise.

2. ***In the vicinity of hospitals and schools, special care shall be used to avoid noise or other nuisances***. The Contractor shall strictly observe all local regulations and ordinances covering noise control.

3. ***Except in the event of an emergency or for critical tie-ins to existing utilities, work shall restricted to between the hours of 7:00 a.m. and 5:00 p.m., Monday through Friday except for legal or City holidays***.

4. Proper and efficient prosecution of the work, particularly to avoid unacceptable shutdown of existing utility service, may require operations during the night. Written permission of the Owner shall be obtained before starting such items of the work.

5. ***No deliveries are to be made to the site before 8:00 a.m. nor after 3:00 p.m.*** Delivery vehicles may not arrive before 8:00 a.m. and are to be limited to normal work days.

6. The Contractor shall not create a public nuisance in accordance with Article 1.33 of Section 01120, *Special Project Procedures*.

C. Access to Public Services

1. Neither the materials excavated nor the materials or equipment used in the construction of the work shall be so placed as to prevent free access to all fire hydrants, valves or manholes.

D. Dust Prevention

1. ***The Contractor shall prevent dust nuisance from his operations or from traffic*** by keeping the roads and/or construction areas sprinkled with water at all times.

1.09 Cutting and Patching

A. The Contractor shall do all cutting, fitting and patching of his portion of the Work that may be required in accordance with Section 01045, *Cutting and Patching*.

1.10 Cleaning

A. The Contractor shall execute cleaning, during progress of the Work, and at completion of the Work, as required by the General Conditions and Section 01710, *Cleaning*, and Section 01800, *Miscellaneous Work and Cleanup*.

1.11 Miscellaneous

A. Protection against Siltation and Bank Erosion

1. The Contractor shall arrange his operations and construct erosion control devices to minimize siltation and bank erosion on the construction site and on existing or proposed water course and drainage channels.

2. The Contractor, at his own expense, shall remove any siltation deposits and correct any erosion problems as directed by the Engineer which results from his construction operations.

3. The Contractor shall review the requirements of Section 01560, *Environmental Protection*, and Section 01570, *Temporary Erosion and Sedimentation Control*.

4. ***The Contractor shall properly dispose of all surplus material, including soil, in accordance with local, state and federal regulations***.

B. Protection of Wetland Areas

1. Under no circumstances shall surplus material be disposed of in wetland or watercourse areas as defined by the Florida Department of Environmental Protection (FDEP) or the wetland or watercourse areas surrounding the Project Site.

2. The Contractor shall review the requirements of Section 01560, *Environmental Protection*, and Section 01570, *Temporary Erosion and Sedimentation Control*.

C. Existing Facilities

1. The Work shall be conducted to maintain all Owner utilities and traffic lanes in operation during the Project.

D. Use of Chemicals

1. All chemicals used during project construction or furnished for project operation, whether herbicide, pesticide, disinfection, polymer, reactant, or of other classification, must show approval of either EPA or USDA.

2. Use of all such chemicals and disposal of residues shall be in strict conformance with instructions.

E. Cooperation with Other Contractors and Forces

1. During progress of work under this Contract, it may be necessary for other contractors and persons employed by the Owner to work in or about the project.

2. The Owner reserves the right to put such other Contractors to work and to afford such access to the Site of the Work to be performed hereunder at such times as the Owner deems proper.

3. The Contractor shall not impede or interfere with the work of such other Contractors engaged in or about the Work and shall so arrange and conduct his work that such other contractors may complete their work at the earliest date possible.

4. The Contractor shall review the requirements of Section 01040, *Project Coordination*.

F. Construction shall be conducted and shall result in construction of the improvements of this Project in full accordance with the conditions of the permits granted for this Project.

1.12 Owner's Representatives

A. The Owner will appoint the Resident Project Representative (RPR) and Project Manager (PM) as the Owner's representative as defined in the General and Supplementary Conditions.

1.13 Pre-Existing Conditions

A. ***The Contractor shall conduct a pre-existing conditions survey of each of the existing structures, adjacent properties, and existing land improvements in the vicinity of or potentially affected by the Work***. The survey shall establish the state of the property before construction as a basis for any claims of damage that may occur.

B. This survey shall include comprehensive photography and video recording of structures; spot elevations of grades and tops of walls; nearby water courses, wetlands, landscape features; driveways and walkways; and shall make note of any identified previously damaged areas. Photographs and video tape shall be subject to review and approval by the Owner and shall be in accordance with Section 01380, *Construction Photographs* and Section 01390, *Preconstruction Video Recording*.

1.14 Proposed Construction Sequencing - NOT USED

1. PRODUCTS - NOT USED

2. EXECUTION - NOT USED

END OF SECTION

SECTION 01010

SUMMARY OF WORK

1. GENERAL

1.01 Work Covered by Contract Documents

A. The Work to be performed under this Contract consists of the construction of ***Sludge Management System Improvements at the Flagler beach WWTF*** (2000 Ave A Flagler Beach, FL 32136) for the City of Flagler Beach, Florida as shown on the Contract Drawings and as specified herein**.** The Work consists of furnishing all materials, equipment, tools, overhead, and labor for the construction of the facilities consisting of, but not limited to, the following:

1. Chemical feed and pumping systems
2. Dechlorination System
3. Biosolids dewatering system and associated improvements
4. Electrical, controls, instrumentation and SCADA system improvements
5. Site work, yard piping, stormwater management system improvements, plant internal roadway improvements, demolition, signage, sodding, and miscellaneous appurtenances and ancillaries.

B. All fees, permits and licenses for the permanent construction which are required by regulatory agencies or authorities, including fees for the review of Contract Documents prior to construction, shall be procured by the Contractor.

C. The Contractor shall perform the work complete, in place, and ready for service, and shall include repairs, testing, clean-up, replacements and restoration required as a result of damages caused during this construction.

D. ***The Contractor shall be required to obtain and pay for a building permit from the City of Flagler Beach Building Department*** for the improvements to be constructed as part of this Contract.

E. ***The Contractor shall also be responsible for all fees associated with the City of Flagler Beach and any Florida Power and Light (FPL) inspections and energizing of services and equipment***.

1.02 Contract

A. This Project shall be constructed under a "***lump sum*"** contract.

B. Construct the Project for the total price stipulated in the agreement subject to authorized change orders only. A written change order will be required authorizing and ordering the work and specifying the amount and terms of payment **"*prior*"** to execution of any extra, additional or changed work.

C. If the Contractor proceeds performing additional, extra or changed work without an executed Change Order, it is understood and agreed by the parties that ***the Owner has no obligation to subsequently pay for the extra or additional work under a subsequent claim or any other basis*** and that by executing the Agreement, the Contractor waives rights to make subsequent claims for extra or additional work if he proceeded without a signed Change Order in performing the work.

1.03 Project Work Sequence

A. The Contractor shall consider the proposed construction sequence, identified in Article 1.14 of Section 01000, *Project Requirements*, when making his Bid and incorporate all related costs in the Bid Price.

B. The "down" time of any "existing" infrastructure shall be minimized as the Flagler Beach WWTF still needs to process the raw wastewater generated from the Flagler Beach Wastewater Management System.

C. The Contractor shall establish his work sequence based on the use of crews to facilitate completion of construction and testing within the specified Contract Time identified in the Agreement.

D. The detailed work sequence, including the Contractor's plans for provision of temporary facilities, shall be submitted to the Engineer ***no later than ten (10) calendar days after the Notice to Proceed***.

E. The Engineer reserves the right to change the construction sequence during construction, if in the opinion of the Engineer and Owner, that the change is made in a timely manner that allows the Contractor adequate time to schedule materials, equipment and labor for the execution of the Work involved in the sequence of the Work from that stated in the Contractor's submitted construction schedule/sequence.

1.04 Contractor Use of Premises

A. The Contractor shall confine operations at the Project Site to the areas permitted by the City of Flagler Beach, the Contract Documents and all applicable laws, ordinances, and permits. If additional storage or work areas are required***, they shall be obtained by the Contractor at no additional cost to the Owner***.

B. The Contractor shall not unreasonably encumber the site with materials or equipment. The City and Engineer shall designate all areas that can be used by the Contractor.

C. The Contractor shall not load structures with weight that will endanger the structure.

D. The Contractor shall assume full responsibility for the protection and safekeeping of products and materials at the job site.

1.05 Construction Schedule

A. ***Within ten (10) calendar days after the Notice to Proceed (NTP)***, ***the Contractor shall submit a detailed Construction Schedule of all major activities*** needed to complete the project in accordance with the details outlined in the Contract Documents.

B. Construction Schedules shall be generated in accordance with the requirement of Section 01311, Construction Progress Schedules".

1.06 Preconstruction Meeting

A. ***The Engineer will schedule a preconstruction meeting no later than ten (10) calendar days after the date of the Notice to Proceed (NTP)***. This meeting shall be attended by the Engineer, Contractor, and Owner. The purpose of the meeting shall be to review shop drawing procedures, construction methods, administrative procedures, project site conditions, to establish a construction schedule, etc.

B. Location of the Meeting: A central site, convenient for all parties designated by the Engineer.

C. The Contractor shall refer to Section 01200, *Project Meetings*, for further details.

1.07 Progress Meetings

A. ***Progress meetings will be held every thirty (30) days or less with the first meeting thirty (30) days after the preconstruction meeting or thirty (30) days or less after the date of Notice to Proceed***.

B. Location of the meetings: Project field office of the Contractor.

C. The Contractor shall refer to Section 01200, *Project Meetings*, for further details.

1.08 Coordination

A. The Contractor shall be fully responsible for the coordination of his work and the work of his employees, subcontractors, manufacturers' representatives, and suppliers and to assure compliance with schedules.

B. The coordination requirements of this Section are in addition to the requirements of the Section 1040, *Project Coordination*, Section 00700, *General Conditions* Section 00800, *Supplementary Conditions* and Sections 00805 and 00806, *FDEP Supplementary Conditions*.

C. It is the Contractor's responsibility to coordinate with all the utilities regarding locates, testing or relocations.

1.09 Work under Other Contracts

A. There are no other major contractual construction operations that are known to be occurring at during the period when the Contractor will be constructing the ***Flagler Beach WWTF Sludge Management System Improvements*** Project.

1.10 Facility Security Requirements

A. Prior to beginning construction activity, ***the Contractor must provide the Owner's Utility Department and the Engineer with a name list and pictures of all personnel (including subcontractors) expected to be on-site during the construction of this Project***.

B. The Contractor and major subcontractor's permanent employees ***shall be required to carry ID cards (photo, company name, position, person's name, etc.)*** with them at all times during project construction. Non-identified personnel will not be allowed at the Facility to perform work. Any missed time, cost and loss of construction schedule due

to Contractor employees not being identified, ***shall be borne solely by the Contractor and the Contract Time and Cost will not be adjusted***.

C. Contractor personnel may, from time to time, be required to show state-issued identification in order to be allowed entrance to the facility. Vehicles and personnel may be searched prior to obtaining access to the site. ***Personnel not on the Contractors list will not be allowed access to the facility***. As such, the Contractor is highly encouraged to keep and maintain a current list of personnel expected to be on-site on a daily basis.

D. All delivery drivers ***must*** check in with the Contractor and provide a valid state driver's license as identification. Delivery vehicles will not be allowed in the facility unless identification is provided.

E. Any missed time, cost and loss of construction schedule due to Contractor employees not being identified, shall be borne solely by the Contractor and the Contractor Time and Cost will not be adjusted.

1.11 Subcontractors

A. The Contractor shall not employ any subcontractors against whom the Owner or the Engineer may have a reasonable objection.

B. The name, addresses and experiences of the proposed project subcontractors shall be submitted with the Bid and also to the Engineer for the Engineer's review prior to any Work being performed by the subcontractor.

1.12 Working Hours

A. Working hours for the Resident Project Representative (RPR) are an eight (8) hour period between the hours of 8:00 a.m. and 5:00 p.m., Monday through Friday. Any work beyond this time period is to be requested, ***in writing, at least seventy-two (72) hours in advance and paid for by the Contractor (in advance) within five (5) days of the additional work at the standard billing rate for the RPR times a multiplier of 1.50***.

B. ***Any work required on Saturday or Sunday shall be requested in writing at least seventy-two (72) hours in advance***. All requests must be approved by the Engineer and Owner in advance. Under emergency conditions, a verbal request may be made with a follow-up written request. ***This additional RPR time shall be paid for by the Contractor (in advance) within five (5) days of the additional work at the standard billing rate for the RPR times a multiplier of 2.00***.

1.13 Contractor's Superintendent

A. The Contractor's Superintendent shall have a ***minimum of ten (10) years of related construction experience of the nature required by this Construction Project and shall be English-speaking.*** The Contractor shall submit the résumé of the superintendent to Engineer for approval prior to the Preconstruction Meeting.

B. The Contractor shall have a ***superintendent on-site at all times*** Work is being performed by the Contractor or subcontractors at the Project Site. The Superintendent does not have to be on-site during the maintenance of the Contractor's equipment.

1.14 Operation of Existing Utilities

A. Existing utilities (water, wastewater, reclaimed water, etc.) must remain operational during the construction of the Project Work.

B. The Contractor shall coordinate all construction activities with the Owner and all applicable utilities.

C. ***The Engineer and Owner shall be given a "written" seventy-two (72) hour notification regarding tie-ins to existing utilities*** as part of this Project. The Contractor shall conduct such activities in accordance with the Owner's requirements relating to the operation of utility systems.

1.15 Demolition

A. Remove all materials and equipment from areas indicated for demolition. Seal abandoned lines that remain in place. Remove all existing unused wires.

B. Dispose of all removed materials and unwanted equipment (as directed by the Owner) and dispose of them in a legal manner.

C. Disconnect existing electrical services and controls to items being removed or relocated.

1.16 Damage

A. All damage to buildings, structures, pipes, ducts, equipment, fixtures, etc. shall be properly repaired by the Contractor, to the satisfaction of the Owner and Engineer, ***at no additional cost to the Owner***.

1.17 Electrical Interlocks

A. Where equipment motors are to be electrically interlocked with other equipment for simultaneous operation, the Contractor shall provide wiring diagrams and coordinate between the various subcontractors and suppliers so that proper wiring of the equipment involved is effected.

1.18 Disturbed Areas

A. Restore all areas disturbed by construction to a condition at least equal to the preconstruction condition including, but not limited to, all landscaping, grassing, driveways, roads, fences, irrigation systems, traffic control devices, and other improvements.

B. Maintain ingress and egress to the treatment facility site and all properties adjacent to the construction and minimize inconvenience to abutting property occupants.

1.19 Cutting and Patching

A. Cutting and patching for inspection and testing and the payment therefor shall be as specified in Section 00700, *General Conditions*, and Section 00800, *Supplementary Conditions*.

B. The Contractor shall, at no additional expense to the Owner, perform cutting and patching necessary to the completion of the Project. The Contractor shall perform cutting and patching in a manner to prevent damage to the structure or previously completed work.

C. The Contractor shall refinish all surfaces as necessary to provide an even finish. Refinish continuous surfaces to the nearest intersection.

1.20 Owner Furnished Products

A. The Owner shall exercise his right, as a tax-exempt entity, to recover sales tax in accordance with Article 1.37 of Section 00100, *Instructions to Bidders*, Article 1.04 of Section 00300, *Bid Form* and State Law.

2. PRODUCTS - NOT USED

3. EXECUTION - NOT USED

END OF SECTION

SECTION 01019

CONTRACT CASH ALLOWANCES

1. GENERAL

1.01 Description

A. This Section discusses the contract cash allowances for the following items:

1. Treatment System compliance monitoring equipment.

2. Computer hardware, software, printers, scanners, etc.

3. Project building permit and miscellaneous equipment and materials.

B. ***The Contract Cash Allowance funds are owned by and are, property of, the City of Flagler Beach and may or may not be used during the construction of the proposed improvements***.

1.02 Cash Allowance for the Operating and Compliance Monitoring Equipment, Computer Hardware/Software, Building Permit and Miscellaneous Equipment and Materials

A. Costs included in the Allowance

1. Direct costs to the Contractor for:

a. The purchase of "new" treatment system operational and compliance monitoring equipment, computer hardware/software, printers, laboratory glassware/equipment, refrigerators, the project building permit, cleaning and maintenance and cleaning items, and other miscellaneous equipment, materials and ancillaries required for completion, implementation and optimization of Flagler Beach WWTF Sludge Management System Improvements requested by the Owner or Engineer.

b. Delivery of the aforementioned materials/equipment to the Project Site.

c. Installation of the equipment, materials, etc., as required, when directed by the Engineer.

2. All costs directly or indirectly related to the costs outlined in Article 1.02(A)(1) above including taxes, overhead, profit, insurance, bonds, supervision and equipment rental provided such costs are identified and approved by the Owner and Engineer prior to the start of the Work.

3. Cost of Shop Drawings, product data, and procedure description submission to the Engineer for approval, as necessary.

B. Compliance Monitoring and Miscellaneous Equipment and Materials Cash Allowance

1. Included on the Bid form, as Item No. 7, is the sum of $100,000 for the purchase of the items identified above in Article 1.02(A)(1) Flagler Beach WWTF Sludge Management System Improvements as requested and approved by the Owner and Engineer.

1.03 Payment

A. Upon receipt of approved invoice from the Engineer submit an electronic copy (PDF) of the equipment manufacturer's invoice with the next application for payment.

B. The City of Flagler Beach, Florida, is exempt from State and local sales taxes. The Contractor is responsible for reviewing the pertinent State statutes involving sales tax and complying with all requirements.

C. Pay the invoice within ten (10) calendar days of receipt of payment from the Owner.

D. ***Any of the miscellaneous cash allowance funds not spent during the course of the project shall be deducted from the Contractor's final application for payment via a Project "Close-out" Change Order***.

1. PRODUCTS - NOT USED

2. EXECUTION - NOT USED

END OF SECTION

SECTION 01025

MEASUREMENT AND PAYMENT

1. GENERAL

1.01 Payment

A. Payment for all work done in compliance with the Contract Documents, ***inclusive of furnishing all labor, equipment, materials, tools and performance of all operations relative to construction of this Project***, will be made on a *lump sum* basis for the quantity of work installed as outlined on the Bid Form (Section 00300) and under the Pay Items listed herein. ***Work for which there is not a Pay Item will be considered incidental to the Contract, and no additional compensation will be allowed.***

B. The Total Base Bid Amount for the Work is intended to establish a total price for completing the Work in its entirety.

C. Additions, deletions, modifications or changes to the Work, as defined by this Contract, will be performed by Change Order according to the General and Supplementary Conditions and will be paid for on the basis of the Cost of the Work.

1.02 General

A. The Owner reserves the right to alter the Contract Drawings, modify incidental work, as may be necessary, and increase or decrease quantities of work to be performed to accord with such changes, including deduction or additions to the Scope of Work outlined in the Contract Documents. Changes in the work shall not be considered as a waiver of any conditions of the Contract nor invalidate any provisions thereof. Changes resulting in changes in the scope or quantities of Work or time or other conditions of work will be basis for consideration of a Change Order which is to be negotiated and executed before proceeding with the work. A supplemental agreement between the Contractor and the Owner will be required when such changes involve a net increase or decrease of more than twenty-five percent (25%) in the total contract amount. ***Work which has not been authorized by a written Change Order will not be subsequently considered for additional payment***.

B. ***Any items not shown or omitted that are required for a complete installation shall be furnished and installed by the Contractor at no additional cost to the Owner***.

C. Quantities necessary to complete the work, as shown on the Contract Drawings or as specified herein, shall govern over those shown on the Bid Form.

D. The Engineer will make measurements and determinations as necessary to classify the Work within Pay Items and determine the quantities for pay purposes. Such decisions shall be final after three calendar (3) days if the Contractor does not submit a written notice as defined below.

> *"If the Contractor differs with the Engineer's classification of the Pay Items or determination of quantities of the Pay Items, he must notify the Engineer, in writing, within three (3) calendar days of the time that the Contractor is informed of the Engineer's decision. Otherwise, the Owner will not consider any such difference as a claim for payment.*"

If the Owner or Engineer determines that the quantities for each respective Pay Item does not represent the work completed and accepted to date, the application for payment will be returned to the Contractor for revision. The Contractor may submit, in writing, an explanation to justify the quantities used in the application. The Contractor only needs to address the Pay Items not approved by the Owner or Engineer. Further review by the Owner and Engineer will determine the quantities allowed on the pay application.

E. ***Work shall not be considered complete until all testing has been satisfactorily completed and the item of work has demonstrated compliance with Contract Drawings and Documents (specifications)***.

F. A ***preliminary*** monthly application for payment shall be submitted to the Engineer for review ***five (5) days prior to the submittal*** for approval of the Contractor's monthly payment request.

G. The quotations for the Work are intended to establish a total price cost for completing Work in its entirety.

H. Thrust blocks or mechanical restraints are not separate pay items.

I. No additional payment will be made for sheeting and shoring, well pointing or other methods of dewatering excavations.

J. Payment for repair and replacement of existing utilities will be included in the "*lump sum*" or "*unit price*" Bid Amount for the related construction Bid Item.

K. Payment for lump sum items shall be on a percentage of the completed and accepted work for a particular item, as determined by the Engineer.

L. Failure on the part of the Contractor to construct any item to the plan or authorized dimensions within the specification tolerances shall result in: (1) Reconstruction to acceptable tolerances at no additional cost to the Owner; (2) Acceptance at "*no pay*"; or (3) Acceptance at a reduced final lump sum payment, all at the discretion of the Engineer.

M. The Contractor shall take no advantage of any apparent error or omission in the Contract Drawings or Specifications, and the Engineer shall be permitted to make corrections and interpretations, as may be deemed, necessary for fulfillment of the intent of the Contract Documents. ***The Contractor shall verify the quantities in the field "prior" to ordering materials. The Owner and Engineer shall not be responsible for restocking fees resulting from the Contractor over-ordering materials or from ordering materials/equipment prior to Engineer "approved" shop drawings.***

N. The quantity for a payment item will be revised only in the event that it is determined to be substantially in error or if the City is attempting to recover sales tax on large ticket items. An error shall be deemed substantial if the quantity will increase or decrease in excess of five percent (5%) of the original quantity for that item or the amount due for that item will increase or decrease in excess of $1,000 (whichever is smaller). In general, such revisions will be determined by final measurement or plan calculations or both as additions to or deduction from plan quantities specified within these Contract Documents.

O. Use of Procurement Cards - NOT USED

P. Taxes

1. ***The City of Flagler Beach is exempt from state and local sales tax***. The City of Flagler Beach, Florida, has the following tax exemption certificates assigned:

   a. Certificate of Registry for tax-free transactions under Chapter 32, Internal Revenue Codes.

   b. Florida Sales & Use Tax Exemption Certificate

Q. Sale Tax Recovery

1. ***The City reserves the right to delete items within the Solicitation and purchase said items directly from a supplier (Owner Direct Purchase) without further competition in an effort to benefit from the City's tax exempt status***.

2. Sales Tax Recovery

   a. The Owner reserves the right to purchase materials associated with any project in order to recover sales tax in the exercise of its tax free status.

   b. The Owner shall exercise his right, as a tax-exempt entity, to recover sales tax in accordance with Article 1.37 of Section 00100, *Instructions to Bidders*, and State Law with respect to, but not limited to, the following equipment (not a complete list):

Division No.	Potential Owner Direct Purchase (ODP) Items
2 - Sitework	Yard Piping
	Sod and Irrigation System
3 - Concrete	Precast Concrete Structures
	Cast-in-Place Concrete
4 - Masonry	Masonry/Reinforced Unit Masonry
5 - Metals	Metal Stairs and Walkways
	Handrails and Accessories
	Grating, Plates and Frames
6 - Wood and Plastics	Double-Wall Chemical Storage Tanks
	Fiberglass Grating
11 – Equipment	Dewatering Screw Press
	Chemical Feed Skids

Division No.	Potential Owner Direct Purchase (ODP) Items
13 - Special Construction	Process Instrumentation and Control Systems
	Control Panels
	SCADA System improvements
	PLC's
15 - Mechanical	Piping and accessories
	Valves and appurtenances
16 - Electrical	Wires and Cables
	Raceways and Fittings
	Motors
	MCC's
	Panelboards
	Fiber Optic systems
	Lighting Systems
	Grounding Systems
	Lightning protection systems

3. ***The Contractor shall be fully responsible for all matters relating to the receipt, protection and risk of loss of Owner Direct Purchase (ODP) Items the same as if such items were purchased by the Contractor. Direct purchase of materials by the City in no way relieves the Contractor of responsibility regarding the compliance with specification requirements, coordination, protection, scheduling, installation or warranty.***

   a. At a minimum, the Contractor shall verify correct quantities, condition of the items received, compliance of the shipment with the purchase order, verify documentation, coordinate and expedite delivery, obtain and verify warranties required by the Contract Documents, inspect and accept or refuse each item at the time of delivery, unload, handle and store the accepted item(s).

   b. As Owner Direct Purchase Items are delivered to the job-site, the ***Contractor shall visually inspect, receive all shipments, verify and reconcile supplier's shipping documents and invoice with the purchase order***.

1) The Contractor shall assure that each delivery of Owner Direct Purchase Items is accomplished by documentation adequate to identify the Purchase Order against which the purchase was made.

2) ***The Contractor will forward approve invoices to the City's Representative for payment***.

c. If the Contractor discovers defective or non-conforming items he/she shall promptly notify the Owner of the defect or nonconformity and assist the Owner to obtain repair or replacement of the item.

1) ***The Contractor shall not be relieved of its obligation to ensure that materials requested for purchase have been reviewed by the Engineer and are released for purchase complying with the shop drawing and submittal procedures***.

2) ***The Contractor shall warrant Owner Direct Purchase Items and provide indemnification to the City as germane to all other materials and equipment furnished by the Contractor***.

3) Nothing in this Section shall alter or modify the Contractor obligations under the Contract relative to warranties and patent indemnification.

4) ***The Contractor shall be liable for any interruption or delay in connection with Owner Direct Purchase Items***.

4. The Contractor shall maintain records of all Owner Direct Purchase Items incorporated into the Work. These records shall be available for inspection by the Owner and Engineer upon request.

R. Partial Pay Request

1. The installation of pipe and fittings includes backfilling, compaction, hydrostatic testing, fine grading, property restoration, clean-up and placing facilities into operation.

2. When measurements of the amount of Work constructed each month are made, for the purpose of partial payment, these items will be considered.

3. No less than five percent (5%) of the Contract Price shall be retained until the Record Drawings, Operational and Maintenance Manuals, and Shop Drawings are delivered and accepted by the Engineer.

S. Description of Pay Items

1. The description of Pay Items is presented in Part 2 of this specification section and is a brief summary of the Work to be accomplished for the Pay Items in the Bid Form and the way to measure for payment purposes.

2. Each Pay Item will include labor, installation, clean-up, testing, and placing into operation.

3. The summary is not intended to describe all items in detail, but to clarify the items on which the price is to be based.

4. The summary does not relieve the Contractor of his responsibility to supply all items complete, operational and fully functional.

T. Related Work Specified Elsewhere

1. Application and Certificate for Payment Form:	Section 00680
2. General Conditions:	Section 00700
3. Supplementary Conditions:	Section 00800
4. FDEP Supplementary Conditions:	Sections 00805 / 00806
5. Applications for Payment:	Section 01030
6. Construction Progress Schedules:	Section 01311
7. Schedule of Values	Section 01370
8. Mobilization / Demobilization:	Section 01510

2. DESCRIPTION OF PAYMENT ITEMS

2.01 Mobilization, Demobilization, Bonds, Insurance, Trailers, etc. (Bid Item No. 1)

A. Description

1. The Work of this Measurement and Payment Item includes preparatory work and operations in mobilizing for beginning work on the Project, including, but not limited to, those operations necessary for the movement of personnel, equipment, supplies

and incidentals to the Project site, construction photography, bonds, insurance, Contractor's site office/trailers, temporary facilities, obtaining of the necessary project permits, preparation for commencement of work onsite and upon completion of construction and miscellaneous general items necessary for completion of the project and final cleanup and demobilization as described on the Contract Drawings and in the Contract Documents.

B. Measurement

1. Unit of measure for this Bid Item shall be on a lump sum basis.

C. Basis of Payment

1. Payment for this item shall be split into two applications. The first, seventy-five percent (75%) of the Bid Item, shall be paid in the first application for payment following the completion of the project mobilization. The second, twenty-five percent (25%), shall be held until the final application for payment.

2. ***Payment for mobilization or any part thereof, shall not exceed three percent (3%) of the total contract price***.

2.02 Survey, Layout and As-Built Information (Bid Item No. 2)

A. Description

1. The Work for this Measurement and Payment Item consists of furnishing all labor, equipment, and materials required to provide surveying, layout, and As-Built information, as required by the Contract Drawings and Contract Documents.

B. Measurement

1. Surveying, layout and As-Built information shall be paid for using the Contract Lump Sum Contract Amount.

C. Basis of Payment

1. Surveying, layout and As-Built information will be paid for at the contract lump sum price, for work completed to include all work items in the description. ***Fifty percent (50%), of the Bid amount for this item shall be paid at the time of the initial survey and layout***.

2. The remaining ***fifty percent (50%) shall be paid upon the receipt and acceptance of the Contractor's As-Builts*** for the completed project.

2.03 Preconstruction High-Definition (HD) Recording (Bid Item No. 3)

A. Description

1. The work for this Measurement and Payment Item consists of furnishing all labor, equipment, and materials required for a preconstruction High Definition (HD) recording, for both on and off-site construction, as required by the Contract Documents.

B. Measurement

1. The Preconstruction HD recording shall be paid for on a lump sum basis.

C. Basis of Payment

1. The Preconstruction HD Recording will be paid for at the Contract Lump Sum Price, for a completed and Engineer/Owner accepted HD recording (BD/DVD).

2.04 3D High Definition Laser Survey (Bid Item No. 4)

A. Description

1. The work for this Measurement and Payment Item consists of all labor, equipment, and materials required to conduct a 3D High-Definition Laser Survey of the "entire" Southwest Regional WRF following completion of the proposed project improvements and provide the Engineer and Owner with a hard-copy and digital version of the 3D high-definition laser survey.

B. Measurement

1. The unit of measurement for this item shall be at the Lump Sum amount.

C. Basis of Payment

1. The 3D High Definition Laser Survey will be paid for at the contract lump sum price, for a completed survey. The "pre-negotiated price for the work is $16,000 (CPH, Inc.) and is included in the Total Base Bid Lump Sum Amount.

2.05 Project Cash Allowance (Bid Item No. 5)

A. Description

1. The work for this Measurement and Payment Item consists of furnishing a project allowance for the Flagler Beach WWTF Sludge Management Systems Improvements Project.

B. Measurement

1. The unit of measurement for this item shall be at the Lump Sum amount.

C. Basis of Payment

1. Payment for this item shall be based on approval of allowance use by the Owner for the project. An allowance of $100,000.00 is included in the Total Base Bid Lump Sum Amount**. Any monies not used for project allowance during the course of the construction project will be deducted from the Contractor's Contract Price via a Close-out Change Order.** Payment will be based on the Contract Lump Sum Contract amount of ***$100,000***.

2.06 Lump Sum Price for Indemnification (Bid Item No. 6)

A. Description

1. The work for this pay item shall be for indemnification as specified in the General and/or Supplementary Conditions.

B. Measurement

1. The unit of measurement for this item shall be at the Lump Sum amount.

C. Basis of Payment

1. Payment will be based on the Contract Lump Sum Contract amount of ***$1,000***.

2.07 Sludge Dewatering System (Bid Item No. 7)

A. Description

1. The work for this Measurement and Payment Item consists of, but is not limited to, all earthwork, excavation, backfilling, compaction, grading, concrete work, metal work, installation of all equipment (screw presses, chemical feed systems, piping, fittings, valves, waterproofing systems, painting, testing, associated equipment, appurtenances and any miscellaneous items necessary for Project completion as shown on the Contract Drawings and described in the Contract Documents.
2. Screw Press is furnished by Owner.

B. Measurement

1. The unit of measurement for this item will be Lump Sum for work completed and accepted.

C. Basis of Payment

1. Payment will be based on the Contract Lump Sum Value for work properly installed, tested and accepted or a percentage thereof.

2.08 Electrical, Controls and Instrumentation Improvements (Bid Item No. 8)

A. Description

1. Work under this Measurement and Payment Item consists of, but is not limited to, project electrical, controls and instrumentation improvements, facility lighting, power distribution and feeding, and other associated equipment/appurtenances associated with the improvements, necessary for Project completion as shown on the Contract Drawings and described in the Contract Documents.

B. Measurement

1. The unit of measurement for this item will be Lump Sum for work completed and accepted.

C. Basis of Payment

1. Payment will be based on the Contract Lump Sum Value for work properly installed, tested and accepted or a percentage thereof.

2.09 SCADA System Modifications (Bid Item No. 9)

A. Description

1. Work under this Measurement and Payment Item consists of, but is not limited to, installation of a facility SCADA system and shall encompass all of the equipment

being supplied and installed as part of this Project and shall be designed, supplied, connected and tested to ensure total integration, compatibility and functionality as identified on the Contract Drawings and as detailed in the Contract Documents.

B. Measurement

1. The unit of measurement for this item will be Lump Sum for work completed and accepted.

C. Basis of Payment

1. Payment will be based on the Contract Lump Sum Value for work properly installed, tested and accepted or a percentage thereof.

END OF SECTION

SECTION 01030

APPLICATIONS FOR PAYMENT

1. GENERAL

1.01 Description

A. Scope of Work

1. Submit Applications for Payment to the Engineer in accordance with the schedule established by the Conditions of the Contract and the Agreement between the Owner and the Contractor. The Contractor shall use the Application for Payment Form, included in Section 00680, *Application and Certificate for Payment Form*, as the official payment request form.

B. Related Work Specified Elsewhere

Specification Section	Title
00662	Contractor's Partial Release of Lien Form
00663	Contractor's Final Release of Lien Form
00664	Subcontractor's/Suppliers Final Release of Lien Form
00680	Application and Certificate for Payment Form
00805 / 00806	FDEP Supplementary Conditions
00807	Classification and Wage Determination (Davis Bacon Act)
00809	American Iron and Steel (AIS)
01025	Measurement and Payment
01311	Construction Progress Schedule
01370	Schedule of Values
01380	Construction Photographs
01700	Project Closeout
01720	Project Record Documents
01740	Warranties and Bonds
General and Supplementary Conditions: Progress Payments, Retainage and Final Payment	

C. Measurement and Payment - General Provisions

1. The Contractor shall receive and accept compensation provided for in the Bid and the Contract, in compliance with the Contract Documents, as full payment for furnishing all materials, labor, equipment, tools, appurtenances, accessories and incidentals, for performing all operations necessary to complete the Work under the Contract, and also in full payment for all loss or damages arising from the nature of the Work, or from the action of elements or from any unforeseen difficulties that may be encountered during the prosecution of the Work until Final Project Acceptance by the Owner.

2. The quotations for the Work are intended to establish a total price for completing the Work in its entirety.

3. ***Payment for all lump sum items shall be based on the percentage of completion of the particular item (actual work installed and accepted) until the work item is completed. Upon completion of the work item, one hundred percent (100%) of the lump sum price may be paid, less any retained amounts***.

4. ***For unit price items, the Contractor shall be paid for the actual amount of work installed and accepted during the period of construction***. After the Work is completed and before final payment is made, the Owner's Representative shall make final measurements to determine the actual quantities of the various items of work installed and accepted as the basis of final payment for the unit priced item, ***less any retained amounts***.

5. ***Work for which there is not a Bid/Pay Item will be considered incidental to the Contract and no additional compensation will be allowed***.

6. Additions, deletions, modifications or changes to the Work, as defined in this Contract, will be performed by Change Order according to the General Conditions, as amended by the Supplementary Conditions, and will be paid for on the basis of the Cost of the Work.

7. ***Any items not shown or omitted from the Contract Documents that are required for a complete installation shall be furnished and installed by the Contractor at no additional cost to the Owner***.

8. ***No additional payment shall be made for well pointing or other methods of dewatering***.

9. ***Payment for repair and replacement of existing utilities will be included in the Lump Sum Bid Amount for the related new construction Bid item***.

10. The approved Contract Schedule of Values shall be the basis for making monthly progress payments.

11. Payments for Work “in progress” shall not constitute acceptance of the Work component, the Work item, or the Bid Item.

12. Prior to submitting any Application for Payment, the Contractor's superintendent or other authorized representative of the Contractor shall meet with the Engineer’s Resident Project Representative (RPR) and determine the quantities of unit price and/or lump sum price work accomplished and/or completed during the period for which the Application for Payment is being submitted.

13. ***A “preliminary” monthly application for payment (PDF) shall be submitted to the Engineer for review approximately five (5) days prior to the submittal for approval of the Contractor's monthly Application for Payment***.

14. Payment to the Contractor will be made for the actual work completed and accepted in accordance with the Contract Documents.

15. No payment shall be made for materials delivered and not installed, unless specifically agreed upon by the Engineer and Owner ***prior*** to delivery of such materials.

16. The Contractor shall take no advantage of any apparent error or omission in the Contract Drawings or Specifications, and the Engineer shall be permitted to make corrections and interpretations as may be deemed necessary for fulfillment of the intent of the Contract Documents.

17. The Owner and Engineer reserve the right to alter the Contract Drawings, modify incidental work as may be necessary, and increase or decrease quantities of work to be performed to accord with such changes, including deduction or cancellation of any one or more of the Pay Items in the Schedule of Values. Changes in the Work shall not be considered as a waiver of any conditions of the Contract nor invalidate any provisions thereof.

18. Failure on the part of the Contractor to construct any Project Item to plan or authorized dimensions within the specification tolerances shall result in reconstruction to acceptable tolerances ***at no additional cost to the Owner***; ***acceptance at no pay; or, acceptance at reduced final pay quantity, all at the discretion of the Engineer***.

19. ***Work shall not be considered complete (100%) until all testing has been satisfactorily completed and the item of work has demonstrated compliance with the Contract Drawings and Documents/Specifications***.

1.02 Format Required

A. Submit applications for payment on the form provided in Section 00680, *Contractor's Application for Payment Form*, in an electronic format (PDF), with itemized data typed on 8½-inch x 11-inch white paper continuation sheets. Provide itemized data on continuation sheets of format, schedules, line items, and values specified on the Application and Certificate for Payment Form.

B. The Contractor shall use the item descriptions and contract values included in the Schedule of Values, approved and accepted by the Engineer, as a basis for preparation of the Application for Payment Form.

1.03 Preparation of Application for Each Progress Payment

A. Application Form

1. Fill in the required information, including that for any Change Orders executed prior to date of submittal of application.

2. Fill in the percentage (%) complete for each "*lump sum*" activity item and dollar values to agree with respective percentages. Fill in quantities installed, using the correct set of units, for each "*unit price*" activity item and use the Contractor's unit prices to determine the dollar amount to be paid for said activity item.

3. Execute certification of the Application for Payment with the signature of a responsible officer of the Contractor in accordance with the Project Contract Documents.

B. Continuation Sheets

1. Fill in the total list of all scheduled component items of the Work, with item number and scheduled dollar value for each item.

2. Fill in the dollar value in each column for each scheduled line item when the Work has been performed or products stored. Round off the values to the nearest dollar, or as specified for the Schedule of Values.

3. List each Change Order executed, prior to the date of submission, at the end of the continuation sheets. List by Change Order Number, and description, as for an original component item of the Work.

4. To receive approval for payment on component material stored on the project site, the Contractor shall submit copies of the "original invoices" with the Application for

Payment. Any materials stored on-site that are included in the payment request must be installed prior to the next pay request submitted.

5. As provided for in the Application Payment Form, the Contractor shall certify, for each current Application for Payment, that all previous progress payments received from the Owner, under this Contract, have been applied by the Contractor to discharge in full, all obligations of the Contractor in connection with the Work covered by prior Applications for Payment, and all materials and equipment incorporated into the Work are free and clear of all liens, claims, security interest, and encumbrances.

6. The Contractor shall attach to each Application for Payment like affidavits by all Subcontractors. The Contractor shall otherwise list the name and amount of any monies owed to subcontractors, suppliers, or equipment manufacturers, whose charges have been previously paid for by the Owner, on the appropriate area of the application form.

7. Applications for Payment, all associated documentation and certifications shall be submitted in accordance with Article 1.06 herein.

1.04 Substantiating Data for Progress Payments

A. The Contractor shall submit suitable information, in an electronic format (PDF), with a cover letter identifying the following:

1. Project Name.

2. Application for Payment number and date.

3. A detailed list of enclosures.

4. <u>For stored products</u>

a. Item number and identification as shown on the application.

b. A description of the specific material.

c. A copy of the material invoice showing the actual amount paid by the Contractor for the stored item.

B. Submit one (1) copy of data and a cover letter for each copy of application in an electronic format (PDF).

C. ***The Contractor is to maintain an updated set of drawings to be used as Record Drawings*** in accordance with Section 01720, *Project Record Documents*. ***As a prerequisite for monthly progress payments, the Contractor is to exhibit the updated record drawings for review by the Owner and the Engineer***. If the Project Record Documents are not up-to-date, the monthly progress payment will not be processed, by the Engineer, until the Contractor has updated, and the Engineer has approved, said documents.

D. As a prerequisite for payment, ***each monthly application for payment shall incorporate, the corresponding "monthly progress status report" and updated construction schedule***, prepared in accordance with the requirements of Section 01311, *Construction Progress Schedules*.

E. As a prerequisite for payment, ***the Contractor shall submit a duly executed letter from it's Surety consenting to payment due and progress-to-date***.

F. ***As a prerequisite for payment, the Contractor shall submit, with the application for payment, construction photographs in accordance with Section 01380, "Construction Photographs"***. If the construction photographs are not submitted with the monthly Application for Payment, the monthly progress payment will not be processed, by the Engineer, until the Contractor has submitted, and the Engineer has approved, said construction photographs.

G. ***As a prerequisite for payment, the Contractor shall submit, with the Application for Payment, copies of the weekly certified payroll*** in compliance with the Davis Bacon Act and with Appendix C of the FDEP Supplementary Conditions (Sections 00805 and 00806). If the certified payroll is not submitted with the monthly Application for Payment, the monthly progress payment will not be processed, by the Engineer, until the Contractor has submitted, and the Engineer has approved, said construction photographs.

1.05 Preparation of Application for Final Payment

A. Fill in the application form as specified for progress payments. Provide the information as required by Section 00700, *General Conditions* and Section 01700, *Project Closeout*.

B. Furnish evidence of completed operations and insurance in accordance with the General Conditions.

C. Submit the Contractor's and Subcontractor/Supplier's Final Release of Lien Forms (Sections 00663 and 00664) and other close-out submittals as required by the General and Supplementary Conditions.

1.06 Submittal Procedure

A. ***Submit Applications for Payment to the Engineer, in an electronic format (PDF), between the first (1st) and the tenth (10th) day after the end of each calendar month*** for which payment is requested as stipulated in the Agreement.

B. Review the percentages complete (lump sum items) and/or unit quantities installed (unit price items), for each item of work, with the Engineer and resolve any conflicts or discrepancies.

C. ***The Contractor shall submit the Application for Payment, and all supporting documentation, in an electronic format (PDF)***. These completed forms shall provide the basis upon which payment will be made to the Contractor.

D. Processing of the monthly Application for Payment will not proceed if the electronic version of the Application for Payment or any other required documentation, is not provided to the Engineer.

E. When the Engineer finds the Application and Certificate for Payment Form is properly completed and correct, he will execute the Certificate for Payment and transmit the forms to the Owner, with a copy to the Contractor.

2. PRODUCTS - NOT USED

3. EXECUTION - NOT USED

END OF SECTION

SECTION 01040

PROJECT COORDINATION

1. GENERAL

1.01 Work Included

A. The Contractor shall furnish personnel and equipment that will be efficient, appropriate and large enough to secure a satisfactory quality of work and a rate of progress that will insure the completion of the Work within the time stipulated in the Agreement.

B. If at any time, such personnel appear to the Engineer to be inefficient, inappropriate or insufficient for securing the quality of work aforementioned, he may order the Contractor to increase the efficiency, change the character or increase the personnel and equipment, and the Contractor shall conform to such order. Failure of the Engineer to give such an order shall in no way relieve the Contractor of his obligations to secure the quality of the Work and rate of progress.

C. Several areas of construction under this Contract must be coordinated with the Engineer and Owner's Operating personnel and accomplished in a logical order to maintain the treatment level and capacity of the existing facility and to allow construction to be completed within the time allowed by the Contract Documents.

D. ***During the construction of the Project Work and modification of existing facilities, incoming wastewater must continue to flow into Flagler Beach WWTF and be treated to meet FDEP Operations Permit requirements***. Wastewater treatment, filtration, disinfection, reclaimed water production, biosolids management facilities, reject facilities and associated support facilities must remain in service at all times.

E. ***When facilities are being upgraded or replaced, the new facilities shall be fully operational before the existing facilities are shutdown for modification, demolition, or decommissioning***.

F. The Contractor shall provide a detailed construction schedule in accordance with Section 01311, *Construction Progress Schedules*. The schedule shall incorporate the information in this section.

1.02 Private Land and other Public Properties

A. The Contractor shall not enter or occupy private or public land outside of the Flagler Beach WWTF facility, except with written permission of the appropriate owners. The Contractor shall provide the Owner with a copy of such written permission.

2. PRODUCTS - NOT USED

3. EXECUTION

3.01 Pipe Locations

A. All pipes shall be located substantially as indicated on the Contract Drawings, but the Engineer reserves the right to make such modifications in locations as may be found desirable to avoid interference with existing structures or for other reasons.

B. Where fittings are noted on the Contract Drawings, such notation is for the Contractor's convenience and does not relieve him from laying and jointing different or additional items where required.

3.02 Open Excavations

A. ***All open excavations shall be adequately safeguarded, on a daily basis***, by providing temporary barricades, caution signs, lights, and other means to prevent accidents to persons, and damage to property.

B. ***All open excavations shall comply with applicable OSHA Standards***. The Contractor shall, at his own expense, provide suitable and safe bridges and other crossings for accommodating travel by workmen, the Owner and the Engineer.

3.03 Test Pits

A. Test pits for the purpose of locating underground pipelines or structures in advance of the construction shall be excavated and backfilled by the Contractor. Test pits shall be backfilled and compacted immediately after their purpose has been satisfied and maintained in a manner satisfactory to the Engineer. ***The costs for such test pits shall be borne by the Contractor.***

3.04 Care and Protection of Property

A. The Contractor shall be responsible for the preservation of all public and private property, and shall use every precaution necessary to prevent damage thereto.

B. If any direct or indirect damage is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the Work on the part of the Contractor, such property shall be restored by the Contractor, ***at his expense***, to a condition similar or equal to that existing before the damage was done, or he shall make good the damage in another manner acceptable to the Engineer.

3.05 Cooperation within this Contract

A. ***The Contractor shall, prior to interrupting a utility service (water, wastewater, effluent, reclaimed water, etc.) for the purpose of making tie-ins to the existing lines or for any other purposes, contact the Owner and Engineer and make arrangements for the interruption that will be satisfactory with the Owner and Engineer. Written notification shall be made at least seventy-two (72) hours prior to the interruption of the utility service. All tie-ins shall be made during "low-flow" periods***.

B. ***The Contractor shall sequence and schedule the work in a manner to preclude delays and conflicts*** between the work of various trades and contractors. Each trade shall keep informed as to the work of other trades on the project and shall execute their work in a manner that will not interfere with the work of other trades.

C. ***The Contractor shall be fully responsible for the coordination of his work*** and the work of his employees, subcontractors, and suppliers with the Owner, and regulatory agencies, and assure compliance with schedules.

D. ***The Contractor shall verify that the utility requirements and characteristics of operating equipment are compatible with building utilities***. Coordinate the Work of various sections, having interdependent responsibilities for installing, connecting to, and placing into service, such equipment.

E. Coordinate space requirements, supports and installation of mechanical and electrical Work which are indicated diagrammatically on the Contract Drawings. Follow the routing shown for pipes, ducts and conduit, as closely as practicable; place runs parallel with lines of the building/structure. Use spaces efficiently to maximize accessibility for other installations, for maintenance and for repairs.

F. In finished areas, except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. ***Coordinate locations of fixtures and outlets with finish elements***.

G. General Scheduling Considerations

1. Coordinate scheduling, submittals, and Work of the various Sections of the specifications to assure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.

2. The Contractor shall take the following items into consideration when creating the construction schedule required by Section 01311, *Construction Progress Schedules*:

   a. ***The Contractor shall schedule the work so that the existing utilities can be maintained in operation at all times. The Contractor shall provide access to all existing facilities at all times during the construction period for operation and maintenance purposes***.

   b. ***The Contractor shall ensure that vehicular and pedestrian traffic will be maintained at all times***, in accordance with Section 01550, *Maintenance of Traffic,* during installation of the Project improvements. Roadways throughout the facility and access roads shall be kept free of obstructions to facilitate deliveries and operations and maintenance activities.

   c. ***The Owner's monitoring and instrumentation system at the Flagler Beach WWTF and shall remain operational at all times during construction and integration.***

   d. ***The Contractor shall generate and submit to the Engineer, for review and approval, a schedule identifying all process "tie-ins" that are to be made within thirty (30) days of the Notice to Proceed***. The "tie-in" schedule shall be detailed and provide, at a minimum, the following:

      1) Detailed description of the tie-in.

      2) Location of the tie-in.

      3) Length of time required to complete the tie-in.

   e. ***One (1) week prior to any tie-in, the Contractor shall meet with the Engineer and Owner to discuss the work to be completed during the "tie-in" process.*** The Contractor, Engineer and Owner shall review the "detailed" written schedule of the events to take place during the tie-in. The schedule will be discussed in detail and changes to the schedule shall be made as required. All tie-ins shall be organized and constructed to minimize disruption of operations at the treatment facility. ***All ancillary work, equipment, etc. required to complete the tie-in shall be included in the Contractor Bid***.

f. ***All raw wastewater, potable water and reclaimed water tie-ins will be performed during periods of low flow (10 p.m. to 5:30 a.m.).***

g. Coordinate with the activities of all utility companies with equipment in the construction area and with the Contractor's and/or subcontractor's work.

h. Coordination with other ongoing construction activities on the Project Site. See Section 01010, Summary of Work, Article 1.09.

3.06 Cooperation with other Contracts - NOT USED

3.07 Diagrammatic Nature of Drawings

A. Where layout of work is diagrammatic, such as pipelines, conduits, ductwork, etc., it shall be followed as closely as other work will permit. Changes from diagrams shall be made as required to conform to the construction requirements.

B. Before running lines, carefully verify locations, depths and sizes and confirm that lines can be run as contemplated without interfering with other construction. Any deviation shall be referred to the Engineer for approval before lines are run. Minor changes in location of the equipment, fixtures, piping, etc., from those shown on the Contract Drawings, shall be made without extra charge if so directed by the Engineer before installation.

C. Determine the locations and sizes of equipment, fixtures, conduit, ducts, openings, etc., in order that there will be no interference in the installation of the work or delay in the progress of other work. In the event that interferences develop, the Engineer's decision regarding relocation of work will be final.

D. Any changes made necessary through failure to make proper arrangements to avoid interference ***shall not*** be considered as extras. Cooperate with those performing other work in preparation of interference drawings, to the extent that the location of piping, ductwork, etc., with respect to the installations of other trades shall be mutually agreed upon by those performing the work.

3.08 Provisions for Later Installation

A. Where any work cannot be installed as the construction is progressing, provide for boxes, sleeves, inserts, fixtures or devices as necessary to permit installation of the

omitted work during later phases of construction. Arrange for chases, holes, and other openings in the masonry, concrete or other work and provide for subsequent closure after placing equipment.

B. Arrangement for and closure of openings shall be subject to the approval of the Engineer and all costs therefor shall be included in the contract price for the work.

3.09 Protection of Construction and Equipment

A. All newly constructed work shall be carefully protected from injury in any way. No wheeling or walking or placing of heavy loads on it shall be allowed and all portions damaged shall be reconstructed by the Contractor at his own expense.

B. ***The Contractor shall protect all structures and shall be protected in a manner approved by the Engineer***. Should any of the floors or other parts of the structures become heaved, cracked or otherwise damaged, all such damaged portions of the work shall be completely repaired and made good by the Contractor at his own expense and to the satisfaction of the Engineer and Owner. If, in the final inspection of the work, any defects, faults or omissions are found, the Contractor shall cause the same to be repaired or removed and replaced by proper materials and workmanship without extra compensation for the materials and labor required.

C. The Contractor shall be fully responsible for the satisfactory maintenance and repair of the construction and other work undertaken herein, for at least the guarantee period described in the contract.

D. ***The Contractor shall take all necessary precautions to prevent damage to any structure*** due to water pressure during and after construction and until such structure is accepted and taken over by the Owner.

3.10 Maintenance of Traffic

A. Unless permission to close a street or road within the treatment facility is received in writing from the proper authority (City, County, FDOT, etc.), all excavated material shall be placed so that vehicular and pedestrian traffic may be maintained at all times. If the Contractor's operations cause traffic hazards, he shall repair the road surface, provide temporary ways, erect wheel guards or fences, or take other measures for safety satisfactory to the Engineer.

B. Detours around construction will be subject to the approval of the Owner and the Engineer. Where detours are permitted, the Contractor shall provide all necessary

barricades and signs as required to divert the flow of traffic. While traffic is detoured, the Contractor shall expedite construction operations and periods when traffic is being detoured will be strictly controlled by the Owner. All maintenance of traffic plans required for construction shall be approved by the local governmental entity having jurisdiction.

C. ***The Contractor shall take precautions to prevent injury to the public due to open trenches.*** Night watchmen may be required where special hazards exist, or police protection provided for traffic while work is in progress. The Contractor shall be fully responsible for damage or injuries whether or not police protection has been provided.

3.11 Miscellaneous

A. The Contractor shall provide for the coordination of his Work with the required work of the Public Agencies and Utilities.

B. Changes in the intended design of the Project as a result of improperly coordinated Construction Work will not be tolerated. Delays in the Work caused by rejections of installed materials due to improper coordination, and as otherwise specified, will not be considered valid justification for extensions of Contract Time.

END OF SECTION

SECTION 01045

CUTTING AND PATCHING

1. GENERAL

1.01 Description

A. Scope of Work

1. ***The Contractor shall be responsible for all cutting, fitting, and patching, including attendant excavation and backfill***, required to complete the Work, or to:

   a. Make several parts fit together properly.

   b. Uncover portions of the Work to provide for installation of ill-timed work.

   c. Remove and replace defective work.

   d. Remove and replace work not conforming to the requirements of the Contract Documents.

   e. Remove samples of installed work as specified for testing.

   f. Provide routine penetrations of non-structural surfaces for installation of piping and electrical conduit.

2. The Contractor shall coordinate, in a satisfactory manner, with the Engineer and in accordance with the Contract Drawings and Specifications all work of this nature.

3. The work must be done by competent workmen skilled in the trade required by the restoration.

B. Related Requirements Described Elsewhere

Specification Section	Title
00700	General Conditions
00800	Supplementary Conditions

Specification Section	Title
00805 / 00806	FDEP Supplementary Conditions
01010	Summary of Work
Division	**Information**
2	Sitework
3	Concrete

1.02 Submittals

A. ***Submit a written request to the Engineer within ten (10) calendar days prior to executing any cutting or alteration that affects***:

1. Work of the Owner or any separate Contractor.
2. Structural value or integrity of any element of the Project.
3. Integrity or effectiveness of weather-exposed or moisture-resistant elements or systems.
4. Efficiency, operational life, maintenance or safety of operational systems.
5. Visual qualities of sight-exposed elements.

B. The written request shall include, but not be limited to, the following:

1. Identification of the Project.
2. Description of the Work.
3. The necessity for cutting, alteration or excavation.
4. Effect on work of the Owner or any separate Contractor, or on structural or weatherproof integrity of the Project.
5. <u>Description of the proposed work</u>

   a. Scope of the cutting, patching, alteration or excavation.
   b. Trades who will execute the work.
   c. Products proposed to be used.
   d. Extent of the refinishing to be done.

6. Alternatives to cutting and patching.

7. Cost proposal, when applicable.

8. Written permission of any separate Contractor whose work will be affected.

C. ***Submit the written notice to the Engineer designating the date and the time that the Work will be uncovered and then completed***.

2. PRODUCTS

2.01 Materials

A. Comply with the Contract Documents, specifications and standards for each specific product involved.

3. EXECUTION

3.01 Inspection

A. Inspect existing conditions of the Project, including elements subject to damage or to movement during cutting and patching. Reference is made to the requirements of Section 00800, *Supplementary Conditions*, Sections 00805 and 00806, *FDEP Supplementary Conditions*, the pre-existing condition survey, Section 01380, *Construction Photographs*, and Section 01390, *Preconstruction Video Recording*.

B. After uncovering the Work, inspect conditions affecting installations of products, or performance of the Work.

C. Report unsatisfactory or questionable conditions to the Engineer in writing; do not proceed with the Work until the Engineer has provided further instructions.

3.02 Preparation

A. Provide adequate temporary support as necessary to assure structural value or integrity of the affected portion(s) of the Work.

B. Provide devices and methods to protect other portions of the Project from damage.

C. Provide protection from elements for that portion of the Project that may be exposed by cutting and patching work, and maintain excavations free from water.

3.03 Performance

A. Execute cutting and demolition by methods that will prevent damage to other work, and will provide proper surfaces to receive installation of repairs.

B. Execute excavating and backfilling by methods that will prevent settlement or damage to other work.

C. Employ the original Installer or Fabricator to perform cutting and patching for:

1. Weather-exposed or moisture resistant elements.

2. Sight-exposed finished surfaces.

D. Execute fitting and adjustment of products to provide a finished installation to comply with specified products, functions, tolerances, and finishes.

E. Restore work that has been cut or removed; install new products to provide completed Work in accordance with the requirements of the Contract Documents.

F. Fit work airtight to pipes, sleeves, ducts, conduit and other penetrations through surfaces.

G. Refinish entire surfaces, as necessary, to provide an even finish to match adjacent finishes:

1. For continuous surfaces, refinish to the nearest intersection.

2. For an assembly, refinish the entire unit.

END OF SECTION

SECTION 01050

FIELD ENGINEERING

1. GENERAL

1.01 Description

A. Scope of Work

1. ***The Contractor shall provide and pay for all field engineering services for the Project***, including, but not limited to, the following:

   a. ***Survey work*** required in execution of the Work and completion of the Project Record Documents.

   b. ***Civil, structural, or other professional engineering services*** specified or required to execute the Contractor's construction methods.

   c. The method of field staking for the construction of the Work shall be at the option of the Contractor. The Owner has provided the engineering survey necessary to establish reference points which in his judgement are necessary to enable the Contractor to proceed with his work.

   d. The accuracy of any method of staking shall be the responsibility of the Contractor. All engineering for vertical and horizontal control shall be the responsibility of the Contractor.

   e. The Contractor shall be held responsible for the preservation of all stakes and marks. If any stakes or marks are carelessly or willfully disturbed by the Contractor, the Contractor shall not proceed with any work until he has established such points, marks, lines, and elevations as may be necessary for the prosecution of the Work.

   f. ***The Contractor shall retain the services of a registered land surveyor licensed in the State of Florida to***:

      1) Identify existing control points and property corner stakes indicated on the Contract Drawings, as required.

2) Verify all existing surface locations and all proposed building and structure corner locations, tank locations and equipment locations.

3) Maintain an accurate location of all buried piping and associated lines.

4) Maintain a survey during construction and for Record Drawing purposes.

B. Related Requirements Described Elsewhere

Specification Section	Title
00700	General Conditions
00800	Supplementary Conditions
00805 / 00806	FDEP Supplementary Conditions
01010	Summary of Work
01030	Applications for Payment
01720	Project Record Documents

1.02 Qualifications of the Surveyor or Engineer

A. A qualified engineer or registered land surveyor, in the State of Florida, that shall be acceptable to the Owner and the Engineer.

B. A registered professional engineer, if selected to provide services to the Contractor, shall be of the discipline required for the specific service on the Project, currently licensed in the State of Florida, and acceptable to the Owner and Engineer.

C. The 3D high-definition final survey of the Flagler Beach WWTF, to be completed after the construction of all project improvements, shall be conducted by the current surveyor of record for the project and treatment facility, CPH, LLC, no equal. The cost for the 3D survey shall be included in the Contractor's Bid price.

1.03 Survey Reference Points

A. Existing basic horizontal and vertical control points for the Project are those designated on the Contract Drawings.

B. The Contractor shall locate and protect control points prior to starting site work, and preserve all permanent reference points during construction. The Contractor shall:

1. Make no changes or relocations without prior written notice to the Engineer.

2. Report to the Engineer when any reference point is lost or destroyed, or requires relocation because of necessary changes in grades or locations.

3. The surveyor shall be required to replace Project control points which may be lost or destroyed at no additional cost to the Owner. Establish replacement control points based on the original survey control.

1.04 Project Survey Requirements

A. ***The Contractor shall establish a minimum of two (2) permanent bench marks at each the Project construction site***, referenced to data established by survey control points.

1. Record locations, with horizontal and vertical data, on the Project Record Documents.

2. One of these should be on the east side of the project construction site; the other on the west side.

B. Establish lines and levels, locate and lay out, by instrumentation and similar appropriate means:

1. <u>All improvements (on-site, off-site, rights-of way, etc.)</u>

a. Stakes for grading, fill, and topsoil replacement.

b. Utility piping slopes, invert elevations, fitting locations and elevations, manhole locations and elevations, etc.

c. Final site elevations.

d. Stormwater structures.

e. Locator balls, if used.

2. Batter boards for structures.

3. Building foundations, column locations, and floor elevations.

4. Controlling lines and levels required for mechanical and electrical trades.

C. On a monthly basis, verify layouts by the same methods.

D. Establish all lines and grades prior to construction of line work for all force mains, potable water mains, wastewater/process mains, reclaimed water mains and transmission and distribution mains at 50-foot intervals and at defined breaks in grade.

1.05 Project Records

A. Maintain a complete and accurate log of all control and survey work as it progresses.

B. Update the Project Record Drawings, on a monthly basis, based on the work performed during the month ending with the Contractor's Application for Payment as a condition for approval of monthly progress payment requests.

C. At the end of the project, submit a certified site survey, at scales to be approved by the Engineer (overall view at 1-inch = 40 feet; individual process diagrams at 1-inch equals 20 feet), on reproducible tracing sheets 22 inches by 34 inches, indicating the building corners and location of all structures and road intersections, horizontal and vertical location of all piping, valves, fittings existing utilities encountered, equipment and appurtenances, locator balls, etc. in accordance with the Engineer's instructions. The Contractor shall also submit the survey and other certified surveying record documents to the Engineer, in AutoCAD (latest version), on a CD/DVD/BD or flash drive.

D. Project Records shall conform to Section 01720, *Project Record Documents*.

1.06 Submittals

A. Submit the name, address, telephone number, and e-mail address of the registered surveyor and/or professional engineer to be used by the Contractor on the Project to the Engineer in accordance with Section 01300, *Shop Drawings, Submittals and Samples*.

B. On request of the Engineer, submit documentation to verify the accuracy of the field engineering work.

C. ***Submit a certificate signed by the registered engineer or surveyor being used by the Contractor on the Project certifying that elevations and locations of improvements are in conformance with the Contract Documents, or if not in conformance, certify as to the variances from the Contract Documents.***

D. ***At the end of the project, and prior to final payment, submit certified drawings*** (signed and sealed by the registered land surveyor) and a CD/DVD containing all certified drawings in AutoCAD (latest version) of the items listed below. These drawings shall be included with, and made part of, the Project Record Documents:

1. Certified site survey at 1-inch equals 40-foot scale or larger, but not greater than 1-inch equals 20-foot scale, on reproducible tracing sheet(s), that are 22-inch x 34-inch, indicating building corners, sidewalks, roadways, paved areas, existing utilities encountered and the location of all above ground structures within the facility or project site.

2. ***Certified drawings*** showing the location, lines and grades of all lines 1-inch in diameter and larger, buried and exterior to buildings and other buried facilities (e.g., valves, fittings, tanks, vaults, etc.) installed as a result of the work. This shall be at the same scale as the Engineer's yard pipe drawing and submitted on reproducible paper.

3. ***Certified survey*** at the same scale as the Engineer's line drawings (e.g., wastewater lines, force mains, potable water lines, reclaimed water lines, etc.) indicating lines, grades, elevations, and stationing at 50-foot intervals. Provide elevations of structure bottoms, pipe inverts, flow lines, rim elevations, etc. on all structures, manholes and vaults.

E. Submit drawings showing locations of all structures, piping, valves, fittings, locator balls, etc., constructed. These drawings shall be included with the Project Record Documents.

1.07 3D High Definition Laser Survey: Post-Construction

A. A 3D High-Definition Laser Survey of the entire Flagler Beach WWTF property shall be completed after the construction of all Project improvements at the facility.

B. ***The 3D High-Definition Laser Survey shall be conducted by the current surveyor of record for the project and treatment facility, CPH, LLC, no equal***. The fee for the 3D High-Definition Laser Survey has been negotiated with the "Surveyor of Record" in the amount of $16,000 and has been included in the Total Base Bid Lump Sum Amount.

C. The 3D Surveyor shall conduct a topographic survey as per Rule Chapter 5J-17 of the Florida Administrative Code in compliance with the minimum technical standards of surveying and mapping of the State of Florida using a high-definition laser scanner.

D. The 3D Surveyor shall:

1. Provide a topographic information survey of the scope area (see figure below).

2. Locate all existing visible ground structures, buildings, manholes, other infrastructure and visible utilities within the scope area (see figure below).

3. Provide a signed and sealed survey.

2. PRODUCTS (NOT USED)

3. EXECUTION (NOT USED)

END OF SECTION

SECTION 01060

REGULATORY REQUIREMENTS

1. GENERAL

1.01 Description

A. Work Specified Herein

1. Regulatory requirements.

B. Related Work Specified Elsewhere:

Specification Section	Title
00700	General Conditions
00800	Supplementary Conditions
00805 / 00806	FDEP Supplementary Conditions
01065	Permits and Fees

1.02 Requirements of Regulatory Agencies

A. All piping installed within the right-of-way of any City, County, State, or Federal Highway or railroad shall be in accordance with a permit to construct issued by the controlling agency and obtained by the Owner. In no case shall an open trench be constructed within a railroad right-of-way unless otherwise indicated.

B. Whenever the Contract Drawings and/or Specifications conflict with the requirements of the permit, then the requirements of the permit shall govern and the cost of abiding by the provisions of the permit shall be considered incidental to the Contract.

C. All electrical apparatus and wiring pertaining to a piece of equipment or an appliance furnished and installed under this Contract shall comply with the National Electrical Code (NEC) and shall be listed by Underwriters Laboratories (UL) or bear the approval of a recognized Testing Laboratory approved by the Engineer.

D. The Contractor shall follow all conditions and provisions of all applicable permits, applications, regulations, and approvals as a part of this project work.

END OF SECTION

SECTION 01065

PERMITS AND FEES

1. GENERAL

1.01 Description

A. The work covered by this Section consists of furnishing all labor, materials, equipment and performing work required to comply with all conditions of the permits, where applicable, for this Project.

B. ***The Contractor shall secure and pay for all permits and licenses related to his work***, including but not limited to, the necessary construction permits, as provided for in Section 00700, *General Conditions*; Section 00800, *Supplementary Conditions*; and Sections 00805 and 00806, *FDEP Supplementary Conditions*; except as otherwise provided herein.

C. The Contractor shall schedule all inspections and obtain all written approvals from all agencies required by the permits and licenses.

D. ***If dewatering is required, the Contractor shall provide a Dewatering Plan to the Engineer that complies with the local water management district rules and regulations in a timely manner for review by the Engineer (14-day review period) and obtaining all required permits***. If a permit is required for the dewatering operations, the Contractor shall be responsible for preparing, applying for, paying for, and obtaining said permit prior to construction activities.

E. Permits regulating the construction of this Project are as follows:

1. Florida Department of Environmental Protection: Domestic Wastewater Treatment Facility Construction and Operations Permit for the Flagler Beach WWTF (Permit No. FL0026611).

F. FDEP Clearance

1. The Contractor shall conform to the requirements of FDEP to obtain proper clearance of any completed Work prior to placing any portion of the Work into active public service.

G. Local Permits

1. All required City of Flagler Beach local permits shall be applied for and obtained by the Contractor prior to commencement of the Work, and shall be in accordance with the approved site plan previously described.

2. ***The application fees for these local permits shall be paid by the Contractor after the amounts are determined***. The Contractor shall contact the City of Flagler Beach for tree removal, land clearing and demolition requirements, if necessary, and contact the City of Flagler Beach Building Department for a construction permit.

H. ***It is the responsibility of the Contractor to ensure that all required permits are obtained before beginning construction activities associated with said permits***.

I. The Contractor shall review and become familiar with ***all*** permits for the Project, complete all conditions, attachments, exhibits, and permit modifications.

J. ***A copy of all permits for the Project shall be maintained by the Contractor at the Project sites***, and shall be available for review upon request.

K. The Contractor shall be fully responsible to abide by all provisions and conditions of the permits. The Contractor is responsible for the selection, implementation and operation of all measures required by the permits, including the maintenance of said measures as necessary during construction. No additional compensation shall be allowed for any work associated with permit requirements.

L. Violations of the permit conditions can potentially result in up to a maximum fine of $25,000 levied against the Contractor per day, per violation. The costs and fines associated with permit violations shall be borne strictly by the Contractor and shall be incidental to the Contract.

M. In addition, the Contractor shall be held responsible for any fines levied against the Owner as a result of these violations, as well as legal fees, engineering fees, administrative fees and restoration costs associated with these violations.

1.02 Submittals

A. The Contractor shall be responsible to submit to the Engineer, for review, various permit condition material, as applicable, within fourteen (14) calendar days after the Notice to Proceed.

B. ***The Contractor shall not submit permit condition information directly to an agency prior to the review and concurrence of the Engineer and Owner***.

2. PRODUCTS - NOT USED

3. EXECUTION - NOT USED

END OF SECTION

SECTION 01070

ABBREVIATIONS AND SYMBOLS

1. GENERAL

1.01 Standards and Abbreviations

A. Referenced Standards

1. Any reference to published specifications or standards of any organization or association shall comply with the requirements of the specification or standard which is current on the date of the Advertisement for Bids. In case of a conflict between the referenced specifications or standards, the one having the more stringent requirements shall govern.

2. In case of a conflict between the referenced specifications or standards and the Contract Documents, the Contract Documents shall govern.

B. Abbreviations

1. In addition to the abbreviations listed in the General Conditions, the following is a list of abbreviations for standards and other terms referenced in the Contract Documents.

2. If an abbreviation is not explained below, it shall be as explained in ANSI Y1.1.

ABBREVIATION	TERM
A	Ampere or Area
AA	Aluminum Association
AAA	American Arbitration Association
AABC	Associated Air Balance Council
AAMA	Architectural Aluminum Manufacturers Association
AASHTO	American Association of State Highway and Transportation Officials

ABBREVIATION	TERM
AB	Anchor Bolt / Aggregate Base
ABA	American Bar Association
ABAN	Abandoned
ABC	Asphalt Base Course
ABMA	American Boiler Manufacturers Association
ABPA	Acoustical and Board Products Association
ABT	About
AC	Acre / Asphaltic Concrete / Alternating Current / Air Conditioning
ACCU	Air Cooled Condensing Unit
ACGIH	American Conference of Governmental Industrial Hygienists
ACI	American Concrete Institute
ACP	Asbestos-Cement Pipe
ACPA	American Concrete Pipe Association
ACU	Air Conditioning Unit
AD	Access Door
ADDL	Additional
AE	Architect - Engineer
AEIC	Association of Edison Illuminating Companies
AF	Air Filter / Ampere Frame
AFBMA	Anti-Friction Bearing Manufacturers Association
AGA	American Gas Association
AGC	Associated General Contractors of America
AGMA	American Gear Manufacturers Association
AHA	American Hardboard Association
AHD	Ahead
AHU	Air Handling Unit
AI	The Asphalt Institute

ABBREVIATION	TERM
AIA	American Institute of Architects / American Insurance Association
AICS	Amperes Interrupting Capacity, Symmetrical
AIEE	American Institute of Electrical Engineers (now IEEE)
AIMA	Acoustical and Insulating Materials Association
AIR FIX	Compressed Air
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AITC	American Institute of Timber Construction
AL	Aluminum
ALIGN	Alignment
ALM	Alarm
ALTN	Alternate
AMB	Ambient
AMCA	Air Movement and Control Association
AMP	Ampere
ANCH	Anchor
ANG	Angle
ANSI	American National Standard Institute
APA	American Plywood Association
API	American Petroleum Institute
APPROX	Approximate
APWA	American Public Works Association
AR	Argon
ARCH	Architecture / Architectural
AR/CH_2	Argon-Methane Mix
AREA	American Railway Engineering Association
ARI	American Conditioning and Refrigeration Institute

ABBREVIATION	TERM
ARV	Air Release Valve
ARVV	Air Release / Vacuum Valve
AS	Alum Solution
ASA	American Standards Association (now ANSI)
ASAHC	American Society of Architectural Hardware Consultants
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASPE	American Society of Plumbing Engineers
ASPH	Asphalt
ASSCBC	American Standard Safety Code for Building Construction
ASSY	Assembly
ASTM	American Society for Testing and Methods
ATS	Automatic Transfer Switch
AVE	Avenue
AVG	Average
AWA	American Welding Association
AWG	American Wire Gauge
AWI	Architectural Woodwork Institute
AWPA	American Wood Preservers Association
AWPB	American Wood Preservers Bureau
AWPI	American Wood Preserver Institute
AWS	American Welding Society
AWWA	American Water Works Association
BaV	Ball Valve
BB	Back-to-Back
BC	Beginning of Curve / Back of Curve / Bolt Circle

ABBREVIATION	TERM
BCR	Begin Curb Return
BCS	Building Contractor Standards (Florida Statutes)
BEG	Begin
BETW	Between
BF	Blind Flange
BHMA	Builders Hardware Manufacturers Association
BHP	Brake Horsepower
BIA	Brick Institute of America (formerly SCPI)
BK	Back / Brake
BKR	Breaker
BL	Base Line
BLDG	Building
BLK	Block
BM	Benchmark / Beam
BNR	Biological Nutrient Removal
BO	Blowoff
BOCA	Building Officials Code Administration International, Inc.
BOD	Biochemical Oxygen Demand
BOT	Bottom
BP	Baseplate
BR	Bronze / Batch
BRG	Bearing
BT	Buried Telephone
BTN	Button
BTU	British Thermal Unit
BUR CBL	Buried Cable
BV	Butterfly Valve

ABBREVIATION	TERM
BVC	Begin Vertical Curve
BW	Block Wall
C	Conduit / Celsius
C_2H_2	Acetylene
CAB	Crushed Aggregate Base
CAGI	Compressed Air and Gas Institute
CANTIL	Cantilevered
CAP	Capacity
CATV	Cable Television
CB	Catch Basin / Circuit Breaker
CC	Cooling Coil
C-C	Center-to-Center
CCB	Concrete Block
CCP	Concrete Cylinder Pipe
CCS	Central Control Station
CD	Cross Drain / Condensate Drain / Ceiling Diffuser
CDA	Copper Development Association
CEM	Cement
CF	Cubic Feet / Curb Face
CFH	Cubic Feet per Hour
CFM	Cubic Feet per Minute
CFS	Cubic Feet per Second
CG	Ceiling Grill / Compressed Gas
C & G	Curb & Gutter
CH	Chiller
CHG	Change
CHKD PL	Checkered Plate

ABBREVIATION	TERM
CI	Cast Iron
CIP	Cast Iron Pipe
CISP	Cast Iron Soil Pipe
CISPI	Cast Iron Soil Pipe Institute
CJ	Construction Joint
CL	Centerline / Class / Clearance
CLR	Clear
CMAA	Crane Manufacturers Association of America
CMC	Cement Mortar Lined or Coating
CML	Cement Mortar Lined or Lining
CMLCSP	Cement Mortar Lined and Coated Steel Pipe
CMP	Corrugated Metal Pipe
CMPA	Corrugated Metal Pipe Arch
CMU	Concrete Masonry Unit
CO	Cleanout / Conduit Only
COL	Column
COMM	Communication
COMP	Composite
COMPL	Complete
CONC	Concrete
CONN	Connection
CONST	Construct or Construction
CONT	Continuous
CONTR	Contractor
COORD	Coordinate / Coordinated
COP	Copper
COR	Corner

ABBREVIATION	TERM
CPLG	Coupling
CPU	Central Processing Unit
CRES	Corrosion Resistant Steel
CRSI	Concrete Reinforcing Steel Institute
CS	Commercial Standard / Carbon Steel / Chlorine Solution
CSP	Corrugated Steel Pipe
CT	Center Top / Current Transformer
CTG	Coating
CTR	Center
CTV	Cable Television
CULV	Culvert
CV	Check Valve
CY	Cubic Yards
CYL	Cylinder
D	Degree of Curvature
DB	Direct Buried / Decibel
DBL	Double
DC	Direct Current
DEPT	Department
DET	Detail / Detour
DF	Diesel Fuel
DG	Decomposed Granite
DHI	Door and Hardware Institute
DI	Drop Inlet / Ductile Iron
DIA	Diameter
DIAG	Diagonal
DIM	Dimension

ABBREVIATION	TERM
DIMJ	Ductile Iron Mechanical Joint
DIP	Ductile Iron Pipe
DIPRA	Ductile Iron Pipe Research Association
DISCH	Discharge
DIST	Distance
DIV	Divide / Division
DMH	Drop Manhole
DN	Down
DO	Dissolved Oxygen
DOT Spec	Std Specification For Road and Bridge Construction, latest edition
DP	Differential Pressure
DPI	Differential Pressure Indicator
DPNL	Distribution Panel
DR	Drain / Door
DSL	Diesel
DWG	Drawing
DWY	Driveway
E	East
EA	Each
EC	End of Curve
ECC	Eccentric
ECR	End of Curb Return
ED	Equipment Drain / External Distance
EDA	Economic Development Association
EDUC	Eductor
EE	Each End
EEI	Edison Electric Institute

ABBREVIATION	TERM
EF	Each Face / Exhaust Fan
EFF	Effluent / Efficiency
EFL	Effluent
EG	Exhaust Grill
EGL	Energy Grade Line
EL	Elevation / Each Layer
E/L	Easement Line
ELEC	Electrical
ELEV or EL	Elevation
ELP	Elliptical
EMB	Embankment
ENC	Encasement
ENCL	Enclosure
ENG	Engine
ENGR	Engineer
EOP	Edge of Pavement
EOS	Equivalent Opening SIze
EOTW	Edge of Traveled Way
EP	Explosion Proof / Edge of Pavement
EPA	Environmental Protection Agency
EQ	Equation
EQL	Equal
ESMT	Easement
EST	Estimate or Estimated
ETC	And so forth
ETM	Elapsed Time Meter
EVAP	Evaporator

ABBREVIATION	TERM
EVC	End Vertical Curve
EW	Each Way
EWC	Electric Water Cooler
EXC	Excavate or Excavation
EXP	Expansion
EXIST	Existing
EXP	Expansion
EXT	Extended / Exterior / Extension
F	Fahrenheit / Floor
FAA	Federal Aviation Administration
FAB	Fabricate
FBRBD	Fiberboard
FC	Foot-Candle
FCC	Federal Communications Commission / Filter Control Console
FCI	Fluid Control Institute
FCO	Floor Cleanout
FCV	Flow Control Valve
FD	Floor Drain
FDEP	Florida Department of Environmental Protection
FDN	Foundation
FDOT	Florida Department of Transportation
FDOT Index	FDOT Roadway and Traffic Design Standards, latest edition
FDOT Specification	FDOT Standard Specification for Road and Bridge Construction, Florida Department of Transportation, latest revision
FE	Filtered Effluent / Flanged End
Fed Spec	Federal Specification
FF	Finished Floor / Flat Faced
FG	Finished Grade

ABBREVIATION	TERM
FHY	Fire Hydrant
F & I	Furnish and Install
FIG	Figure
FIN	Final
FIT	Fitting
FL	Floor / Flow Line
FLEX	Flexible / Flexure
FLG	Flange
FLT	Float
FLUOR	Fluorescent
FM	Force Main (Wastewater) / Factory Mutual
FMH	Flexible Metal Hose
FNSH	Finish
FOC	Face of Concrete
FOS	Face of Stud
FPC	Flexible Pipe Coupling
FPM	Feet per Minute
FPS	Feet per Second
FPT	Female Pipe Thread
FS	Finished Surface / Floor Sink / Federal Standards / Florida Statutes
FSTNR	Fastener
FT	Feet or Foot
FTG	Footing
FUT	Future
FW	Finished Water
FWY	Freeway
G	Gas

ABBREVIATION	TERM
GA	Gauge
GAL	Gallon
GALV	Galvanized
GAS	Gasoline
GB	Grade Break
GDR	Guard Rail
GE	Grooved End
GEN	Generator
GENL	General
GFI	Ground Fault Interrupter
GM	Gas Main
GMT	Greenwich Mean Time
GND	Ground
GPD	Gallons per Day
GPM	Gallons per Minute
GR	Grade
GRTG	Grating
GS	Galvanized Steel
GSKT	Gasket
GSP	Galvanized Steel Pipe
GUT	Gutter
GV	Gate Valve
GWB	Gypsum Wall Board
GWBX	Gypsum Wall Board, Fire-Rated
GYP	Gypsum
H	Humidistat
H_2	Hydrogen

ABBREVIATION	TERM
HARN	Harness
HB	Hose Bibb
HC	Heating Coil
HD	Heavy Duty
HDPE	High Density Polyethylene
He	Helium
HEPA	High Efficiency Particulate Air
HGL	Hydraulic Grade Line
HGT	Height
HID	High Intensity Discharge
HMI	Hoist Manufacturers Institute
HOA	Hand-Off-Automatic
HOR	Hand-Off-Remote
HORIZ	Horizontal
HP	Horsepower / High Pressure
HPAC	High Pressure Air - Copper
HPAG	High Pressure Air - Galvanized
HPS	High Pressure Sodium
HPT	High Point
HR	Hour / Handrail
HS	High Strength
HSBII	Hartford Steam Boiler Inspection and Insurance Co.
HTG	Heating
HTR	Heater
HV	Hose Valve
HVAC	Heating, Ventilating and Air Conditioning
HVY	Heavy

ABBREVIATION	TERM
HW	Headwall / Hot Water
HWL	High Water Level
HWY	Highway
HYDR	Hydraulic
HZ	Hertz (cycles per second)
I	Intersection Angle
ICBO	International Conference of Building Officials
ID	Inside Diameter or Identification
IE	Invert Elevation
IEEE	Institute of Electrical and Electronic Engineers
IES	Illuminating Engineering Society
IFI	Industrial Fasteners Institute
IN	Inches
INCAND	Incandescent
INCL	Include
INF or INFL	Influent
INL	Inlet
INS	Insulating
INSTL	Install or Installation
INTR	Interior / Intersection
INV	Invert
IP	Iron Pipe
IPCEA	Insulated Power Cable Engineers Association
IPS	Iron Pipe Size
IPT	Iron Pipe Thread
IRI	Industrial Risk Insurers
IRR	Irrigation

ABBREVIATION	TERM
ISA	Instrumentation, Systems and Automation Society
J	Joist / Joule
JB	Junction Box
JCT	Junction
JN	Join
JT	Joint
KG	Kilogram
KM	Kilometer
KIPS	Thousands of Pounds
KV	Kilovolt
KVA	Kilovolt-Ampere
KW	Kilowatt
KWH	Kilowatt-Hour
KWHM	Kilowatt-Hour Meter
L	Length of Curve / Long / Left
LATL	Lateral
LAV	Lavatory
LB	Pound
LBR	Lumber
LCL	Local
LF	Linear Feet
LG	Long
LI	Level Indicator
LLO	Long Leg Outstanding
LOC	Location / Locate
LOS	Lockout Stop
LP	Light Pole

ABBREVIATION	TERM
LPT	Low Point
LR	Long Radius
L/R	Slenderness Ratio
LS	Lime Solution / Lift Station / Lump Sum
LT	Left / Light
LTG	Lighting
LWC	Lightweight Concrete
LWIC	Lightweight Insulating Concrete
LWL	Low Water Level
MA	Milliampere
MAG	Magnet / Magnetic
MANF	Manufacturer
MATL	Material
MAX	Maximum
MB	Machine Bolt / Megabyte / Millibar
MBH	Thousand BTU per Hour
MBR	Membrane Bioreactor
MC	Metal Channel
MCC	Motor Control Center
MCM	Thousand Circular Mils
MCP	Motor Circuit Protector
MD	Motorized Damper
MECH	Mechanical
MFR	Manufacturer
MG	Million Gallons
MGD	Million Gallons per Day
MH	Manhole

ABBREVIATION	TERM
MHI	Materials Handling Institute
MHZ	Megahertz
MI	Malleable Iron / Mile
MIL	Military Specifications
MIN	Minimum
MISC	Miscellaneous
MJ	Mechanical Joint
ML	Mixed Liquor
MLSS	Mixed Liquor Suspended Solids
MLVSS	Mixed Liquor Volatile Suspended Solids
MMA	Monorail Manufacturers Association
MO	Motor Operator / Motor Operated / Masonry Opening
MOD	Modification
MON	Monument
MOT	Motor / Maintenance of Traffic
MPT	Male Pipe Thread
MSL	Mean Sea Level
MSS	Manufacturer's Standardization Society
MTD	Mounted
MUTCD	Manual of Uniform Traffic Control Devices
N	North / Neutral / Nitrogen
N_2	Nitrogen
N_2O	Nitrous Oxide
NA	Not Applicable
NAAMM	National Association of Architectural Metal Manufacturers
NBFU	National Board of Fire Underwriters
NBHA	National Builders' Hardware Association

ABBREVIATION	TERM
NBS	National Bureau of Standards
N & C	Nail & Cap
NC	Normally Closed
NCPI	National Clay Pipe Institute
NCSA	National Crushed Stone Association
NCSPA	National Corrugated Steel Pip Association
NE	Northeast
NEBB	National Environmental Balancing Bureau
NEC	National Electric Code
NECA	National Electrical Contractors' Association
NEMA	National Electrical Manufacturers' Association
NF	Nanofiltration
NFC	National Fire Code
NFPA	National Fire Protection Association
NG	Natural Grade
NIC	Not In Contract
NIP	Nipple
NLA	National Lime Association
NO	Number / Normally Open
NOM	Nominal
NPC	National Plumbing Code
NPT	National Pipe Threads / National Pipe Taper
NPW	Non-potable Water
NRS	Non-Rising Stem
NSC	National Safety Council
NSF	National Sanitation Foundation
NTS	Not to Scale

ABBREVIATION	TERM
NW	Northwest
NWL	Normal Water Level
OA	Overall / Outside Air
OC	On Center / Overcurrent
OD	Outside Diameter
ODP	Open Dripproof / Owner Direct Purchase
OE	Or Equal
OF	Outside Face
OHE	Overhead Electric
OPER	Operator
OPNG	Opening
OPP	Opposite
ORIG	Original
OSA	Outside Air
OSHA	Occupational Safety and Health Administration
O TO O	Out to Out
OVFL	Overflow
OVHD	Overhead
P	Pole
PARA	Paragraph
PB	Push Button / Pull Box
PC	Point of Curvature / Programmable Controller
PCA	Portland Cement Association
PCC	Point of Compound Curvature / Portland Cement Concrete
PCI	Prestressed Concrete Institute
PDI	Plumbing and Drainage Institute
PE	Plain End / Polyethylene / Professional Engineer

ABBREVIATION	TERM
PEN	Penetration
PERF	Perforated
PF	Power Factor
PFMA	Power Fan Manufacturer's Association
PG	Pressure Gauge
PI	Point of Intersection
PJTN	Projection
PKWY	Parkway
PL	Plate / Property Line
PLATF	Platform
PLF	Pounds Per Lineal Foot
PNL	Panel
POB	Point of Beginning
POC	Point of Connection
POJ	Push-On Joint
PP	Power Pole / Polypropylene
PPB	Parts Per Billion
PPM	Parts Per Million
PR	Pair
PRC	Point of Reverse Curvature
PRESS	Pressure
PRL	Parallel
PROP	Proposed
PROV	Provisions
PRPSD	Proposed
PRVC	Point of Reverse Vertical Curve
PS	United States Products Standards or Polymer Solution

ABBREVIATION	TERM
PSI	Pounds per Square Inch
PSIA	Pounds per Square Inch - Absolute
PSIG	Pounds per Square Inch - Gauge
PSF	Pounds Per Square Foot
PT	Pressure Treated / Point of Tangency
PV	Plug Valve
PVC	Polyvinyl Chloride
PVMT	Pavement
PW	Potable Water
PWR	Power
Q	Flow Rate
QTY	Quantity
R	Right / Radius
RAD	Radius / Radial
RAF	Return Air Fan
RAG	Return Air Grille
RAS	Return Activated Sludge
RC	Reinforced Concrete
RCB	Reinforced Concrete Box
RCP	Reinforced Concrete Pipe
RCPA	Reinforced Concrete Pipe Arch
RD	Road
RDC	Reduce
RDCR	Reducer
RDWY	Roadway
RED	Reducer
REF	Reference

ABBREVIATION	TERM
REINF	Reinforce / Reinforced
RELOC	Relocated
REQ	Required / Requirement
REQD	Required
REUSE	Reuse Water
REV	Revise / Revision
RF	Raised Face
RH	Relative Humidity
RND	Round
RJ	Restrained Joinit
RLG	Railing
RO	Reverse Osmosis
RPM	Revolutions per Minute
RR	Railroad
RST	Reinforced Steel
RT	Right
RTD	Resistance Temperature Detector
RW	Raw Water
R/W	Right-of-Way
RWM	Reclaimed Water Main
RWW	Raw Wastewater
S	South / Sewer / Slope in Feet Per Foot
SAE	Society of Automotive Engineers
SAN	Sanitary
SAR	Supply Air Register
SBC	Standard Building Code
SBCCI	Southern Building Code Congress International

ABBREVIATION	TERM
SC	Seal Coat
SCFM	Standard Cubic Feet per Minute
SCHED	Schedule
SCR	Silicon-Controlled Rectifier
SCRN	Screen
SCUM	Scum
SD	Storm Drain
SDG	Siding
SDI	Steel Deck Institute
SDWK	Sidewalk
SE	Southeast
SECT	Section
SEFF	Secondary Effluent
SF	Square Feet
SGL	Single
SH	Sheet / Shoring / Shielded
SIM	Similar
SJI	Steel Joists Institute
SJRWMD	St. Johns River Water management Project
SLP	Slope
SLV	Sleeve
SM	Sheet Metal
SMACNA	Sheet Metal and AC Contractor's National Association
sNdN	Simultaneous Nitrification/Denitrification
SOL	Solenoid
SOV	Solenoid-Operated Valve
SP	Space / Steel Pipe / Static Pressure / Spare

ABBREVIATION	TERM
SPCG	Spacing
SPEC	Specification
SPLC	Splice
SPRT	Support
SQ	Square
SQ FT	Square Foot
SR	Short Radius
SS	Stainless Steel
SSE	Substandard Effluent
SSI	Scaffolding and Shoring Institute
SSPC	Steel Structures Painting Council
SSPC	Structural Steel Painting Council
SST	Stainless Steel
ST	Street
STA	Station (100 ft)
STBY	Standby
STD	Standard
STK	Stake
STL	Steel
STN STL	Stainless Steel
STR	Straight
STR:	Structural
STRUCT	Structure
STS	Storm Sewer
STGR	Stringer
STWY	Stairway
SURF	Surface

ABBREVIATION	TERM
SW (S/W)	Southwest / Sidewalk
SWD	Side Water Depth
SWG	Swing
SY	Square Yard
SYMM	Symmetrical
SYS	System
T	Ton / Tangent Length of Curve / Telephone
TAN	Tangent
T/B	Top of Beam
TB	Top of Bank / Terminal Board
T & B	Top and Bottom
TBG	Tubing
TBM	Temporary Bench Mark
TC	Top of Curb
TD	Time Delay
TDH	Total Dynamic Head
TDS	Total Dissolved Solids
TEFC	Totally Enclosed Fan Cooled
TEFF	Tertiary Effluent
TEL	Telephone
TEMP	Temperature / Temporary
TENV	Totally Enclosed Non-Ventilated
TH	Total Head
THB	Thrust Block
THD	Thread or Threaded
THH	Thrust Harness
THK	Thick

ABBREVIATION	TERM
TIR	Total Indicator Reading
TO	Turnout
T/O	Top of
TOC	Top of Concrete / Total Organic Carbon
TOF	Top of Floor
TOS	Top of Slab
TOT	Total
TP	Telephone Pole / Total Phosphorus
TRA	Tread
TRD	Tie Rod Assembly
TRANS	Transformer
TS	Tube Steel
TV	Television
TYP	Typical
UBC	Uniform Building Code
UD	Underdrain
UE	Underground Electric
UG	Underground
UH	Unit Heater
UL	Underwriter's Laboratories, Inc,
ULT	Ultimate
UNO	Unless Noted Otherwise
UPS	Uninterruptible Power Supply
UR	Urinal
USASI	United States of America Standards Institute
USGS	United States Geological Survey
UT	Underground Telephone

ABBREVIATION	TERM
UTC	Underground Telephone Cable
UTR	Up Through Roof
V	Vent / Valve / Volt
VAC	Vacuum / Volts - Alternating Current
VC	Vertical Curve
VCP	Vitrified Clay Pipe
VEL	Velocity
VERT	Vertical
VFD	Variable Frequency Drive
VOL	Volume
VPC	Vertical Point of Curve
VPI	Vertical Point of Intersection
VPT	Vertical Point of Tangency
VSS	Volatile Suspended Solids
VTR	Vent Through Roof
W	Water Line / West / Watt / Wide / Water
W/	With
WAS	Waste Activated Sludge
WC	Water Closet
WCO	Wall Cleanout
WG	Water Gauge
WH	Wall Hydrant
WL	Water Line
WLD	Welded
WM	Water Main / Water Meter
W/O	Without
WP	Waterproof/Working Point

ABBREVIATION	TERM
WRGWB	Water-Resistant Gypsum Wallboard
WSE	Water Surface Elevation
WSP	Water Stop
WT	Weight
WTR	Water
WWF	Welded Wire Fabric
WWM	Woven Wire Mesh
XFMR	Transformer
XFR	Transfer
YCO	Yard Cleanout
YD	Yard
YP	Yield Point
YR	Year
YS	Yield Strength

C. Additional abbreviations and symbols are shown on the Contract Drawings. If an abbreviation or symbol is used that is not defined, inquire of the Engineer as to its meaning or intent.

2. PRODUCTS - NOT USED

3. EXECUTION - NOT USED

END OF SECTION

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SECTION 01075

REFERENCE SPECIFICATIONS

1. GENERAL

1.01 Description

A. Applicable Publications

1. Whenever in these Specifications references are made to published specifications, codes, standards, or other requirements, it shall be understood that wherever no date is specified, only the latest specifications, standards, or requirements of the respective issuing agencies which have been published as of the date that the Work is advertised for bids, shall apply; except to the extent that said standards or requirements may be in conflict with applicable laws, ordinances, or governing codes.

2. No requirements set forth herein or shown on the Contract Drawings shall be waived because of any provision of or omission from said standards or requirements.

B. Assignment of Specialists

1. In certain instances, a specification test requires (or implies) that specific work is to be assigned to specialist or expert entities who must be engaged for the performance of the Work. Such assignments shall be recognized as special requirements over which the Contractor has no choice or option.

2. These requirements shall not be interpreted so as to conflict with the enforcement of building codes and similar regulations governing the Work. They are not intended to interfere with local union jurisdiction settlements and similar conventions.

3. Such assignments are intended to establish which party or entity involved in a specific unit of Work is recognized as an "expert" for the indicated construction processes or operations.

4. ***The final responsibility for fulfillment of the entire set of Contract requirements remains with the Contractor***.

1.02 Reference Specifications, Codes and Standards

A. Without limiting the generality of other requirements of the Specifications, all Work specified herein shall conform to or exceed the requirements of such referenced documents which are not in conflict with the requirements of these Specifications or applicable codes.

B. References herein to "Building Code" shall mean the Florida Building Code (FBC). The latest edition of the code as approved and used by the local agency as of the date of award as adopted by the agency having jurisdiction shall apply to the Work herein, including all addenda, modifications, amendments, or other lawful changes thereto.

C. In case of conflict between codes, reference standards, Contract Drawings, and the other Contract Documents, the most stringent requirements shall govern. All conflicts shall be brought to the attention of the Engineer for clarification and directions prior to ordering or providing any materials or labor. The Contractor shall bid the most stringent requirements.

D. Applicable Standard Specifications

1. The Contractor shall construct the Work specified herein in accordance with the requirements of the Contract Documents and the referenced portions of those referenced codes, standards, and specifications listed.

E. ***The Contractor shall ensure that the Work complies to all codes, standards and regulations as they apply to the Project whether or not specifically referenced elsewhere***.

F. In the absence of specified agencies, associations, councils, etc., the Contractor shall conform to the requirements of the most widely recognized standards for each particular portion of the Work.

1.03 FDOT Standards and Requirements

A. The Florida Department of Transportation, Standard Specifications for Road and Bridge Construction, latest English Units edition (Standard Specifications) and Roadway Traffic and Design Standards, latest English Units edition (Design Standards) are referenced herein as source documents for applicable technical specifications and construction details to be used in the construction of this Project.

B. Where the FDOT Standard Specifications use the reference *Department*, replace *Department* with *Owner*, except for when such reference is to Department Standards and evaluation criteria.

C. The Design Standards are referenced herein as a source document for applicable construction items and details called for in the Contract Documents for which a specific plan detail is not provided. The Contractor shall construct the items called for in the Contract Documents in accordance with the *Design Standards* unless otherwise defined or detailed in the plans or as directed by the Owner, Engineer or authorized representative.

D. In case of conflict, all technical specification sections provided within the Project Manual (Divisions 2-16) take precedence over FDOT specifications for a particular construction requirement.

E. Copies of the Florida Department of Transportation Standard Specifications are on file with the Plans and other Contract Documents at the Engineer's office. Copies of the Florida Department of Transportation Standard Specifications may be purchased from FDOT for a nominal charge. Copies are also available on the Internet at " www.dot.state.fl.us/specificationsoffice ".

F. The Contractor shall inform the Owner and Engineer in writing of any specification which the Contractor feels is ambiguous or conflicting with other Contract Drawings and details prior to the construction of the associated item. The Engineer will determine which information is to be used for construction. The Contractor is responsible for the removal and replacement of any item improperly constructed resulting from a misinterpretation of the specifications, at no additional cost to the Owner.

2. PRODUCTS - NOT USED

3. EXECUTION - NOT USED

END OF SECTION

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SECTION 01120

SPECIAL PROJECT PROCEDURES

1. GENERAL

1.01 Scope of Work

A. The Work included in this Project, as described in the General Requirements, is to be turned over to the Owner upon final completion. As such, this section describes the special project procedures that must be followed to meet the concerns and special needs of the Owner.

B. The Contractor shall follow these procedures and no specific pay item is provided for this. The cost for the labor, equipment, and materials associated with meeting these requirements, including requirements of Federal, State, and local agencies with jurisdiction over the work, is considered incidental to the contract. Therefore, the Contractor shall bear any costs associated with them.

C. Failure to comply with these provisions shall be adequate grounds to withhold payment requests and issue a stop work order at no cost to the Owner.

1.02 Workmanship, Material and Equipment

A. When a particular product is specified or called for, it is intended and shall be understood that the proposal tendered by the Contractor included those products in his Bid. Should the Contractor desire equal to those specified, the Contractor shall furnish information as described in the General Conditions, Supplementary Conditions and the Bid Form. The alternate product or products proposed and submitted by the Contractor shall meet the requirements of the specifications and shall, in all respects, be equal to the products specified by name herein.

B. The Contractor shall refer to and review the following specification sections with respect to materials and equipment specified: Section 00100, *Instructions to Bidders*, Section 00300, *Bid Form*, and the individual equipment sections.

C. All materials and manufactured articles for incorporation into the Work shall be the new and unused standard products of recognized reputable Manufacturers.

1.03 Responsibility of the Contractor

A. ***The Contractor shall be responsible for all of the Project Work*** determined by the Contract Drawings, Technical Specifications and Contract/Agreement from the date of the starting of the Work (Notice to Proceed) until Final Project Acceptance (Completion Certificate) by the Owner. The Contractor shall be responsible for removals, renewals and replacements due to action of the elements and all other causes except as otherwise provided in the Specifications.

B. The Contractor shall keep the Contract under his own control and it shall be his responsibility to see that the Work is properly supervised and carried on faithfully and efficiently. ***The Contractor shall supervise the work personally or shall have a competent, English speaking superintendent or representative, who shall be on the site of the project at all working hours, and who shall be clothed with full authority by the Contractor to direct the performance of the work and make arrangement for all necessary materials, equipment and labor without delay***.

C. Renewals or repairs necessitated because of defective materials or workmanship, or due to action of the elements or other natural causes, including fire and flood, prior to the acceptance as determined by the Completion Certificate, shall be done anew in accordance with the Contract and Specifications at the expense of the Contractor.

1.04 Services of the Manufacturer's Field Service Technician

A. Bid prices for project equipment furnished under Divisions 5 through 16 shall include the cost of a competent field service technician of the manufacturers of all equipment to supervise the installation, adjustment and testing of the equipment and to instruct the Owner's operating personnel on operation and maintenance. The approved manufacturer's operation and maintenance data as specified in Section 01730, *Operation and Maintenance Data*, shall be delivered to the Contractor prior to instructing the Owner's personnel. This supervision may be divided into two or more time periods as required by the installation program or as directed by the Engineer.

B. After installation of the equipment has been completed and the equipment is presumably ready for operation, but before it is operated by others, ***the manufacturer's field service technician shall inspect, operate, test and adjust the equipment***. The inspection shall include at least the following points where applicable:

1. Soundness (without cracked or otherwise damaged parts).

2. Completeness in all details, as specified and required;

3. Correctness of setting, alignment and relative arrangement of various parts.

C. ***Upon completion of this work, the manufacturer's field service technician shall submit, in triplicate, to the Engineer a complete, signed report of the results of his/her inspection, operation, adjustments and tests***. The report shall include detailed descriptions of the points inspected, tests and adjustments made, quantitative results obtained if such are specified and suggestions for precautions to be taken to ensure proper maintenance.

D. ***A certificate from the manufacturer stating that the installation of the equipment is satisfactory, that the unit has been satisfactorily tested, is ready for operation and that the operating personnel have been suitably instructed*** in the operation, lubrication and care of the unit shall be submitted prior to the startup and performance demonstration hereinafter specified. The certificate shall indicate date and time that the instruction was given and names of operating personnel in attendance. This certification shall be submitted on the certification sheet, a sample of which is presented at the end of this Section.

E. The Contractor is referred to the detailed specification sections, Section 01430, *Manufacturer's Services*, Section 01600, *Materials and Equipment*, and Section 01650, *Systems Start-Up and Demonstration*, for additional requirements for furnishing the services of the manufacturer's field service technician.

F. For equipment furnished under other Divisions, unless otherwise specified, furnish the services of accredited field services technicians of the manufacturer only when some evident malfunction or over-heating makes such services necessary in the opinion of the Engineer.

1.05 Operating and Maintenance Data

A. Operating and maintenance data covering all equipment furnished under Divisions 5 through 16 shall be delivered directly to the Engineer: Benjamin M. Fries, Vice-President, CPH, LLC, 500 West Fulton Street, Sanford, FL 32771.

B. Data shall be prepared and submitted in full conformance with Section 01300, *Shop Drawings, Submittals and Samples*, and Section 01730, *Operation and Maintenance Data*.

C. Submissions of Project Operation and Maintenance Data shall be in accordance with Section 00980, *O & M Manual Submittal Form*.

D. Final approved copies of Operation and Maintenance data shall have been delivered to the Engineer prior to scheduling the instruction period with the Owner.

1.06 FDOT and Rights-of-Way

A. The Contractor shall strictly adhere to the requirements of FDOT, the City of Flagler Beach and Flagler County where construction work is in a right-of-way under the jurisdiction of the State of Florida, the City of Flagler Beach or Flagler County and shall abide by applicable local ordinances and rules that govern work performed in right-of-ways under the City's/County's jurisdiction.

B. The Contractor shall take care to avoid any unreasonable traffic conflicts due to the work in road rights-of-way, and shall provide appropriate detour equipment, barricades, flagmen, and safety equipment to protect the public and direct the smooth flow of traffic around work areas. The Contractor is referred to the General and Supplementary Conditions and Section 01040, *Project Coordination*, for other traffic related requirements.

1.07 Notification of Work to Begin

A. ***Before commencing work, the Contractor shall notify the Owner, in writing, at least ten (10) calendar days in advance of the date he proposes to commence such work***.

B. The Contractor shall provide at his own cost all necessary temporary facilities for access to, and for protection of, all existing structures. The Owner's personnel must have ready access at all times to existing work areas.

C. The Contractor is responsible for all damage to existing structures, equipment, and facilities caused by his construction operations, and must repair all such damage when and as ordered by the Owner.

1.08 Installation of Equipment

A. Special care shall be taken to ensure proper alignment of all equipment with particular reference to mechanical equipment such as pumps, blowers and electric drives, etc. The units shall be carefully aligned on their foundations by qualified millwrights after their sole plates have been shimmed to true alignment at the anchor bolts. The anchor bolts shall be set in place and the nuts tightened against the shims. After the foundation alignments have been approved by the manufacturer, the bedplates or wing feet of the equipment shall be securely bolted in place. The alignment of equipment shall be further checked after securing to the foundations and after confirmation of all alignments, the sole plates shall be finally grouted in place. The Contractor shall be responsible for the exact alignment of equipment with associated piping, and under no circumstances, will "*pipe springing*" be allowed.

B. All wedges, shims, filling pieces, keys, packing, red on white lead grout, or other materials necessary to properly align, level and secure apparatus in place shall be furnished by the Contractor. All parts intended to be plumb or level must be proven exactly so. Any grinding necessary to bring parts to proper bearing after erection shall be done at the expense of the Contractor.

1.09 Sleeves and Openings

A. The Contractor shall provide all openings, channels, chases, etc. and install anchor bolts and other items to be embedded in concrete, as required to complete the Work under this Contract, together with those required by subcontractors and shall do all cutting and patching, except cutting and patching of materials of a specified trade and as stated otherwise in the following Article.

B. The Contractor shall coordinate with the subcontractors to provide all sleeves, inserts, hangers, anchor bolts, etc. of the proper size and material for the execution of the Work. Be responsible for any corrective cutting and refinishing required to make the necessary openings, chases, etc. In no case shall beams, lintels or other structural members be cut without the written approval of the Engineer.

1.10 Relocations

A. ***The Contractor shall be responsible for the relocation of structures***, including but not limited to, light poles, signs, sign poles, fences, piping, conduits and drains that interfere with the positioning of the Work as set out on the Contract Drawings. The cost of all such relocations shall be included in the Bid for the Project and ***shall not result in any additional cost to the Owner***.

1.11 Obstructions

A. The attention of the Contractor is drawn to the fact that during excavation at the Project site, the possibility exists of the Contractor encountering various water, chemical, electrical, or other lines not shown on the Contract Drawings.

B. The Contractor shall exercise extreme care before and during excavation to locate and flag these lines so as to avoid damage to the existing lines. Should damage occur to an existing line, the Contractor shall repair the line ***at no cost to the Owner***.

C. It is the responsibility of the Contractor to ensure that all utility or other poles, the stability of which may be endangered by the close proximity of excavation, are temporarily stayed in position while work proceeds in the vicinity of the pole and that the utility or other companies concerned be given reasonable advance notice of any such excavation by the Contractor.

1.12 Provisions for Control of Erosion

A. Sufficient precautions in accordance with Section 01570, *Temporary Erosion and Sedimentation Control*, shall be taken during construction to minimize the run-off of polluting substances such as silt, clay, fuels, oils, bitumen, calcium chloride, sodium hypochlorite or other polluting materials harmful to humans, fish, or other life, into the supplies and surface waters of the State.

B. Control measures must be adequate to assure compliance with federal, state, and local regulations and permit conditions. Special precautions shall be taken in the use of construction equipment to prevent operations that promote erosion.

C. Erosion and sedimentation control shall conform to the requirements of the Owner, Lake County, St. Johns River Water Management District and the State of Florida.

D. Submit background readings to the Engineer prior to the start of construction activities in any area.

1.13 Provisions for the Control of Dust

A. Sufficient precautions shall be taken during construction to ***minimize the amount of dust created***.

B. Wetting down the site may be required or as directed by the Engineer to prevent dust as a result of vehicular traffic.

C. The Contractor shall be referred to the requirements in these specifications, particularly Section 01560, “Environmental Protection”.

1.14 Architectural Coatings

A. Maintain coordination among all Sections (windows, window walls, louvers, doors and frames, etc) requiring PVC and PVF coatings. All coatings shall match to the satisfaction of the Engineer with regard to color and texture. Items rejected by the Engineer shall promptly be removed from the job site.

1.15 "On-Site" Storage

A. The Contractor's attention is directed to the special storage requirements and possible charges for "noncompliance" of "on-site" storage requirements for materials and equipment as specified in Section 01600, *Materials and Equipment*.

B. ***All material delivered to the job site shall be properly protected from dirt, dust, dampness, UV, water and any other combination detrimental*** to the life of the materials from the date of delivery to the time that the material is installed and the Owner assumes beneficial occupancy (Final Project Acceptance by the Owner).

1.16 Tropical Storm / Hurricane Preparedness Plan

A. ***Within fifteen (15) calendar days of the date of Notice to Proceed, the Contractor shall submit to the Engineer a Tropical Storm / Hurricane Preparedness Plan***. The Plan should outline the necessary measures which the Contractor proposes to perform, at no additional cost to the Owner, in case of a tropical storm or hurricane warning. Such measures shall be in accordance with local and state requirements.

B. In the event of inclement weather, the Contractor will, and will cause subcontractors to protect carefully the Work and materials against damage or injury from the weather.

C. If, in the opinion of Engineer, any portion of Work or materials shall have been damaged or injured by reason of failure on the part of the Contractor or subcontractors to so protect the Work, such Work and materials shall be removed and replaced at the expense of Contractor.

1.17 Valve Indices

A. ***The Contractor shall furnish and install tags for all valves, weir gates and slide gates required on the Work***. Tags for buried valves shall be in accordance with Article 2.01 (G) of Section 09905, *Piping, Valve and Equipment Identification System*.

B. Submit to the Engineer for review, two (2) samples of each type of tag proposed and the manufacturer's standard color chart and letter styles. Tags shall have stamped or engraved on them the information shown on the Contract Drawings and the data described herein. ***Submit to the Engineer for approval, within sixty (60) days from the Notice to Proceed, a valve schedule containing all valves required for his/her work***. The schedule shall contain a list of abbreviations used for each valve, the location, type, a number, words or abbreviations to identify the valve's function and the normal operating position.

C. The valve schedule, abbreviations, words, identification, etc. shall be approved by the Engineer and Owner prior to submission for casting.

D. The information contained in the valve schedules shall be coded on the tags in a system provided by the Owner.

E. Above ground valve tags shall be furnished with ***stainless steel (Type 316) wire*** for attachment thereof. The tag shall not be attached to the handwheel or crank operators or any part of the valve which would inhibit operation of the valve.

1.18 Testing, Disinfection and Clearance

A. It shall be the responsibility of the Contractor to perform all pressure tests, water main disinfection and preparation for subsequent bacteriological testing by the Contractor's designated laboratory (Owner approved). The Contractor shall review the Contract Documents for specific requirements for flushing, pressure tests and disinfection.

B. Disinfection shall be performed in accordance with AWWA standards, FDEP and Florida Department of Health regulations and Section 15041, *Disinfection of Piping and Structures*. Disinfection is required for both new potable water facilities installed, and existing potable water facilities which are modified.

C. ***The Contractor shall follow the potable water main clearance*** procedure described in the Florida Department of Environmental Protection's regulations.

D. ***It shall be the responsibility of the Contractor to provide a "flushing plan" to the Owner and Engineer at the preconstruction conference***. This plan shall clearly indicate the volumes to be flushed and the disposal methodology for the flush water. Further, it shall be the responsibility of the Contractor to obtain any permits associated with the flushing activity.

E. Testing shall be in accordance with Section 15044, *Pressure Testing of Piping*.

F. The Contractor shall be entirely responsible to coordinate and schedule the full diameter flushing activity and shall provide written notification to the Owner a minimum of forty-eight (48) hours prior to commencing the flushing activity. All temporary piping associated with the flushing shall be provided and installed by the Contractor.

G. ***Clean, disinfect and bacteriologically test and clear in accordance with applicable Florida Department of Health and FDEP regulations all water supply facilities affected by this Project*** which shall come into contact with raw water, water being treated or treated water prior to placing the facility in operation. The above statement shall apply to both new water facilities installed and existing water facilities that are or may be modified.

H. ***The cost of all disinfection work and bacteriological clearance tests shall be included in the Bid***.

I. The Contractor shall employ a disinfection method approved by the Engineer and Owner and shall fully satisfy the Owner that adequate disinfection has been achieved prior to placing a potable water facilities on-line.

J. ***Neither the Owner nor the Engineer shall be held responsible for delays to the Contractor awaiting a "Letter of Clearance" or "Release for Use" from the Florida Department of Environmental Protection (FDEP) to operate either the "new" facilities (water, wastewater and reclaimed water)***.

K. It shall be the responsibility of the Contractor to make provisions for the time to obtain these releases from FDEP when planning his construction progress schedule.

1.19 Connections to Existing Systems

A. Perform all work necessary to locate, excavate and prepare for connections to the terminus of the existing systems (potable water, wastewater and reclaimed water) all as shown on the Contract Drawings, or where directed by the Engineer.

B. The cost for this Work and for the actual connection of the existing mains (potable water, wastewater and reclaimed water) shall be included in the Bid for the Project and shall not result in any additional cost to the Owner.

1.20 Utility Crossings

A. It is intended that wherever existing utilities such as gas, potable water, wastewater, reclaimed water, storm drain, chemical, electrical or other service lines must be crossed, deflection of the pipe within recommended limits and cover shall be used to satisfactorily clear the obstruction unless otherwise indicated on the Contract Drawings.

B. However, when in the opinion of the Engineer, this procedure is not feasible, the Contractor may direct the use of fittings for a utility crossing as detailed on the Contract Drawings.

1.21 Watertightness

A. Special precautions shall be taken in the curing of concrete to reduce concrete cracking as called for in Section 03300, *Cast-in-Place Concrete*.

B. The procedure and manner in which any leaks are repaired must meet the approval of the Engineer.

1.22 Utilities Infrastructure Maintenance and Protection

A. Existing utilities are shown in their approximate locations. Locate and protect all utilities whether shown on Contract Drawings or not.

B. The Contractor shall contact other utility companies at least seven (7) days before starting construction so maintenance personnel can locate and protect facilities, if required by the utility company.

C. Throughout the entire duration of the construction process and within the construction project boundaries, it shall be the responsibility of the Contractor to maintain the location of all active Owner utility service lines and all utility lines that are pressurized (whether presently owned or to be owned in the future by the Owner) by identifying, by preserving, and by protecting all valves (with their associated boxes and lids) and manholes. These locations must remain visible and accessible to the Owner's personnel.

D. Protection shall be provided in the form of a four (4) inch PVC conduit with a minimum burial of four (4) feet and a minimum above-ground exposure of four (4) feet. The entire circumference of the top two (2) feet of the pipe shall be color coded using blue paint to indicate potable water, green paint to indicate wastewater, and purple paint to indicate reclaimed water.

E. Protection shall be installed by the Contractor after the Notice to Proceed but prior to any work (including preliminary clearing and grubbing) being performed within the construction project limits. ***Until the required protection is installed, the Contractor is strictly prohibited from performing any preliminary clearing or grubbing or excavating in areas that are adjacent to or include Owner's utilities***.

F. Protection of utility lines that are to be removed and/or abandoned shall be removed only after the following conditions are met:

1. The replacement line is in service and approved for operation by the Florida Department of Environmental Protection (FDEP) and the Engineer and accepted by the Owner.

2. All service connections have been relocated from the utility line to be abandoned to the utility line that has been placed in active service, if any, with approvals from the Florida Department of Environmental Protection, the Engineer, and the Owner.

3. The utility line to be taken out of service has been depressurized, if any.

G. With respect to the utility lines that are to be the final utility lines in service at the completion of construction, the protection shall be removed by the Contractor only after the final site restoration (including final sodding and/or seeding and mulching of all disturbed areas) has been accepted by the Engineer.

H. ***The Contractor shall be responsible for adjusting all manholes, valve boxes, lids, water meters, reclaimed water meters, and similar structures to match the final project finished grade***, regardless of whether other utility work is performed.

I. ***The Contractor shall be responsible for the relocation of structures***, including but not limited to light and power poles, signs, sign poles, fences, piping, conduits (and wire), drains and other obstructions that interfere with the positioning of the work as set out in the Contract Drawings. The cost of all such relocations shall be included in the Contractor's Bid. The Contractor shall install any test pits required to identify potential points of interference.

J. ***It shall be the responsibility of the Contractor to relocate or adjust all of the Owner's utilities in accordance with the approved plans***. Should a conflict arise between the relocated or existing utilities and the subsequent construction of the work as shown on the Contract Documents, it shall be the responsibility of the Contractor to relocate or adjust the utilities, providing the necessary piping, bends, tees, and fittings to resolve the conflict. Relocations of this nature shall be approved in advance of said work by both the Engineer and the Owner and shall be reflected on the "As-Built" drawings upon completion of the actual installation. The Contractor is to assume the cost of providing permanent or temporary utility work to resolve conflicts and is to bear all costs associated with the installation of various bends and fittings that are installed on new or existing water, wastewater and reclaimed water mains.

K. ***It shall be the responsibility of the Contractor to provide all sheeting, bracing, shoring, and other forms of support when working adjacent to or directly on the Owner's utilities***. This provision applies to both existing and proposed utilities that are presently or are to be owned by the Owner.

1.23 Warranties

A. ***All equipment supplied under this Project Contract shall be warranted by the Contractor and the equipment manufacturers for a period of two (2) years, unless longer periods are identified in individual specification sections. The Warranty period shall commence on the date of Final Project Acceptance by the Owner***.

B. The Guarantee shall cover all necessary labor, equipment, materials, and replacement parts resulting from faulty or inadequate equipment design, improper assembly or erection, defective workmanship and materials, leakage, breakage or other failure of all equipment and components furnished by the manufacturer or the Contractor.

C. The Contractor shall be responsible for obtaining certificates for equipment warranties for all major equipment specified under Division 11, *Equipment*; Division 13, *Special Construction*; Division 15, *Mechanical*; and Division 16, *Electrical*; and which has at least a 1.0 hp motor or which lists for more than $1,000.

D. The Engineer reserves the right to request warranties for equipment not classified as major. The Contractor shall still warrant equipment not considered to be "major" in the Contractor's ***two-year warranty period*** even though certificates of warranty may not be required (commencing at the time of Final Project Acceptance by the Owner).

E. The Owner shall incur no labor or equipment cost during the guarantee period.

1.24 Final Guarantee

A. ***All work shall be guaranteed by the Contractor for a period of two (2) years, unless longer periods are specified in individual specification sections, commencing at the time of Final Project Acceptance of the work by the Owner***.

B. If, within the guarantee period, repairs or changes are required in connection with guaranteed work, which, in the opinion of the Engineer, is rendered necessary as the result of the use of materials, equipment or workmanship which are inferior, defective, or not in accordance with the terms of the Contract, promptly upon receipt of notice from the Owner and without expense to the Owner, do the following.

1. Place in satisfactory condition all guaranteed work and correct all defects therein.

2. Make good all damage to the site, buildings, structures, equipment or contents thereof, which, in the opinion of the Engineer, is the result of the use of materials, equipment or workmanship which are inferior, defective, or not in accordance with the terms of the contract.

3. Make good any work or material, or the equipment and contents of any buildings or structures on the Project Site disturbed in fulfilling any such guarantee.

C. If the Contractor, after notice, fails within ten (10) calendar days to proceed to comply with the terms of this guarantee, the Owner may have the defects corrected, and the Contractor and his/her surety shall be liable for all expense incurred, provided, however, that in case of an emergency where, in the opinion of the Owner, delay would cause loss or damage, repairs may be started without notice being given to the Contractor and the Contractor shall pay the cost thereof.

D. All special guarantees or warranties applicable to specific parts of the work, as may be stipulated in the Contract Documents, or other papers forming a part of this Contract

shall be subject to the terms of this paragraph during the first year of life of each such guarantee. All special guarantees and manufacturers' warranties shall be assembled by the Contractor and delivered to the Engineer, along with a summary list thereof, as specified in Section 01740, *Warranties & Bonds*, before the acceptance of the Work.

1.25 Archeological Finds

A. Notwithstanding anything to the contrary herein, in the event any archeological artifacts within the Project are discovered during the course of the work, ***the Owner shall have and retain all right, title, and interest to such artifacts*** and shall have the further right, during the course of the Contract, to examine or cause to have examined, the site of the work for any such artifacts and to perform or have performed archeological excavations and all other related work to explore for, discover, recover and remove such artifacts from the site of the work.

B. In the event the work or archeological examination and related work delays the Contractor's work, he/she shall be entitled to an extension of time to complete the work equal to the number of days he/she is thus delayed. Such delay shall be considered an excusable delay as defined in Section 00800, *Supplementary Conditions*.

1.26 Electrical Devices and Voltage Ratings of Motors

A. All motors, switches, controllers, panels, switchgear and other electrical devices shall be UL and/or CSA labeled and/or listed or shall be inspected and labeled in the field by an Owner approved certifying testing laboratory.

B. Unless otherwise specified, motors in excess of A-horsepower shall be nameplate rated for 460 Volt, 3 Phase, 60 Hz current. Motors of A-horsepower or less shall be suitable for operation on 115 Volt, single phase, 60 Hz current.

1.27 Maintenance of Existing Utility Service and Existing Treatment Facility Operation

A. Cooperate at all times with the Owner in order to maintain utility operations (water, wastewater, reclaimed water, stormwater, etc.) with the least amount of interference and interruption possible. Public health and safety considerations shall exceed all others and the Contractor's schedule, plan and work shall, at all times, be subject to alteration and revision if necessary for public health and safety considerations.

B. ***Interruptions of the Owner's operations must be kept to a minimum of less than four (4) hours during low demand periods.*** However, no interruption of service to

the Owner's customers will be allowed. The Contractor is to assume that water, wastewater and reclaimed water mains being replaced or temporarily bypassed are the only means of servicing existing customers and that no alternative water source or backfeed or wastewater collection system is available.

C. ***It is the responsibility of the Contractor to schedule all shutdowns, at least seventy-two (72) hours in advance (Monday through Friday), in writing, with the Engineer and Owner. The Owner reserves the right to approve or disapprove said request***.

D. Should the Contractor create an unscheduled interruption of utility service, then the Contractor shall be directly responsible for performing the necessary repairs in order to restore service. In addition, the Contractor shall be billed for subsequent repair work performed by the Owner, and shall be held liable for any claims related to the service interruption.

E. If the requested "System Shut Down" is approved by the Owner, then it shall be the responsibility of the Contractor to notify all affected customers that will experience a disruption in service, if any. Notification shall indicate the date and time limits of the interruption an must be provided to affected customers, ***in writing, a minimum of forty-eight (48) hours in advance*** while simultaneously providing two (2) duplicate copies of all said notifications to the Engineer. In lieu of written notification, the Contractor may opt to install signage in the affected area indicating the same information stated above.

F. ***The Owner reserves the right to require the Contractor to perform utility "tie-ins" during periods of "low flow" conditions in order to minimize service disruptions. "Tie-ins" of this nature are typically required to begin no sooner than 10 p.m. and be completed no later than 5:30 a.m. "Tie-ins" of this nature that are required by the Owner shall be performed by the Contractor at no additional cost to the Owner***.

G. In no case will the Contractor be permitted to interfere with any existing service until all materials, supplies, equipment, tools and incidentals necessary to complete the Work are on the job site.

H. The Contractor shall perform all work necessary to locate, excavate and prepare for connections to the terminus of the existing systems (potable water, wastewater and reclaimed water) all as shown on the Contract Drawings, or where directed by the Engineer.

I. ***The cost for this Work and for the actual connection of the existing mains (potable water, wastewater and reclaimed water) shall be included in the Bid for the Project and shall not result in any additional cost to the Owner***.

J. No interference with service shall be made until the Engineer approves the method and schedule for completing the work.

1.28 Equipment Data List

A. Obtain, prepare and submit a complete, detailed listing of equipment and motor data for all electrical items furnished under this Contract. This listing shall be submitted on Equipment Data Sheets, a "sample" of which is at the end of this Section.

B. Submit the Equipment Data List, at least thirty (30) calendar days prior to the start-up and performance demonstration hereinafter specified.

C. Upon approval of the data sheets by the Engineer, the Contractor shall supply the appropriate number of each (number of items provided under the Contract), laminated in a heavy plastic with a non-metallic fastening system for attachment to each piece of equipment.

1.29 Protection Against Electrolysis

A. Where dissimilar metals are used in conjunction with each other, ***suitable insulation shall be provided between adjoining surfaces so as to eliminate direct contact and any resulting electrolysis***.

B. The insulating material shall be bituminous impregnated felt, heavy bituminous coatings, non-metallic separators or washers, or other approved materials.

1.30 Damage on Account of High Water

A. The Contractor shall be responsible for all damage done to his/her work by heavy rains or floods and he/she shall take all reasonable precautions to provide against damages by building such temporary dikes, channels, or shoring to carry off storm water as the nature of the work may require.

1.31 Tools

A. Any special tools (including grease guns or other lubricating devices) which may be necessary for the adjustment, operation and maintenance of any equipment shall be furnished with the respective equipment.

1.32 Grease, Oil, Fuel, Electrical Power and Testing Equipment

A. ***All grease, oil and fuel required for testing of equipment shall be furnished with the respective equipment***. Electric power and all equipment and tools required for testing of equipment shall be furnished by the Contractor, the cost of which shall be included in the prices quoted in the Bid Form.

B. The Owner shall be furnished with a two (2) year supply of required lubricants including grease and oil of the type recommended by the manufacturer with each item of equipment supplied under Divisions 11, *Equipment*; Division 13, *Special Construction*; Division 15, *Mechanical*; and Division 16, *Electrical*.

1.33 Emergency Phone Numbers and Accident Reports

A. ***Emergency phone numbers (fire, medical, police) shall be posted at the Contractor's phone and its location known to all***.

B. Accidents shall be reported immediately to the Engineer, Owner and appropriate authorities by messenger or phone.

C. All accidents shall be documented and a fully detailed written report submitted to the Engineer after each accident. The Contractor shall use the reporting form presented in Section 00852, *Construction Accident Report Form*.

1.34 Construction Conditions and Subsurface Investigation

A. The Contractor shall strictly adhere to the specific requirements of the governmental unit(s) or agency(ies) having jurisdiction over the Work. Wherever there is a difference in the requirements of a jurisdictional body and these Specifications, the more stringent shall apply.

B. The Contractor shall be responsible for having determined to his satisfaction, prior to the submission of his Bid, the nature and location of the Work, the conformation of the ground, the character and quality of the substrata, the types and quantity of materials to be encountered, the nature of the groundwater conditions, the character of equipment and facilities needed preliminary to and during the prosecution of the Work, the general and local conditions and all other matters which can in any way affect the Work under this Contract. The prices established for the Work to be done will reflect all costs pertaining to the Work. Any claims for extras based on substrata, groundwater table, and other such conditions will not be allowed.

C. From investigations, including surveys made at the site, it is assumed that physical conditions are approximately as indicated on the Contract Drawings, but the nature of the materials below the surface, the depth to satisfactory foundations, or the stability of beds or banks, are not guaranteed.

D. Certain information regarding the reputed presence, size, character and location of existing underground structures, pipes and conduits has been shown on the Contract Drawings. There is no certainty of the accuracy of this information, and the location of underground structures shown may be inaccurate and other obstructions than those shown may be encountered. The Contractor hereby distinctly agrees that the Owner and Engineer are not responsible for the correctness or sufficiency of the information given; that in no event is this information to be considered as a part of the Contract; and that he shall have no claim for delay or extra compensation on account of incorrectness of information regarding obstructions either revealed or not revealed by the Contract Drawings; and that he shall have no claim for relief from any obligation or responsibility under this Contract in case the location, size, or character of any pipe or other underground structure is not as indicated on the Contract Drawings, or in case any pipe or other underground structure is encountered that is not shown on the Contract Drawings, as determined by the Owner and/or Engineer.

E. Subsurface Investigation Data - NOT USED

1.35 Public Nuisance

A. The Contractor shall not create a public nuisance including, but not limited to, the following:

1. Encroachment on adjacent lands.

2. Flooding or pollution of adjacent lands.

3. Excessive noise.

B. ***Sound levels measured by the Engineer shall not exceed 45 dBA from 7:00 p.m. to 7:00 a.m. or 50 dBA from 7:00 a.m. to 7:00 p.m.*** This sound level shall be measured at the Owner's property line.

C. ***Levels at the equipment shall not exceed 50 dBA at any time***. Sound levels in excess of these values are sufficient cause to have the Work halted until equipment sound levels are in compliance with this Section.

D. Work stoppage by the Engineer, Owner, or the local governmental agency for excessive noise shall not relieve the Contractor for any delays of other portions of the Contract including, but not limited to, completion dates and Bid amounts. The work stoppage shall not be grounds for any claims by the Contractor.

E. ***No extra charge may be made*** for time lost due to work stoppage resulting from the creation of a public nuisance or for temporary or permanent sound attenuation systems.

F. ***No claim shall be made*** by the Contractor for lost time due to work stoppage resulting from the creation of a public nuisance by the Contractor.

G. Pollution control

1. For pollution control, use water sprinkling, temporary enclosures, and other suitable methods as necessary to limit the amount of dust and dirt rising and scattering in the air to the lowest level of air pollution practical for the conditions of work. Comply with the governing regulations.

2. Take all necessary measures and means to provide dust, dirt, debris and paint abatement methods to prevent damage to surrounding residential properties, on-site structures and private property.

3. Clean "*on-site*" structures and improvements of all dust, dirt and debris caused by construction operations as directed by the Engineer. Clean or repair all "*off-site*" residential and private property as directed by the Engineer. Return all areas to the conditions existing prior to the commencement of the Project Work.

1.36 Suspension of Work Due to Weather

A. During inclement weather, all work which might be damaged or rendered inferior by such weather conditions shall be suspended. ***The decisions of the Engineer as to suspensions shall be "final"***.

B. During suspension of the work from any cause, the work shall be suitably covered and protected so as to preserve it from injury by the weather; and, all rubbish, debris and surplus materials shall be removed and legally disposed of.

C. The Contractor is referred to the General Conditions, Supplementary Conditions, FDEP Supplementary Conditions and Article 1.16, *Tropical Storm/Hurricane Preparedness Plan*, herein, for additional requirements.

D. A certain amount of "*bad weather*" days are to be expected for work in this Project location, especially due to rain or high winds.

1.37 Permits

A. Upon issuance of the Notice of Award (NOA), the Contractor shall immediately apply for all applicable permits not previously obtained by the Owner to do the work from the appropriate governmental agency or agencies.

B. No work shall commence until all applicable permits have been obtained and copies delivered to the Engineer.

C. The costs for obtaining all permits shall be borne by the Contractor. Existing permits are identified in Section 01065, *Permits and Fees*.

1.38 Pumping / Dewatering

A. The Contractor, with his own equipment, shall do all pumping necessary to prevent flotation of any part of the structures during construction operations.

B. ***The Contractor, with his own equipment, shall do all bypass pumping necessary to make tie-ins to structures, piping systems, etc.***

C. The Contractor shall, for the duration of the Contract and with his own equipment, pump out water that may seep or leak into manholes and other appurtenances. All construction shall be kept dry at all times. The extent of pumping required shall be determined by the Engineer.

D. If dewatering is needed, ***a Dewatering Plan must be prepared and certified by a Registered Professional Engineer in the State of Florida and be submitted and approved by the Engineer*** and the local water management district ***prior*** to commencement of work. The Contractor shall, for the duration of the Contract and with his own equipment, pump out water that may seep or leak into the excavations or structures. Any permitted dewatering and compliance with dewatering regulations shall be the responsibility of the Contractor.

E. ***The Contractor shall not be allowed to pump water off-site or to area wetlands***.

F. The Contractor shall meet all of the requirements specified in Section 02075, *Dewatering and Drainage*.

G. No additional payment shall be made for pumping or other difficulties encountered due to water.

H. ***No additional payment shall be made for sheeting and shoring***.

1.39 Easement for Work on Private Property

A. The Owner will secure easements for the construction of the lines across private property as shown on the Contract Drawings, if any. The Owner will not secure additional easement for additional working room. Bidders should base their Bids upon these conditions.

B. Work performed in such easements shall be subject to the provisions of the easement agreement on file and open to inspection in the office of the Owner.

C. In general, these easement agreements provide for restoring the property to the condition existing before construction began.

D. Any damage to private property outside of easement shall be repaired or restored at the Contractor's expense.

1.40 Project Cleaning

A. The Contractor shall execute cleaning, during the progress of the Work and at the completion of the Work, as required by the General and Supplementary Conditions, Section 01710, *Cleaning*, Section 01800, *Miscellaneous Work and Cleanup*, and as indicated herein.

B. Control of blowing litter caused by any regrading by the Contractor shall be the responsibility of the Contractor.

1.41 Discrepancies in the Contract Documents

A. ***In accordance with the Instructions to Bidders, it was the responsibility of the Contractor to alert the Owner, in writing, within forty-eight (48) hours of discovery of any apparent discrepancies in the Bid Documents prior to submission of Bids so that any required addendums can be issued to address these concerns***. Given circumstances where it can be shown that a Contractor is aware of discrepancies in the Bid Documents and fails to formally alert the Owner in writing prior to the Bid Opening, the Contractor shall not be permitted additional compensation to comply with the Owner and Utility Design Engineer's intended requirements of the Bid Documents.

B. Should the discrepancy in the Bid documents be discovered by the Contractor after the Bid Opening, it shall be the responsibility of the Contractor to alert the Engineer ***in writing within forty-eight (48) hours of the discovery*** of the discrepancy so that it can be addressed promptly to ***minimize*** impact on the project schedule. Failure of the Contractor to follow procedure shall forfeit any and all possibility for the Contractor to

request additional time for the completion of construction. Further, failure of the Contractor to provide written notification of the discrepancy to the Engineer shall be regarded as an attempt by the Contractor to create an intentional delay in the construction and no additional compensation shall be allowed.

C. Items of material, equipment, machinery and the like may be specified on the Contract Drawings and not in the Contract Specifications. Such items shall be provided by the Contractor in accordance with the specification on the Contract Drawings.

1.42 Claims for Property Damages and Citizen's Complaints

A. In the event of any indirect or direct damage to public or private property caused in whole or in part by an act, omission or negligence on the part of the Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or by anyone for whose acts any of them may be liable, ***the Contractor shall at his own expense and cost promptly remedy and restore such property to a condition equal to or better than that existing before such damage was done***.

B. The Contractor shall perform such restoration by underpinning, repairing, rebuilding, replanting, or otherwise restoring as may be required or directed by the Engineer or Owner, or shall make good such damage in a satisfactory and acceptable manner.

C. In case of failure on the part of the Contractor to promptly restore such property or make good such damage, the Engineer or Owner may, upon five (5) calendar days written notice, proceed to repair, rebuild or otherwise restore such property as may be necessary and the cost thereof, or a sum sufficient in the judgement of the Engineer or Owner to reimburse the owners of the property so damaged, will be deducted from any monies due or to become due the Contractor under the Contract.

D. The Contractor shall designate a responsible member of his organization at the site whose sole duty shall be the prevention and resolution of citizen complaints and the protection of material, equipment, and private property. This person shall be someone other than the Contractor's superintendent.

1.43 Jurisdictional Disputes

A. It shall be the responsibility of the Contractor to pay all costs that may be required to perform any of the Work shown on the Contract Drawings or specified herein in order to avoid any work stoppages and delays due to jurisdictional disputes.

B. The basis for subletting Work in question, if any, shall conform with precedent agreements and decisions on record with the Building and Construction Trades Department, AFL-CIO, dated June, 1973, including any amendments thereto.

1.44 Hauling and Construction Operations on Facility Property

A. The Contractor shall conduct access, hauling, filling, and storage operations as specified herein and as shown on the Contract Drawings.

1. ***On-site borrow areas shall not be allowed.*** All borrow material required shall be provided by the Contractor from off-site locations with all costs associated with the material being borne by the Contractor.

2. On-site spoil areas will become the property of the Contractor and removed from the site and legally disposed of by the Contractor at no additional cost to the Owner.

B. Construct all fill areas so that runoff will not flood improved areas.

1.45 Start-up and Acceptance of the Facilities and Related Systems

A. General Requirements

1. Successfully execute the step-by-step procedure of Start-Up and performance demonstration specified hereinafter.

2. The Start-Up and performance demonstration shall be successfully executed prior to substantial completion and acceptance by the Owner.

3. ***All performance tests and inspections shall be scheduled, in writing, at least five (5) calendar days in advance or as otherwise specified with the Engineer and the Owner***. All performance tests and inspections shall be conducted during the work week of Monday through Friday, unless otherwise specified.

B. Preparation for Start-Up

1. All mechanical and electrical equipment shall be checked to ensure that it is in good working order and properly connected. Preliminary run-ins of the various pumps, compressors, and other remaining equipment shall be made. All systems shall be purged as required. All sumps, tanks, basins, chambers, wet wells, and pipe lines

which are hydraulically checked shall be drained and returned to their original condition once the testing is complete.

2. All instruments and controls shall be calibrated through their full range. Any other adjustments required for proper operation of all instrumentation and control equipment shall be made.

3. Perform all other tasks needed for preparing and conditioning the treatment facilities for proper operation.

4. No testing or equipment operation shall take place until it has been verified by the Engineer that all specified safety equipment has been installed and is in good working order.

5. No testing or equipment operation shall take place until it has been verified by the Engineer that all lubricants, tools, maintenance equipment, spare parts, and approved equipment operation and maintenance manuals have been furnished as specified.

C. Start-up and Final Performance Demonstration

1. As soon after the satisfactory completion of the performance tests for the various system components, equipment, etc., make the appropriate connections and begin operation of the “new” facilities.

   a. ***Demonstrate seven (7) consecutive, 24-hour days of successful operation of the “new” facilities and systems as a prerequisite of substantial completion and acceptance***.

2. In the event of failure to demonstrate satisfactory performance of the treatment facilities and systems on the first or any subsequent attempt, all necessary alterations, adjustments, repairs and replacements shall be made. When the facility is again ready for operation it shall be brought on line and a new test shall be started. This procedure shall be repeated as often as necessary until the facilities and systems have operated continuously to the satisfaction of the Owner and Engineer, for the specified duration.

3. The Contractor will furnish all operating personnel (other than vendor's or subcontractor's service personnel), electricity, chemicals, water, etc., needed to operate equipment during the final performance test period.

4. Until the performance tests are completed and the units and systems are accepted by the Owner as "substantially complete", the Contractor shall be fully responsible for the operation and maintenance of all new facilities and systems.

5. At no time during performance tests shall the Contractor allow the facilities and systems to be operated in a manner which subjects any equipment to conditions that are more severe than the maximum allowable operating conditions for which the equipment was designed.

6. Startup and the final performance demonstration test shall not begin until all new treatment facilities, systems and equipment have been tested as specified and are ready for operation.

7. ***The Owner shall receive spare parts, safety equipment, tools and maintenance equipment, lubricants, approved operation and maintenance data and the specified operation and maintenance instruction at least five (5) calendar days prior to startup.***

8. All valve tagging, as specified in the Contract Documents, shall also be complete prior to testing.

1.46 Delivery of Locator Ball Detector Devices

A. The Contractor shall provide locator ball detector devices for all underground utilities, both new and relocated in accordance with Section 09905, *Piping, Valve and Equipment Identification System*, Article 2.01(E).

B. The Contractor shall be responsible for providing the Owner with water, wastewater and reclaimed water marker balls and an electronic marker locator and probe package as part of the construction contract.

C. ***All electronic marker locators and probes shall be delivered by the Contractor to the Owner through the Engineer no later than thirty (30) days after the Notice to Proceed is issued***. Failure to comply with this provision shall be adequate grounds for Engineer to withhold payment requests and issue a stop work order at no cost to the Owner.

D. In addition, the Owner shall not perform any field utility locates for the Contractor nor allow any subsurface excavation in the vicinity of existing Owner utilities until the locator ball devices are provided to the Owner and are determined to be fully functional and acceptable.

1.47 Demolition, Salvage and Disposal

A. The Contractor shall exercise the appropriate care necessary to remove and stockpile all existing utilities of the Owner (including, but not limited to, all piping, bends, valves, tees, fittings, hydrants, and appurtenances) in such a manner as to preserve the materials for future use.

B. Salvaged materials, that the Owner wishes to keep, shall be removed and stock piled, hauled, unloaded and stored at the direction of the Owner in an orderly manner by the Contractor at a location to be provided by the Owner. Those that the Owner does not want, shall be removed from the Project Site and legally disposed of by the Contractor. The Contract shall be inclusive of all costs associated with the item description provided above.

C. The Contractor shall contact the Owner to arrange for the delivery of any salvaged materials to the location designated by the Owner. The condition of the materials cannot be guaranteed as they shall be subject to the normal excavation and handling procedures used on the project.

D. ***The Contractor shall be responsible for the removal and legal disposal of the materials associated with the demolition of the any buildings, structures, all abandoned utilities of the Owner that are damaged and/or deemed unsalvageable by the Owner and all unsuitable materials from the development of the site and shall dispose of them in a legal manner. The cost associated with the legal disposal of the above referenced materials shall be included in the Contractor's Bid Price***.

2. PRODUCTS - NOT USED

3. EXECUTION - NOT USED

END OF SECTION

WARRANTY FOR EQUIPMENT ITEM

Location of Project	**Flagler Beach WWTF**
Owner	**City of Flagler Beach**
Project No.	
Equipment Item	
Section No. / Item No.	
Supplier	
Supplier's Address	
Suppliers Phone No.	
Supplier's Reference No.	

The undersigned guarantees that the above equipment is of good merchantable quality, free from defects in material and workmanship, fully meets the type, quality, design and performance requirements defined in the Contract Documents of the above project, and that the equipment will in actual operation satisfactorily perform the functions for which it is installed.

The undersigned agrees to repair, replace, or otherwise make good, any defect in workmanship or materials in the above described equipment which may develop within a ***period of two (2) years from the date of Final Project Acceptance by the Owner*** of the above named Project.

Two (2) years from the date of Substantial Completion:

(Insert date of Substantial Completion)

Company: _____

Company Address: _____

Phone / FAX: _____

By: _____

Title: _____

Signed: _____

Date: _____

EQUIPMENT DATA SHEET	
Name	
Nomenclature	
Location	
Manufacturer	
Manufacturer's Local Representative	
Address	
Phone / FAX No.	
Equipment Data	
Serial No.:	Model No.:
Size:	Lubricant:
If the equipment is a pump, complete the following:	
Pump Capacity (gpm):	Material:
Pump TDH (ft):	Packing Gland:
Motor Speed (rpm):	Seal:
Impeller Diameter (in):	
Motor Data	
Manufacturer:	
Serial No.:	Frame:
Model No.:	Type:
Volts:	Hertz:
Phase:	Amps:
Amps:	Horsepower (hp):
Motor Speed (rpm):	Rating:
Insulation Class:	Max. Ambient:
Service Factor:	Max. Temp. Rise:
Code Letter:	NEMA Design:
Shaft End Bearing No.:	Front Bearing No.:

EQUIPMENT DATA SHEET	
Coupling Data	
Manufacturer:	
Serial No.:	Model No.:
Type:	
Driver or Reducer Data	
Manufacturer:	
Serial No.:	Model No.:
Horsepower (hp):	RPM In:
RPM Out:	Ratio:
Type:	Bearings:
Lubricant:	

EQUIPMENT MANUFACTURER'S CERTIFICATE OF INSTALLATION TESTING AND INSTRUCTION

Owner	**City of Flagler Beach**
Project Location	**Flagler Beach WWTF**
Contract No.	
CPH Project No.	
Equipment Specification Section	
Equipment Description	

I _____, authorized representative of
(Print Name)

_____ hereby certify that
(Print Manufacturer's Name)

_____
(Print equipment name and model with Serial No.)

_____

installed for the subject Project has (have) been installed in a satisfactory manner, has (have) been satisfactorily tested, is (are) ready for operation, and the Owner assigned operating personnel have been suitably instructed in the operation, lubrication, and care of the unit(s) on _____,
at _____ (Date)
(Time)

Certified by: _____ Date: _____
(Signature of Manufacturer's Representative)

OWNER'S ACKNOWLEDGMENT OF MANUFACTURER'S INSTRUCTION

I (we) the undersigned, authorized representatives of the City of Flagler Beach, Florida and/or Facility Operating Personnel have received classroom and hands on instruction on the operation, lubrication, and maintenance of the subject equipment and prepared to assume normal operational responsibility for the equipment.

NAME	DATE

SECTION 01200

PROJECT MEETINGS

1. GENERAL

1.01 Description

A. The Contractor shall cooperate and coordinate with the Engineer to schedule and administer the preconstruction meeting, monthly progress meetings, coordination meetings and specifically called meetings throughout the progress of the Work.

B. The Engineer shall schedule and administer a preconstruction meeting, periodic progress meetings, and specially called meetings throughout the progress of the work.

1. Prepare agenda for meetings.

2. Make physical arrangements for meetings.

3. Preside at meetings.

C. Representatives of the Contractor, subcontractors and suppliers attending meetings shall be qualified and authorized to act on behalf of the entity each represents.

D. ***The Contractor shall record all progress meetings in their entirety, and shall provide the Engineer with an audio copy of each such recording, having good quality and clarity, and an "electronic" version (Word or WordPerfect) of the manuscript of the minutes of each meeting. The "draft" minutes of each meeting shall be delivered to the Engineer, electronically (e-mail), no later than five (5) business days after the meeting***. If the meeting minutes are not delivered within this time period, the current and all future applications for payment shall not be processed by the Engineer and Owner until the minutes are delivered. All delays in processing applications for payment, associated with a delay in the delivery of meeting minutes, shall be borne solely by the Contractor.

E. ***The Owner and Engineer shall review the "draft" minutes and shall provide comments to the Contractor, if any, within five (5) business days after receipt***. The Contractor shall then make all corrections and changes to the "draft" minutes, based on the Engineer's and Owner's comments, and shall distribute "final" meeting minutes, in an "***electronic" format***, within five (5) calendar days following receipt of the comments.

F. The Owner shall attend meetings to ascertain that the Work is expedited consistent with the Contract Documents and construction schedules.

G. Related Work Specified Elsewhere

Specification Section	Title
01040	Project Coordination
01300	Shop Drawings, Submittals and Samples
01311	Construction Progress Schedules
01720	Project Record Documents

1.02 Preconstruction Meeting

A. ***The Engineer will schedule a preconstruction meeting no later than fourteen (14) days after the date of the Notice to Proceed (NTP)***. The purpose of the meeting is to:

1. Designate responsible personnel and establish a working relationship.

2. Discuss matters of Project coordination and procedures for handling all construction related activities and to establish a construction schedule.

B. This meeting shall be attended by the following:

1. Owner's representative.

2. Engineer and his professional consultants.

3. Resident project representative (RPR).

4. Contractor's Project Manager and superintendent.

5. Major subcontractors.

6. Representatives of major suppliers and manufacturers, as appropriate.

7. Government representatives, as appropriate.

8. Representative of the various utilities, as appropriate.

9. Others as requested by the Contractor, Owner, and Engineer.

C. Location

1. A central site, convenient for all parties designated by the Engineer.

D. The Engineer shall preside at the preconstruction meeting. The Contractor shall provide for keeping all project meeting minutes and distribution of the minutes to the Owner, Engineer, and others as identified in Article 1.01(D-E). The purpose of the preconstruction meeting is to designate responsible personnel and establish a working relationship. Matters requiring coordination will be discussed and procedures for handling such matters established.

E. The agenda for the Preconstruction Meeting would include, but is not limited to, the following:

1. Distribution and discussion of:

   a. List of major subcontractors and suppliers.

   b. Projected schedules.

   c. Schedule of Values (SOV).

2. Discussion of Owner Direct Purchase of Materials and Equipment (for tax savings purposes).

3. Critical work sequencing: Relationships and coordination with other contracts and/or work and continuing operation of the existing utilities.

4. Major equipment deliveries and priorities.

5. Project Coordination: Designation and responsible personnel.

6. Procedures and processing of:

   a. Field decisions, field orders and work directives.

   b. Proposal requests.

   c. Requests for Information (RFI)

   d. Submittals.

   e. Change Orders.

   f. Applications for Payment.

7. Submittals of Shop Drawings, Project Data and Samples.
8. Adequacy of distribution of Contract Documents
9. Procedures for maintaining project record documents.
10. Use of Premises
    a. Office, work and storage areas.
    b. Owner's requirements.
    c. Access and Traffic Control.
11. Construction facilities, controls and construction aids.
12. Temporary utilities.
13. Housekeeping procedures.
14. Check of required Bond and Insurance certifications.
15. Completion Time for the Contract and Liquidated Damages.
16. Request for Extension of the Contract Time.
17. Procedures for monthly progress meetings, for all involved.
18. Security Procedures.
19. Procedures for making partial payments.
20. Guarantees on completed work.
21. Equipment to be used.
22. Project Layout and staking of Work.
23. Project Inspection.
24. Labor requirements.
25. Laboratory testing of material requirements.
26. Provisions for material stored on-site and monthly inventory of materials stored.

27. Requirements of other organizations such as utilities, railroads, highway departments, building departments.

28. Rights-of-way and easements.

29. Housekeeping procedures.

30. Liquidated Damages.

31. Posting of signs and installation of a Project Sign.

32. Pay request submittal dates.

33. Equal Opportunity Requirements.

34. Safety and First Aid Procedures.

35. Requirements of Special Conditions and Contract Forms.

36. Process Safety Management Procedures.

37. Contractor's Storage Area and Trailer Location(s).

F. ***The Contractor shall furnish a list of emergency telephone numbers for the Project Manager, Superintendent and all supervisors and major Subcontractors***.

1.03 Progress Meetings

A. The Engineer shall schedule regular progress meetings. ***The progress meetings will be held a minimum of once every thirty (30) days*** and at other times as required by the progress of the work. ***The first meeting shall be held within thirty (30) days after the preconstruction meeting or thirty (30) days after the Notice to Proceed***.

B. The Engineer or authorized representative shall hold called progress meetings as required by progress of the work.

C. Location of the meetings

1. The Contractor's construction trailer at the Project Site (See Section 01500, "Temporary Facilities").

D. Attendance

1. Engineer and his professional subconsultants as needed.
2. Resident Project Representative (RPR).
3. Contractor's Project Manager and Superintendent.
4. Owner's representatives.
5. Subcontractors (Active on the site and as appropriate to the agenda).
6. Suppliers and manufacturers, as appropriate to the agenda.
7. Others as appropriate to the Agenda.

E. The Engineer or authorized representative shall preside at the meetings. The Contractor shall be responsible for keeping all project meeting minutes and distribution of the minutes to the Owner, Engineer, RPR, and others as identified in Article 1.01(D - E). The purpose of the meetings will be to review the progress of the Work.

F. The suggested agenda for the progress meetings will include, but is not limited to, the following:

1. Review, approval of minutes of previous meeting.
2. Review of Work progress since the previous meeting and the Work scheduled (3-week look ahead schedule).
3. Field observations, problems and conflicts.
4. Problems which impede the construction schedule.
5. Review of off-site fabrication and delivery schedules.
6. Corrective measures and procedures to regain the projected schedule.
7. Status of the approved Construction Schedule and revisions to construction schedule as appropriate.
8. Progress, schedule during the succeeding work period.

9. Coordination of schedules.

10. Review the status of submittals and submittal schedules; expedite as required.

11. Maintenance of quality standards.

12. Pending changes and substitutions.

13. Shop Drawing Problems.

14. Review proposed changes for:

    a. Effect on the construction schedule and on the completion date.

    b. Effect on other contracts of the Project.

15. Critical/long lead times.

16. Other business.

G. ***The Contractor is to attend all progress meetings and is to study the previous meeting minutes and current agenda items, and be prepared to discuss pertinent topics and provide specific information including, but not limited to, the following***:

1. Status of all submittals and what specifically is being done to expedite them.

2. Status of all activities behind schedule and what specifically will be done to regain the schedule.

3. Status of all material deliveries.

4. Latest contact with equipment manufacturers.

5. Specific actions taken to expedite material delivery.

6. Status of open deficiencies and what is being done to correct the same.

H. The Contractor shall provide a current submittal log at each progress meeting in accordance with Section 01300, *Shop Drawings, Submittals and Samples*.

2. PRODUCTS - NOT USED

3. EXECUTION - NOT USED

END OF SECTION

SECTION 01300

SHOP DRAWINGS, SUBMITTALS AND SAMPLES

1. GENERAL

1.01 Scope of Work

A. The Contractor shall submit to the Engineer for review and approval, such Shop Drawings, Test Reports, and Product Data on materials and equipment (hereinafter in this Section called Product Data), and material samples (hereinafter in this Section called Samples) as are required for the proper control of work, including but not limited to those Shop Drawings, Product Data, and Samples for materials and equipment specified elsewhere in the Specifications and in the Contract Drawings.

B. Shop Drawings

1. Shop Drawings are original drawings, prepared by the Contractor, a subcontractor, supplier, or distributor, which illustrate some portion of the work; showing fabrication, layout setting, or erection details. Refer to Article 1.04 herein.

2. Shop drawings shall be prepared by a qualified detailer and shall be identified by reference to sheet and detail numbers on the Contract Drawings. ***Reproductions for submittal shall be "full-size" prints (22" x 34")*** or other print acceptable to the Engineer. Reduced size prints will not be reviewed or approved.

C. Product Data

1. Product data are manufacturer's standard schematic drawings and manufacturer's catalog sheets, brochures, diagrams, schedules, performance charts, illustrations, and other standard descriptive data.

2. Standard drawings shall be modified to delete information which is not applicable to the project and supplemented to provide additional information applicable to the project.

3. Catalog sheets, brochures, etc., shall be clearly marked to identify pertinent materials, products, or models.

D. Samples are physical examples to illustrate materials, equipment, or workmanship and to establish standards by which work is to be evaluated.

E. ***Within fourteen (14) calendar days after the Notice to Proceed, the Contractor shall submit to the Engineer a complete list of preliminary product data on items for which shop drawings are to be submitted, in an electronic format (PDF)***. Included in this list shall be the names of all proposed manufacturers furnishing specified items. Review of this list by the Engineer shall in no way, expressed or implied, relieve the Contractor from submitting complete shop drawings and providing materials, equipment, etc., fully in accordance with the Contract Documents. This procedure is required to expedite final review of shop drawings.

F. The Contractor is to maintain an accurate updated submittal log and will bring this log to each scheduled progress meeting with the Owner and the Engineer. This log should include the following items:

1. Submittal description and number assigned.

2. Date shop drawings/product data/samples were submitted to the Engineer.

3. Date shop drawings/product data/samples were returned to the Contractor.

4. Status of submittal (Approved, Approved as Noted, Revise and Resubmit, etc.)

5. Date of resubmittal and return (as applicable).

6. Date material released (for fabrication).

7. Projected date of fabrication.

8. Projected date of delivery to the Project Site.

9. Status of O&M Manual submittals.

10. Specification Section and Contract Drawing sheet number.

G. ***In addition to standard O&M Manuals, all manufacturers supplying equipment and products specified herein shall also submit their operation and maintenance manuals and data to the System Integrator for this Project on CD/DVD/BD's in Corel WordPerfect (latest version), Microsoft Word (latest version), or text, "txt", formats. All graphic files shall be in BMP, PCX, CDR, JPEG, DWG or DXF formats (integrators preference for the system shall be required). <u>All O&M Manual files shall also be submitted electronically on CD/DVD/BD's to the Engineer in both PDF and JPEG formats, no exceptions</u>.***

H. ***The System Integrator shall be responsible to configure and compile the O&M Manuals into "hypertext" window help files for use as computer "on-line" help screens for equipment operation and maintenance. The System Integrator shall return all hypertext files to the equipment and product manufacturer's for review and approval prior to introducing them into the treatment facility SCADA System.***

I. Related Requirements Described Elsewhere

Specification Section	Title
00700	General Conditions
00800, 00805 and 00806	Supplementary Conditions and FDEP Supplementary Conditions
00950	Shop Drawing Submittal Form
00980	O&M Manual Submittal Form
01311	Construction Progress Schedules
01600	Materials and Equipment
01720	Project Record Documents
01730	Operating and Maintenance Data
01740	Warranties and Bonds
Division	**Information**
0	Conditions of the Contract
11, 13, 15 and 16	Equipment

1.02 Contractor's Responsibility

A. ***It is the responsibility of the Contractor, prior to submission to the Engineer, to thoroughly check all shop drawings, product data and samples for completeness and for compliance with the Contract Drawings.*** The Contractor shall verify all dimensions and field conditions and shall coordinate the shop drawings with the requirements for other related work. ***The electronic (PDF) shop drawings and product data shall bear the Contractor's stamp showing that they have been so checked. Electronic shop drawings (PDF format) submitted to the Engineer without the Contractor's stamp will be "rejected" and returned to the Contractor for conformance with this requirement.*** Shop drawings shall indicate any deviations in the submittal from the requirements of the Contract Documents. If the Contractor takes exception to the specifications, the Contractor shall note the exception in the letter of transmittal to the Engineer.

B. The Contractor's responsibility for errors and omissions in submittals is not relieved by the Engineer's review of the submittals.

C. ***The Contractor shall notify the Engineer, in writing, at the time of submission, of deviations in submittals from the requirements of the Contract Documents*** and is not relieved by the Engineer's review of submittals, unless the Engineer gives written acceptance of specific deviations.

D. Determine and verify:

1. Field measurements.
2. Field construction criteria.
3. Catalog numbers and similar product data.
4. Conformance with the Specifications.

E. The Contractor shall furnish the Engineer a schedule of Shop Drawing submittals fixing the respective dates for the submission of shop and working drawings, the beginning and ending of manufacture, testing, and installation of materials, supplies, and equipment. This schedule shall indicate those that are critical to the progress schedule.

F. The Contractor shall not begin any of the work covered by a Shop Drawing, Product Data, or a Sample until the Engineer has returned to the Contractor an ***approved*** shop drawing submittal with his initials or signature.

G. The Contractor shall submit to the Engineer all drawings and schedules sufficiently in advance of construction requirements to provide no less than ***thirty (30) calendar days*** for checking and appropriate action from the time the Engineer receives them.

H. All submittals shall be accompanied with a transmittal letter, all in an ***electronic format (PDF)***, containing the following information:

1. Date.
2. Project Title and Number.
3. Contractor's name and address.
4. The number of each Shop Drawing, Project Data, and Sample submitted.
5. Notification of Deviations from Contract Documents

   a. The Contractor shall indicate in ***bold type*** at the top of the cover sheet of the submittal of shop drawing if there is a deviation from the Contract Drawings, Specifications, or referenced specifications or codes.

b. ***The Contractor shall also list any deviations from the Contract Drawings, Specifications, or referenced specifications or codes*** and identify in "***blue***" ink prominently on the applicable Shop Drawings.

6. Submittal Log Number.

7. Specification Section Number and Contract Drawing Number(s).

I. ***No partial submittals will be reviewed***. Submittals not deemed complete will be stamped "Rejected" and returned to the Contractor for resubmittal. Unless otherwise specifically permitted by the Engineer, make all submittals in groups containing all associated items for:

1. Systems.
2. Processes.
3. As indicated in specific specification sections.

J. All drawings, schematics, manufacturer's product data, certifications and other shop drawing submittals required by a system specification shall be submitted at "***one time***" as a package to facilitate interface checking.

K. ***The Contractor shall submit all shop drawings, submittals, copies of descriptive or product data information to the Engineer in an electronic (PDF) format. Failure to submit the shop drawings and associated documents in an electronic (PDF) format will delay the review process at the Contractor's expense.*** The Engineer shall submit electronic copies to the Owner and any relevant subconsultant for a simultaneous review. The Engineer will incorporate all comments onto the electronic review set, electronically stamp the submittal as required, and e-mail the parties indicated above with a "Shop Drawing Review" set of review comments for the Contractor to implement for resubmittal or to proceed with ordering equipment and materials.

L. The Contractor shall be responsible for and bear all costs of damages which may result from the ordering of any material or from proceeding with any part of Work ***prior to the completion of the review*** by the Engineer of the necessary shop drawings.

M. The Contractor shall be fully responsible for observing the need for and making any changes in the arrangement of piping, connections, wiring, manner of installation, etc., which may be required by the materials/equipment he proposes to supply both as it pertains to his own work and any work affected under other parts, headings, or divisions of the Contract Drawings and Specifications.

N. The Contractor ***shall not use Shop Drawings as a means of proposing alternate items*** to demonstrate compliance with the Contract Drawings and Specifications.

O. If the Contractor considers any correction indicated on the shop drawings to constitute a change to the Contract Drawings or Specifications, the Contractor shall give written notice thereof to the Engineer, ***prior*** to ordering the materials or equipment.

P. Each submittal shall bear a "***stamp of approval***" certifying that they have been checked and approved for submittal to the Engineer and that the Contractor has satisfied the Contractor's obligations under the Contract Documents with respect to Contractor's review and approval of that submittal as illustrated in the figure below.

Q. Submittals without the Contractor's initialed or signed certification "stamp of approval" and submittals which, in the Engineer's opinion, are incomplete, contain numerous errors or have not been properly checked, will be returned unchecked by the Engineer for resubmission. ***The Contractor shall mark his corrections in blue ink*** **and the** ***Engineer's comments shall be noted in red ink***.

R. Submittals for each type of work shall be numbered consecutively, and the numbering system shall be retained throughout all revisions. Resubmittals shall utilize the same number with a modifying letter. For example, two different submittals for Section 15050 would initially be submitted as submittal number 15050-1 and 15050-2. Resubmittals would therefore be 15050-1A and 15050-2A.

Owner's Name: **City of Flagler Beach, Florida**

Project Name: **Flagler Beach WWTF Sludge System Improvements**

CPH Project Number: _____

Shop Drawing No.: _____

Specification Section: _____ Contract Drawing No.: _____

The Engineer's review and approval is only for general conformance with the design concept of the Project and the requirements of the Contract Documents. The review and approval of submittals shall not relieve the Contractor from any obligation contained in the Contract Documents, does not authorize any deviation from the requirements of the Contract Documents, and does not relieve the Contractor from errors or omissions in the submittal. The review and approval shall not constitute approval of any dimensions, quantities, installation instructions, equipment performance, construction means, methods techniques, sequencing or any safety precautions or procedures. The approval of a specific item shall not indicate approval of an assembly of which the item is a component.

Submittal Review: _____

CPH, LLC

By: _____ Date: _____
Authorized Signature

S. Drawings and schedules shall be checked and coordinated with the work of all trades and sub-contractors involved, before they are submitted for review by the Engineer and ***shall bear the Contractor's stamp of approval as evidence of such checking and coordination***. Drawings or schedules submitted without this stamp of approval shall be returned to the Contractor for resubmission.

T. Submittals shall be clearly legible and note only the items to be reviewed. If a submittal lists several options or models, the Contractor shall specifically indicate what he proposes to furnish. If the item is not identified, the shop drawing will be "*rejected*".

U. When the shop drawings have been completed to the satisfaction of the Engineer, the Contractor shall carry out the construction in accordance therewith and shall make no further changes therein except upon written instructions from the Engineer.

1.03 Engineer's Review of Shop Drawings

A. The Engineer's review of Shop Drawings, Product Data, and Samples as submitted by the Contractor will be to determine if the item(s) generally conforms to the information in the Contract Documents and is compatible with the design concept. The Engineer's review, and exceptions, if any, ***will not*** constitute an approval of means, methods, techniques, sequences, procedures of construction, safety precautions, dimensions, connections, quantities, and details of the material, equipment, device, or item shown.

B. ***The review and approval of a separate item will not constitute approval of the assembly in which the item functions***.

C. ***The Engineer's review of submittals shall not be construed as a complete check and shall not relieve the Contractor from responsibility for complete compliance with the Contract requirements***. The review of drawings and schedules will be general, and shall not be construed as:

1. Permitting any departure from the Contract Documents.

2. Relieving the Contractor of responsibility for any errors, including details, dimensions, and materials.

3. Approving departures from details furnished by the Engineer, except as otherwise provided herein.

D. No corrections, changes, or deviations indicated on submittals reviewed by the Engineer or other supplementary reviewing agency shall be considered as a Change Order.

E. According to the requirements of the particular local regulatory agency having jurisdiction or the requirements of the Owner or utility company, there may be required a review of the shop drawings by the local regulatory agency, or the Owner, or utility company in addition to the review by the Engineer. This supplementary review will be considered part of the normal processing and approval process and will be accomplished without additional compensation.

F. If the drawings or schedules as submitted describe variations, per Article 1.02(M), and show a departure from the Contract Documents which the Engineer finds to be in the interest of the Owner and to be so minor as not to involve a change in Contract Price or Contract Time, the Engineer may return the reviewed drawings without noting an exception.

G. When reviewed by the Engineer, each of the Shop Drawings will be identified as having received such review being so stamped and dated. Shop Drawings will be stamped with one of the following:

Stamp	Description
Approved	*The submittal is approved as submitted and in accordance with the Contract Documents.*
Approved as Noted	*The Contractor shall incorporate the Engineer's comments into the submittal before release to the manufacturer. The Contractor shall send a letter to the Engineer acknowledging the comments and their incorporation into the Shop Drawing.*
Revise and Resubmit	*The Contractor shall resubmit the shop drawing to the Engineer. The resubmittal shall incorporate the Engineer's comments highlighted on the shop drawing.*
Rejected	*The Contractor shall resubmit the shop drawing with materials or equipment meeting the specifications for review by the Engineer.*

H. Resubmittals will be handled in the same manner as first submittals. On resubmittals the Contractor shall direct specific attention, in writing or on resubmitted shop drawings, to revisions other than the corrections requested by the Engineer on previous submissions. ***The Contractor shall address and make any corrections required by the Engineer.***

I. Only the Engineer shall utilize the color "***red***" in marking Shop Drawing submittals.

J. ***Shop drawing and submittal data shall be reviewed by the Engineer for each original submittal and the first resubmittal. Thereafter review time for subsequent resubmittals shall be charged to the Contractor and the Contractor shall reimburse the Engineer for services rendered by the Engineer as specified below***:

1. ***Reimbursements shall be based on a factor of five (5) times the Engineer's payroll cost plus reimbursable expenses at cost and shall be "paid in full", by the Contractor, PRIOR to the Engineer's release of the submittal back to the Contractor, regardless of whether the submittal is "approved" or "denied"***.

2. Failure to reimburse the Engineer for his time, with regard to the evaluation of additional submittals, will constitute a breach of the Project Contract/Agreement and all Work will be *suspended* until the Engineer is reimbursed and ***no additional time or Cost will be added to the Contract Time and Price***.

K. Distribution of copies of "*acceptable*" submittals will be as mutually determined by the Contractor, Owner and Engineer on an individual item basis during or following the preconstruction conference.

L. If the submittal is "*not satisfactory*", the Engineer shall notify the Contractor and appropriate action shall be taken.

1.04 Shop Drawings

A. When used in the Contract Documents, the term "shop drawing" shall be considered to mean the Contractor's plans for materials and equipment which become an integral part of the Project.

B. ***Shop drawings shall be complete and detailed*** and shall consist of fabrication, erection and installation, layout, setting and schedule drawings, manufacturer's scale drawings, wiring and control diagrams, catalog cuts, catalogs, pamphlets, descriptive literature, mix design, performance and test data, and all other drawings and descriptive data pertaining to materials, equipment, piping, duct and conduit systems, and methods of construction as may be required to show that the materials, equipment or systems, and the positions thereof conform to the Contract requirements. As used herein, the term "manufactured" applies to standard units usually mass-produced; and "fabricated" means items specifically assembled or made out of selected materials to meet individual design requirements.

C. ***Shop drawings shall establish the actual detail of all manufactured or fabricated items***, indicate proper relation of adjoining work, amplify design details of mechanical and electrical equipment in proper relation to physical spaces in the structure, and incorporate minor changes of design or construction to suit actual conditions. Shop drawings shall be drawn to scale and shall be completely dimensioned.

D. If shop drawings cover more than one piece of equipment or components, the shop drawings shall show the entire assembly and the relationship and connections between all components.

E. The Contractor shall coordinate the shop drawings from different manufacturer's and supplies so that all equipment and material will fit and work together.

F. The Contract Drawings are "*diagrammatic*" and are intended to indicate the "*general arrangement*" of equipment, ducts, conduits, piping, and fixtures. The Contractor shall be fully responsible for observing the need for and making any changes in the arrangement of piping, connections, wiring, manner of installation, etc., which may be required by the materials/equipment he proposes to supply both as pertains to his own work and any work affected under other parts, headings, or divisions of drawings and specifications. ***Changes shall be reviewed in advance by the Engineer.***

G. Manufacturer's data shall include all standard published information describing the products, systems, methods and performance. Include the manufacturer's name, address, telephone number, e-mail address and standards to which the products comply. Manufacturer's catalog sheets, brochures, diagrams, illustrations, and other standard descriptive data shall be clearly marked to identify pertinent materials, products, or models. ***Delete information which is not applicable to the Work by striking or cross-hatching***.

H. ***Drawings and schedules shall be checked and coordinated with the Work of all trades involved, before they are submitted for review by the Engineer*** and shall bear the Contractor's "*stamp of approval*" as evidence of such checking and coordination. Drawings or schedules submitted without this "stamp of approval" shall be returned to the Contractor for resubmission.

I. ***Each shop drawing shall be submitted with the shop drawing submittal form presented in Section 00950, "Shop Drawing Submittal Form"***.

J. Shop drawings, including manufacturer's literature, catalog cuts, or other printed material shall be entitled with the name of the project on each sheet and shall otherwise be identified by listing the particular Division, Section, Article, or reference of the work pertaining thereto. Differing items ***shall not*** be submitted on the same sheet.

K. Product data on materials and equipment shall include, without limitation, materials and equipment lists, catalog data sheets, catalog cuts, performance curves, diagrams, verification of conformance with applicable standards or codes, materials of construction, and similar descriptive material. Materials and equipment lists shall give, for each item thereon, the name and location of the supplier or manufacturer, trade name, catalog reference, size, finish, and all other pertinent product data.

L. For all mechanical and electrical equipment furnished, the Contractor shall provide a list including the manufacturer, equipment name, address, e-mail address and phone

number of the manufacturer and his representative and service company so that service and/or spare parts can be readily obtained.

M. If drawings show variations from the Contract requirements because of standard shop practice or for other reasons, the Contractor shall describe such variations in his letter of transmittal. If acceptable, proper adjustment in the Contract shall be implemented where appropriate. If the Contractor fails to describe such variations, he shall not be relieved of the responsibility for executing the Work in accordance with the Contract, even though such drawings have been reviewed.

N. All manufacturers or equipment suppliers who propose to furnish equipment or products shall submit an installation list to the Engineer along with the required shop drawings. The installation list shall include at least five (5) installations where identical equipment has been installed and has been in operation for a period of at least two (2) years unless specified otherwise in the Specification Section applicable.

O. Shop drawings shall include specific information related to the installation proposed for this Project. Special shop drawings shall be submitted when necessary to show all details and requirements for anchorage, interface with other equipment, special fabricated products, and other information not shown on the standard manufacturer's submitted data.

P. Certifications or test reports that may be required for submission in accordance with the technical specifications, shall contain the name (or signature), address, telephone number and e-mail address of the person(s) responsible for the certification or test who shall be authorized to make such certifications.

Q. The Contractor shall utilize "***blue ink***" in marking shop drawing submittals. The Engineer shall utilize "***red ink***" in reviewing and marking shop drawing submittals.

1.05 Working Drawings

A. When used in the Contract Documents, the term "Working Drawings" shall be considered to mean the Contractor's plan for temporary structures such as temporary bulkheads, support of open cut excavation, support of utilities, ground water control systems, forming and falsework; for underpinning; installation drawings; and for such other work as may be required for construction but does not become an integral part of the Project.

B. Copies of working drawings, as noted in Article 1.05(A) above, shall be electronically submitted to the Engineer where required by the Contract Documents or requested by the Engineer, and shall be ***submitted at least thirty (30) calendar days*** (unless otherwise specified by the Engineer) ***in advance of their being required for the Work***.

However, the Contractor shall require each manufacturer to provide complete installation instructions that include all information required to complete the installation of the equipment and which can be used as a guide for checking for conformance after installation.

C. ***Working Drawings shall be signed by a licensed, registered Professional Engineer, currently licensed to practice in the State of Florida***, and shall convey, or be accompanied by, calculation or other sufficient information to completely explain the structure, machine, or system described and its intended manner of use.

D. Prior to commencing such work, working drawings must have been reviewed without specific exceptions by the Engineer, which review will be for general conformance and will not relieve the Contractor in any way from his responsibility with regard to the fulfillment of the terms of the Contract. ***All risks to new or existing work are assumed by the Contractor; the Owner and Engineer shall have no responsibility therefor***.

1.06 Samples

A. The Contractor shall furnish, for the approval of the Engineer, samples required by the Contract Documents or requested by the Engineer to illustrate materials, equipment or workmanship and to establish standards by which the work is to be evaluated. Samples shall be delivered to the Engineer as specified or directed. The Contractor shall prepay all shipping charges on samples. Materials or equipment for which samples are required shall not be used in the Work until approved by the Engineer.

B. Samples shall be of sufficient size and quantity to clearly illustrate:

1. Functional characteristics of the product, with integrally related parts and attachment devices.

2. Full range of color, texture, and pattern.

3. A minimum of three (3) samples of each item shall be submitted.

C. Each sample shall have a label indicating:

1. Name of Project.

2. Name of Contractor and subcontractor.

3. Material or equipment represented.

4. Place of origin.

5. Name of producer/supplier and brand (if any).

6. Location in the Project.

7. Submittal, specification and Contract Drawing numbers.

D. Samples of finished materials shall have additional marking that will identify them under the finished schedules.

E. The Contractor shall prepare a transmittal letter and a description sheet for each shipment of samples. The description sheet shall contain the information required in Articles 1.06(B) and 1.06(C) above. He shall enclose a copy of the letter and description sheet with the shipment and send a copy of the letter and description sheet to the Engineer. Approval of a sample shall be only for the characteristics or use named in such approval and shall not be construed to change or modify any Contract requirements.

F. Approved samples not destroyed in testing shall be sent to the Engineer or stored at the site of the Work. Approved samples of the hardware in good condition will be marked for identification and may be used in the Work. Materials and equipment incorporated in the Work shall match the approved samples. Samples which failed testing or were not approved will be returned to the Contractor, at his expense, if so requested at time of submission.

1.07 Schedule of Operations

A. ***The Contractor shall submit a schedule of operations to the Engineer, in an electronic format (PDF), for approval within ten (10) calendar days after the Notice to Proceed (NTP) and prior to any construction operations***.

B. Inform the Engineer of any changes in the schedule and allow ample time for the Owner to alter operations as required by the construction of the various components of the work.

C. Approval of traffic control and schedules shall be obtained from the governmental entity having jurisdiction over the area of the Work.

1.08 Operation and Maintenance Manuals

A. Submittal Requirements

1. The Contractor shall be submit a "*preliminary draft*" and "*final*" O&M Manuals in accordance with Article 1.07, Section 01730, *Operation and Maintenance Data*.

2. The form of Operation and Maintenance Manual submittals shall be in accordance with Article 1.03, Section 01730, *Operation and Maintenance Data*.

3. The content of the Operation and Maintenance Manuals shall be in accordance with Articles 1.03 - 1.06, Section 01730, *Operation and Maintenance Data*.

4. Operation and Maintenance Manuals specified herein are in addition to any operation, maintenance, or installation instructions by the Contractor to install, test, and start-up equipment.

5. Manuals shall be provided for each piece of equipment including individual components and subsystems of complete assemblies. The section of the manual on operation shall describe the function of each component and its relationship to the system of which it is a part. Where several models, options, or styles are described, the manual shall identify the items actually provided.

6. Instruction of the Owner's personnel shall be in accordance with Article 1.08, Section 01730, *Operation and Maintenance Data*.

7. ***In addition to standard O&M Manuals, all manufacturers supplying equipment and products specified herein shall also submit their operation and maintenance manuals and data to the System Integrator for this Project on CD/DVD/BD's in Corel WordPerfect (latest version), Microsoft Word (latest version), or text, "txt", formats. All graphic files shall be in BMP, PCX, CDR, JPEG, DWG or DXF formats (integrators preference for the system shall be required). All O&M Manual files shall also be submitted electronically on CD/DVD/BD's to the Engineer in both PDF and JPEG formats, no exceptions.***

8. ***The System Integrator shall be responsible to configure and compile the O&M Manuals into "hypertext" window help files for use as computer "on-line" help screens for equipment operation and maintenance. The System Integrator shall return all hypertext files to the equipment and product manufacturer's for review and approval prior to introducing them into the SCADA System at the treatment facility.***

B. The Contractor is directed to thoroughly review Section 01730, *Operation and Maintenance Data*, for additional detailed information with respect to O&M Manuals.

C. ***Failure to meet the deadlines for submittal of the "preliminary" and "final" versions of the Operation and Maintenance Manuals shall be cause for the Project to be "shut down" until such time as the documents are provided, in the proper format, to the Engineer. Any lost construction time and Contractor associated construction costs shall be borne by the Contractor based on his failure to meet the above referenced deadlines***.

1.09 Project Record Documents

A. Maintain at the project construction site for the Engineer , one (1) record copy of each of the following:

1. Contract Drawings.
2. Contract Specifications.
3. Addenda.
4. Change Orders and Other Modifications to the Contract.
5. Engineer's Field Orders or Written Instructions.
6. Approved Shop Drawings, Working Drawings and Samples.
7. Field Test Records.

B. ***The Contractor shall maintain a set of Record and As-Built documents*** in accordance with the General Conditions and the requirements herein.

C. ***As the Project work progresses, the Contractor shall mark on a set of Contract Documents all changes from the Contract Documents*** using standard symbols listed in the legend.

D. The Contractor is directed to thoroughly review Section 01720, *Project Record Documents*, for additional detailed information with respect to Project Record Documents, Recording, and submittals.

1.10 Maintenance of Documents and Samples

A. Store documents and samples in the Contractor's field office apart from documents used for construction.

1. Provide files and racks for storage of documents.
2. Provide a locked cabinet for secure storage space for storage of samples.

B. File documents and samples in accordance with CSI format.

C. Maintain documents in clean, dry, legible, condition and in good order. ***Do not use record documents for construction purposes***.

D. Make documents and samples available at all times for inspection by the Engineer.

E. As a prerequisite for monthly progress payments, the Contractor is to exhibit the currently updated "Project Record Documents" for review by the Engineer and Owner.

1.11 Marking Devices

A. Provide "**green**" ballpoint pens for recording information on the Project Record Documents.

B. The Contractor ***shall not*** use pencils or "***red***", "***blue***", or "***black***" colored pens to record information on the record documents.

1.12 Recording

A. Label each document **"PROJECT RECORD"** in neat, large printed letters.

B. Record information concurrently with construction progress.

C. Contract Drawings

1. The Contractor is directed to thoroughly review Section 01720, *Project Record Documents,* for additional "detailed" information with respect to Project Record Documents, Recording, and submittals.

2. Legibly mark to record actual construction:

   a. Depths of various elements of foundation in relation to finish floor datum.

   b. All underground piping with elevations, dimensions, pipe size, pipe material, class, etc.

   c. All changes to piping location.

   d. Horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.

   e. Location of internal utilities and appurtenances concealed in the construction, referenced to visible and accessible features of the structure.

   f. Field changes of dimension and detail.

g. Changes made by Field Order or by Change Order.

h. Details not on the “original” Contract Drawings.

i. Equipment and piping relocations.

j. Major architectural and structural changes.

D. Specifications Addenda

1. ***Legibly mark each Specification Section to record***:

a. Manufacturer, trade name, catalog number, and supplier of each product and item of equipment actually installed.

b. Manufacturer’s and local representatives name, address, e-mail address and telephone and FAX numbers.

c. Changes made by Field Order or by Change Order.

E. Shop Drawings

1. After final review and approval, ***submit one (1) electronic set and three (3) paper sets of record drawings*** for process equipment, structures, piping, appurtenances, electrical, and instrumentation systems.

1.13 Project Closeout

A. At Project Closeout, deliver all Project Record Documents to the Engineer, in good condition and free from any extraneous notations.

B. Accompany the Project Closeout submittal with transmittal letter in triplicate, containing:

1. Date.

2. Project Title and Number.

3. Contractor's Name and Address.

4. Title and Number of Each Record Document.

5. Signature of Contractor or his Authorized Representative.

2. PRODUCTS - NOT USED

3. EXECUTION - NOT USED

END OF SECTION

SECTION 01311

CONSTRUCTION PROGRESS SCHEDULES

1. GENERAL

1.01 Scope of Work

A. ***Within ten (10) calendar days after the Contract Award, the Contractor shall prepare and submit to the Engineer an estimated construction progress schedule (electronic copy - PDF and 11" x 17" sheets) demonstrating complete fulfillment of all Contract requirements utilizing a Critical Path Method (hereinafter referred to as CPM) in planning, coordinating, and performing the Work under this Contract (including all activities of subcontractors, equipment vendors, and suppliers).***

B. The principles and definition of CPM terms used herein shall be as set forth in the Associated General Contractors of America (AGC) publication, Construction Planning & Scheduling Manual, latest edition, but the provisions of this Specification shall govern the planning, coordinating, and performance of the Work.

C. Development of the CPM construction schedule, the cost loading of the schedule, monthly payment requisitions and project status reporting requirements of the contract shall employ “computerized” CPM scheduling. The CPM construction schedule shall be cost loaded based on the schedule of values or unit bid prices or combination thereof.

D. ***Submit a revised progress schedule, in an electronic (PDF) format, to the Engineer on a monthly basis***. No progress payments shall be approved until there is an approved construction progress schedule on hand.

E. ***The schedule shall include sufficient time for final inspection and completion of punchlist items and all physical work prior to the contract completion date***.

F. The construction schedule shall be in accordance with the requirements of Section 00700, *General Conditions*, Section 00800, *Supplementary Conditions*, and Sections 00805 and 00806, *FDEP Supplementary Conditions* and shall be developed utilizing software specified and submitted for initial approval in accordance with the General and Supplementary Conditions.

G. Related Work Specified Elsewhere

Specification Section	Title
01010	Summary of Work
01030	Applications for Payment
01200	Project Meetings
01300	Shop Drawings, Submittals and Samples
01370	Schedule of Values
Division	**Information**
0	Conditions of the Contract

1.02 Qualifications

A. ***A statement of computerized CPM capability shall be submitted in writing prior to the Award of the Contract*** and shall verify that either Contractor's organization has "*in-house*" capability to use the CPM technique or that Contractor will employ a CPM consultant who is so qualified.

B. "*In-house*" capability shall be verified by description of construction projects that the Contractor or Contractor's consultant has successfully applied computerized CPM and shall include at least three (3) projects valued at least three-quarters the expected value of this Project.

1.03 Form of Schedules

A. Prepare construction progress schedules in the form of a horizontal bar chart and as follows:

1. Provide a separate horizontal bar for each trade or operation within each structure or item.

2. Horizontal Time Scale

a. Show starting and completion dates for each activity in terms of the number of days after Notice to Proceed. All completion dates shown shall be within the period specified for contract completion.

b. See the General and Supplementary Conditions for stipulations for schedules submitted with earlier completion dates less than the specified completion time.

c. Identify the first work day of each month.

3. Scale, Spacing and Maximum Sheet Size

a. Sufficient to allow space for notations and future revisions.

b. Twenty-two (22) inches by thirty-four (34) inches.

B. Format of Listings

1. The chronological order of the start of each item of work for each structure/system.

C. Identification of Listings

1. By major specification section numbers as applicable and by structure.

D. Construction Progress Schedules shall be computer generated using software equal to Primavera Project Planner for Windows by Primavera Systems, Inc., Bala Cynwyd, P.A., or approved equal.

1.04 Initial Schedule Submittals

A. The Contractor shall ***submit two (2) short-term schedule documents at the Preconstruction Conference,*** in a PDF format, which shall serve as the Contractor's plan of operation for the initial 60-day period of the contract time and to identify the manner in which the Contractor intends to complete all work within the contract time.

B. The Contractor shall submit, in an electronic format (PDF):

1. ***A sixty (60) day narrative plan of operation***, describing in detail how contract operations will be conducted.

2. A project overview bar-chart type plan for all work as indicated below.

C. Sixty (60) Day Narrative Plan of Operation

1. During the initial sixty (60) days of the contract time, conduct contract operations in accordance with the sixty (60) day detail narrative and bar chart plan of operation.

2. The bar chart shall show the accomplishment of the Contractor's early activities (mobilization items, permits, submittals necessary for early material and equipment procurement, submittals necessary for long lead equipment procurement, CPM submittals, initial site work, and other submittals and activities required in the first sixty days).

D. Comprehensive Project Overview Bar Chart

1. ***The comprehensive overview bar chart shall indicate the major components of the Project Work and the sequence relations between major components and subdivisions of major components***. The overview bar chart shall indicate the relationships and time frames in which the various components of the work will be substantially complete and placed into service in order to meet the project milestones.

2. ***Sufficient detail shall be included for the identification of subdivisions of major components*** into such activities as potholing, excavation, bedding and pipe installation, backfilling, surface restoration, tunneling, structures, relocations, improvements, and other important work identified in the overall project scope and Contract Documents.

3. Indicate planned durations and start dates for each work item subdivision. Plot each major component and subdivision component on time scale ***sheets not exceeding 22 inches by 34 inches in size***. Do not use more than four (4) sheets to represent this overview information.

1.05 Content of Schedules

A. Construction Progress Schedule

1. Show the complete sequence of construction by activity and by structure/system.

2. Show the dates for the beginning and completion of each major element of construction in no more than a two (2) week increment scale. Specifically list, but do not limit the construction progress schedule to, the following:

   a. Shop Drawing Schedule.

   b. Installation of temporary facilities.

   c. Site clearing.

   d. Site utilities.

e. Demolition.

f. Excavation.

g. Foundation work.

h. Structural framing.

i. Subcontractor work.

j. Equipment installations.

k. Finishings.

l. Instrumentation.

m. SCADA.

n. Electrical.

o. Painting.

p. Operator training and receipt of operation and maintenance manuals.

q. Equipment testing.

r. Equipment and Process Start-up.

s. Receipt of Spare Parts.

t. Project Closeout.

3. ***Show the projected percentage of completion for each item, as of the first day of each month***.

4. ***Clearly show progress made on the construction schedule and actual "S" curves on a monthly basis***.

5. ***Show the projected dollar cash flow requirements for each month of construction and for each activity as indicated by the approved Schedule of Values and as specified in the General and Supplementary Conditions***.

B. Submittals for construction progress schedules shall be in accordance with Section 01300, *Shop Drawings, Submittals and Samples*. Indicate on the construction progress schedule the following:

1. The dates for the Contractor's submittals.

2. The dates submittals will be required for Owner-furnished products, if applicable.

3. The dates approved submittals will be required from the Engineer.

C. ***A computer-generated list of all long lead time items*** (equipment, materials, etc.).

D. To the extent that the progress schedule or any revised progress schedule shows anything not jointly agreed upon or fails to show anything jointly agreed upon, it shall not be deemed to have been approved by the Engineer. Failure to include any element of the Work required for the performance of this Contract shall not excuse the Contractor from completing all work required within any applicable completion date, notwithstanding the Engineer's approval of the progress schedule.

E. Scheduling Constraints

1. The Work within the Owner's treatment facility must be completed within the maximum number of calendar days, start to finish, as indicated in the Contract Agreement.

2. Additionally, the Work must proceed on a continuous basis, without stoppages, except for nights and weekends. There shall be no lapses between phases of construction.

F. Submit a preliminary Schedule of Values for the components that make up the Project, in accordance with Section 01370, *Schedule of Values*.

1.06 Progress Revisions

A. Indicate the progress of each activity to date of submission.

B. Show changes occurring since the previous submission of schedule, including, but not limited to, the following:

1. Major changes in the scope.

2. Activities modified since the previous submission.

3. Revised projections of progress and completion.

4. Other identifiable changes.

C. Provide a narrative report as needed to define the following:

1. Problem areas, anticipated delays, and the impact on the schedule.

2. Corrective action recommended, and its effect.

3. The effect of changes on schedules of other contractors.

D. ***If the Work falls behind the critical path schedule by two (2) weeks or more, the Contractor shall prepare a recovery schedule***.

1.07 Submissions

A. Submittal Requirements

1. Submittals shall be in accordance with the requirements detailed within the specification section.

2. Logic network and/or time-phased bar chart, computer generated, with critical path(s) identified.

3. Computerized network analysis

a. Sort by early start.

b. Sort by float.

c. Sort by predecessor/successor.

4. Narrative description of the logic and reasoning of the schedule.

B. The CPM construction schedules shall indicate dates for important activities, including, but not limited to, the following:

1. A logical succession of work from start to finish. This logical succession, when accepted, is the Contractor's work plan and is only designated as early start to accommodate standard computerized systems.

2. Detailed definition of each activity.

3. A logical flow of work crews/equipment (crews are to be defined by labor category and labor hours; equipment by type and hours).

4. Shop drawings submittals and reviews.

5. Decisions.

6. Product procurement and delivery.

7. Beginning and completion of each element of construction.

8. Critical coordination dates.

9. Submittal of record drawings and equipment manuals.

10. Cleanup, final inspection, etc.

11. Any project milestones or phases of work that affect important dates.

C. Submit the construction schedules and provide the following:

1. Activity sorted by Early Start (ES) and organized by related elements.

2. Activities sorted by Float (F) and organized by related elements.

3. Activities sorted by predecessor/successor.

4. Narrative description of the logic and reasoning of the schedule.

5. Resource allocation by activity.

6. A list of cost-loaded activities that identifies the specific cost amount for each activity in the CPM construction schedule.

D. Show constraints between interrelated activities.

E. The initial schedule shall include the following minimum data for each activity:

1. Activity numbers.

2. Estimated duration.

3. Activity description.

4. Early Start and Early Finish dates (calendar dated).

5. Late Start and Late Finish dates (calendar dated).

6. Status (whether “critical”).

7. Float.

8. Cost of the activity.

9. Other resources including equipment hours by type, labor by craft or crew, and materials by units.

F. Where float time exists in activities, show the activities with early start/early finish times.

G. The construction schedule shall include a title block with the project title, the Contractor's business name, the date of submittal or revision, and the signature of the Contractor's authorized representative attesting to his review and accuracy of the submittal.

H. The duration indicated for each activity shall be in calendar days and shall represent the single best time considering the scope of the work and resources planned for the activity including time for inclement weather. Except for certain non-labor activities, such as curing concrete or delivering materials, activity durations shall not exceed fourteen (14) days, be less than one day, or exceed $200,000 in value unless otherwise accepted by the Owner's Representative.

I. Time of Submittals

1. ***Within ten (10) working days after the Notice to Proceed (NTP)***, ***the Contractor shall submit network diagrams, in an electronic format (PDF) describing the activities to be accomplished in the overall Project and their dependency (predecessor/successor) as well as a tabulated schedule as herein defined***.

2. ***The total length of time indicated on the initial CPM schedule shall equal the exact number of days in the Contract Time*** as defined in the Agreement (Spec. Section 00500). The schedule produced and submitted shall also indicate calendar dates, including project starting and completion dates, based on the Contract Commencement and completion dates indicated in the Notice to Proceed.

3. ***The Engineer will complete the review of the complete schedule within fifteen (15) working days after receipt***. During the review process, the Engineer may meet with a representative of the Contractor to review the proposed plan and schedule to discuss any clarifications, that may be necessary.

J. ***Within ten (10) working days after the conclusion of the Engineer's review period, the Contractor shall revise the network diagrams, as required, and resubmit the network diagrams, in an electronic format (PDF), and a tabulated schedule produced therefrom***. The revised network diagrams and tabulated schedules shall be reviewed and accepted or rejected by the Engineer within fifteen (15) working days after receipt. The network diagrams and tabulated schedules, when accepted by the Engineer, shall constitute the project work schedules unless revised schedules are required due to substantial changes in the Work, a change in Contract Time or a recovery schedule is required and requested.

K. Acceptance

1. The finalized schedule will be acceptable to the Engineer when, in the opinion of the Engineer, it demonstrates an orderly progression of the Project Work to completion in accordance with the contract documents and requirements, adequately defines the Contractor's work plan, provides a workable arrangement for processing the submittals in accordance with the project specification requirements, and properly allocates resources (labor, equipment and costs) to each activity (free of unbalances in resources).

2. Review of the Contractor's project schedule is for conformance to the requirements of the Contract Documents only. Review by the Engineer of the Contractor's project schedule does not relieve the Contractor of any of its responsibility whatsoever for the accuracy or feasibility of the project schedule, or of the Contractor's ability to meet the interim milestone date(s) and the contract completion date, nor does such review and acceptance imply or expressly warrant, acknowledge, or admit the reasonableness of the logic, durations, labor, or equipment loading of the Contractor's project schedule.

3. Such acceptance will neither impose on the Engineer responsibility for the progress or scheduling of the Work nor relieve the Contractor from full responsibility therefore.

4. The finalized schedules of shop drawing submittals will be acceptable to the Engineer when, in the opinion of the Engineer, it demonstrates a workable arrangement for processing the submittals in accordance with the requirements.

5. The finalized Schedule of Values (lump sum price breakdown), as applicable, will be acceptable to the Engineer as to form and content when, in the opinion of the Engineer, it demonstrates a substantial basis for equitably distributing the Contract Price.

6. When the network diagrams and tabulated schedules have been accepted, the Contractor shall submit the following to the Engineer in an electronic format (PDF):

a. The time-scaled network diagrams.

b. A computerized tabulated schedules in which the activities have been sequenced by numbers.

c. A computerized tabulated schedules in which the activities have been sequenced by early starting date.

d. A computerized, tabulated schedules in which activities have been sequenced by total float.

e. Sorted by predecessor/successor.

L. Revised Work Schedules / Schedule Revisions

1. The Contractor, if requested by the Engineer, shall provide revised work schedules if, at any time, the Engineer considers the completion date to be in jeopardy because of "activities behind schedule".

2. The revised work schedules shall include a new diagram and tabulated schedules conforming to the requirements of Article 1.10 herein, designed to show how the Contractor intends to accomplish the Work to meet the completion date. The form and method employed by the Contractor shall be the same as for the original work schedules.

3. An activity that cannot be completed by its original latest completion date shall be deemed to be behind schedule.

4. No change may be made to the sequence, duration, or relationships of any activity without the approval of the Engineer.

5. ***No payment will be made if activities fall more than two (2) weeks behind schedule and a revised work schedule is not furnished***.

6. The Contractor shall revise or update the Project schedule upon the occurrence of any of the following:

   a. When delay in completion of an activity or group of activities indicates an overrun of the contract time or control point requirement by ten (10) working days or ten percent (10%) of the remaining duration, whichever is less.

   b. Delays in submittals, deliveries, or work stoppage are encountered which make re-planning or rescheduling of the work necessary.

c. The schedule does not represent the actual prosecution and progress of the Project as being performed in the field and progress for any activity is five (5) working days behind the current schedule.

d. The Contractor will be performing work at an earlier date than is shown on the schedule and the work will require additional inspection and/or testing personnel.

7. In the event of any change to the Contract, submit a time analysis of the effect on the Critical Path. If the Contractor maintains there is no impact, he shall submit a statement to that effect.

8. The cost of revisions to the construction schedule, resulting from Owner-initiated contract changes, shall be included in the cost for the change in the work and shall be paid as part of the total cost of the change through the contract allowable percentages for changed work.

9. ***The cost of revisions to the construction schedule not resulting from authorized changes in the work shall be the responsibility of the Contractor***.

10. ***Submittal of an "updated" construction progress schedule shall be a condition for approval of the Contractor's monthly progress payment***.

1.08 Distribution

A. Distribute copies of the revised construction progress schedules as follows:

Distribution	No. of Copies
Engineer	3
Contractor jobsite files	As required
Subcontractors	As required
Other concerned parties	As required

B. Instruct recipients to report promptly to the Contractor, in writing, any problems anticipated by the projections shown in the schedules.

1.09 Change Orders

A. Upon approval of a change order, the approved changes shall be reflected in the next scheduled, revision or update submittal of the construction progress schedules by the Contractor.

1.10 CPM Standards

A. CPM, as required by this Section, shall be interpreted to be generally as outlined in the Associated General Contractor's (AGC) publication, Construction Planning & Scheduling Manual, latest edition.

B. Work schedules shall include a graphic network and computerized, tabulated schedules as described below. To be acceptable the schedule must demonstrate the following:

1. A logical succession of work from start to finish.

2. Definition of each activity. Activities shall be identified by major specification section numbers, as applicable, and by major structure.

3. A logical flow of work crews/equipment (crews are to be defined by manpower category and man-hours; equipment by type and hours).

4. Show all work activities and interfaces including submittals as well as major material and equipment deliveries.

C. Networks

1. The CPM network or diagram, shall be in the form of a time-scaled diagram of the customary activity-on-type and may be divided into a number of separate pages with suitable notation relating the interface points among the pages. Notation on each activity line shall include a brief work description and a duration, as described herein.

2. All construction activities and procurement shall be indicted in a time-scaled format, and a calendar shall be shown on all sheets along the entire sheet length. Each activity arrow shall be plotted so that the beginning and completion dates of said activity can be determined graphically by comparison with the calendar scale. ***All activities shall be shown using the symbols that clearly distinguish between critical path activities, non-critical path activities, and float for each non-critical activity. All non-critical path activities shall show estimated performances time and float time in scaled form***.

D. The duration indicated for each activity shall be in calendar days and shall represent the single best time considering the scope of the work and resources planned for the activity including time for inclement weather. Except for certain non-labor activities, such as curing concrete or delivering materials, activity durations shall not exceed fourteen (14) days nor be less than one (1) day unless otherwise accepted by the Engineer.

E. Tabulated Schedules

1. The initial schedules shall include the following minimum data for each activity:

   a. Activity Beginning and Ending Numbers (i-j numbers) (single activity numbers may be used).

   b. Duration.

   c. Activity Description.

   d. Early Start Date (Calendar Dated).

   e. Late Start Date (Calendar Dated).

   f. Early Finish Date (Calendar Dated).

   g. Late Finish Date (Calendar Dated).

   h. Identified Critical Path(s).

   i. Total Float (Note: No activity may show more than 20 days float).

   j. Cost of Activity.

   k. Equipment Hours, by type; manpower hours, by crew or trade.

F. Project Information

1. Each tabulation shall be prefaced with the following summary data:

   a. Project Name.

   b. Contractor.

   c. Type of Tabulation (Initial or Updated).

   d. Project Duration.

e. Project Contract Completion Date.

f. Effective or Starting Date of the Schedule.

g. New Project Completion Date and Project Status (if an updated or revised schedule).

h. Actual Start Date and Actual Finish Date (for all updated schedules).

G. Float Time

1. Definition

a. Unless otherwise provided herein, float as referenced in these Contract Documents is "Total Float". ***Total float is the period of time measured by the number of working days each non-critical path activity may be delayed before it, and its succeeding activities, become part of the "critical path"***.

b. If a "non-critical" path activity is delayed beyond its float period, that activity then becomes part of the critical path and controls the end date of the project. Thus, the delay of the "non-critical" path activity beyond its float period will cause delay to the project itself.

2. Float Ownership

a. ***Neither the Owner nor the Contractor owns the float time. The Project owns the float time.*** As such, liability for delay of the Project completion date rests with the party actually causing delay to the project completion date.

b. For example, if Party X uses some but not all of the float time and Party Y later uses the remainder of the float time as well as additional time beyond the float time, Party Y shall be liable for the costs associated with the time that represents a delay to the Project's completion date. Party X would not be responsible for any costs since it did not consume all of the float time and additional float time remained; therefore, the Project's completion date was unaffected.

1.11 Schedule Monitoring

A. ***At not less than monthly intervals or when specifically requested by Engineer, the Contractor shall submit to the Engineer a computer printout of updated schedules for those activities that remain to be completed.***

B. The updated schedules shall be submitted with the application for payment as specified below.

C. The updated schedules shall be submitted in the form, sequence, and number of copies requested for the initial schedule.

1.12 Progress Meetings

A. ***For the monthly progress meeting, the Contractor shall submit a revised CPM schedule and three-week look-ahead schedule, showing all activities completed, in progress, uncompleted, or scheduled to be worked during the weeks***.

B. ***The three-week look-ahead schedule shall include the current week plus the next two (2) weeks***.

C. All activities shall be from the approved CPM and must be as shown on the CPM unless behind or ahead of schedule.

D. ***Revised CPM schedules shall be submitted with each copy of that month's Application for Payment, in an electronic format (PDF)***.

1.13 Applications for Payment

A. ***A revised CPM schedule shall be submitted with each copy of that month's Application for Payment in an electronic format (PDF).***

2. PRODUCTS - NOT USED

3. EXECUTION - NOT USED

END OF SECTION

SECTION 01370

SCHEDULE OF VALUES

1. GENERAL

1.01 Description

A. Work Specified Herein

1. Submit to the Engineer a detailed Schedule of Values (SOV), in an electronic format (PDF), allocated to the various lump sum and unit price portions of the Work, ***at the Preconstruction Conference***, and as otherwise specified or requested to be submitted earlier as evidence of the Apparent Low Bidder's qualifications.

2. ***The Contractor shall support the values with data that will substantiate their correctness***. The data shall include, but not be limited to, quantity of materials, all sub-elements of the activity, and their units of measure. The values should reflect the Contractor's Bid Form detail sheets.

3. ***The Schedule of Values shall establish the actual value for each activity of the Work to be completed taken from the "approved" Critical Path Method (CPM) Construction Schedule***, and shall be used as the basis for the Contractor's Applications for Payment.

B. Related Work Specified Elsewhere

Division	Information
0	Conditions of the Construction Contract

1.02 Form and Content of the Schedule of Values

A. Generate the ***Schedule of Values in a computer-generated format***. Submittals shall be in an electronic format (Excel or PDF).

B. Identify the Schedule of Values with the following:

1. Title of the Project and Location.

2. Owner and Purchase Order No.

3. Engineer and Project No.

4. Name, address, phone number and e-mail address of the Contractor.

5. Contract Designation.

6. Date of Submission.

C. ***The Schedule shall list the installed value of the component parts of the Work in sufficient detail to serve as a basis for computing item prices for progress payments during construction***.

D. Identify each line item with the number and the title of the respective section of the Specifications.

E. For each major item of the Work, list sub-values of major products or operations under the major item.

F. <u>For the various portions of the Work</u>:

1. The amount for each item shall reflect a total installed cost including a directly proportional amount of the Contractor's overhead and profit.

2. For items on which progress payments will be requested for stored materials, break down the value into the following:

a. The cost of the materials, delivered and unloaded, with taxes paid. Paid invoices are required for materials. Payment for materials shall be limited to the invoiced amount only.

b. The total installed value.

G. Round off all figures to the nearest dollar.

H. The sum of the costs of all items listed in the schedule shall equal the total Contract Price.

I. For each item that has an installed value of more than $1,000, provide a breakdown of costs to list major products or operations under each item.

J. ***The ultimate requirement is to develop a detailed Schedule of Values sufficient to determine appropriate monthly progress payment amounts through "cost loading" of the CPM schedule activities***. ***The Contractor shall provide a sufficient detailed breakdown to meet this requirement***. The Engineer shall be the sole judge of acceptable numbers, details, and the description of values established. If, in the opinion of the Engineer, a greater number of schedule of values items than proposed by the Contractor is necessary, the Contractor shall add the additional items so identified by the Engineer as a condition to processing the Contractor's monthly applications for payments.

K. ***Following acceptance of the "detailed" Schedule of Values, the Contractor shall incorporate the values into the cost loading portion of the CPM schedule***. The CPM activities and logic shall have been developed concurrent with development of the "detailed" Schedule of Values; however, it shall be necessary to adjust the "detailed" Schedule of Values to correlate to individual schedule activities. It is anticipated that instances will occur, due to the independent but simultaneous development of the Schedule of Values and the CPM schedule activities, where interfacing these two documents will require changes to each document. Schedule activities may need to be added to accommodate the detail of the Schedule of Values. Schedule of Value items may need to be added to accommodate the detail of the CPM schedule activities. Where such instances arise, the Contractor shall propose changes to the Schedule of Values and to the CPM schedule activities to satisfy the CPM schedule "cost loading" requirements.

1.03 Incorporation of the Schedule of Values into the CPM Schedule

A. ***In conjunction with each submittal of the construction schedule, submit a cash flow projection indicating estimated earnings by month during the entire contract period and a Schedule of Values of the Work using the Schedule of Values described herein, including quantities and prices***. The aggregate of these extended prices shall equal the contract price. Costs shall include all materials, labor, equipment, and appurtenant items necessary to accomplish the work in accordance with the contract documents. This schedule shall be satisfactory in form and substance to the Engineer and shall subdivide the work into the specified component parts. Upon review by the Engineer, the Contractor shall incorporate the Schedule into the form for Application for Payment. The Engineer and Owner reserve the right to delete (or add) items of work from the contract and the total contract amount shall be reduced (or increased) by the total amount shown in the Schedule of Values.

B. ***Develop the Schedule of Values and incorporate it into the cost-loading function of the CPM schedule***. Determine monthly progress payment amounts from the monthly progress updates of the CPM schedule activities. Develop the Schedule of Values independent, but simultaneous with, the development of the CPM schedule activities and logic.

C. Cross-Reference Listing

1. To assist in the correlation of the Schedule of Values and the CPM schedule, ***provide a cross-reference listing, furnished in two parts***. The first part shall list each scheduled activity with the breakdown of the respective valued items making up the total cost of the activity. The second part shall list the valued item with the respective scheduled activity or activities that make up the total cost indicated. In the case where a number of schedule items make up the total cost for a valued item (shown in the schedule of values), the total cost for each scheduled item should be indicated.

2. Update and submit these listings in conjunction with each CPM monthly submittal.

3. Incorporate executed Change Orders reflected in the CPM schedule into the Schedule of Values as a single unit identified by the Change Order number.

1.04 Schedule of Unit Material Values

A. ***Submit a separate schedule of unit prices for materials to be stored on-site and for those materials incorporated into the Work for which progress payments will be requested***.

B. The format shall be approved by the Engineer; however, it shall parallel that shown in Section 00845, *Materials Stored On-Site Form*.

C. The unit values for the materials shall be broken down into the following:

1. Cost of the material, delivered and unloaded at the site, with taxes paid.

2. Copies of the paid invoices for component material shall be included with the payment application in which the material first appears.

D. Only materials unique to the Project may be billed when stored on-site. Materials of standard use such as conduit, wire, small-diameter pipe, steel, etc., shall not be accepted for payment.

E. The installed value multiplied by the quantity listed shall equal the cost of that item in the Schedule of Values.

1.05 Review and Resubmittal

A. The Contractor shall submit the Schedule of Values, in an electronic format (PDF), to the Engineer for approval.

B. The Contractor and the Engineer shall meet and jointly review the Schedule of Values and make any adjustments in value allocations if, in the opinion of the Engineer, these are necessary to establish fair and reasonable allocation of values for the major work components. ***Front-end loading will not be permitted.*** The Engineer may require reallocation of major work components if, in the opinion of the Engineer, such reallocation is necessary. This review and any necessary revisions shall be completed within fifteen (15) days from the date of the notification of the required reallocation.

C. After review by the Engineer, the Contractor shall revise and resubmit the Schedule of Values and the Schedule of Unit Material Values as required.

D. Resubmit the revised schedules in the same manner.

2. PRODUCTS - NOT USED

3. EXECUTION - NOT USED

END OF SECTION

SECTION 01380

CONSTRUCTION PHOTOGRAPHS

1. GENERAL

1.01 Description

A. Scope of Work

1. The Contractor shall provide professional quality construction record digital photographs prior to the start of work and periodically throughout the course of the Work as specified herein.

B. Related Requirements Described Elsewhere

Specification Section	Title
01010	Summary of Work
01720	Project Record Documents

1.02 Photography Required

A. ***Digital Photographs taken in conformance with this Section shall be furnished to the Engineer, digitally, with each Application for Payment***, or every month if no application for payment is initiated in a month. Monthly Applications for Payment ***will not be processed without submittal of the digital photographs outlined herein***.

B. Provide still photography of the general work area and any and all adjacent areas to be impacted by the construction activities, prior to commencing any work on any property. These photographs, in addition to the Preconstruction Video, will be used as a basis for settling any potential damage claims.

C. Once work has begun, provide digital photographs at each of the major stages or events of construction related to the work performed and as directed by the Engineer or Resident Project Representative (RPR).

D. ***High-Resolution digital photographs (> 10 MP) shall be provided as herein specified. No low-resolution (< 10 MP), poorly light, digital photographs, will be acceptable.***

E. Views and Quantities Required

1. A minimum of four (4) digital photographs, at 90□ to one another, of each pre-existing condition of an area where work is to begin.

2. A minimum of four (4) digital photographs of each construction activity as directed by the RPR per week.

3. One (1) digital photograph each of six (6) views (minimum) of the overall project site on a weekly basis, as directed by the Representative Project Representative (RPR).

4. One (1) digital photograph, per side, of each structure on the Project Site where construction activities are present weekly.

5. Once per day, the Contractor shall take at least one (1) photograph of the same overall view (location and view to be determined by the Engineer) as previously photographed.

6. Drone Shots of the Treatment Facility

   a. Drone aerial photography shall be conducted at the Flagler Beach WWTF, prior to, during and after the construction work, as described below. The drone photography shall be provided by the Contractor.

   b. Pre-Construction Drone Aerial Photography

      1) Preliminary drone aerial photography of the Project Site prior to commencement of construction activities.

      2) The Contractor shall provide ***two (2) prints each of three (3) preliminary drone aerial views (16" x 20"), as selected by the Engineer, of the Project Site prior to commencement of construction activities***.

   c. Monthly During Construction of the Project Improvements

      1) Drone aerial photography of the Project Site every month for the duration of the project.

      2) The Contractor shall provide ***two (2) prints each of three (3) preliminary drone aerial views (16" x 20"), as selected by the Engineer, of the Project Site every month for the duration of construction activities.***

   d. Post-Construction Drone Aerial Photography

1) Post-construction drone aerial photography of the Project Site after the completion of construction activities, the new Sludge Management System improvements are operational and the final site work (sodding, etc.) has been completed.

2) The Contractor shall provide ***six (6) prints of the selected final aerial drone photographs, enlarged and framed (1.5" wide, minimum, oak frame to be selected by the Engineer from samples provided by the Contractor) from the completed project set of drone aerial photographs (to be selected by the Engineer). Final print sizes shall be 18" x 24"*** with the frames to match this sizing.

F. Digital Photography

1. The digital photographs shall be taken using a digital camera that has, at a minimum, the following characteristics:

   a. 10.0 megapixel image sensor, minimum.

   b. ***Minimum*** resolution: 1920 x 1080.

   c. Precision digital zoom lens with high speed scan AutoFocus.

   d. Flash capabilities.

2. The photographer shall take photographs of the views and quantities indicated above in Article 1.02(E)(1-5). The digital photographs shall be taken in the "high resolution" mode (> 10 MP). ***No low resolution digital photographs (< 10 MP) will be allowed***.

3. The "*high resolution*" digital photographs shall be downloaded onto a CD/DVD/BD or flash drive each month, in accordance with Article 1.02(A), and shall be indexed, digitally labeled (photo ID name) and categorized in folders with distinctive names to be determined in the Preconstruction Conference. The monthly submittal will contain digital photographic CD/DVD/BD's or flash drives as required by Article 3.03(D).

1.03 Cost of Photography

A. ***The Contractor shall pay all costs for the specified digital photography***. The cost for the photography shall be included in the Contractor's Bid for this Project.

B. The digital camera to be used by the Contractor ***shall be submitted for approval prior*** to construction activities to ensure that it meets the criteria identified herein.

2. PRODUCTS

2.01 Aerial Drone Photography Prints

A. Type of Print

1. Paper: Single weight, full color print paper.
2. Camera and Film: High Resolution, High Definition Camera
3. Finish: Smooth surface, glossy.

B. Identify each print on the back, utilizing a printed label (bleed-proof), listing the following:

1. Name of the Project.
2. Project Location.
3. Description and orientation of the view.
4. Date and time of exposure.

C. Aerial Photographs

1. Each aerial drone photograph shall be scaled to picture the facility site within no less than eighty percent (80%) of the print total area.
2. ***Each selected enlarged final aerial print shall be provided mounted within an solid oak frame, with a non-glare glass front, behind a minimum 2-inch wide, two-tone, double beveled mat (color to be selected by the Engineer)***.

2.02 Digital Camera (NOT IN CONTRACT)

1. EXECUTION

1.01 Technique

A. Factual Presentation

B. Correct Exposure and Focus

1. High Resolution/sharpness. 2. Maximum depth-of-field. 3. Minimum Distortion

1.02 Views Required

A. Photograph from locations, at the Project Site, to adequately illustrate the condition of construction and state of progress.

B. Consult with the Engineer at each period of photography for instructions concerning the views required.

1.03 Delivery of Digital Photographs

A. Deliver the herein described digital high resolution photographs digitally to the Engineer, ***with each Application for Payment or in the event of no Application for Payment, once per month***.

B. ***All digital photographs shall be filed electronically in folders with appropriate titles for each of the pictures as approved by the Engineer in the Pre-construction Conference and the Monthly Progress Meetings***. Digital photograph submissions not meeting the requirements of this specification section will be rejected and the monthly application for payment will not be processed until the proper photographs and format are provided to the Engineer.

C. Distribute the digital construction photographs as follows:

Entity	Description
Owner	1
Engineer	1
Project Record File	One (1) set to be stored by the Contractor until the end of the Project that shall be delivered with the Project Record Documents.
Contractor	As required per Contractor

END OF SECTION

SECTION 01390

PRECONSTRUCTION VIDEO RECORDING

1. GENERAL

1.01 Description

A. Provide all material, equipment, transportation, labor and incidentals to prepare a continuous, ***"high resolution"*** digital HD video recording of all construction, utility and roadways areas at the Flagler Beach WWTF prior to the start of the Work.

B. The Contractor shall engage the services of a competent, professional videographer to provide "***high quality***", digital HD recording, in color, of the construction areas.

C. The purpose of this digital audio-video preconstruction survey is to serve as a record of pre-construction conditions and to establish a basis for defense against claims for damage to property owned by private or public entities, including the City of Flagler Beach, Flagler County, other utilities, businesses and residences, etc.

D. All DVD's/BD's and written records shall become the property of the Engineer/Owner.

E. Related work specified elsewhere

Specification Section	Title
00700 / 00800	General and Supplementary Conditions
01010	Summary of Work
01700	Project Closeout

F. The high-resolution HD digital audio-video system and the procedures employed in its use shall be such as to produce a finished product that will be admissible as evidence in a legal or administrative proceeding involving the Project. The video portion of the recording shall produce bright, ***high-resolution (1920 x 1280 minimum video resolution)*** clear pictures with accurate colors and shall be free from distortion or any other form of picture imperfection. The audio portion of the recording shall clearly produce the commentary of the HD digital recording device operator and be free from distortion.

1.02 Videographer Qualifications

A. The high resolution digital HD video documentation shall be performed by a responsible commercial firm, subcontracted by the Contractor, known to be skilled and regularly engaged in the business of "professional" pre-construction, color, high-quality digital audio/video documentation.

B. ***The Engineer and Owner will approve the "high-quality" digital HD audio/video recording company providing the service***. The recording company shall furnish such information as the Owner deems necessary to determine the ability of that company to perform the work in accordance with the contract specifications. ***Under no circumstances will the Contractor be allowed to do this HD filming***.

C. The preconstruction "*high-quality*", digital HD audio/video filming shall be of professional quality that will clearly log an accurate visual description of existing conditions. Any portion of the DVD/BD not acceptable for the determination of the existing conditions shall be re-filmed at no additional cost to the Owner.

D. The videographer shall be prepared to serve as a consultant or witness for the Owner in any litigation, public hearing or other legal or administrative proceeding involving the Project.

E. Include the names, addresses, e-mail addresses and telephone numbers of two (2) references where the videographer has performed color, high-resolution, digital HD audio/video filming on projects of a similar nature, including one (1) within the last six (6) months.

1.03 Submittals

A. All submittals shall be in accordance with Section 01300, *Shop Drawings, Submittals and Samples*.

B. The Contractor shall submit, at a minimum, the following:

1. The qualifications and references of the videographer.

2. A sample high-resolution HD digital audio/video color DVD/BD meeting the exact Contract requirements.

C. It will be upon this sample DVD/BD that the job quality standards will be based and judged. This sample DVD/BD shall be submitted to the Engineer and Owner in sufficient time to allow the DVD/BD to be played back for viewing and audio results prior to beginning the actual video recording required by the Contract.

2. EQUIPMENT

2.01 General

A. The total high-resolution digital HD audio/video recording system and the procedures employed in its use shall be such as to produce a finished product that will fulfill the technical requirements of the project.

B. The high-resolution digital HD video portion of the recording shall produce bright, sharp (***1080p***), clear pictures with accurate colors and shall be free from distortion or any other form of picture imperfection.

C. The audio portion of the recording shall produce the commentary of the HD digital recording device operator with proper volume, clarity, and be free from distortion.

2.02 HD Digital Recording Device

A. The "high quality" HD digital recording device used in the recording system, shall have the ***minimum*** characteristics:

1. Full HD capability
2. Aspect Ratio: 16:9
3. Video Format: MPEG-4
4. "Minimum" Video Resolution: 1920 x 1280
5. Maximum Frame Rate: 60 fps
6. Video System: NTSC
7. Sound System: Dolby Digital
8. Optical/Digital Zoom: 10X / 200 X

B. All digital media to be provided to the Owner and Engineer shall be "*high-resolution*" DVD/BD.

3. EXECUTION

3.01 Coverage

A. The HD recordings shall contain coverage of all surface features located within the construction's zone of influence. The construction's "*zone of influence*" shall be defined as follows:

1. Flagler Beach WWTF Project Site and adjacent properties.

2. Area within the permanent and temporary easements or ROW, and areas adjacent to these areas that may be affected by routine construction operations.

3. By the direction of the Engineer.

B. The surface features within the construction's zone of influence shall include, but not be limited to, all roadways, pavements, curbs, driveways, sidewalks, culverts, headwalls, retaining walls, buildings, treatment structures, utilities (water, power, etc.), landscaping, trees, shrubbery, grassed areas, waterways, ponds, structures, tanks, fences, overhead projections, poles, signs, railroad tracks, etc.

C. Panning, zoom-in and zoom-out rates shall be controlled to maintain a clear view of the Project.

D. With respect to roadway construction or waterways, filmed coverage shall be limited to one side of the street or waterway at any one time and shall include all surface conditions located within the "*zone of influence*" of construction supported by appropriate audio description when dealing with work along roadways. When filming open areas, the entire region shall be videotaped in its entirety.

3.02 Audio Content

A. The HD recording of each video shall be a simultaneous recorded audio recording. This audio recording, exclusively containing the commentary of the HD digital recording device operator, shall assist in viewer orientation and in any needed identification, differentiation, clarification, or objective description of the feature being shown in the video portion of the recording.

B. The audio recording also shall be free from any conversations between the HD digital recording device operator and any other production technicians that are not pertinent to the Project.

3.03 Recording Schedule

A. The HD recording shall be performed ***prior*** to the placement of any construction materials or equipment on the proposed construction site.

B. The Contractor shall coordinate the *high resolution*, digital HD video recording with the construction schedule so that those portions of the construction that will be completed first will be recorded first.

C. The recording company shall deliver the *high-resolution*, digital HD video recordings to the Contractor upon their completion. The Contractor shall submit the *high resolution*, digital HD video recordings to the Engineer in accordance with Section 01300, *Shop Drawings, Submittals and Samples*.

D. Upon delivery of the high resolution, digital HD video recordings to the Engineer, transfer of ownership of those DVD's/BD's shall be made to the Owner.

3.04 Visibility

A. All HD recordings shall be performed during times of good visibility. No HD recording shall be conducted during periods of significant precipitation, mist, or fog.

B. The HD recording shall only be done when sufficient sunlight is present to properly illuminate the subject, and to produce bright, sharp digital HD recordings of those subjects.

C. No HD filming shall be performed when more than ten percent (10%) of the area to be taped contains debris or obstructions unless otherwise authorized by the Engineer.

3.05 Continuity of Coverage

A. To increase the continuity of the coverage, the coverage shall consist of a single, continuous, unedited filming which begins at one end of a particular construction area.

B. The coverage shall consist of an organized, interrelated sequence of HD recordings at various positions along that proposed construction area.

C. The complete coverage of all building and structure surfaces is required per this contract to document their "*existing*" condition (due to project compaction operations).

3.06 HD Digital Recording Device Operation

A. HD Digital Recording Device Stability

1. The HD digital recording device shall be firmly mounted or held, such that transport of the recording device during the recording process will not cause an unsteady or jumpy picture.

B. HD Digital Recording Device Control

1. The HD digital recording device pan, tilt, zoom-in, an zoom-out rates shall be sufficiently controlled such that recorded objects will be clearly viewed during playback.

2. In addition, all other recording device and recording system controls (lens, focus, aperture, white balance, etc.) shall be properly controlled or adjusted to maximize picture quality.

3.07 Viewer Orientation Techniques

A. The "*high resolution*", digital HD video/audio recording shall maintain viewer orientation. To this end, overall establishing views and visual displays of all surface to determine their "existing" condition is critical to this component of the Project.

B. In areas where the proposed construction location will not be readily apparent in the HD recording device viewer, highly visible yellow flags shall be placed, by the Contractor, in such a fashion as to clearly indicate the proposed centerline of construction.

C. The horizontal location of the HD recordings shall be documented by linear measurement, utilizing a fifth "*wheel*" measuring device, relating the recording to the Project Stationing.

3.08 DVD/BD Identification and Security

A. All DVD's/BD's shall be permanently labeled and shall be properly identified by DVD/BD number, Project Title and date(s) of the recording.

B. To preclude the possibility of tampering or editing in any manner, all HD recordings must, by electronic means, display continuously and simultaneously generated transparent digital information to include the date and time of recording. The date information shall contain the month, day and year. The time information shall consist of hours, minutes and seconds, separated by colons (i.e., 13:24:10). This transparent information shall appear on the screen.

3.09 DVD/BD Logs

A. Each DVD/BD shall have a log of that DVD's/BD's contents. The log shall describe the various segments of coverage contained on that DVD/BD in terms of the names of streets, waterways or easements, structures, coverage beginning and end, directions of coverage, and DVD/BD counter numbers when possible, and the date of the recording.

3.10 Contractor's Responsibilities

A. All "*high resolution*", digital HD recordings shall be performed during regular business hours, unless otherwise specified by the Engineer. The Contractor shall enter and leave private property in a professional and orderly, workmanlike manner.

B. The Contractor shall provide for an audio-visual presentation for review. The Engineer and Owner shall have the authority to reject all or any portion of the high resolution, digital HD video recording not conforming to Specifications. ***Any coverage not acceptable to the Engineer and Owner shall be re-filmed at no additional charge***. The Contractor shall reschedule unacceptable coverage within five (5) calendar days after being notified. Submit complete audio-visual DVD's/BD's to the Engineer no less than fifteen (15) calendar days before commencement of construction in areas to be filmed.

END OF SECTION

SECTION 01400

QUALITY CONTROL

1. GENERAL

1.01 Description

A. This Section discusses quality control and quality assurance measures required by the Contractor during execution of the construction activities associated with this Project.

B. Related Work Specified Elsewhere:

Specification Section	Title
00700	General Conditions
00800	Supplementary Conditions
00805 / 00806	FDEP Supplementary Conditions
01040	Project Coordination
01075	Reference Specifications
01300	Shop Drawings, Submittals and Samples
01410	Testing and Testing Laboratory Services
01430	Manufacturer's Services
01600	Materials and Equipment
01650	Systems Start-Up and Demonstration
01710	Cleaning
Division	**Information**
6, 10 and 11	Equipment
15	Mechanical
13 and 16	Electrical, Controls and Instrumentation

1.02 Quality Control

A. It is the Contractor's responsibility to perform all work to a degree and in a manner that satisfies and complies with the Project requirements. To fulfill this responsibility, ***the Contractor is required to have an approved Quality Control Program (QCP)***, including testing, as part of his Contract work in accordance with the Contract Documents and to ***submit details of his Program to the Engineer for review and approval prior to commencing any construction operations***. The submittal shall include detailed information on locations and number of all tests, etc., that will be necessary for compliance with the Contract Documents and the Project requirements.

B. As part of the Contractor's Quality Control Program (QCP) included as part of his work under this Contract, ***the Contractor shall employ and pay for an independent, approved testing laboratory to perform testing services outlined in these Contract Documents***. The Contractor shall meet all of the requirements outlined under Section 01410, “Testing and Testing Laboratory Services”.

C. The Contractor's Quality Control Program (QCP) shall include, but not be limited to, the following in addition to the type and frequency of tests as required by the individual technical specification sections:

1. Piping and structural excavation, bedding and backfill materials and density quality control testing.

2. Determination of the compactive effort needed for compliance with the density requirements.

3. Portland cement concrete and asphalt paving quality control testing including design mix review, materials, field slump and air content, and field and lab cured strength samples and testing.

4. Removal and legal disposal of all trash from the project site.

D. In addition to Quality Control Testing, the Contractor shall be responsible for required testing or approvals for any work (or any part thereof) if laws or regulations of any public body having jurisdiction specifically require testing, inspections or approval. The Contractor shall pay all costs in connection therewith and shall furnish the Engineer the required certificates of inspection, testing or approval. ***The Contractor shall also be responsible for and shall pay all costs in connection with any inspection or testing*** required in connection with Owner or Engineer acceptance of a supplier of materials or equipment proposed to be incorporated into the work.

E. Any design or testing laboratory utilized by the Contractor shall be an independent laboratory acceptable to both the Owner and the Engineer, ***approved in writing***, and

complying with the latest edition of the "*Recommended Requirements for Independent Laboratory Qualification*", published by the American Council of Independent Laboratories.

F. Testing laboratories, shall promptly notify the Engineer and the Contractor of irregularities or deficiencies of work which are observed during performance of services.

G. Laboratories shall submit copies of all reports in accordance with Section 01410, *Testing and Testing Laboratory Services*.

1.03 Quality Assurance

A. ***The Contractor shall monitor quality control*** over suppliers, manufacturers, products, services, site conditions, and workmanship to produce Work of specified quality.

B. The Contractor shall comply with all manufacturer's instructions, including each step in sequence.

C. Should the manufacturer's instructions conflict with the Contract Documents, the Contractor shall request clarification from the Manufacturer first, followed by the Engineer prior to proceeding.

D. The Contractor shall comply with the specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship. The Work shall comply with all local, State and Federal Building Codes and regulations, and the Florida Building Code.

E. The Contractor shall perform the Work with persons qualified to produce the required and specified quality.

F. ***The Contractor shall verify that field measurements are as indicated on shop drawings*** or as instructed by the manufacturer.

G. The Contractor shall secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.

H. The Contractor shall comply with all of the quality assurance standards and criteria specified within the individual specification sections.

1.04 Tolerances

A. The Contractor shall monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.

B. The Contractor shall comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Engineer before proceeding.

C. The Contractor shall adjust products to their appropriate dimensions and positions before securing them in place.

1.05 Testing of Materials

A. Unless otherwise specified in the Contract Documents, all materials shall be sampled and tested in accordance with the latest published standard methods of ASTM in effect at the time the Bids are received. If no ASTM Standards apply, applicable standard methods of the Federal Government or of other recognized agencies shall be used.

B. ***Testing of materials shall be made by an authorized testing laboratory/manufacturer's representative, employed and paid for by the Contractor***, unless otherwise provided.

C. ***Testing of equipment shall be the responsibility of the Contractor or an authorized manufacturer's representative***. All test results shall be furnished to the Engineer in writing in accordance with Section 01410, "Testing and Testing Laboratory Services".

D. ***The Contractor shall provide facilities required to collect and forward samples***. The Contractor shall furnish the required samples without charge.

E. The Contractor shall not make use of or incorporate into the Work, the materials represented by the sample until tests have been made and the material found to be in accordance with the requirements of the Specifications.

F. Materials to be tested and the applicable test procedure shall be as outlined in the individual sections of these Specifications or detailed by the Engineer.

1.06 References and Standards

A. For products or workmanship specified by association, trade, or other consensus standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.

B. Conform to reference standards by date of issue, current on the date for receiving Bids, except where a specific date is established by code.

C. Referenced Standards are identified in Section 01075, *Reference Specifications* and the individual specification sections. The Contractor shall obtain copies of and comply with all reference standards.

D. Neither the contractual relationships, duties, or responsibilities of the parties in the Contract, nor those of the Engineer, shall be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.07 Source and Quality of Materials and Equipment

A. The source of materials to be used shall be in accordance with the Contract Documents and as approved by the Engineer before delivery. The approval of the source of any material shall continue as long as the material conforms to the Specifications.

B. ***All material not conforming to the requirements of the Specifications shall be considered as defective and shall be removed from the Project Site***. If in place, faulty materials shall be removed by the Contractor, at his expense, and replaced with acceptable material. No defective materials which have been subsequently corrected shall be reused until approval has been given.

C. Upon failure of the Contractor to comply immediately with any order of the Engineer to remove and replace defective material, the Owner shall have authority to remove and replace defective materials, and to deduct the cost of removal and replacement from any monies due or to become due to the Contractor. Failure to reject any defective materials or work at the time of installation shall in no way prevent later rejection when such defects are discovered, nor obligate the Owner to final acceptance.

1.08 Manufacturer's Field Services

A. When specified in individual specification sections, material, product or equipment suppliers or manufacturer's may be required to provide qualified staff personnel to:

1. Observe site conditions.

2. Conditions of surfaces.

3. Installation.

4. Quality of workmanship.

5. Start-up of equipment.

6. Testing, adjusting and balancing of equipment.

7. Operation of equipment.

8. Provide Operation and Maintenance training to the Owner's personnel.

B. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to the manufacturer's written instructions.

C. The Contractor shall refer to the individual specification sections for Contract required manufacturer's field services.

D. The Contractor shall refer to Section 01300, *Shop Drawings, Submittals and Samples*, Section 1430, *Manufacturer's Services*, Section 01600, *Materials and Equipment*, and Section 01650, *System's Start-Up and Demonstration*.

1.09 Additional Testing

A. In addition to soils laboratory and material testing, the Contractor shall perform other testing called for in the Contract Documents, including, but not limited to, piping, pressure, leakage, infiltration and exfiltration, as appropriate.

2. PRODUCTS - NOT USED

3. EXECUTION

3.01 Examination

A. ***The Contractor shall verify that the site conditions and substrate surfaces are acceptable for subsequent work***. Beginning new work means Contractor acceptance of existing conditions.

B. The Contractor shall verify that existing substrate is capable of structural support or attachment of new Work being applied or attached.

C. The Contractor shall examine and verify specific conditions described in the individual specification sections.

D. The Contractor shall verify that utility services are available, of the correct characteristics, and in the correct locations.

3.02 Preparation

A. Clean substrate surfaces prior to applying the next material or substance.

B. Clean all cracks or openings of substrate prior to applying the next material or substance.

C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to apply any new material or substance in contact or bond.

D. Refer to Section 01710, *Cleaning*, and follow all contractual requirements and procedures.

END OF SECTION

SECTION 01410

TESTING AND TESTING LABORATORY SERVICES

1. GENERAL

1.01 Description

A. Scope of Work

1. ***The Contractor will employ and pay for the services of an independent, qualified, state-certified testing laboratory to perform testing specifically indicated on the Contract Documents or specified in the Specifications and may at any other time elect to have materials and equipment tested for conformity with the Contract Documents***.

2. The Contractor shall cooperate with the laboratory to facilitate the execution of its required services.

3. The Contractor shall provide the Engineer with all test results herein ***within two (2) calendar days of receipt in an electronic format***.

4. Employment of any particular laboratory shall in no way relieve the Contractor's obligations to perform the Work of the Contract or cooperate with the selected laboratory, following the sampling methods and means required.

B. Related Requirements Described Elsewhere

1. General Conditions and Requirements of the Contract.

2. Respective Sections of the Specifications: Certification of products.

3. Each Specification Section listed: Laboratory test required, and standards for testing.

4. Testing laboratory inspection, sampling and testing is required for, but not limited to, the following:

Specification Section	Title
02200	Earthwork
02220	Excavation, Backfilling and Compacting
02610	Stabilized Sub-Base
03300	Cast-in-Place Concrete
15000	Mechanical - General Requirements

C. The following schedule defines the responsibilities and extent of various tests required for the Project. The Contractor shall notify the Owner in advance of any new work so that arrangements can be made with the testing laboratory for the required sampling.

TEST	NOTES	PAID FOR BY
Soil Compaction	Pipe Work: Every 150 feet at each lift of compaction, minimum	Contractor
	Beneath Structures: Each 2,000 ft^2, each lift of compaction, minimum	
	Strip/Column Foundation Work: Every 100 feet at each lift of compaction, minimum	
Pressure	As specified in Section 15044, *Pressure Testing of Piping*	Contractor
Bacteriological	As required by the local and state agencies and as specified in Division 15, *Mechanical*	Contractor
LBR (Limerock Bearing Ratio)	Each 600 ft^2 of pavement, minimum	Contractor
Concrete	Slump Test: Each delivery, minimum	Contractor
	Compression Test: Five (5) cylinders every 50 yd^3, minimum	
	Additional tests per Section 03300, *Cast-in-Place Concrete*	
Leak Tests	As specified in Section 03800, *Leakage Testing of Hydraulic Structures*	Contractor
Electrical Tests	As specified in Division 16, *Electrical*	Contractor
Instrumentation Tests	As specified in Division 13, *Special Construction*	Contractor

D. Additional Tests

1. ***The Contractor shall pay for all tests*** to ensure that the applicable material specification is met.

2. If the first test samples do not meet the specification requirements, the Contractor shall take measures to conform the material and equipment to the Specifications.

1.02 Laboratory Duties: Limitations of Authority

A. ***The Contractor shall submit, within fifteen (15) calendar days after the Notice to Proceed, the name of the testing laboratory that he is proposing to use on the Project***.

B. The testing laboratory ***shall be "approved"*** by the Owner and Engineer prior to commencement of any Project Work.

C. The testing laboratory shall cooperate with the Engineer and Contractor and provide qualified personnel promptly on notice to perform the required testing.

D. The testing laboratory shall perform specified inspections, sampling and testing of materials and methods of construction to:

1. Comply with specific standards, including, but not limited to, ASTM, other recognized authorities, and as specified.

2. Determine and report on compliance with the requirements of Contract Documents.

E. ***The testing laboratory shall immediately notify the Engineer and Contractor*** of any material or operations that do not meet the Project specifications.

F. ***The testing laboratory shall promptly submit electronic copies (PDF) of all reports or inspections and tests to the Engineer***. Each report or inspection shall include, at a minimum, the following:

1. Date issued.

2. Project title and Engineer's Project No.

3. Testing Laboratory's name, address, telephone, contact person and e-mail address.

4. The name and signature of the inspector.

5. The date of inspection or sampling.

6. A record of temperature and weather.

7. Date of the test.

8. Identification of the Product and Specification Section.

9. Location in the project.

10. The type of inspection or test.

11. Observations regarding the compliance with the Contract Documents (or not).

G. The testing laboratory may also be instructed to perform additional services as required by the Owner.

H. The Engineer and Owner "*approved*", independent, qualified, state-certified testing laboratory is not authorized to:

1. Release, revoke, alter, enlarge or give interpretations on the requirements of the Contract Documents.

2. Approve or reject any portion of work.

3. Perform any duties of the Contractor.

1.03 Contractor's Responsibilities

A. Cooperate with the Engineer's representative and laboratory personnel. Provide access to the Work and the manufacturer's operations.

B. Provide to the laboratory the preliminary design mix proposed to be used for concrete, if to be placed, and other material mixes which require control by the testing laboratory.

C. Materials and equipment used in the performance of work under this Contract are subject to inspection and testing at the point of manufacturer or fabrication. Standard specifications for quality and workmanship are indicated in the Contract Documents. The Engineer may require the Contractor to provide statements or certificates from the manufacturers and fabricators that the materials and equipment provided by them are manufactured or fabricated in full accordance with the standard specifications for quality

and workmanship indicated in the Contract Documents. All costs of providing statements and certificates shall be a subsidiary obligation of the Contractor, and no extra charge to the Owner shall be allowed on account of such testing and certification.

D. Furnish incidental labor and facilities:

1. To provide access to the Work to be tested.

2. To obtain and handle samples at the Project Site or at the source of the product to be tested.

3. To facilitate inspections and tests.

4. For storage and curing of test samples.

5. For delivery of samples.

E. ***Notify the Engineer "approved", independent, qualified, state-certified testing laboratory a minimum of three (3) working days in advance of operations to allow for the laboratory assignment of personnel and scheduling of the required tests***. Any Contractor "down-time" and expenses incurred by the Contractor due to his negligence or inability to have the testing laboratory perform tests when required shall not be compensated by the Owner.

F. ***The Contractor shall employ and pay for the services of the same or a separate, equally qualified independent testing laboratory*** to perform additional inspections, sampling and testing required for the Contractor's convenience and as approved by the Engineer.

G. If the tests and any subsequent retests indicate the materials and equipment fail to meet the requirements of the Contract Documents, ***the Contractor shall pay for the laboratory costs directly to the testing firm, at no additional expense to the Owner***.

H. If, in the making of any test of any material or equipment, it is ascertained by the Engineer that the material or equipment does not comply with the Contract Documents, the Contractor will be notified thereof and he will be directed to refrain from delivering said material or equipment, or to remove it promptly from the site or from the work and replace it with acceptable material, ***without additional cost to the Owner***.

I. The Contractor shall assure that tests of electrical and mechanical equipment and appliances shall be conducted in accordance with recognized test codes of the ANSI, ASME, or the IEEE, except as may otherwise be stated herein.

J. The Contractor shall be fully responsible for the proper operation of equipment during tests and instruction periods and shall neither have nor make any claim for damage which may occur to equipment prior to the time when the Owner normally takes over the operation thereof.

1.04 Costs of Shop Tests and Substitute Equipment

A. ***Field testing of materials furnished under this Contract will be provided by the Contractor***, unless otherwise specified.

B. ***The cost of shop tests of equipment and certain other tests specifically called for in the Contract Documents shall be borne by the Contractor*** and such costs shall be deemed to be included in the Contract Bid Price.

C. Shop Tests

1. Testing for pressure, duty, capacity, rating, efficiency, performance, function or special requirements which are specified shall be tested in the shop of the maker in a manner which shall conclusively prove that its characteristics comply fully with the requirements of the Contract Documents.

2. No such equipment or materials shall be shipped to the Project Site until the Engineer notifies the Contractor, in writing, that the results of such tests are acceptable.

3. ***Electronic copies (PDF)*** of the manufacturer's actual test data and interpreted results thereof, accompanied by a certificate of authenticity sworn to be a responsible official of the manufacturing company and/or independent laboratory, shall be forwarded to the Engineer for approval.

4. The cost of shop tests and of furnishing manufacturer's preliminary and shop test data of operating equipment ***shall be borne by the Contractor***.

D. Materials and equipment submitted by the Contractor as the equivalent to those specifically named in the Contract, if allowed by the Contract Documents, may be tested by the Owner for compliance. ***The Contractor shall reimburse the Owner for the expenditures incurred in making such tests of materials and equipment to verify equitable products are provided***.

1.05 Final Tests and Inspection

A. Final Demonstration Tests

1. Upon completion of the work and prior to final payment, all equipment and piping installed under this Contract shall be subjected to acceptance tests as specified or required to provide compliance with the Contract Documents.

2. The Contractor shall furnish labor, fuel, energy, water and all other materials, equipment and instruments necessary for all acceptance tests, at ***no additional cost to the Owner***. The finishing Contractor shall assist in the final field tests as applicable.

B. Final Inspection

1. During such final inspections, the work shall be clean and functional.

2. In no case will the final pay estimate be prepared until the Contractor has complied with all requirements set forth and the Engineer and Owner have made their final inspection of the entire work and are satisfied that the entire work is properly and satisfactorily constructed in accordance with the requirements of the Contract Documents.

2. PRODUCTS - NOT USED

3. EXECUTION - NOT USED

END OF SECTION

SECTION 01430

MANUFACTURER'S SERVICES

1. GENERAL

1.01 Description

A. Work Specified Herein

1. Mechanical start-up services.
2. Process start-up services.
3. Training services.

B. Related work specified elsewhere

Specification Section	Title
01600	Materials and Equipment
01650	Systems Start-Up and Demonstration
Division	**Information**
6, 10, 11 and 15	Equipment
13 and 16	Electrical, Controls and Instrumentation

1.02 Definitions

The following definitions shall apply wherever used herein and elsewhere in the Specifications:

A. Factory Serviceman: *A person trained by the manufacturer of the equipment and experienced in the installation, maintenance, start-up and operation of the specified equipment.*

B. Factory Process Specialist**:** *A person trained and experienced in adjusting and optimizing the operation of the specified equipment to assure proper operation of the equipment as a part of the system in which it is installed.*

C. Factory Trained Specialist**:** *A person trained and experienced in the operation and maintenance of the specified equipment and capable of training the Owner's personnel in the operation and maintenance of the equipment and systems.*

D. Eight-Hour Working Day: *A minimum of eight hours of on-site work, exclusive of travel time to and from the project location. Consecutive days include the five (5) working days in a week, exclusive of Saturday and Sunday.*

1.03 Submittals

A. At the time of submittal of shop drawings and product data, ***the Contractor shall submit the names and qualifications of the manufacturer's personnel who will perform manufacturer's services*** as specified here and elsewhere. Failure to provide this information with the shop drawings will lead to "rejection" of that shop drawing submittal.

2. PRODUCTS - NOT USED

3. EXECUTION

3.01 General

A. All manufacturers' services shall be performed in the presence of the Engineer and a representative of the Owner.

B. The Contractor shall be responsible for scheduling and coordinating the manufacturer's site visits with the Owner and the Engineer. ***The Owner and the Engineer shall be given a minimum of ten (10) calendar days written notice prior to the site visit and shall be given a minimum of three (3) calendar days written notice of cancellation of a site visit***. The time of written notification of the Owner and Engineer shall mean from the date of receipt of the notification by the Engineer and Owner, not the date that the Contractor issued the written notification. Any time delay, loss of work or increase in contract cost due to the Contractor not providing the required notification shall be incidental to the Contract.

C. Mechanical start-up services shall be performed following complete installation of the equipment item or system.

D. Process start-up services shall be performed at the time the equipment item or system is required by the treatment process.

E. Initial training services shall be performed at the time of process start-up and Section 01730, *Operation and Maintenance Data*.

F. ***Follow-up training and check-out services shall be performed at the times requested in writing by the Owner during the period of one (1) year after Final Project Acceptance by the Owner***.

G. The manufacturer's services specified herein are in addition to the guarantee requirements in Section 00700, *General Conditions*, Section 00800, *Supplementary Conditions*, and Sections 00805 and 00806, *FDEP Supplementary Conditions*.

3.02 Mechanical Start-Up Services

A. Mechanical start-up services shall consist of checking the installed equipment electrically and mechanically to insure it has been installed correctly, wired correctly, properly lubricated, and is ready to operate.

B. Mechanical start-up services shall be performed by a Factory Serviceman and shall consist of a minimum of the number of consecutive eight (8) hour working days specified in the individual equipment Specifications.

C. ***The Contractor shall be responsible for arranging for or providing, at no additional cost to the Owner***, all required equipment, supplies, and services, including power, water, wastewater, sludge, air, compressed gases, etc., and the availability of subcontractors and skilled tradesmen as necessary for mechanical start-up services.

D. ***Mechanical start-up will not be considered complete until all installation and material difficulties have been corrected***. Upon completion of the mechanical start-up services, ***the manufacturer shall submit to the Engineer a letter certifying that the equipment has been properly installed and is ready for process start-up. Process start-up will not be allowed without prior receipt of the above certification***.

E. As part of the above certification letter, the manufacturer shall submit to the Contractor and the Engineer written interim operation and maintenance activities required to ensure that the equipment will remain in operating condition between the mechanical start-up service and process start-up. This information is in addition to information submitted to the Engineer for preparation of an operation and maintenance manual for the Owner. ***The Contractor shall be responsible for all interim operation and maintenance activities***.

3.03 Process Start-Up Services

A. Process start-up services shall consist of start-up of the equipment at the time required by the treatment process and final adjustment, calibration, etc., required to optimize operation of the equipment. Process start-up shall also consist of the additional services specified in the individual equipment specifications.

B. ***Process start-up services shall be performed by a Factory Process Specialist*** and shall consist of a minimum of the number of consecutive eight (8) hour working days specified in the individual equipment specifications.

C. The Contractor shall be responsible for arranging for or providing, at no additional cost to the Owner, all required equipment, supplies, and services, including power, water, wastewater, air, compressed gases, etc., and the availability of subcontractors and skilled tradesmen as necessary for process start-up services.

D. ***Upon completion of the process start-up services, the manufacturer shall submit to the Engineer a letter, in an electronic format, certifying that the equipment is operating properly***.

3.04 Training Services

A. Training services shall consist of the following:

1. Initial instruction of the Owner's personnel in the operation and maintenance of the equipment consisting of the number of consecutive eight (8) hour working days of classroom and hands-on training specified in the individual equipment specifications.

2. ***Follow-up equipment check-out and instruction of the Owner's personnel during the first year of operation***, consisting of the number of trips and eight (8) hour working days of training specified in the individual equipment Specifications.

B. Training shall be performed by a Factory Trained Specialist from the manufacturer. ***Training materials shall be supplied to the Owner at least seven (7) calendar days prior to the date of the training by the Factory Trained Specialist***.

C. All training shall be performed at the Owner's facilities, unless otherwise specified.

D. ***Each manufacturer's training service shall be filmed, in a minimum 1080p HD, by a professional filming firm, at no additional cost to the Owner***, for the purpose of O&M training. Upon completion, three (3) copies of the video (labeled and indexed) shall be submitted to the Engineer for distribution in accordance with the requirements and conditions of Section 01390, *Preconstruction Video Recording*.

END OF SECTION

SECTION 01500

TEMPORARY FACILITIES

1. GENERAL

1.01 Description

A. Scope of Work

1. Provide temporary facilities at the Project Site as specified in the General and Supplementary Conditions (Division 0), with the addition of the requirements set forth herein. The Contractor shall meet the requirements for all temporary facilities as specified in the General Conditions including, but not limited to, the following:

   a. Temporary telephone and internet service.

   b. Storage sheds.

   c. Temporary water service.

   d. Temporary lighting.

   e. Temporary electrical service.

   f. Temporary sanitary facilities.

   g. Temporary fire protection.

   h. Safety precautions.

   i. Contractor's Field Office.

2. No temporary facilities of any type are to be provided by the Owner as part of the proposed project improvements identified within the Contract Documents.

B. \]All construction temporary facilities and controls shall remain the property of the Contractor establishing them and shall be maintained in a safe and useful condition until removed from the Project.

1.02 Temporary Water

A. The Contractor shall furnish and install temporary water service(s) for use throughout construction period , including, but not limited to, the following:

1. Water for construction purposes (compaction, concrete, testing, dust control, etc.).

2. Water for other purposes

a. Testing.
b. Temporary sanitary facilities.
c. Cleaning.
d. Potable water source (separate).

B. Maintain adequate volume of water for all purposes.

C. Water Source

1. Supplier: Owner

2. Potable water used shall be separately metered and protected with approved back flow prevention devices. ***Potable water used will be paid for by the Owner***.

D. The Contractor shall maintain strict supervision over the use of temporary services, including, but not limited to, the following:

1. Enforce conformance with applicable codes and standards.

2. Enforce sanitary practices.

3. Prevent the waste of water.

4. Prevent abuse of services.

E. Costs of Installation and Operation

1. The Contractor shall obtain all permits required by governing authorities. Permit fees shall be paid for by Owner.

2. Potable water used shall be separately metered and protected with an approved back flow prevention device(s). Potable water used shall be controlled.

F. Requirements of Regulatory Agencies

1. The Contractor shall obtain and pay for all permits, and all fees and deposits required by governing authorities.

2. Comply with the National Electric Code (NEC).

3. Comply with federal, state and local codes and regulations and with utility company requirements.

4. Comply with the County Health Department regulations.

1.03 Temporary Electricity

A. The Contractor shall furnish and install temporary electric power service for all construction needs throughout the construction period including, but not limited to, the following:

1. Power centers for miscellaneous tools and equipment used in construction work.

a. Locate so that power is available at any desired point with no more than a 100-foot extension.

b. Provide a weatherproof distribution box with a minimum of four (4), 20 amp, 120 volt grounded outlets with GFCI protection.

c. Provide circuit breaker protection for each outlet.

d. Provide equipment grounding continuity for the entire system.

e. Users shall provide grounded, Underwriters Laboratories, Inc. (UL) approved extension cords from the power center to points of operations.

2. Power for construction equipment.

3. Power for testing and checking equipment.

4. Power for welding units and for other equipment having special power requirements.

5. Power for Contractors and Subcontractors.

6. Power for all field offices.

B. Capacity

1. Adequate electrical service for construction use by all trades at the Project Site during the entire construction period.

2. Notify the Power Company if unusually heavy loads such as welding, and other special power requirements, will be connected.

   a. Provide special circuits for heavy load requirements.

   b. Do not overload any circuit.

C. Power Source

1. Supplier: Florida Power and Light (FPL)

2. Provide minimum 120/240 volt, single phase, 60 hertz power service to the Project site. The use of portable generators is allowed, however, it is recommended to disconnect the temporary power from the power company metered power supply prior to using portable generators. If fuel powered generators are used, ConVault type fuel containment systems shall be utilized for fuel storage.

D. Maintain strict supervision of use of temporary services

1. Enforce conformance with applicable standards.

2. Enforce safe practices.

3. Prevent abuse of services.

E. Costs of Installation and Operation

1. ***The Contractor shall pay all costs of installing, maintaining and removing temporary electrical power.*** *The Owner shall pay for utility.*

F. Requirements of Regulatory Agencies

1. The Contractor shall obtain permits as required by all governing authorities.

2. Comply with applicable codes including, but not limited to, the following:

   a. National Electrical Code (NEC).

b. National Electrical Safety Code (NESC).

c. National Fire Protection Association (NFPA).

d. Federal, state and local codes and utility company regulations.

1.04 Temporary Sanitary Facilities

A. Furnish and install temporary sanitary facilities for use throughout the construction period. Existing facilities, private property facilities, school facilities and the Owner's facilities, if any, shall not be used. The temporary facilities herein, include, but are not limited to, the following:

1. Potable water for construction personnel

   a. Portable containers to dispense drinking water. Provide cups for use by all employees at the Project Site.

   b. Maintain the temperature between 45□F (7.5□C) and 55□F (13□C).

2. Enclosed toilet facilities for construction personnel.

3 General employee washing facilities.

4. ***The Owner's facilities shall not be used by any construction personnel***.

B. Minimum number of fixtures

1. Toilets and Urinals

   a. For less than 20 employees: One (1) toilet.

   b. For 20 or more employees: One (1) toilet and one (1) urinal per 40 workers.

2. Washing Facilities

   a. Adequate for the number of employees and for the type of work requiring washing facilities.

C. Maintain strict supervision of use of facilities

1. Enforce conformance with applicable standards.

2. Maintain, service and clean facilities.

3. Enforce proper use of sanitary facilities.

4. ***Prohibit Contractor/subcontractor use of the Owner's facilities***.

D. Cost of Installation and Operation

1. Pay the costs of temporary sanitary facilities, including costs of installation, maintenance and removal.

2. Costs of Water: As specified in Article 1.02(C)(2) and 1.02(E)(2), herein.

3. Pay the service charges for the use of portable sanitary units.

E. Facility Locations

1. Within each project site at a location(s) approved by the Owner and Engineer.

2. Drinking Water: Convenient to work stations.

3. Toilet and washing facilities

   a. Secluded from public observation.

   b. Convenient for use of personnel in relation to work stations.

4. Obtain acceptance of facility locations from the Owner and Engineer.

F. Enclosure for Toilet Facilities

1. Weatherproof, sight-proof, sturdy temporary enclosures.

2. Insect-proof screening, adequate natural ventilation.

G. Requirements of Regulatory Agencies

1. Obtain and pay for all permits as required by governing authorities.

2. Comply with federal, state, and local codes.

1.05 Temporary Ventilation

A. The Contractor shall provide, operate and furnish power for temporary ventilation required for:

1. The proper installation and curing of materials.

2. Installation of materials and equipment in confined spaces.

3. The safety of the workmen.

1.06 Temporary Fuel Supply

A. The Contractor shall provide for all temporary fuel supply needs and specified herein and the General Conditions. A temporary fuel supply, for all types of fuel, shall be supplied as needed for running Contractor furnished tools and equipment

B. Temporary fuel supply tanks and equipment shall be of the double wall containment type with delivery systems that prevent accidental spillage of fuel.

C. Road capable vehicles or portable equipment that require fuel shall not be fueled on-site.

D. ***Accidental spills shall be cleaned up immediately***. Any site impact containment of soils shall be remediated to the satisfaction of all governing agencies at the Contractor's cost.

1.07 Temporary Internet

A. The Contractor shall provide, for himself, at least one of the following:

1. Cellular phone service for the site superintendent/foreman.

B. The Contractor shall have ***high-speed internet*** service at the field construction office.

C. The Contractor shall pay for all telephone bills resulting from the use of services from the Contractor's Field Office(s) as part of the Contract. The bills to be paid shall include, but are not limited to, installation charges, monthly telephone service, all telephone calls (local and project-related long distance calls), monthly "high speed" internet service, throughout the entire construction period.

1.08 Temporary Pumping, Site Drainage, Erosion and Mud Control

A. The Contractor shall refer to Section 01570, *Temporary Erosion and Sedimentation Control* for detailed erosion control requirements.

B. The Contractor shall ***keep the project site free from water at all times*** to permit continuous access and to prevent damage to the Work.

C. The Contractor shall comply with all of the requirement presented in Section 02075, *Dewatering and Drainage*.

D. Provide for the drainage of stormwater onto or off of the Project site in performance of the work. Drainage facilities shall be adequate to prevent damage to the work, project sites, and adjacent properties.

E. Existing drainage channels and conduits shall be cleaned, enlarged or supplemented as permitted by drainage control agencies to carry all runoff attributable to Contractor's operations. Dikes shall be constructed to divert runoff from entering adjacent property (except in natural channels), to protect City's facilities and the Work, and to direct water to drainage channels or conduits. Ponding shall be provided to prevent downstream flooding and waterway contamination.

F. Install silt barriers, turbidity curtains and screens for capturing sediment/solids from erosion and liquids from temporary pumping and dewatering activities.

G. ***Prevent erosion of soil on the Project Site and adjacent properties resulting from the Contractor's construction activities***. Effective measures shall be initiated prior to the commencement of clearing, grading, excavation, or other operation that will disturb the natural protection. Install silt barriers or screens for capturing sediments/solids from erosion and dewatering activities.

H. Work shall be scheduled to expose areas subject to erosion for the shortest possible time, and natural vegetation preserved to the greatest extent practicable. Temporary storage and construction buildings shall be located, and construction traffic routed, to minimize erosion. Temporary fast growing vegetation or other suitable ground cover shall be provided as necessary to control runoff.

I. ***Perform dust and mud control operations to prevent construction operations*** at the Project construction site from producing dust and mud in amounts harmful to persons or causing a nuisance to persons living nearby or occupying buildings in the vicinity of the work. The Contractor shall use water or a dust preventative to control dust during throughout the construction period. Their supply and application shall be at the expense of the Contractor. The Contractor shall take all steps necessary to prevent the tracking of mud onto facility roadways, adjacent streets and highways.

J. The Contractor shall be responsible for procuring and paying for all required permits associated with temporary pumping and site drainage.

1.09 Material Hoists and Cranes

A. Provide material hoists required for normal use by all trades and employ skilled hoist operators. Provide all necessary guards, signals, safety devices, etc., required for safe hoist operation.

B. The construction and operation of material hoists shall be in accordance with the applicable ANSI Standards, the "Manual Code of Accident Prevention in Construction" of the Associated General Contractors of America, OSHA, and of other Federal, State, and municipal codes or ordinances.

C. The Contractor shall prohibit the use of hoists for transporting personnel. Hoists shall be located to avoid risk of damage to completed work.

D. Special rigging and hoisting facilities shall be provided by each trade requiring their use.

E. The Contractor shall employ a crane and certified operator, as necessary, from a local professional crane firm, to facilitate the Work in accordance with the Contract Documents.

1.10 Temporary Runways, Chutes, Scaffolding and Ladders

A. Provide temporary ladders, chutes, ramps, and runways as required for performance and inspection of the Work. The above facilities shall be constructed and maintained in accordance with the applicable Federal, State, and Municipal regulations and codes.

B. Furnish, erect, and maintain all scaffolding required for the Project Work. Scaffolding shall be constructed and maintained in accordance with applicable State and Federal laws and local ordinances. Scaffolding shall be promptly removed after serving its purpose.

C. The structural strength and safety of scaffolding, runways, chutes, covers, railings, ladders, stairs, etc., and compliance with all laws and regulations shall be the sole responsibility of the Contractor.

D. No materials shall be dropped from structures except through enclosed wooden or metal chutes which shall be provided and maintained as required for the performance of the work by the various trades.

1.11 Temporary Roadways and Parking Areas

A. Construct temporary roadways and parking areas within the Project Site as required to provide proper access to the site for delivery of material and equipment of all trades.

B. Construct temporary parking areas for the Contractor's Field Office(s), at the Project Site, in accordance with Article 2.06 of this Specification Section.

C. At completion of the Project Work or when directed by the Engineer, surfacing and sub-base material used for the temporary road and parking areas shall be removed, unless otherwise approved by the Engineer, disposed of in a legal manner and the area restored to its natural condition as required by the Owner.

1.12 Project Signs

A. As soon as practicable after Award of the Contract, the Contractor shall furnish and erect one (1) sign for the Project at the entrance of the project site, placed at a location to be determined by Engineer and Owner.

B. The Project sign shall be erected before the Work is started and shall be suitably supported, braced, and maintained, and shall be removed upon completion of the project or when directed by the Engineer. The Project Sign shall meet the requirements presented in Section 01580, *Project Identification and Signs*.

C. ***The Contractor shall submit***, in accordance with Section 01300, *Shop Drawings, Submittals and Samples*, and Section 01580, *Project Identification and Signs*, an 11-inch x 17-inch AutoCAD drawing of the project sign ***to the Engineer for approval prior to final preparation of the sign and installation***.

D. No other signs will be permitted.

1.13 Security

A. The Contractor shall, at all times, be responsible for the security required in all project areas and shall provide all reasonable protection to prevent damage, injury or loss to employees on the Work and all other persons who may be affected thereby; all the work materials and equipment to be incorporated therein, whether in storage on or off the project site, under the care, custody or control of the Contractor or any subcontractors; and any other property under the care, custody or control of the Contractor or any subcontractors. The Contractor shall be responsible for such security and safety until final acceptance of the Work

B. Full-time watchmen ***will not*** be specifically required as a part of the Contract, but the Contractor shall provide inspection of work area daily and shall take whatever measures are necessary to protect the safety of the public, workmen, and materials, and provide for the security of the site, both day and night.

1.14 Construction Solid Waste Disposal

A. ***The Contractor shall provide at least one (1) roll-off container for construction debris for the duration of the construction contract***.

1.15 Fire Danger

A. The Contractor shall minimize fire danger in the vicinity of and adjacent to the Project construction site. The Contractor shall provide labor and equipment to protect the surrounding private property from fire damage resulting from construction operations.

B. All costs arising from fire or the prevention of fire shall be at the expense of the Contractor.

1.16 Construction Staking

A. The Contractor shall provide all construction staking for the Work.

2. PRODUCTS

2.01 Materials

A. Materials may be new or used, but must be adequate for the purpose required, sanitary and must not violate requirements of applicable codes.

B. At the Contractor's option, patented specialty products may be used, in compliance with applicable codes.

2.02 Electricity

A. Refer to Article 1.03 within this Specification Section.

B. Comply with the requirements of Division 16, *Electrical*.

C. Provide the required facilities, including transformers, conductors, poles, conduits, raceways, breakers, fuses and switches.

D. Provide the appropriate enclosures for the environment in which used, in compliance with NEMA standards.

2.03 Temporary Sanitary Facilities

A. Refer to Article 1.04 within this Specification Section.

B. Drinking Water Facilities (Portable Containers)

1. Tightly closed, and equipped with dispensing tap.

2. Clearly label contents.

3. Do not use for any other purposes.

4. Provide single-service disposable cups, with a sanitary container for unused cups, and waste receptacles for used cups.

C. Toilet Facilities

1. Portable Toilets shall be either: (1) chemical toilets; (2) recirculating toilets; or (3) combustion toilets.

2. Toilet Tissue: Provide at each toilet, on a suitable dispenser.

2.04 Contractor's Field Office(s) and Facilities

A. Specific Requirements

1. Provide either a separate building or a trailer of adequate floor space for the Contractor's use at the Project Site.

2. The trailer(s) shall be weather-tight, have a tight level floor at least eight (8) inches off the ground, shall be insulated, have suitable screened ventilation and a solid door. The Contractor shall provide temporary wooden steps and a landing with handrailing for ingress and egress to the office. The landing, steps and handrailing shall be constructed using new pressure treated lumber in accordance with local building codes and ordinances.

3. The office shall be provided with a weekly janitor service, heating equipment, water, approved fire extinguisher(s), electrical wiring, outlets and fixtures suitable to light the tables and desks adequately.

4. Toilet facilities are to be included with a holding tank to be pumped clean daily by the Contractor. Garbage shall be collected daily and clean-up of the trailer(s) shall be provided at least three (3) times per week.

5. Lighting and Temperature Control

   a. Central heat and air-conditioning system capable of maintaining the trailer(s) between 65□F and 80□F with a heat strip and thermostat control (minimum 12,000 BTU (1-ton) rating).

   b. The trailer(s) shall be provided with sufficient ceiling mounted lights per current lighting standards.

B. Furniture and Equipment

1. The office(s) shall have the following furniture and equipment:

   a. Telephone: The Contractor shall provide one (1) cellular phone service for the site superintendent/foreman.

   b. Internet: ***High-speed internet access is required***.

   c. Racks and file for Project Record Documents.

   d. Other furniture and furnishings: Contractors' option.

C. Within ten (10) days after issuance of the Notice to Proceed, submit a sketch showing the proposed number and locations; including storage sheds and trailers.

D. The Contractor shall locate all temporary construction offices and storage trailers in locations approved by the Owner and the Engineer.

2.05 Engineer's Field Office

A. An Engineer's field office trailer ***will not*** be required on this project. ***An office space in the Contractor's Field office/trailer shall be provided for the Engineer resident project representative***.

2.06 Temporary Parking

A. Provide a location, approved by the Engineer, for a gravel (12-inch minimum depth) or other suitable surface for the Contractor's employees, Engineer's representatives and visitor parking. Personal vehicles will be restricted from the work area.

B. Provide gravel parking space at the Contractor's trailer(s) for a minimum of four (4) vehicles.

2.07 Security Lighting

A. Provide for adequate pole-mounted flood lights for the parking area at the Contractor field office area. Maintain lighting on a photocell or timer.

2.08 Temporary Structures

A. Temporary Fences/Structures

1. If, during the course of the work, it is necessary to remove or disturb any needed fence or structure, or part thereof, the Contractor shall provide a suitable temporary fence or structure at his own expense.

2. The original fence or structure shall be replaced to at least its original condition, once the work is completed. The Project site shall remain secure at the perimeter at all times during the construction.

B. Temporary Controls/Power

1. If, during the course of the work, it is necessary to provide temporary means to control or power existing or new equipment until the final equipment is completed, the Contractor shall provide a suitable temporary equipment at his own expense.

C. Responsibility for Temporary Work

1. In accepting the Contract, the Contractor assumes full responsibility for the sufficiency and safety of all temporary work and for any damage which may result from their failure or their improper construction, maintenance or operation and will indemnify and hold harmless the Owner and Engineer from all claims, suits or actions and damages or costs of every description arising by reason of failure to comply with the above provisions.

3. EXECUTION

3.01 General

A. Install the Work in a neat and orderly manner.

B. Make structurally sound throughout.

C. Maintain to provide continuous service.

D. Modify and extend services as the Project Work progress requires.

E. ***The Contractor's Field Office shall be delivered to the Project Site and made suitable for occupation (all facilities and services specified herein shall be fully operational) within ten (10) days after the Notice to Proceed***.

F. ***The Contractor's Field Office shall be removed from the Project Site at Final Project Acceptance by the Owner*** and the area fully restored to its natural condition prior to construction and in a manner approved by the Engineer.

3.02 Temporary Water

A. Locate piping and outlets

1. Provide service convenient to work stations.

2. Avoid interference with:

a. Traffic and work areas.

b. Materials handling equipment.

c. Storage areas.

B. Do not run piping on the floor or on the ground.

C. When necessary to maintain pressure, provide temporary pumps, tanks, and compressors.

3.03 Temporary Electricity

A. Service and distribution may be overhead or underground.

B. Locate temporary electricity to avoid interference with the following:

1. Traffic, work and storage areas.

2. Cranes.

3. Material handling equipment

C. Do not run branch circuits on the floor or on the ground.

D. Wire all safety devices specified for final operation of the equipment.

E. Check the operation of all safety devices.

3.04 Temporary Sanitary Facilities

A. Portable Toilets

1. Erect toilets securely and anchor them to prevent dislocation or tipping over.

2. All sanitary waste shall be collected from the sanitary facilities a minimum of three (3) times per week by a licensed sanitary waste management contractor to prevent accumulation of wastes and creation of unsanitary conditions and odors.

3. Portable toilet shall be used unless wastewater and water service can be provided to site.

B. Washing Facilities

1. Provide faucets, drains and other washing facilities suitable for the type of work requiring washing.

3.05 Location of Construction Trailer(s)

A. The Contractor shall locate the field office and construction trailer(s) where indicated on the Contract Drawings or as indicated by the Engineer and Owner.

B. A “staging area” for delivered equipment stored outdoors, or for temporary storage trailers and sheds, shall be separated from the trailer area, as located on the Contract Drawings or as indicated by the Engineer and Owner.

3.06 Temporary Fuel Systems

A. Install and maintain temporary diesel fuel tanks in a manner to avoid accidental spillage of fuel.

B. Facilities shall be kept out of the path of normal vehicular traffic, including temporary fuel feed lines.

3.07 Removal of Temporary Materials and Equipment

A. Completely remove all temporary materials, equipment, facilities, services and controls and legally dispose of them upon completion of construction.

B. Clean, and repair damage caused by installation of the temporary facilities and restore the area to the specified, or original condition. All areas shall be solid sodded, after removal of temporary materials, equipment and construction trailer(s), in accordance with Section 02815, *Solid Sodding*.

END OF SECTION

SECTION 01510

MOBILIZATION / DEMOBILIZATION

1. GENERAL

1.01 Description

A. Mobilization shall include the costs of obtaining all permits, insurance and bonds, moving onto the Project sites; all facets of construction for the Project, furnishing and erecting facilities, equipment, systems, temporary buildings, and other construction facilities; all facets of construction activities on the Project Site all as required for the proper performance and completion of the Work. Mobilization shall include, but not be limited to, the following principal items:

1. Move onto the site all Contractor's plant and equipment required for the first month's operations.

2. Install temporary construction power, wiring, and lighting facilities.

3. Establish a fire protection plan and safety program (shall meet all local, state and federal requirements).

4. Secure a construction water supply.

5. Provide field office trailer(s) for the Contractor as specified. ***The office/trailer shall be set-up and complete within ten (10) days after the Notice to Proceed***.

6. Provide on-site sanitary facilities and potable water facilities as specified.

7. Arrange for and erect the Contractor's work and storage yard and employee's parking facilities.

8. Submit all required insurance certificates and bonds.

9. Obtain all required permits.

10. Post all OSHA, FDEP, EPA, Department of Labor, and all other required notices.

11. Have the Contractor's ***English-speaking*** superintendent at the job site "***full time***".

12. Submit a detailed construction CPM schedule acceptable to the Engineer as specified.

13. Submit a Schedule of Values (SOV) for the Work as specified.

14. Submit a schedule of submittals as specified.

15. ***All employees shall:***

    a. Pass a ***Criminal Background Check.***

    b. Have ***state-issued identification badges*** prior to coming "on-site".

1.02 Demobilization

A. Demobilization is the timely and proper removal of all Contractor owned material, equipment or plant, from the job site and the proper restoration or completion of work necessary to bring the site into full compliance with the Contract Documents.

1.03 Payment for Mobilization/Demobilization

A. The Contractor's attention is directed to the condition that ***payment for mobilization/demobilization or any part thereof, shall not exceed three (3) percent of the Total Contract Price***.

2. PRODUCTS - NOT USED

3. EXECUTION - NOT USED

END OF SECTION

SECTION 01530

CONSTRUCTION AIDS

1. GENERAL

1.01 Description

A. Scope of Work

1. Furnish, install and maintain required construction aids for completion of the work associated with the Project.

2. Remove all construction aids on completion of Work.

B. Related Requirements Described Elsewhere

Specification Section	Title
01010	Summary of Work

C. Comply with the applicable requirements specified in the Project Contract Documents.

2. PRODUCTS

2.01 Materials

A. Materials may be new or used, suitable for the intended purpose, but must not violate the requirements of applicable codes, standards, and regulations.

2.02 Construction Aids

A. Provide construction aids and equipment required by personnel and to facilitate execution of the Work: scaffolds, staging, ladders, stairs, ramps, runways, platforms,

railings, hoists, cranes, chutes and other such facilities and equipment such as temporary valves and fittings. Refer to respective specification sections for the particular requirements for each trade.

B. When permanent stair framing is in place, provide temporary treads, platforms and railings, for use by construction personnel.

C. Maintain facilities and equipment in a "***first-class***" condition.

3. EXECUTION

3.01 Preparation

A. Consult with the Engineer, review site conditions and factors which affect the construction procedures and construction aids, which may be affected by execution of the Work.

3.02 General

A. Comply with applicable requirements specified in the Project Contract Documents.

B. Relocate construction aids as required by the progress of construction, by storage of work requirements and to accommodate legitimate requirements of Owner and other contractors employed at the site.

3.03 Removal

A. Completely remove temporary materials, equipment and services:

1. When construction needs can be met by use of permanent construction.

2. At completion of the Work.

B. Clean and restore areas damaged by installation and by use of temporary facilities.

1. Remove foundations and underground installations for construction aids.

2. Grade and grass areas of the site affected by temporary installations to required elevations, slopes, ground cover and clean the area.

C. Restore permanent facilities used for temporary purposes to the specified condition or in kind if not specified.

END OF SECTION

SECTION 01550

MAINTENANCE OF TRAFFIC

1. GENERAL

1.01 Scope of Work

A. This Section covers procedures for developing and implementing traffic control and regulation measures and maintenance of traffic in and around the construction area to provide for safe and efficient protection and movement of vehicular and pedestrian traffic/through and adjacent to the construction site areas.

B. Related Work Specified Elsewhere

Specification Section	Title
01500	Temporary Facilities
Division	**Information**
2	Sitework

1.02 Terminology

A. The term "*Maintenance of Traffic*" as used herein, shall include all facilities, devices, traffic control personnel, and operations as are required for the safety and convenience of the public as well as for minimizing public nuisance.

1.03 References

A. Codes, Specifications and Standards

1. Any reference to published specifications or standards of any organization or association shall comply with the requirements of the specification or standard which is current on the date of the Advertisement for Bids. In case of a conflict between the referenced specifications or standards, the one having the more stringent requirements shall govern.

2. Codes, specifications, and standards referred to by number or title shall form a part of this Specification to the extent required by the reference thereto. Latest revisions shall apply, unless other wise shown or specified.

3. In case of a conflict between the referenced specifications or standards and the Contract Documents, the Contract Documents shall govern.

4. The publications listed in Table 01550-1 form a part of the Specifications to the extent referenced. The publications are referred to in the text by the basic designation only.

Table 01550-1: Referenced Publications

FDOT Manual State of Florida Manual of Traffic Control and Safe Practices for Street and Highway Construction, Maintenance and Utility Operations
FDOT Specifications Florida Department of Transportation Standard Specifications for Road and Bridge Construction, Latest Edition
FDOT Standards Florida Department of Transportation Roadway and Traffic Design Standards, Latest Edition
Manual on Uniform Traffic Control Devices

1.04 Submittals

A. All items associated with maintenance of traffic and this Project shall be submitted to the Engineer for approval in accordance with Section 01300, *Shop Drawings, Submittals and Samples*, prior to construction.

B. Before closing or restricting traffic flow through any thoroughfare or the internal roadway(s) within the treatment facility site, the Contractor shall give written notice to and, if necessary, obtain a permit or permits from the duly constituted public authority having jurisdiction over the thoroughfare. The Contractor shall also notify the applicable law enforcement, fire, and emergency services having jurisdiction in the area. Notice shall be given no less than seventy-two (72) hours in advance of the time when it may be necessary in the process of construction to close or restrict traffic to such thoroughfare, or as may be otherwise required by the governing authority.

C. ***The Contractor shall prepare and submit a Maintenance of Traffic (MOT) Plan or Traffic Control Plan (TCP)*** . The MOT shall comply with County Code and Federal and State criteria, specifically MUTCD and FDOT 600 Series Indexes. Each MOT shall include, but not be limited to, the following:

1. Each MOT shall show the posted speed limits.

2. The MOT for work outside the travel lanes can consist of the legible dimensioned sketch of field conditions, position and type of traffic control devices and a brief description of intended work, type of right of way encroachment, time and work duration.

3. The MOT requiring a full or partial closure will provide full information as above, and dimensioned legible sketch of conditions and MOT. Based on the complexity of the project, the Engineer may require a Professional Engineer (P.E.) sign and seal plans. This requirement may be satisfied if the MOT is prepared by a company having trained and design certified personnel.

4. The MOT for larger projects (i.e., subdivision entrance with deceleration lanes and overlay) will require that the plans be signed and sealed by a Professional Engineer (P.E.) The MOT shall detail individual phases.

5. The TCP shall include the listing of all agencies (police, fire, emergency, utilities) and phone numbers to be contacted (72 hours) before and during MOT.

6. During the construction of the Project, an MOT trained and certified person shall be present. The level of certification depends on type and complexity of the job (flagman, ATSSA Certified Worksite Traffic Supervisor, etc.).

7. Any changes in the MOT shall be supervised by trained and responsible personnel (i.e., ATSSA Inspector). It includes active to non-active, day to night and phasing.

8. The Contractor may choose to provide professional services from such firms as Bob's Barricades, Traffic Control Devices, Inc., Control Specialists, Inc., etc. The TCP and onsite MOT shall clearly display the names and emergency phone number of the MOT responsible person.

1.05 Site Conditions

A. The Contractor shall plan construction operations such that existing local traffic access can be maintained and shall maintain during the construction such barricades, lights, flagmen, and other protective devices as appropriate, whether specified for the project or required by the local governing authority. Traffic control devices used for maintenance of traffic shall comply with the FDOT Manual.

B. ***The Contractor shall conduct his work in such manner as not to unduly or unnecessarily restrict or impede normal traffic through the streets of the community or within the treatment facility site.*** Insofar as it is practicable,

excavated material and spoil banks shall not be located in such manner as to obstruct traffic. The traveled way of all streets, roads, and alleys shall be kept clear and unobstructed insofar as is possible and shall not be used for the storage of construction materials, equipment, supplies, or excavated earth, except when and where necessary.

C. If required by duly constituted public authority, the Contractor shall, at his own expense, construct bridges or other temporary crossing structures over trenches so as not to unduly restrict traffic. Such structures shall be of adequate proper construction and shall be maintained by the Contractor in such manner as not to constitute an undue traffic hazard. Private driveways shall not be closed except when and where necessary, and then only upon due advance notice to the Engineer and the Owner and for the shortest practicable period of time consistent with efficient and expeditious construction. The Contractor shall be liable for any damages to persons or properly resulting from his work.

D. The Contractor shall make provisions at cross streets for the free passage of vehicles and foot passengers, either by bridging or otherwise, and shall not obstruct the sidewalks, gutters, or streets, nor prevent in any manner the flow of water in the latter, but shall use all proper and necessary means to permit the free passage of surface water along the gutters. The Contractor shall immediately cart away all offensive matter, exercising such precaution as may be directed by the Owner. All material excavated shall be so disposed of as to inconvenience the public and adjacent tenants as little as possible and to prevent injury to trees, sidewalks) fences) and adjacent property of all kinds. The Contractor may be required to erect suitable barriers to prevent such inconvenience or injury.

E. Unless otherwise required by the governing authority, maintenance of traffic in and around the construction zone shall conform to Section 102 of the FDOT Specifications, and 600 Series Roadway Design Standards drawings of the FDOT Standards, as applicable.

1.06 Qualifications

A. Provide at least one (1) employee in the field (superintendent or foreman) who holds an IMSA (International Municipal Signal Association) Work Zone Traffic Control Safety Certification.

B. This certified employee shall be on the job site when the traffic control measures are installed and when work is occurring within the zones.

2. PRODUCTS - NOT USED

3. EXECUTION

3.01 Site Preparation

A. Contact property owners affected by the construction. Coordinate temporary driveway closures and sequencing. Maintain access for all property owners during construction.

B. Remove existing pavement markings, as required, and remove or relocate existing signs as necessary to implement traffic control.

C. Install signs, markings, barricades in accordance with approved traffic control plan.

D. Implement lane closures in accordance with the “approved” traffic control plan.

E. Perform work in a manner that will cause minimum interruptions to traffic.

F. Place excavated material outside roadway clear zones, and away from pedestrian facilities.

G. All trenches shall be backfilled each day prior to the completion of construction activities.

H. Where special hazards exist, install traffic control through the use of lighted concrete barriers, barricades, or other such traffic control facilities as needed to ensure public safety.

3.02 Maintenance

A. Inspect traffic control devices on a daily basis to ensure placement of barricades and function of lights is maintained throughout construction.

B. Wet unstabilized areas as necessary to control dust.

C. Adjust traffic control devices as required under emergency conditions.

END OF SECTION

SECTION 01560

ENVIRONMENTAL PROTECTION

1. GENERAL

1.01 Description

A. Work Specified Herein

1. Environmental Protection References
2. Submittals
3. Environmental Protection Requirements
4. Quality Assurance
5. Natural Resources
6. Erosion and Sediment Control
7. Solid and Sanitary Wastes
8. Hazardous Wastes
9. Dust
10. Abrasive Blasting

B. Related work specified elsewhere

Specification Section	Title
01000	Project Requirements
01300	Shop Drawings, Submittals and Samples
01570	Temporary Erosion and Sedimentation Control
Division	**Information**
2	Sitework

1.02 Scope of Work

A. ***Furnish all labor, materials, and equipment to perform all work required for the prevention of environmental pollution in conformance with applicable laws and regulations***, during and as the result of construction operations under this Contract.

For the purpose of this Section, environmental pollution is defined as the presence of chemical, physical, or biological elements or agents that adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; affect other species of importance to man; or degrade the utility of the environment for aesthetic and/or recreational purposes.

B. The control of environmental pollution requires consideration of air, water and land, and involves the management of noise and solid waste, as well as other pollutants.

C. ***The Contractor shall schedule and conduct all work in a manner that will minimize the erosion of soils in the area of the Work***. Provide erosion control measures such as diversion channels, sedimentation or filtration systems, berms, staked hay bales, seeding, mulching or other special surface treatments as are required to prevent silting and muddying streams, rivers, canals, impoundments, lakes, etc. All erosion control measures shall be in place in an area prior to any construction activity in that area. Specific requirements for erosion and sedimentation controls are specified in Section 01570, *Temporary Erosion and Sedimentation Control*.

D. This Section is intended to ensure that construction is achieved with a minimum of disturbance to the existing ecological balance between a water resource and its surroundings. These are general guidelines. It is the Contractor's responsibility to determine the specific construction techniques to meet these guidelines.

E. ***All phases of sedimentation and erosion control shall comply with and be subject to approval of the Florida Department of Environmental Protection (FDEP)***. The Contractor shall prepare sedimentation and erosion control drawings to minimize the impact of the construction activities and meet the requirements of the FDEP. These drawings and control methods must be submitted to the Engineer, and approved, prior to the beginning of Project construction activities. The Contractor shall be responsible for implementing the approved program and meeting all local, state and federal requirements.

1.03 References

A. The publications listed in Table 01560-1 form a part of the Specifications to the extent referenced. The publications are referred to in the text by the basic designation only.

TABLE 01560-1: REFERENCED PUBLICATIONS

CODE	DESCRIPTION
29 CFR 1910.94 (SubPart G)	Occupational Health and Environmental Control
40 CFR 112	Oil Pollution Prevention
40 CFR 261	Identification and Listing of Hazardous Waste

TABLE 01560-1: REFERENCED PUBLICATIONS	
CODE	**DESCRIPTION**
40 CFR 262	Generators of Hazardous Waste
40 CFR 263	Transporters of Hazardous Waste
40 CFR 264	Owners and Operators of Hazardous Waste Treatment, Storage and Disposal Facilities
40 CFR 403	General Pretreatment Regulations for Existing and New Sources of Pollution
49 CFR 171	General Information, Regulations, and Definitions
49 CFR 172	Hazardous Materials Tables and Hazardous Materials Communications Regulations
49 CFR 178	Shipping Container Specifications
PL 96-510	Comprehensive Environmental Response Compensation and Liability Act of 1980

1.04 Definitions

A. Chemical Wastes: *Salts, acids, alkalies, herbicides, pesticides, and organic chemicals*.

B. Debris: *Combustible and noncombustible wastes such as ashes and waste materials resulting from construction or maintenance and repair work, leaves, and tree trimmings.*

C. Garbage: *Refuse and scraps resulting from consumption of food.*

D. Hazardous Materials: *As defined in DOT regulation 49 CFR 171 and listed in 49 CFR 1 72.*

E. Hazardous Substances: *As defined in EPA PL 96-510.*

F. Hazardous Wastes: *Hazardous substances as defined in 40 CFR 261 or as defined by applicable state and local regulations.*

G. Landscape Features: *Trees, plants, shrubs and ground covers.*

H. Oily Wastes: *Petroleum products and bituminous materials.*

I. Rubbish: *Combustible and noncombustible wastes including paper, boxes, glass, crockery, metal, lumber, cans and bones.*

J. Sediment: *Soil and other debris that have eroded and have been transported by runoff water or wind.*

K. Solid Wastes : *Rubbish, debris, and other discarded solid materials, except hazardous waste as defined in paragraph entitled, 'Hazardous Waste, resulting from industrial, commercial, and agricultural operations and from community activities.*

L. Wastewater: *"Sewage" or waste characterized as domestic sanitary sewage.*

1.05 Submittals

A. ***Submit an Environmental Protection Plan (EPP) for the Project Site***, in accordance with Section 01300, *Shop Drawings, Submittals and Samples*, of these Contract Documents.

B. The Environmental Protection Plan (EPP) shall include at a minimum, but is not limited to, the following:

1. Submit the proposed Environmental Protection Plan (EPP) including a preconstruction survey, to the Engineer ***within fifteen (15) days after the Notice to Proceed***.

2. Identify the hazardous wastes expected to be generated and submit a management and disposal plan before commencing work.

3. Submit a copy of a laboratory analysis of debris collected as a result from abrasive blasting operations before disposing of debris.

4. Submit details of Dewatering and Drainage Plan in accordance with Section 02075, *Dewatering and Drainage*.

1.06 Notifications

A. The Engineer will notify the Contractor, in writing, of any non-compliance with the foregoing provisions or of any environmentally objectionable acts and corrective action to be taken. State or local agencies responsible for verification of certain aspects of the environmental protection requirements shall notify the Contractor, in writing, through the Engineer, of any non-compliance with local, state or federal requirements. After receipt

of such notice from the Engineer or from the regulatory agency through the Engineer, the Contractor shall immediately take corrective action. Such notice, when delivered to the Contractor or his authorized representative at the site of the work, shall be deemed sufficient for the purpose.

B. If the Contractor fails or refuses to comply promptly, the Owner may issue an order stopping all or part of the work until satisfactory corrective action has been taken.

C. No part of the time lost due to any such stop orders shall be made the subject of a claim for extension of time or for excess costs or damages by the Contractor unless it is later determined that the Contractor was in compliance.

D. Failure to notify the Contractor of any non-compliance by the Engineer does not relieve the Contractor of the responsibility to comply with the foregoing provisions.

1.07 Quality Assurance

A. Environmental Protection Requirements

1. Provide and maintain, during the life of the contract, environmental protection as specified.

2. Plan for and provide environmental protective measures to control pollution that develops during normal construction practice.

3. Plan for and provide environmental protective measures required to correct conditions that develop during the construction of permanent or temporary environmental features associated with the project.

4. Comply with Federal, state and local regulations pertaining to the environment, including water, air, solid waste, hazardous waste and substances, oily substances and noise pollution.

1.08 Implementation

A. Prior to commencement of the Work, the Contractor shall meet with the Engineer to develop mutual understandings relative to compliance with these provisions and administration of the environmental pollution control program.

B. Remove temporary environmental control features, when approved by the Engineer, and incorporate permanent control features into the Project at the earliest practicable time.

2. PRODUCTS - NOT USED

3. EXECUTION

3.01 Asbestos

A. Materials containing asbestos should not be located on the Project site.

B. Notify the Engineer immediately if asbestos materials are encountered.

3.02 Erosion Control

A. Provide positive means of erosion control such as shallow ditches around construction activities to carry off surface water. The Contractor shall refer to Section 01570, *Temporary Erosion and Sedimentation Control*.

B. Erosion control measures, such as siltation basins, hay check dams, mulching, jute netting and other equivalent techniques, shall be used as appropriate.

C. Flow of surface water into excavated areas shall be prevented. Ditches around construction area shall also be used to carry away water resulting from dewatering of excavated areas.

D. At the completion of the work, ditches shall be backfilled and the ground surface restored to the original condition or as proposed on the Contract Drawings.

3.03 Protection of Streams and Surface Waters

A. ***Take all precautions to prevent, or reduce to a minimum, any damage to any stream, drainage channel, canal or surface water*** from pollution by debris, sediment or other material, or from the manipulation of equipment and/or materials in or near such natural resources.

B. Water that has been used for washing or processing, or that contains oils or sediments that will reduce the quality of the water in the surface waters shall not be directly returned to the surface water. Divert such waters through a settling basin or filter before being directed into surface waters.

C. ***Do not discharge water from dewatering operations directly into any live or intermittent stream, channel, wetlands, surface water or any storm sewer***. Water from dewatering operations shall be treated by filtration, settling basins, or other approved method to reduce the amount of sediment contained in the water to allowable levels.

D. Take all preventative measures to avoid spillage of petroleum products and other pollutants. In the event of any spillage, prompt remedial action shall be taken in accordance with a contingency action plan approved by the FDEP. ***Submit two (2) copies of approved contingency plans to the Engineer for review and approval***.

E. Water being flushed from structures or pipelines after disinfection, with a chlorine residual of 0.01 mg/L or greater, ***shall be treated with a dechlorination solution***, in a method approved by the Engineer, prior to discharge.

3.04 Protection of Land Surfaces

A. Restore land resources within the project boundaries and outside the limits of permanent work to a condition, after completion of construction, that will appear to be natural and not detract from the appearance of the project. Confine all construction activities to areas shown on the Contract Drawings or as identified by the Engineer and/or Owner.

B. ***Outside of areas requiring earthwork for the construction of the new facilities, do not deface, injure, or destroy trees or shrubs, nor remove or cut them without prior approval***. No ropes, cables, or guys shall be fastened to or attached to any existing nearby trees for anchorage unless specifically authorized by the Engineer. Where such special emergency use is permitted, first wrap the trunk with a sufficient thickness of burlap or rags over which softwood cleats shall be tied before any rope, cable, or wire is placed. ***The Contractor shall, in any event, be responsible for any damage resulting from such use***.

C. ***Before beginning operations near them, protect trees that may possibly be defaced***, bruised, injured, or otherwise damaged by the construction equipment, dumping or other operations, by placing barricades, constructed in accordance with local requirements or as indicated by the Engineer, around them. Monuments and markers shall be protected similarly.

D. ***Any trees or other landscape features scarred or damaged by the Contractor's equipment or operations shall be restored, as nearly as possible, to their original condition***. The Engineer will decide the method of restoration to be used and whether damaged trees shall be treated and healed or removed and disposed of. ***The cost of treating, healing, removing, disposal of and replacement of trees or other landscape features shall be incidental to the Contract***.

1. All scars made on trees by equipment, construction operations, or by the removal of limbs larger than 1-inch in diameter shall be coated as soon as possible with an approved tree wound dressing. All trimming or pruning shall be performed in an approved manner by experienced workmen with saws or pruning shears. Tree trimming with axes will not be permitted..

2. Climbing ropes shall be used where necessary for safety. Trees that are to remain, either within or outside established clearing limits, that are subsequently damaged by the Contractor and are beyond saving in the opinion of the Engineer, shall be immediately removed and replaced. ***Costs shall be incidental to the Contract***.

E. The locations of the Contractor's storage and other construction buildings, required temporarily in the performance of the Work, shall be cleared portions of the job site or areas to be cleared as shown on the Contract Drawings and approved by the Engineer and shall not be within wetlands or flood plains. The preservation of the landscape shall be an imperative consideration in the selection of all sites and in the construction of buildings. Contract Drawings showing storage facilities shall be submitted for approval of the Engineer.

F. If the Contractor proposes to construct temporary roads or embankments and excavations for facility and/or work areas, he shall submit the following for approval at least ten (10) days prior to scheduled start of such temporary work:

1. A layout of all temporary roads, excavations, embankments and drainage to be constructed within the work area.

2. Details of temporary road construction.

3. Drawings and cross sections of proposed embankments and their foundations, including a description of proposed materials.

4. A landscaping drawing showing the proposed restoration of the area. Indicate the proposed removal of any trees and shrubs outside the limits of existing clearing area. Indicate locations of guard posts or barriers required to control vehicular traffic and protect trees and shrubs to be maintained undamaged. The drawing shall provide for the obliteration of construction scars as such and shall provide for a natural appearing final condition of the area. Modification of the Contractor's approved drawings shall be made only with the written approval of the Engineer. No unauthorized road construction, excavation or embankment construction including disposal areas will be permitted.

G. Remove all signs of temporary construction facilities such as haul roads, work areas, structures, foundations of temporary structures, stockpiles of excess of waste materials,

or any other vestiges of construction as directed by the Engineer. It is anticipated that excavation, filling and plowing of roadways will be required to restore the area to near natural conditions that will permit the growth of vegetation thereon. The disturbed areas shall be prepared and sodded as described in Section 02815, *Solid Sodding* or as approved by the Engineer.

H. All debris and excess material will be disposed of outside wetland or flood plain areas in a legal and environmentally sound manner.

3.05 Protection of Air Quality

A. Burning

1. ***The use of burning at the Project Sites for the disposal of refuse is prohibited***.

B. Dust Control

1. The Contractor will be required to maintain all excavations, embankment, stockpiles, access roads, facility sites, waste areas, borrow areas and all other work areas within or without the project boundaries free from dust which could cause the standards for air pollution to be exceeded and which would cause a hazard or nuisance to others.

C. An approved method of stabilization consisting of sprinkling or other similar methods will be permitted to control dust. ***The use of petroleum products is prohibited***. The use of chlorides may be permitted with prior approval from the Engineer.

D. Sprinkling, to be approved, must be repeated at such intervals as to keep all parts of the disturbed area at least damp at all times, and the Contractor must have sufficient competent equipment on the job to accomplish this.

E. Dust control shall be performed as the work proceeds and whenever a dust nuisance or hazard occurs, as determined by the Engineer.

3.06 Noise Control

A. ***Make every effort to minimize noises caused by the construction operations***.

B. Equipment shall be equipped with silencers or mufflers designed to operate with the least possible noise in compliance with Federal and State regulations.

C. Noise levels shall not exceed those indicated in Section 01120, *Special Project Procedures*.

3.07 Miscellaneous Provisions

A. Preserve the natural resources within the project boundaries and outside the limits of permanent work. Restore the natural resources to an equivalent or improved condition upon completion of work. Confine construction activities to within the limits of the work indicated or specified by the Engineer/Owner.

B. Prevent oily or other hazardous substances from entering the ground, drainage areas, or local bodies of water. Take precautions to ensure that no oil or other hazardous material is released to the water or land or sanitary sewer system. Environmental requirements for the prevention of oil spills are contained in 40 CFR 112. For oil and hazardous substance spills which may be large enough to violate Federal, State or Local Regulations, verbally notify the Engineer and the Florida Department of Environmental Protection (FDEP) immediately. Immediately clean up spills of oil or hazardous substances which result from the Contractor's operations. The cost of the cleanup shall be borne entirely by the Contractor and shall be incidental to the Contract.

C. Do not disturb fish and wildlife. Do not alter water flows or otherwise disturb the native habitat on or adjacent to the project, which is critical to the survival of fish and wildlife, except as indicated or specified.

D. ***Preserve, and verbally report immediately to the Engineer, items having possible historical or archaeological interest which are discovered in the course of work***. Protect monuments, markers, and works of art.

E. Borrow pit areas, on the Owner’s property, shall not be allowed.

F. ***Immediately finish the earthwork to its final grade, as indicated or specified***. Immediately protect the side slopes and back slopes upon completion of rough grading. Plan and conduct earthwork to minimize the duration of exposure of unprotected soils.

G. ***Pick up solid wastes, and place in containers which are regularly emptied***. Prevent contamination of the site and other areas where handling and disposing wastes. On completion, leave the areas clean. ***Control and dispose of all wastes in a legal manner.***

H. ***The Contractor shall transport all wastes off the Project Site and dispose of them in a legal manner*** that complies with federal, state & local requirements at no additional cost to the Owner.

I. Where the construction project is located in an area where garbage collection is accomplished on a scheduled basis, the Contractor shall place garbage in an appropriate container. In areas where there is no scheduled garbage collection, the Contractor shall transport the garbage to a pickup point or disposal area. The preparation, cooking, and disposing of food are strictly prohibited on the Project sites.

J. ***Conduct the fueling and lubricating or equipment and motor vehicles to protect against spills and evaporation. Dispose of lubricants and excess oils in a legal manner.***

K. As indicated previously, keep dust down at all times, including during non-working periods. Do not use dry power brooming, vacuuming, wet mopping, wet sweeping, or wet power brooming is acceptable. Air blowing will be permitted only cleaning non-particulate debris such as steel reinforcing bars. Only wet cutting will be permitted for cutting concrete blocks, concrete, and bituminous concrete. Do not shake bags of cement, concrete mortar, or plaster.

L. Provide tarpaulin drop cloths and windscreens to enclose abrasive blasting operations to confine and collect dust, abrasive agent, paint chips, and other debris. Dispose of abrasive blasting debris.

M. Perform work involving removal of blasting debris in accordance with 29 CFR 1910.94, SubPart G. Dispose of abrasive blasting debris containing lead in accordance with 40 CFR 262, 40 CFR 263, and 264. Collect dust, sand, paint, and other debris resulting from sandblasting operations and store in fifty-five (55) gallon drums with watertight lids. Take a representative sample of this material, and test for EP toxicity with respect to lead, chromium, and cadmium content. Perform sampling and testing in accordance with 40 CFR 261. Debris shall be transported only by a transporter licensed and permitted for transportation of toxic materials. Dispose of toxic debris in an EPA-approved and permitted facility.

3.08 Maintenance of Pollution Control Facilities During Construction

A. Maintain all facilities constructed for pollution control as long as the operations creating the particular pollutant are being carried out or until the material concerned has become stabilized to the extent that pollution is no longer being created.

END OF SECTION

SECTION 01570

TEMPORARY EROSION AND SEDIMENTATION CONTROL

1. GENERAL

1.01 DESCRIPTION

A. Scope of Work

1. The Work specified in this Section consists of designing, providing, maintaining and removing temporary erosion and sedimentation controls as required by Rules and Regulations and permit conditions.

2. Temporary erosion controls include, but are not limited to, grassing, mulching, setting, watering and reseeding on-site surfaces and soil and borrow area surfaces and providing interceptor ditches at ends of berms and at those locations which will ensure that erosion during construction will be either eliminated or maintained within acceptable limits as established by the Owner and/or permit conditions.

3. Temporary sedimentation controls include, but are not limited to, silt dams, traps, barriers, and appurtenances at the foot of sloped surfaces which will ensure that sedimentation pollution will be either eliminated or maintained within acceptable limits as established by the Engineer and Owner and/or permit conditions.

4. ***The Contractor is responsible for providing effective temporary erosion and sediment control measures during construction*** or until final controls become effective. The Contractor shall be responsible for removing and legally disposing of the erosion and sediment control measures installed as part of the Project.

B. Related Work Described Elsewhere

Specification Section	Title
02220	Excavation, Backfilling and Compaction
02815	Solid Sodding

2. PRODUCTS

2.01 Erosion Control

A. Sodding and grassing are specified in Section 02815, *Solid Sodding*.

B. Netting shall be fabricated of material acceptable to the Engineer and Owner.

2.02 Sedimentation Control

A. Bales shall be clean, seed-free cereal hay type.

B. Netting shall be fabricated of material acceptable to the Engineer and Owner.

C. Filter stone shall be crushed stone which conforms to Florida Department of Transportation (FDOT) specifications.

D. Concrete block shall be hollow, non-load bearing type.

E. Concrete shall be exterior grade not less than one (1) inch thick.

3. EXECUTION

3.01 Erosion Control

A. The minimum acceptable procedures for grassing are:

1. Scarify slopes to a depth of not less than six (6) inches and remove large clods, rock, stumps, roots larger than ½-inch in diameter and debris.

2. ***Sod within twenty-four (24) hours after the ground is scarified***.

3. Roll and water grassed areas in a manner which will encourage the growth of grass. Resod areas which exhibit unsatisfactory growth. Backfill and resod eroded areas.

3.02 Sedimentation Control

A. Install and maintain silt dams, traps, barriers, and appurtenances as shown on the approved descriptions and working drawings.

B. Hay bales which deteriorate and filter stone which is dislodged shall be replaced.

3.03 Performance

A. Should any of the temporary erosion and sediment control measures employed by the Contractor fail to produce results that comply with the requirements of the State of Florida and/or the U.S. EPA, or the Engineer or Owner, the Contractor shall immediately take whatever steps are necessary to correct the deficiency at his own expense.

3.04 Inspection and Maintenance

A. ***During construction, the Contractor shall provide, at a minimum, weekly or within twenty-four (24) hours of any storm event of 0.25 inches or greater, an inspection of the temporary erosion and sedimentation controls***. Inspection and maintenance practices shall be at a minimum as follows:

1. No more than twenty-five percent (25%) of the Project Site shall be denuded at any point in time.

2. All measures will be maintained in good working order; if a repair is necessary, it will be initiated within twenty-four (24) hours of report.

3. Built up sediment will be removed from silt fences when it has reached one third (A) of the height of a fence.

4. Silt fences will be inspected for:

   a. Depth of sediment.

   b. Tears.

   c. To see if the fabric is securely attached to the fence posts.

   d. To see that the fence posts are firmly in the ground.

5. Temporary and permanent seeding and planting will be inspected for bare spots, washouts, and healthy growth.

6. ***A maintenance inspection report will be made after each inspection. A copy of the report shall be submitted to the Engineer and shall be keep with the stormwater pollution prevention plan***. A copy of the report form to be completed by the inspector shall be included in the stormwater pollution prevention plan.

7. The site superintendent will select three (3) individuals who will be responsible for inspections, maintenance and repair activities, and filling out the inspection and maintenance report.

8. Personnel selected for inspection and maintenance practices necessary for keeping the erosion and sediment controls used onsite in good working order.

9. The site superintendent will select an individual who will be responsible for the recording of the dates when major grading activities occur, when construction activities temporarily or permanently cease on a portion of the site, and when stabilization measures are initialized. These records will be kept with the stormwater pollution prevention plan.

END OF SECTION

SECTION 01580

PROJECT INFORMATION AND SIGNS

1. GENERAL

1.02 Project Informational Signs

A. One (1) painted sign with lettering, size, color and construction in accordance with the local, state and/or federal requirements at the treatment facility site.

B. Erect the Project Site sign ***at a location of high public visibility as approved by the Engineer and the Owner prior to placement***.

C. Sign Information

1. Information on each Project Sign shall contain, at a minimum, the following:

   a. Project name (Flagler Beach WWTF Sludge Management System Improvements).

   b. Treatment Facility Name (Flagler Beach WWTF).

   c. Owner (City of Flagler Beach) title and logo.

   d. Design Engineer (CPH, LLC) title and logo.

   e. Contractor's title and logo.

   f. Funding Agencies (Florida Department of Environmental Protection) and logo.

2. The size of the lettering for the Project Sign shall be as required by the Engineer and the Owner.

3. Project Sign Colors

   a. All surfaces of the sign shall initially be painted with three (3) coats of white exterior grade paint.

b. The signage, lettering and logos will be painted with two (2) coats of exterior grade paint as follows:

1) Logo: Colors to match logos of the Owner, Engineer, Contractor, etc.

2) Lettering: Black Lettering

4. The Project Sign materials shall be as identified in Article 2.01(A-C) of this Specification Section.

1.01 Description

A. Scope of Work

1) Furnish, install and maintain project signs at the Project construction site.

2) Remove the signs on completion of construction.

3) Install additional project signs that are designed, approved and fabricated by the Owner, at the location requested by the Owner.

4) Allow no other signs to be displayed.

B. Related Requirements Described Elsewhere

Specification Section	Title
01010	Summary of Work
09900	Painting

1.03 Quality Assurance

A. Sign Painter: Professional experience in the type of work required.

B. Finishes, Painting: Adequate to resist weathering and fading for the scheduled construction period.

1.04 Informational Signs

A. Painted signs with painted lettering, or standard products

1. Size of signs and lettering: As required by the Engineer and Owner, or as appropriate to usage - 4 foot x 8 foot (Submit shop drawings).

2. Color: As required by the Engineer and Owner, otherwise of uniform colors throughout Project.

B. ***Erect at a location, as approved the Owner and Engineer***, to provide the required information.

C. Information

1. Contractor's name and home office address.

2. A list of subcontractors and type of subcontract work.

1.05 Submittals

A. An 11-inch by 17-inch AutoCAD drawing of all Project Sign's (every type) shall be submitted to the Engineer for approval prior to final preparation of the Project signs.

2. PRODUCTS

2.01 Sign Materials

A. Structure and Framing

1. New wood or metal, in sound condition, structurally adequate and suitable for the specified finish.

2. The framing structure shall be designed to provide an even, uniform, smooth-surface without waves or buckles.

B. Sign Surfaces

1. Exterior softwood plywood with medium density overlay, standard large sizes to minimize joints.

2. The sign thickness shall be as required by standards to span framing members, to provide an even, smooth-surface without waves or buckles.

C. All hardware shall be galvanized.

D. All paint to be used shall be exterior quality, waterproof paint as specified in Section 09900, *Painting*.

E. The Contractor shall submit shop drawing of all signs to the Engineer for approval, identifying all sign materials and layouts, prior to sign preparation.

3. EXECUTION

3.01 Project Information Signs

A. Paint the exposed surface of supports, framing and surface material; one (1) coat of primer and one (1) coat of exterior paint.

B. Paint all graphics in the size, styles, and colors selected by the Engineer.

3.02 Sign Maintenance

A. Maintain signs and supports in a neat and clean condition.

B. Repair any damage to the structures, framing or signs.

3.03 Sign Removal

A. Remove signs, framing, supports and foundations at the completion of the Project.

END OF SECTION

SECTION 01600

MATERIALS AND EQUIPMENT

1. GENERAL

1.01 Description

A. Scope of Work

1. In general, the material and equipment incorporated into the Work shall meet the requirements of the General Conditions as well as the following minimum requirements:

   a. Conform to applicable specifications and standards.

   b. Comply with size, make, type and quality specified, or as specifically approved in writing by the Engineer.

   c. Manufactured and fabricated products

      1) Design, fabricate and assemble in accordance with the best engineering and shop practices.

      2) Manufacture like parts of duplicate units to standard sizes and gauges, to be interchangeable.

      3) Any two (2) or more items of the same kind, type or classification, and being used for identical types of service, shall be manufactured by the same manufacturer.

      4) Products shall be suitable for service conditions intended supplied with all accessories, trim, finish, safety guards, and other devices needed.

      5) Equipment capacities, sizes and dimensions shown or specified shall be adhered to unless variations are specifically approved in writing.

      6) ***Only new, unused, and undamaged materials and equipment shall be incorporated into the Work***.

d. Do not use material or equipment for any purpose other than that for which it is designed or specified.

e. The proposed manufacturers, material suppliers, and dealers who are to furnish materials and equipment for this Project shall be listed on the Bid Form.

f. Substitute equipment for items not listed in the Bid Form shall be subject to the procedures specified in the General and Supplementary Conditions and as specified herein ***and must be approved by the Engineer***.

g. All transactions with the manufacturers or subcontractors shall be through the Contractor, unless the Contractor shall request, in writing to the Engineer, that the manufacturer or subcontractor deal directly with the Engineer. Any such transactions shall not in any way release the Contractor from his full responsibility under this Contract.

1.02 Approval and Samples of Materials and Equipment

A. ***Only "new" materials and equipment shall be incorporated in the work***. All materials and equipment furnished by Contractor shall be subject to the inspection and approval of Engineer. No material shall be delivered to the site without prior approval of Engineer.

B. ***Within fifteen (15) days after the Notice to Proceed, the Contractor shall submit to Engineer, data relating to materials and equipment he proposes to furnish for the work***. Such data shall be in sufficient detail to enable Engineer to identify the particular product to form an opinion as to its conformity to the specifications.

C. ***Materials other than those designated within the Specifications or approved by the Engineer shall not be delivered to the Project Site***.

D. ***Facilities and labor for handling and inspection of all materials and equipment shall be furnished by Contractor***. If the Engineer requires, either prior to beginning or during progress of the work, the Contractor shall submit samples of materials for such special tests as may be necessary to demonstrate that they conform to the specifications. Such samples shall be furnished, stored, packed and shipped as directed at the Contractor's expense. Except as otherwise noted, the Contractor will make arrangements for and pay for the tests.

E. The Contractor shall submit data and samples sufficiently early to permit consideration and approval before materials are necessary for incorporation in the work. Any delay of approval resulting from the Contractor's failure to submit samples or data promptly shall not be used as a basis of claim against the Owner or Engineer.

F. To demonstrate the proficiency of workers or to facilitate the choice among several textures, types, finishes and surfaces, the Contractor shall provide such samples of workmanship or finish as may be required.

G. The materials and equipment used on the Work shall correspond to the approved samples or other data.

1.03 Substitutions and Product Options

A. The intent of these Specifications is to provide the Owner with a quality facility without discouraging competitive bidding. Substitutions may be submitted and will be evaluated as specified herein, within Division 0, *Contract Requirements*, and Division 1, *General Requirements*.

B. ***For products specifically listed in the Bid Form, the Contractor shall designate which manufacturer or supplier was used to form the basis of the bid by selecting one of the named manufacturers***. No substitution shall be allowed after the Bid is awarded without significant benefit to the Owner being demonstrated, or in the case of product unavailability or other condition beyond the control of the Contractor. Requests for substitutions prior to the Bid must be made in the form of questions well in advance of the Bid date as indicated in the Instruction to Bidders. A formal submittal of product data similar to that referred to herein will be required.

1.04 Manufacturer's Instructions for Installation

A. When Contract Documents require that installation of work shall comply with the manufacturer's printed instructions, obtain and distribute copies of such instructions to all parties involved in the installation, including two (2) copies and an electronic copy (searchable PDF) to the Engineer. Maintain one (1) set of complete instructions at the job site during installation and until Project completion.

B. ***Handle, install, connect, clean, condition and adjust products in strict accordance with the manufacturer's instructions and recommendations and in conformity with specified requirements***. Should job conditions or specified requirements conflict with the manufacturer's instructions or recommendations, the Contractor shall consult with Engineer for further instructions. Do not proceed with work without clear instructions.

C. Perform all work in accordance with the manufacturer's instructions and recommendations. Do not omit any preparatory step or installation procedure unless specifically modified or exempted by the Contract Documents.

1.05 Transportation and Handling

A. Arrange deliveries of products in accordance with construction progress schedules. The Contractor shall coordinate to avoid conflict with work, conditions at the site, and avoid long term storage on-site

B. ***Do not store materials on-site for more than thirty (30) days before installation***.

C. Deliver materials to the Project Site in ample quantities to insure the most speedy and uninterrupted progress of the Work so as to complete the Work within the allotted time frame.

D. Coordinate delivery to ensure the minimum holding time for items that are flammable, hazardous, easily damaged, sensitive to deterioration, or subject to theft.

E. Ship and handle products in accordance with the manufacturer's recommendations, using means and methods that prevent damage, deterioration, and theft.

F. ***Deliver products in an undamaged condition***, in the manufacturer's original containers or packaging, with identifying labels intact and legible, and instructions for handling, storage, unpacking, protecting, and installing readily available.

G. Immediately on delivery, inspect shipments to assure compliance with the requirements of Contract Documents and approved submittals, and that products are properly protected and undamaged.

H. Provide equipment and personnel to handle the products/equipment by methods to prevent soiling or damage to products or packaging. All materials shall be received by the Contractor and it shall be the Contractor's responsibility to provide the equipment to load, unload, and store all materials.

I. Structural members and metal fabrications shall be handled to prevent overstress and damage of any kind. Any damaged or misformed members that can not be satisfactorily repaired at the site, without compromising the integrity of the item, shall be returned to the manufacturer for correction or replacement at no additional cost to the Owner.

1.06 Storage and Protection

A. ***The Contractor shall furnish a covered, weather-protected storage structure*** providing a clean, dry, non-corrosive environment for all mechanical equipment, valves, architectural items, electrical and instrumentation equipment, and special equipment to be incorporated into this Project. Storage of equipment shall be in strict accordance

with the *Instructions for Storage* of each equipment supplier and manufacturer including connection of heaters, placing of storage lubricants in equipment, etc. ***Corroded, damaged or deteriorated equipment and parts will not be accepted by the Engineer or Owner, at any time during the construction period, and shall be replaced before acceptance of the Project at no additional cost to the Owner***. Improperly stored equipment and materials shall not be included in an application for payment.

B. Store products in accordance with the manufacturer's instructions and recommendations, with seals and labels intact and legible.

C. ***Store products subject to damage by the elements in weather-tight enclosures***, off the floor, with adequate ventilation to prevent condensation. Maintain temperature and humidity with the ranges required by the manufacturer's instructions.

D. ***Store all products above the ground on blocks or skids*** and prevent soiling or staining. Cover products outside, which are subject to deterioration, with impervious sheet coverings and provide adequate ventilation to avoid heat buildup and/or condensation.

E. Miscellaneous metals, reinforcement bars, welded wire fabric, and masonry reinforcement materials shall be stored to prevent contact with the ground and from being damaged by its own weight or by other loads. Reinforcement which has become muddy shall be cleaned by the Contractor before use.

F. Store loose granular materials in a well-drained area on solid surfaces to prevent mixing with foreign matter.

G. Store heavy materials or equipment with adequate support structures that maintain their integrity throughout the storage period.

H. ***Store cementitious materials in a weather-protected storage structure on an elevated floor away from damp surfaces***.

I. All materials and equipment to be incorporated in the Work shall be handled and stored by the Contractor before, during and after shipment in a manner to prevent warping, twisting, bending, breaking, chipping, rusting, and any injury, theft or damage of any kind whatsoever to the material or equipment.

J. ***Cement, sand and lime shall be stored under a roof and off the ground and shall be kept completely dry at all times***. ***All structural and miscellaneous steel, and reinforcing steel, shall be stored off the ground or otherwise to prevent accumulations of dirt or grease, and in a position to prevent accumulations of "standing water" and to minimize "rusting".*** Beams shall be stored with the webs

vertical. Precast concrete beams shall be handled and stored in a manner to prevent accumulations of dirt, standing water, staining, chipping or cracking. Brick, block and similar masonry products shall be handled and stored in a manner to reduce breakage, chipping, cracking and spalling to a minimum.

K. All materials, which, in the sole opinion of the Engineer, have become so damaged as to be unfit for the use intended or specified shall be promptly removed from the site of the work, and the Contractor shall receive no compensation for the damaged material or its removal.

L. The Contractor shall not use and shall dispose of any materials that have been stored for longer than their maximum recommended shelf life or beyond their recommended shelf date.

M. Arrange storage in a manner to provide easy access for inspection and inventory counting of stored materials or equipment. Make periodic inspections of stored products to assure that products are maintained under specified conditions, free from damage or deterioration, and verify the inventory.

N. Protection After Installation

1. ***Provide substantial coverings as necessary to protect installed products*** from damage from traffic and subsequent construction operations.

2. Remove covering when no longer needed.

3. Periodically rotate and oil moving parts as needed and recommended.

O. The Contractor shall be responsible for all material, equipment and supplies sold and delivered to the Owner under this Contract until final inspection of the work and acceptance thereof by the Owner. In the event any such material, equipment and supplies are lost, stolen, damaged or destroyed prior to final inspection and acceptance, the Contractor shall replace same without additional cost to the Owner.

P. Should the Contractor fail to take proper action on storage and handling of equipment supplied under this Contract within seven (7) days after written notice to do so has been given, the Owner retains the right to correct all deficiencies noted in previously transmitted written notice and deduct the cost associated with these corrections from the Contractor's Contract. These costs may be comprised of expenditures for labor, equipment usage, administrative, clerical, engineering and any other costs associated with making the necessary corrections.

1.07 Storage and Handling of Equipment on Site

A. Because of the long period allowed for construction, special attention shall be given to the storage and handling of equipment on-site. As a minimum, the procedure outlined below shall be followed:

1. ***Materials shall not be shipped until approved by the Engineer***. The intent of this requirement is to avoid unnecessary delivery of unapproved materials and to reduce on-site storage time prior to installation and/or operation. ***Under no circumstances shall major equipment or finish products be delivered to the site more than thirty (30) days prior to installation*** without written authorization from the Engineer.

2. Materials shipped to the site, or temporarily stored off-site in approved locations, shall be stored in accordance with Article 1.06, herein.

3. ***All equipment having moving parts such as gears, electric motors, etc., and/or instruments shall be stored in a temperature and humidity controlled building*** approved by the Engineer, until such time as the equipment is to be installed.

4. All equipment shall be stored fully lubricated with oil, grease, etc., unless otherwise instructed by the manufacturer.

5. The Manufacturer's storage instructions shall be carefully studied by the Contractor and reviewed with the Engineer by him. These instructions shall be carefully followed and a written record of this kept by the Contractor.

6. ***Moving parts shall be rotated a minimum of once weekly to insure proper lubrication and to avoid metal-to-metal "welding"***. Upon installation of the equipment, the Contractor shall start the equipment, at least half the load, once weekly for an adequate period of time to insure that the equipment does not deteriorate from lack of use.

7. ***Lubricants shall be changed upon completion of installation and as frequently as required thereafter during the period between installation and final acceptance of the Project***.

8. ***Mechanical equipment to be used in the work, if stored for longer than ninety (90) days, shall have the bearings cleaned, flushed and lubricated prior to testing and startup, at no additional cost to the Owner***.

9. ***Prior to acceptance of the equipment, the Contractor shall have the manufacturer inspect the equipment and certify that its condition has not been detrimentally affected by the long storage period***. Such certifications by

the manufacturer shall be deemed to mean that the equipment is judged by the manufacturer to be in a condition equal to that of equipment that has been shipped, installed, tested and accepted in a minimum time period. As such, the manufacturer will guarantee the equipment equally in both instances. ***If such a certification is not given, the equipment shall be judged to be "defective". It shall be removed from the site and replaced with same at the Contractor's expense***.

10. ***The Contractor shall be responsible to protect the factory finish of equipment and materials from damage during construction operations and until Final Project Acceptance by the Owner***. Satisfactorily restore any finishes that become stained or damaged to the acceptance of the Engineer and Owner.

1.08 Warranty

A. For all major pieces of material, provide warranties, maintenance agreement, irrevocable letters of credit, and bonds as specified in Section 01740, *Warranties and Bonds*.

B. ***The manufacturer's warranty period shall be concurrent with the Contractor's for a minimum of two (2) years after Final Project Acceptance by the Owner, or as specified in each specification section***.

1.09 Spare Parts and Special Tools

A. The Contractor shall, unless otherwise stated in the Contract Documents, furnish with each type, kind or size of equipment, one complete set of suitably marked ***high grade special tools and appliances which may be needed to adjust, operate, maintain or repair the equipment***. Such tools and appliances shall be furnished in approved thermoplastic cases, properly labeled and equipped with good grade cylinder locks and duplicate keys.

B. Spare parts shall be furnished as specified in the individual technical specifications. ***The Contractor shall develop a complete list of spare parts for the Project, prior to turning over any spares to the Owner***, that shall be used as the official check off sheet for spare parts verification. See Section 01700, *Project Closeout* for additional requirements for spare parts inventory.

C. In addition, ***the Contractor shall furnish, to the Engineer, an inventory table listing all spare parts for the project***, prior to turning them over to the Owner, including, but not limited to, the following:

1. Name of the spare part.

2. The equipment or system that the spare part is associated with.

3. The SKU or stock number associated with each spare part.

4. The name, address, telephone and fax numbers, and e-mail address of the supplier.

5. The delivered cost of each item.

D. Copies of actual invoices for each item shall be furnished with the inventory to substantiate the delivered cost.

E. ***Each piece of equipment shall be provided with a permanent, corrosion-resistant nameplate***, securely fastened in place and clearly inscribed with the manufacturer's name, product name, year of manufacture, model and serial numbers, weight and principal rate data. Locate on an accessible but inconspicuous surface.

F. Do not attach or imprint non-essential manufacturer's or product's trademarks or logos. Product labels or warning labels that are required should be located where required for observation after installation, as inconspicuously as allowable.

1.10 Grease, Oil and Fuel

A. All grease, oil and fuel required for testing of equipment shall be furnished with the respective equipment***. The Owner shall be furnished with a two (2) year's supply of the required lubricants including grease and oil of the type recommended by the manufacturer with each item of equipment supplied***.

B. The lubricants shall be provided in containers or packages with identifying indelible labels, legible and intact, that indicate the type of lubricant and the equipment that it is to be used on.

C. ***The Contractor shall be responsible for changing the oil in all drives and intermediate drives of each mechanical equipment after initial break-in of the equipment, which in no event shall be any longer than three (3) weeks of operation***.

1.11 Services of the Manufacturer's Representative

A. ***The Contract prices for equipment shall include the cost of furnishing a competent and experienced representative who shall represent the manufacturer and shall assist the Contractor, when required, to install, adjust, test, certify and place into operation, the equipment in conformity with the Contract Documents.***

B. After the equipment is placed into permanent operation by the Owner, ***the manufacturer's representative shall make all adjustments and tests required by the Engineer, and these Contract Documents, to prove that such equipment is in proper and satisfactory operating condition***, and shall instruct such personnel as may be designated by the Owner in the proper operation and maintenance of such equipment.

C. The Contractor shall review and conform to all of the requirements of Section 01430, *Manufacturer's Services*.

1.12 Equipment Selection and Serviceability

A. Locate and install all equipment so that it may be serviced. Demonstrate, during the shop drawing review process, that there is room to remove all parts, shafts, bearings, filters, pumps and motors and similar equipment.

B. Equipment that is too large or poorly located to permit servicing shall be replaced or repositioned at no additional cost to the Owner.

C. Where piping, control diagrams or sequencing differ from the recommended piping arrangements of the equipment manufacturer, and will directly affect the equipment performance, the manufacturer's recommendations shall be submitted in writing to the Engineer for review prior to purchasing the equipment involved. Obtain such recommendations from the manufacturers in order to effect correct and perfect operation of the equipment at the capacities and temperatures indicated.

2. PRODUCTS - NOT USED

3. EXECUTION - NOT USED

END OF SECTION

SECTION 01650

SYSTEM'S START-UP AND DEMONSTRATION

1. GENERAL

1.01 DESCRIPTION

A. Scope of Work

1. Demonstrate to the Owner and Engineer that the Work functions as a complete and operable system under normal and emergency operating conditions.

B. Related Work Described Elsewhere

Specification Section	Title
00865	Check-Out Form
00866	Certification of Completed Demonstration Form
01311	Construction Progress Schedules
03800	Leakage Testing of Hydraulic Structures
Division	**Information**
0	Miscellaneous Forms
11	Equipment
13	Special Construction - PICS
15	Mechanical
16	Electrical

1.02 Applicable Codes

A. All work shall be acceptable to the State Health Authority, Florida Department of Environmental Protection (FDEP) and the U.S. EPA. If any requirements of this Section

are in conflict with the requirements of the State Health Authority, Florida Department of Environmental Protection (FDEP), or the U.S. EPA, those of the Authority shall govern.

1.03 Qualifications

A. All work performed shall be under the direction of an experienced supervisor.

B. All equipment used shall be in proper working condition, meet the requirements of the manufacturer/supplier and shall be adequate for the specified work.

1.04 Requirements

A. Equipment testing and facility start-up is requisite to satisfactory completion of the Contract and, therefore, shall be completed within the required Contract Time for Substantial Completion.

B. ***The Contractor shall furnish all personnel, power, chemicals, fuel, oil, grease, and all other necessary equipment, facilities, and services required for conducting the tests.***

C. ***The Contractor shall provide all water or purchase water from the Owner, if available, required for testing of equipment, process subsystems, and facility start-up.*** The Contractor shall notify the Owner of the amount of water required for the test at the time the testing is scheduled. If the Owner is providing the water to the Contractor, the Owner reserves the right to limit the amount of water or set the time of day and dates of the deliveries of water to the Contractor if deliveries of such water unduly affects Owner 's system operation and to maintain customer service. The Contractor shall provide a ten (10) calendar day, written notice to the Engineer, for the scheduling of the process water for testing purposes. If the Owner is unable to deliver the water for process startup, a time extension may be provided. This extension shall be equal to the time the process startup was delayed.

D. <u>Disposal of Non-Acceptable Water</u>

1. It shall be the sole responsibility of the Contractor to dispose of facility flow produced during any equipment, process subsystem, and facility startup testing in a manner approved by regulatory agencies and to the satisfaction of the Owner.

2. The Contractor shall identify the disposal method in its testing protocol submittal.

E. ***Prior to commencement of any discharge from equipment testing and facility start-up, the Contractor shall obtain all regulatory approval, in writing, and submit it to the Engineer.*** If only the Owner may apply for a specified permit regarding the disposal of testing water, the Contractor shall notify the Owner and furnish all the regulatory requirements. The Contractor shall prepare all necessary regulatory agency submittals for the Owner to review and execute.

1.05 Start-Up Guidelines

A. The Contractor shall startup and test all equipment, subsystems, and the complete facility under the guidelines listed below. The startup and testing shall be performed in the following segments:

1. Individual Equipment Units

   a. ***The startup and testing of the individual equipment units shall not commence until all flushing, and pressure testing of pipelines, hydraulic structures, and equipment is complete and the Engineer has accepted the results.*** All potable water lines shall be disinfected and pressure tested prior to acceptance by the Engineer and Owner.

   b. The sequence shall be determined by the Contractor and approved by the Engineer and Owner. The description and requirements for startup and testing of individual equipment units are located under the equipment's individual specification section.

2. Process Subsystems

   a. ***The startup and testing of the process subsystems shall not commence until the startup and testing of the individual equipment units is complete and the manufacturer has determined the unit(s) to be "ready" for operation***.

   b. The sequence shall be determined by the Contractor and approved by the Engineer and Owner. The description of startup and testing of process subsystems is located under the system's specification section or herein as noted.

3. Sludge Management System Startup

   a. ***The startup of the Sludge Management System shall not commence until the startup and testing of the process subsystems are complete and approved by the Engineer***.

b. This segment shall demonstrate operation of the facility for a specified length of time and provide evidence of satisfactory Sludge Dewatering performance in accordance with the requirements defined in Section 11553, Dewatering Screw Press.

4. Performance Testing

a. ***Performance testing of the entire Sludge Dewatering system shall not commence until the startup of the Sludge Dewatering system, and its associated infrastructure (including the dewatering screw press, sludge cake pump, sludge transfer pump, polymer feed system, etc.), are complete.***

b. This segment shall demonstrate that the entire Sludge Dewatering System is functioning properly and reliably as a system and that the system will function to meet the specified standards over the stated period of time.

2. PRODUCTS

2.01 Testing

A. ***The Contractor shall provide all necessary equipment, appurtenances and instrumentation required for proper completion of the testing.***

2.02 Start-up Plan

A. ***Submit for approval by the Engineer, an electronic copy (searchable PDF)*** of a detailed start-up plan outlining the schedule and sequence of all tests and start-up activities, including, but not limited to, the following:

1. Checkout forms

2. Demonstration test procedures, start-up, demonstration and testing

3. Certification of completed demonstration and training.

B. ***Start-up and commissioning of the Flagler Beach WWTF Sludge Management System Improvements may not begin until the Start-Up Plan (SUP) is approved by the Engineer and Owner and a clearance is received from FDEP***.

C. Provide adequate chemicals and materials to perform start-up services. ***After completion and acceptance of the performance testing, all bulk chemical tanks shall be completely filled (at the Contractor's cost)***.

3. EXECUTION

3.01 Component Test and Check-out

A. Start-up Certification

1. Prior to system start-up, successfully complete all the testing required of the individual components of the Work. ***Submit an electronic copy (PDF) of Check-out Form's*** (Section 00865) ***for each individual component or piece of equipment***, signed by the Contractor or the subcontractor and the manufacturer's representative.

2. ***All copies of the Operation and Maintenance Manuals must be provided before start-up may begin and in accordance with Section 01730, Operation and Maintenance Data***. These forms shall be completed and submitted before *Instruction in Operation* to the Owner and his personnel or a request for initiating any final inspections.

3. Insert one (1) copy of this form into the applicable section of each Operation and Maintenance Manual.

B. Demonstrate to the Engineer and the Owner's representative(s), that all temporary jumpers and/or bypasses have been removed and that all of the components are operating under their own controls as designated and specified.

C. Coordinate start-up activities with the Owner and with the Engineer prior to commencing system start-up. Utilize the Owner's/Engineers's standard start-up request form given in the Special Conditions of the General Requirements or one provided by the Engineer.

D. Initiate O&M Training in accordance with Section 01730, *Operation and Maintenance Data*, prior to Start-Up. Training shall include the use of the facility Operation and Maintenance Manuals, handouts and any instructions received from the Engineer or Owner.

3.02 Start-Up

A. ***Confirm that all equipment is properly energized, that the valves, gates, infrastructure and ancillary equipment are set to their "normal" operating condition and that the flow path through the Work is unobstructed***.

B. ***Confirm that all process subsystems have been tested and are ready for operation***.

C. Receive all letters of clearance from the appropriate regulatory agencies and provide proof of such clearance to the Owner.

D. ***Receive approval from the Engineer and Owner to begin start-up*** of any equipment after notification is given through the standard start-up request form.

E. ***Slowly initiate the operation of the process streams, and fill each hydrostatic structure in the process.***

F. Initiate start-up and training in accordance with and with the use of the facility Operation and Maintenance Manuals and any instructions received from the Engineer or Owner in accordance with Section 01730, *Operation and Maintenance Data*.

G. ***Observe the component operation and make adjustments as necessary*** to optimize the performance of the Work.

H. Coordinate with the Engineer and Owner for any adjustments desired or operational problems requiring debugging. Make adjustments as necessary to provide a complete and functional system.

3.03 Start-Up Demonstration and Testing

A. After all Work components have been constructed, field tested, and started up in accordance with the individual specification sections and manufacturer requirements, and after all Check-Out Forms have been completed and submitted, perform the Start-Up and Demonstration Testing in the presence of the Engineer, Owner and Owner's representatives. The demonstration period shall be held upon completion of all systems at a starting date to be agreed upon, in writing, by the Engineer and Owner. ***Prior to beginning the start-up demonstration testing, the Contractor shall submit a detailed schedule of operational circumstances for approval by the Engineer***. The schedule of operational circumstances shall describe, in detail, the proposed test procedures for each piece of equipment. Provide similar test procedure forms for each piece of equipment or section of the Work to include all particular aspects and features of that equipment or section of the Work and as specified in the Technical Sections of the Specifications.

B. ***The Start-Up and Demonstration Testing of the Sludge Management System will be conducted for eight (8) hours***. The Work must operate successfully during the testing period in the manner intended and in accordance with Specification 11553 as acceptable to the Owner, Engineer and FDEP in accordance with the regulatory mandate, requirements for biosolids treatment and management. ***If the Work does not operate successfully, or if the start-up is interrupted due to other contracts, the problems will be corrected and the test will start over from day one***. The party causing the interruption will be subject to the assessment of actual damages due to delay. During the start-up tests, instruct designated facility operating personnel in the function and operation of the Work. The Contractor is referred to

Specification Section 11553, Dewatering Screw Press.

C. During the start-up demonstration period for the Sludge Management System (independent start-ups and 30-day Demonstration Testing periods), operate the Work, instruct designated facility operating personnel in the function and operation of the Work, and cause various operational circumstances to occur. Demonstrate the essential features of the equipment and its relationship to other equipment. As a minimum, these circumstances will include average, maximum and peak daily flows, random equipment or process failures, tank overflows, surcharges, interlocks and bypasses. Demonstrate the essential features of the equipment and its relationship to other equipment. The approved schedule of operational circumstances and Demonstration Test Procedures Forms will be used as the agenda during the Start-Up Demonstration Testing period for all equipment and sections of the Work. ***Coordination of the Demonstration Test schedule shall be accomplished through the Engineer***.

D. The Demonstration Test procedures shall follow the sample test procedures form provided in Section 00870, *Demonstration Test Procedures*. Provide similar test forms for each section of the Work to cover all aspects and features specified.

E. Acceptability of the Work's performance will be based on the Work performing as specified under these actual and simulated operating conditions, to provide potable water, wastewater, reclaimed water, water reclamation facility and biosolids management systems, and other utilities functioning as intended and as defined in the Contract Documents. ***The intent of the start-up demonstration and testing is for the Contractor to demonstrate to the Owner and the Engineer that the Work will function as a complete and operable system under normal, as well as emergency operating conditions, and is ready for final acceptance.***

F. ***Demonstrate the essential features of the whole system as it applies to the Work, including the mechanical equipment, piping, structures, finishes, controls, instrumentation, SCADA system, power distribution and lighting systems.*** Use the approved procedures and circumstances to demonstrate the system. Any minor deficiencies found shall be noted and included on a *punch-list* attached to the Certificate of Completed Demonstration. The system shall be demonstrated after completion of "*start-up*" tests. If circumstances arise that interrupt the test procedures (such as weather, unforeseen process problems, or problems caused by the Contractor whether or not the problems are the fault of the Contractor, etc.) then the test shall be terminated and rescheduled to a later date after the problem is corrected. The test shall be run in its entirety, if so directed by the Engineer.

G. Demonstrate the essential features of all the mechanical systems including, but not limited to, the following as they apply to the Work:

1. Chemical Storage and Feed Systems.

2. Dechlorination Systems.

3. Biosolids Dewatering System and associated equipment.
4. Flow metering systems.
5. Controls and Instrumentation.
6. Mechanical Systems.
7. Electrical Systems.
8. Computer and SCADA Systems.

G. Demonstrate the essential features of all electrical systems including, but not limited to, the following as they apply to the Work:

1. Electrical systems controls and equipment
    a. Electrical power equipment.
    b. Motor control devices.
    c. Relays.
    d. Special transformers.
    e. Starting devices.
2. Lighting fixtures
    a. Safety fixtures.
    b. Outdoor fixtures.
3. Panelboards
    a. Distribution panels.
    b. Lighting panels.
    c. Main panels and power panels.
    d. Switchboards.
4. Wiring devices

a. Face plates.

b. Low-voltage controls.

c. Convenience and special purpose outlets.

d. Regular and time switches.

H. Upon successful completion of the Start-up and Demonstration and Testing, the Owner's personnel shall receive the specified training for each system. ***Training of the Owner's personnel will not be considered valid unless it takes place using a system that has successfully passed the Start-up, Demonstration and Testing.***

I. Upon completion of all Demonstration Testing, the Contractor shall ***submit an electronic copy (PDF) of the Certificate of Completed Demonstration Form*** to the Engineer, for each item of equipment or system in the Work, signed by the Contractor, Subcontractor, Engineer, and the Owner. Insert one (1) copy of this form in the applicable section of each Operation and Maintenance Manual. A sample Certificate of Completed Demonstration Form is presented in Section 00866.

END OF SECTION

SECTION 01700

PROJECT CLOSEOUT

1. GENERAL

1.01 Description

A. Scope of Work

1. Comply with the requirements stated in Conditions of the Contract and in the Specifications for administrative procedures in closing out the Work.

B. Related Requirements Described Elsewhere

Specification Section	Title
00848	Certificate of Substantial Completion
00880	Certificate of Final Inspection
00883	Certificate of the Engineer
01650	Systems Start-up and Demonstration
01710	Cleaning
01720	Project Record Documents
01730	Operation and Maintenance Data
01740	Warranties and Bonds
01800	Miscellaneous Work and Cleanup

1.02 Substantial Completion

A. The Work at the Flagler Beach WWTF will not be declared *substantially complete*, and the Contractor may not request an inspection for a *Certification of Substantial Completion* inspection unless the following submittals and Work are completed:

1. ***All Operation and Maintenance Manuals have been submitted and "approved"*** to the requirements of Section 01730, *Operation and Maintenance Data*.

2. ***All equipment has been "checked-out"*** by the equipment manufacturer and Certificates of Manufacturer's Check-Out have been submitted as required by Specification Section 01650, *Systems Start-Up and Demonstration*.

3. ***All start-up and demonstration testing has been completed*** and Certificates of Completed Demonstration have been submitted in accordance with the requirements of Section 01650, *System's Start-Up and Demonstration*.

4. ***Project Record Documents are complete and have been submitted and reviewed*** in accordance with the requirements of Section 01720, *Project Record Documents*.

5. ***All tools, spare parts, extra stocks of material and similar physical items have been delivered*** to the Owner and all spare parts delivery sheets have been certified by the Contractor, Engineer and Owner.

6. ***The entire Project Site has been thoroughly cleaned*** in accordance with the Section 01800, *Miscellaneous Work and Cleanup*.

7. ***All training of the Owner's personnel has been completed and the high-quality HD recordings have been submitted*** in accordance with the Contract Documents.

8. ***All areas to be used and occupied are safe, operable in "automatic" and complete***.

9. ***All building occupancy certificates have been issued*** by the appropriate building permitting agency.

10. ***All temporary facilities and services have been removed from the Project Site*** along with construction tools, mock-ups, and similar elements.

11. ***All painting, finishes, fencing, cleanup, final grading, sodding, grassing, sidewalk construction and paving have been completed and are ready for inspection***.

12. ***All marred, exposed surfaces have been touched-up*** and otherwise repaired and/or restored.

13. ***All deficiencies noted on inspection reports or non-conformances are corrected*** or the correction plan approved.

14. ***Punchlist items that remain***, as identified by the Engineer and Owner, shall be ***completed within thirty (30) consecutive calendar days***.

B. Work cannot be considered to be "*Substantially Complete*" until ***all regulatory agency letters of clearance*** for placing systems into service are received by the Owner.

C. When the conditions of Article 1.02(A) are met, the Contractor shall submit the following to the Engineer:

1. A written notice that they consider the Work at the Flagler Beach WWTF, or portion thereof, is substantially complete, and requests an inspection.

2. A punchlist of items to be completed or corrected (uncompleted work which is not related to the safe, effective, efficient use of the Projects may be allowed on the punchlist with the Engineer's approval) and explanations thereof.

D. Within a reasonable time after receipt of such notice, the Engineer will make an inspection to determine the status of Project Completion.

E. Should the Engineer determine that the Work is not *substantially complete*:

1. The Engineer will promptly notify the Contractor, in writing, giving the reasons therefore.

2. The Contractor shall remedy the deficiencies in the Work and send another written notice of substantial completion to the Engineer.

3. The Engineer will, within a reasonable time, reinspect the Work. The Contractor will be liable for reinspection fees as described in Article 1.04, herein.

F. When the Engineer finds that the Work is "substantially complete", he will:

1. ***Schedule a walk-through of the treatment facility site to include the Owner***. The Engineer shall determine the completeness of the punchlist and readiness of the facility for occupancy by the Owner.

2. ***Prepare and deliver to the Owner a tentative Certificate of Substantial Completion*** (Section 00848) with the tentative punchlist of items to be completed or corrected before final inspection.

3. After consideration of any objections made by the Owner, as provided in the Conditions of the Contract, and when the Engineer considers the Work substantially complete, he will execute and deliver to the Owner and the Contractor a definite "Certificate of Substantial Completion" for the treatment facility site, with a revised tentative list of items to be completed or corrected. Any incomplete work allowed on a punchlist must be reinspected upon completion and any deficiencies found will be added to the punchlist.

1.03 Final Inspection

A. Prior to the Contractor's request for a final inspection, the following submittals and work must be complete:

1. ***Project Record Documents must be approved***.

2. ***All spare parts, special tools and expendables have been transferred to the Owner*** with a full accounting of the quantities and amounts due per the requirement of the technical sections of the specifications.

3. The Project ***Operation and Maintenance materials must be suitably delivered*** to the Owner per the requirements of the technical sections of the specifications and Section 01730, *Operation and Maintenance Data*.

4. The Contractor must submit ***evidence of compliance with the requirements of the governing authorities***.

5. ***All punchlist items identified during the substantial completion inspection shall be finished*** to the satisfaction of the Engineer and Owner.

6. ***Grease, dirt, dust, paint or plaster splatter, stains, labels, grease pencil markings, fingerprints, and other foreign materials shall have been removed from ALL exposed surfaces***.

7. ***The Contractor shall have repaired, patched, and touched-up ALL marred surfaces to the specified finish and match adjacent surfaces***.

8. All exterior paved ***driveways and parking areas shall have been broom cleaned***.

9. ***All sidewalks, loading areas, structures and other contiguous areas shall have been hosed down and cleaned***.

10. ***The interior and exterior of all buildings shall be thoroughly cleaned and clean of all debris, garbage, dirt, dust, etc***.

B. After satisfying the requirements of Article 1.03(A) and when the Contractor considers the Work at the treatment facility site complete, he shall submit written certification that:

1. The Contract Document requirements have been met.

2. The Work has been inspected for compliance with the Contract Documents.

3. The Work has been completed in accordance with the Contract Documents.

4. Equipment and systems have been tested in the presence of the Owner's representative and are operational.

5. The entire project site has been thoroughly cleaned, in accordance with the General and Supplementary Conditions, and Section 01710, *Cleaning*.

6. All punchlist items have been corrected or completed and the Work is ready for final inspection.

7. FDEP Certificates of Completion of Construction or Letter of Release have been received.

8. Warranties, maintenance bonds, and other legal documents have been turned over to the Owner.

C. The Engineer will, within reasonable time, make an inspection to verify the status of completion with reasonable promptness after receipt of such certification.

D. Should the Engineer consider that the Work is "*incomplete*" or "*defective*":

1. The Engineer will promptly notify the Contractor in writing, listing the incomplete or defective work.

2. The Contractor shall take immediate steps to remedy the stated deficiencies, and send another written certification to the Engineer that the Work is complete.

3. The Engineer will, within a reasonable amount of time, reinspect the Work and the Contractor shall be liable for reinspection fees as described in Article 1.04, herein.

E. When the Engineer finds that the Work is acceptable under the Contract Documents, he shall prepare a Certificate of Final Inspection (Section 00880) and request that the Contractor make all closeout submittals.

1.04 Reinspection Fees

A. Should the Engineer perform re-inspections due to failure of the Work to comply with the claims of status of completion made by the Contractor:

1. The Contractor will compensate the Engineer for such additional services.

2. ***The reinspection fee will be the Engineers actual salary rate times a multiplier of 5.0 (8 hr minimum) plus any reimbursable expenses*.**

3. ***The Contractor shall make payment directly to the Engineer within three (3) calendar days from the date of the reinspection***.

4. ***Failure to reimburse the Engineer for his time, with respect to reinspection of equipment and systems, will constitute a breach of the Project Contract/Agreement and all Work will be suspended until the Engineer is reimbursed and no additional time will be added to the Contract Time***.

5. ***All lost Project time and money due to the Contractor's failure to reimburse the Engineer shall be the sole responsibility of the Contractor. No additional Contract Time shall be added to the Contract***.

1.05 Contractor's Closeout Submittals

A. Upon completion of the Project, or portions thereof, and prior to final payment, the Contractor shall transfer to the Engineer and Owner all applicable items accumulated throughout the Project Construction Period. These submittals include, but are not limited to, the following:

1. Spare parts and special tools, as required by the Contract Documents.

2. Submit the Manufacturer's Warranties and Bonds in accordance with Specification Section 01740, *Warranties and Bonds*, and letters of coverage extending beyond the time limitations of the Contractor's guarantee.

3. Submit, in accordance with the requirements of the General and Supplementary Conditions, all Release of Lien Form and affidavits from the Contractor, subcontractors and all material suppliers.

4. Certificate of Insurance for Products and Completed Operations.

5. Salvaged materials or materials and equipment borrowed from the Owner.

6. Project Record Documents of the completed facilities in accordance with Section 01720, *Project Record Documents*.

7. Releases of liens from the Contractor plus copies of releases of lien from all subcontractors and suppliers.

8. All keys to all doors, gates and equipment.

9. Statements from the manufacturer's representatives as called for in the Contract Documents.

10. Releases of Liens from the Contractor plus copies of Releases of Lien from all subcontractors and suppliers.

B. The closeout requirements of this Section are in addition to the requirements of other Sections, and the General and Supplementary Conditions.

1.06 Final Adjustment of Accounts

A. Submit a final statement of accounting to the Engineer.

B. The Final Statement of Accounting shall reflect all adjustments to the Contract Sum including, but not limited to, the following:

1. The original Contract Sum.

2. Additions and deductions resulting from:

a. Previous change orders or written amendments.

b. Allowances.

c. Unit prices, if applicable.

d. Deductions for uncorrected work.

e. Deductions for liquidated damages.

f. Deductions for reinspection payments.

g. Any other adjustments.

3. The Total Contract Sum, as adjusted.

4. Previous payments.

5. The Sum remaining due.

6. Evidence that all spare parts, special tools and expendable have been transferred to the Owner with a full accounting of the quantities and amounts due per the requirement of the technical sections of the specifications.

C. The Engineer will prepare a final Change Order, if necessary, reflecting the approved adjustments to the Contract Sum which were not previously made by Change Orders, and prepare a Certificate of the Engineer and a Certificate of Final Completion.

1.07 Final Application for Payment

A. The Contractor shall submit the final Application for Payment in accordance with procedures and requirements stated in the Conditions of the Contract.

2. PRODUCTS - NOT USED

3. EXECUTION - NOT USED

END OF SECTION

SECTION 01710

CLEANING

1. GENERAL

1.01 Description

A. Execute cleaning, during the progress of the Work and at the completion of the Work, as required by the General and Supplementary Conditions and as indicated herein.

1.02 Related Work

A. Cleaning for specific products or work may be identified in individual specification sections.

1.03 Disposal and Cleaning Requirements

A. Conduct cleaning and disposal operations to comply with codes, ordinances, regulations and anti-pollution laws.

2. PRODUCTS

2.01 Materials

A. Use only those cleaning materials which will not create hazards to health or property and that will not damage surfaces.

B. Use only those cleaning materials and methods recommended by manufacturer of the surface material to be cleaned.

C. Use cleaning materials only on surfaces recommended by the cleaning material manufacturer.

3. EXECUTION

3.01 Cleaning during Construction

A. During construction of the work, the Contractor shall, at all times, ***keep the site of the Work and adjacent premises as free from material, debris and rubbish as is practicable*** and shall remove the same from any portion of the site if, in the opinion of the Owner and Engineer, such material, debris, or rubbish constitutes a nuisance or is objectionable.

B. ***The Contractor shall remove from the site all of his surplus materials and temporary structures when no further need therefore develops***. The Contractor shall be responsible and liable for all spillage and incur all associated costs including, but not limited to, costs related to repair and maintenance resulting from damages thereof, and fines that may be levied as a result of citations given by State or local regulatory agencies.

C. ***The Contractor shall, at all times, execute daily cleaning to keep the Work, the site and adjacent properties free from accumulations of waste materials, rubbish and windblown debris, resulting from construction operations or personal activities***.

D. ***Provide an on-site, securely "lidded" metal dumpster and containers for the collection of waste materials, debris and rubbish***. No construction waste materials shall be buried on-site.

E. Remove waste materials, debris and rubbish from the site ***a minimum of twice per week*** or move frequently if necessary, or as directed by the Engineer or Owner, and dispose of at legal disposal areas away from the site.

F. All hazardous material shall be disposed of in a manner specified by local and state regulations. Site personnel shall be instructed in these practices.

3.02 Dust Control

A. ***The Contractor shall employ construction techniques that minimize the production and distribution of dust***.

B. Clean all interior spaces prior to the start of finish painting and continue cleaning on an as needed basis until painting is finished.

C. The Contractor shall schedule operations so that dust and other contaminants resulting from the cleaning process will not fall on wet or newly-coated surfaces.

3.03 Off-Site Vehicle Tracking

A. The Contractor shall take all necessary measures to ***remove sediment and/or sludge from vehicles before leaving the Project Site to reduce vehicle tracking of sediment both "on-site" and "off-site"***. ***Any sediment and/or sludge buildup shall be immediately cleaned and removed by the Contractor at no additional cost to the Owner***.

B. Measures include, but may not be limited to, vehicle shaking device and/or wheel washing facility.

C. The Contractor shall maintain areas of site ingress and egress and surrounding off-site public rights-of-way from the buildup of sediment and/or sludge. Any sediment and/or sludge buildup in these areas shall be immediately cleaned and removed by the Contractor at no cost to the Owner.

3.04 Final Cleaning

A. The Contractor shall employ skilled workmen for the final cleaning process.

B. At the conclusion of the work, all erection plant, tools, temporary structures and materials belonging to the Contractor shall be promptly taken away, and he shall remove and promptly dispose of all water, dirt, rubbish or any other foreign substances in a legal manner.

C. Remove grease, mastic, adhesives, dust, dirt, stains, fingerprints, labels, writing on stainless steel, aluminum and other metal surfaces, and other foreign materials from sight-exposed interior and exterior surfaces.

D. The Contractor shall thoroughly clean all equipment and materials installed by him and shall deliver such materials and equipment undamaged in a bright, clean, polished and new operating condition.

E. Wash and shine glazing and mirrors.

F. Polish glossy surfaces to a clear shine.

G. The Contractor shall be responsible for the removal of excess dust and mud created by the construction project from all sidewalks, roadways, streets, and highways as directed by the Engineer. Equipment to clean these surfaces shall be subject to approval by the Engineer and Owner.

H. Broom-clean exterior paved surfaces; rake-clean other surfaces of the grounds.

I. Ventilating Systems

1. Clean permanent filters and replace disposable filters if units were operated during construction.

2. Clean ducts, blowers and coils if units were operated without filters during construction.

J. ***Prior to final completion, or Owner occupancy, the Contractor shall conduct an inspection of sight-exposed interior and exterior surfaces and all work areas, to verify that they are clean***.

END OF SECTION

SECTION 01720

PROJECT RECORD DOCUMENTS

1. GENERAL

1.01 Description

A. Scope of Work

1. Maintain at the site during construction, for the Engineer and Owner, one (1) project record copy of:

   a. Contract Drawings.

   b. Contract Specifications.

   c. Addenda.

   d. Change Orders and other modifications to the Contract.

   e. Engineer's Field Orders or written instructions.

   f. Approved Shop Drawings, Working Drawings and Samples.

   g. Field Test records.

   h. Construction photographs and the Preconstruction HD Videos (DVD/BD's).

   i. Field engineering records for compliance with field engineering submittals.

   j. An updated Project Schedule.

B. General Requirements

1. As the Work progresses, the Contractor shall be responsible for recording information on the approved Contract Documents (Contract Drawings and Technical Specification Sections) concurrently with construction progress.

2. ***The Contractor shall mark on the Contract Drawings all changes in direction and location of structure, piping, equipment, electrical, and mechanical work***.

3. ***The Contractor shall mark on the Technical Specification Sections the manufacturer, trade name, catalog, and supplier of each product actually installed, and mark changes made by Change Order, Word Directive or Field Order***.

4. ***All Record Drawings shall be prepared by the Contractor in AutoCAD format (latest version) using the construction plan sheets provided by the Engineer***. As-built information shall be field verified, measured, added to the AutoCAD files of the construction plan sheets provided by the Engineer, and certified, signed and sealed by the Contractor's licensed Surveyor who will be responsible for the accuracy of all dimensions and elevations.

5. ***Record Drawings shall clearly show all field changes of dimension and detail including changes made by Field Order, Work Directive or Change Order***.

6. ***The licensed surveyor shall identify the X, Y and (Z) location based on the coordinate system Florida East Zone State Plane Coordinate Feet NAVD 83, of all piping, valves (center of pipe) and valve boxes, hydrants (grade), blow offs (grade), sample points (grade), meter boxes (grade), foundations, structures, etc. and shall be clearly shown on the Project Record Documents***. Acceptable position accuracy shall be sub-meter or better for compatibility with Global Positioning System (GPS) equipment. The vertical datum used shall be NAVD 88 unless otherwise shown on the Contract Documents.

7. ***The licensed surveyor shall provide the GIS coordinates*** of all installed process equipment, structures, vaults, manholes, etc. as part of this Project (to be used in the City's asset management program).

C. Related Work Specified Elsewhere

Specification Section	Title
01010	Summary of Work
01030	Applications for Payment
01050	Field Engineering
01200	Project Meetings
01300	Shop Drawings, Submittals and Samples
01380	Construction Photographs

Specification Section	Title
01390	Preconstruction Video Recording
01700	Project Closeout

1.02 Maintenance of Documents and Samples

A. Store documents and samples in the Contractor's field office apart from all documents used for construction.

B. Provide files and racks for storage of documents.

C. Provide locked cabinets or secure storage space for storage of samples.

D. File documents and samples in accordance with CSI format with Section numbers as provided herein.

E. Maintain project documents in a clean, dry, legible, condition and in good order. ***Do not use Project Record Documents for construction purposes***.

F. Make documents and samples available at all times for inspection by the Engineer or the Owner.

G. ***As a prerequisite for monthly Progress payments, the Contractor is to exhibit the currently updated "Project Record Documents"*** for review by the Engineer and Owner. Payment will be withheld if the project record documents are not satisfactorily maintained.

1.03 Marking Devices

A. Provide marking pens for recording information in the color code designated by the Engineer.

1.04 Recording

A. Label each document **"PROJECT RECORD DOCUMENT"** with a rubber stamp having one (1) inch high letters, using ***"red ink"***.

B. ***Record information concurrently with construction progress***.

C. Do not conceal any work until the required information is recorded.

D. Project Record Drawings

1. Legibly and clearly mark, to scale, each drawing to record actual "*As-Built*" construction as follows:

   a. All final grading elevations per the required project final survey.

   b. Horizontal locations and vertical elevations of all structures, equipment, valves, fittings, electrical and mechanical work, connection points, etc.

   c. All utility structure top and invert elevations (including pipe inverts, etc.).

   d. Depths of various elements of foundation in relation to finish first floor datum.

   e. All underground piping with pipe sizes, material, elevations and dimensions. Changes to piping location. Horizontal and vertical locations of underground utilities, valves and appurtenances (valves, fittings, marker locator balls, etc.), referenced to at least two (2) permanent points (surface improvements), and vertical locations of underground utilities and appurtenances, referenced to a permanent point.

   f. Vertical elevations of all pipelines at crossings of potable water mains (whether the water main is existing or new) to document that the minimum required vertical separation has been met.

   g. Horizontal offsets from adjacent potable water mains (whether the water main is existing or new) in order to document that the minimum required horizontal separation has been met.

   h. Utility pipelines tied horizontally to the edge of pavement and right-of-way lines, located every 25 feet plus all changes in horizontal offset.

   i. Pavement width and elevations at the centerline and edge of pavement every twenty (20) feet plus at all changes in longitudinal slope, cross slope, inlet locations, and at all driveway and street intersections. For parking areas, record centerline and edge of pavement elevations along all drive aisles and islands.

   j. Lift station surveyed layout (horizontal and vertical) of all structures, valves, panels, conduits, piping, corners of all concrete pads and slabs, and bollards.

   k. New Building construction or building modification exterior dimensions and horizontal reference to property lines.

   l. New Building construction or building modification finish floor elevations.

m. Concrete pad dimensions and elevations at each corner.

n. The material, diameter, length, elevations and actual slope of all piping installed.

o. All abandoned in-place facilities including the extent and method of abandonment.

p. Horizontal and vertical data for any construction that deviates from the approved engineering drawings.

q. Where the Contract Documents contain specific horizontal location data, such as station and offset, the as-built drawings are to reflect the actual horizontal location.

r. Where the Contract Documents contain specific vertical elevation data, the “As-Built” drawings are to reflect the actual measured vertical elevation.

s. Location of internal utilities and appurtenances concealed in the construction, referenced to visible and accessible features of the structure.

t. Field changes of dimension and detail.

u. Changes to the Project made by Field Order, Work Directive or Change Order.

v. Details not on the original Contract Drawings.

w. Equipment and piping relocations.

x. Stormwater pond top of berm and pond bottom elevations and horizontal dimensions measured at a minimum of twenty (20) locations per pond and at locations designated by the Engineer. The top of pond horizontal dimensions are also to be tied to property corners, easements, and rights-of-way.

y. Stormwater control structure dimensions, horizontal locations and elevations, including all weirs, slots, orifices, grates, and skimmers.

z. Stormwater conveyance systems including dimensions, horizontal locations, elevations, contours, and cross sections.

aa. Actual installed pipe material, class, pipe size, etc. shall be included.

bb. Major architectural and structural changes including relocation of doors, windows, etc.

cc. Architectural schedule changes according to Contractor's records and shop drawings.

dd. Bronze plaque revisions according to the actual installation.

ee. Mechanical and electrical changes.

2. For electrical work, as a minimum, show the following:

   a. Location of stub outs, dimensioned from permanent building lines.

   b. Location and depth of under-slab and in-slab raceways.

   c. The routing of all raceways even though they may not have been shown in the drawings.

   d. Corrected panelboard and equipment schedules.

   e. Corrected circuit numbers as they appear on panelboard directories.

   f. Corrected motor horsepower or full load amperages.

3. Show elevations to the nearest hundredth of a foot for:

   a. Top of pipe for water mains and force mains at deflection points and every twenty-five (25) feet along straight runs.

   b. Top of pipe for water mains and force main fittings.

   c. Top of pipe for connection to existing facilities.

   d. Top of operating nut for valves.

   e. Top of pipe of water and wastewater facilities where they cross other facilities (drainage, telephone, cable TV, electric, etc.).

4. Show elevations to the nearest hundredth of a foot for:

   a. Maintenance access structure (manhole) rims.

   b. Inverts of every gravity sewer pipe and force main connection to maintenance access structures.

   c. Structure top of slab, bottom, influent pipe invert, etc.

   d. Lift station top of slab, bottom of wetwell, influent pipe invert and control set points.

E. Specifications and Addenda

1. Legibly mark each section to record:

   a. Manufacturer, trade name, catalog number of Supplier of each product and item of equipment actually installed.

   b. Model number and serial number of each piece of equipment and all electrical data (motor size, horsepower, voltage, etc.).

   c. Changes made by Field Order, Work Directive or Change Order.

F. Shop Drawings (after final review and approval)

1. Provide three (3) sets of "*record*" shop drawings, and an electronic searchable PDF, within the Operation and Maintenance Manual, for each piece of process equipment, piping (including casings), electrical system and instrumentation system.

2. The Contractor shall review the requirements of Section 1730, *Operation and Maintenance Data*.

G. ***Certified site survey, below ground piping survey, and line elevations and stationing at 25-foot increments*** per Section 01050, *Field Engineering*.

H. ***Certified 3D High Definition Laser survey of the Flagler Beach WWTF site, after project completion, conducted by the "current" surveyor of record for the project and treatment facility (CPH, LLC, no equal) - for a "pre-negotiated" price.***

1.05 Final Surveys and CADD Files

A. Prepare and submit four (4) copies of the following ***"certified" surveys*** for the Project:

1. Site Survey.

2. Below-ground piping survey.

3. Line elevations and stationing at 25-foot increments.

4. Building and structure elevations.

B. The "As-Built's" shall be ***certified, signed and seal by a registered land surveyor in the State of Florida*** who will be responsible for the accuracy of all dimensions and

elevations in accordance with the "Minimum Technical Standards" and Section 01050, *Field Engineering*.

C. ***Each sheet of "As-Built" drawings shall be signed and sealed by the registered land surveyor***. The cover sheet shall contain the following statement: *"I hereby certify that the "**As-Built" location information of the water and sewer facilities shown on these drawings conforms to the minimum technical standards for land surveying in the State of Florida, Chapter 61G17-6 (Florida Administrative Code), as adopted by the Department of Business and Professional Regulation, Board of Professional Surveyors and Mappers in September 1981, and that said As-Built's are true and correct to the best of my knowledge and belief as surveyed under my direction."*** The cover sheet shall include the land surveyor's name, business name, surveyor's number, address and telephone number.

D. During the course of the Work, if any computer-aided drafting design files are created or used for shop drawings, working drawings, installation drawings, or other details of the Project, ***a CD/DVD/BD of such files and a "full-size" reproducible copy of the file shall be given to both the Engineer and Owner***.

1.06 Submittals

A. Record Drawings are to be prepared by the Contractor, certified by the Contractor's registered surveyor and delivered to the Engineer.

B. Submit "initial" Project Record Documents, listed herein, to the Engineer with the Contractor's Request for Substantial Completion. ***Also deliver a CD/DVD/BD containing the Project Record Drawings, in AutoCAD format, latest version, to the Engineer.*** The required field engineering submittals certified by a registered land surveyor, are listed in Section 01050, *Field Engineering*.

C. At Contract closeout, the Contractor shall submit the "*final*" Project Record Documents to the Engineer for the Owner with a claim for Final Completion and Readiness for Final Payment. The "*final*" Record Drawings submittal shall contain three (3) copies of the following:

1. Signed and sealed copies of the Record Drawings on 22" x 34" paper.

2. AutoCAD files of the Record Drawings (latest version of AutoCAD).

3. PDF and JPEG copies of the Record Drawings on a CD/DVD/BD or flash drive.

D. At Contract closeout, submit the "*approved*" Shop Drawings to the Engineer for the Owner with a claim for Final Completion and Readiness for Final Payment. The "approved" Shop Drawings submittal shall contain the following:

1. PDF and JPEG copies of the Record Drawings on a CD/DVD/BD or flash drive.

E. Accompany the closeout submittal with a letter of transmittal (LOT) in duplicate, containing, but not limited to, the following.

1. Date.

2. Project title and number.

3. Contractor's name and address.

4. Title and number of each Record Document.

5. Signature of Contractor or his authorized representative.

F. If the Record Drawings are found to be incomplete or inaccurate, the drawings will be returned to the Contractor for correction.

G. In cases where the Owner determines partial clearances from permitting agencies are beneficial to the Owner for completed portions of the project, provide preliminary record drawings (AutoCAD, PDF and JPEG formats) to the Engineer for its use in preparing the partial clearance applications for the Owner.

H. Complete signed and sealed Record Drawings are required to be delivered to the Engineer prior to final inspection of the Project. ***Final inspections will only be scheduled upon receipt of signed and sealed Record Drawings that have been reviewed by the Engineer and delivered by the Engineer to the Owner***.

2. PRODUCTS - NOT USED

3. EXECUTION - NOT USED

END OF SECTION

SECTION 01730

OPERATION AND MAINTENANCE DATA

1. GENERAL

1.01 Description

A. Scope of Work

1. Compile product data and related information appropriate for the Owner's operation and maintenance of products furnished under the Contract (whether the materials or products were purchased by Owner or Contractor). Prepare operating and maintenance data as specified in this Section and as referenced in other pertinent sections of Specifications.

2. ***Instruct the Owner's personnel in the maintenance of products and in the operation of the installed equipment and systems***.

B. Related Work Specified Elsewhere

Specification Section	Title
00980	O & M Manual Submittal Form
01300	Shop Drawings, Submittals and Samples
01650	Systems Start-up and Demonstration
01700	Project Closeout
01720	Project Record Documents
Division	**Information**
6, 10, and 11	Equipment
13	Special Construction - PICS
15	Mechanical
16	Electrical

1.02 Quality Assurance

A. Preparation of the data shall be performed by personnel who are:

1. ***Trained and experienced*** in the operation and maintenance of the described products.

2. Familiar with the requirements of the Specification Section(s).

3. ***Skilled as technical writers*** to the extent required to communicate the essential data associated with the referenced equipment and products.

4. Skilled as draftsmen competent to prepare the required drawings.

1.03 Form of Submittals

A. Prepare ***ALL*** data in the form of an instructional manual (hard copy - paper) and in electronic formats (PDF and JPEG), for use by the Owner's personnel.

B. Data Format

1. Size: 8 ½ " x 11"

2. Paper Weight/Color: 24 pound minimum, ***bright white paper (99+ on the paper brightness scale***).

3. Text: Manufacturer's printed data, or neatly typewritten.

4. Drawings

a. Provide a reinforced punched binder tab; bind in with text.

b. Reduce larger drawings to 11" x 17" and fold them to an 8 ½ " x 11" size.

5. Provide a fly-leaf for each separate product, or each piece of operating equipment:

a. Provide a typed description of the projects and major component parts of the equipment.

b. Provide summary data sheets for each separate product or each piece of operating equipment.

c. Provide identified and indexed tabs.

6. ***Provide an electronic copy of the complete O&M Manual from each manufacturer/supplier in <u>both</u> PDF (searchable) and JPEG formats (on CD/DVD/BD) to the Engineer***.

7. <u>Cover and Spine</u>

   a. Identify each volume with the following printed title, based on the facility for which the O&M materials are being provided, on the binder cover and spine:

FLAGLER BEACH WASTEWATER TREATMENT FACILITY

SLUDGE MANAGEMENT SYSTEM IMPROVEMENTS

"OPERATION AND MAINTENANCE MANUAL"

[Owner's Logo] [Engineer's Logo] [Contractor's Logo]

[Date of Completion]

Volume No.

   b. Also identify on the binder cover, the following:

      1. Identity of separate structure as applicable.

      2. Identification of general subject matter covered in the Manual.

      3. Identification of the Consulting Engineer (CPH, LLC) for the project and their corporate logo.

      4. Identity of the general contractor for the project and their corporate logo.

C. <u>Binders</u>

1. ***Commercial quality, three D-ring View-type binders with durable and cleanable white plastic covers***. Binders shall be of the ***presentation quality type*** with clear vinyl covers on front, back and spine. The Binders shall include two (2) sheet lifters and two, horizontal inside pockets.

2. Maximum D-ring width: ***2.5 inches***

3. When multiple binders are used, *correlate the data into related consistent groupings*.

1.04 Content of Manual

A. Each volume of the Operation and Maintenance Manual shall include, but is not limited, to the following:

1. ***A neatly computer-generated Table of Contents for each volume***, arranged in a systematic order by division, as listed within the product specifications. Each binder shall have a ***complete Table of Contents for all volumes***.

2. Equipment Data sheets shall be provided for all project equipment and shall be developed in the format required by the Engineer. ***A copy of the equipment data sheets shall be provided in both PDF (searchable) and JPEG formats (on CD/DVD/BD), to the Engineer, as previously referenced herein***.

3. Contractor, name of responsible principal, address, telephone number and e-mail address.

4. A list of each project item required to be included, indexed to content of the volume.

5. List the following:

a. Subcontractor, manufacturer and installer name, addresses and telephone numbers and e-mail addresses.

b. Each product item required to be included, indexed to the content of the volume.

c. Identification of the area of responsibility of each product.

d. ***Local source of supply for parts and replacement equipment*** including company name, contact person, address, telephone number and e-mail address.

6. Identify each product item by product name and other identifying symbols as set forth in Contract Documents.

B. Product Design

1. ***Provide hydraulic and engineering design criteria*** for each product as it pertains to a particular unit operation/process (submit searchable PDF and JPEG formats).

2. ***Provide a "detailed" description*** of each normal product operation as it pertains to a particular unit operation/process (submit searchable PDF and JPEG formats).

C. Product Data

1. Include only those sheets which are pertinent to the specific product. Hydraulic and engineering design criteria, information and procedures required for normal control, process control and performance evaluations, emergency operation, start-up and shut down operations, listing of spare parts required, maintenance and repair instructions, safety and personnel requirements and a ***detailed "troubleshooting" problem guide shall be included in the manual***. References to related products, manufacturer and equipment histories, product catalogs, etc. shall not be included within the content of the Operation and Maintenance Manual.

2. Annotate each sheet to:

   a. Clearly identify the specific product or part installed.

   b. Clearly identify the data applicable to installation.

   c. Delete references to inapplicable information.

3. Provide operation and maintenance information as herein specified.

4. ***"Record" and "approved" shop drawings as submitted and approved, by the Engineer, with all corrections made for each product. Include "As-Built" data and modifications with shop drawings for each product. This data shall also be provided in both PDF (searchable) and JPEG formats (on CD/DVD/BD)***.

D. Drawings

1. ***Supplement the product data with drawings*** as necessary to clearly illustrate:

   a. Relations of the component parts of equipment and systems.

   b. Product assembly and disassembly for maintenance and repair procedures.

   c. Control and flow diagrams.

   d. Representation of the manufacturer's recommended spare parts and their associated SKU or part numbers and current cost.

2. Coordinate the drawings with information in Project Record Documents to assure the correct illustration of the completed installation.

3. ***Do not use Project Record Documents as maintenance drawings***.

E. ***A written text, as required to supplement product data*** for the particular installation including, but not limited to, the following:

1. Organize in a consistent format under separate headings for different procedures.

2. Provide a logical sequence of instruction of each procedure.

F. ***A copy of each warranty, bond and service contract issued***. Provide an information sheet for the Owner's personnel, presenting:

1. The proper step-by-step procedures in the event of product failure.

2. Safety instructions for facility personnel in the handling of failed equipment.

3. Instances which might affect the validity of the warranties or bonds.

G. ***List of all serial numbers of the equipment furnished***.

H. ***Tabulation of the motor nameplate horsepower, nameplate current, field-measured current, overload relay setting, and catalog number for polyphase motors***.

I. List of fuses, lamps, seals and other expendable equipment and devices. Specify the size, type and ordering description. List the name, address, e-mail address, FAX number and telephone number of the vendor.

J. ***A complete valve tag list*** including the name and function of the pipe in which the valve is mounted and ***I/O list (including all tags)***.

1.05 Manual for Materials and Finishes

A. ***Submit four (4) copies of the complete Operation and Maintenance Manual in final form per Article 1.07 of this specification section***.

B. Content for architectural products, applied materials and finishes

1. Manufacturers' data, giving full information on products

a. Catalog number, size, and composition.

b. Color and texture designations.

c. Information required for reordering special manufacturing products (Include SKU or product numbers).

2. Instructions for care and maintenance

a. Manufacturers' recommendation for types of cleaning agents and methods.

b. Cautions against cleaning agents and methods which are or may be detrimental to the product.

c. Recommended schedule for cleaning and maintenance.

C. Content for moisture protection and weather-exposed products

1. Manufacturers' data, giving full information on products

a. Applicable standards.

b. Chemical composition.

c. Details of installation.

2. Instructions for inspection, maintenance and repair of products.

D. Additional requirements for maintenance data can be found in the respective Sections of the Specifications.

1.06 Manual for Equipment and Systems

A. ***Submit three (3) copies of the complete Operation and Maintenance Manual in final form per Article 1.07 of this specification section***.

B. Provide a Table of Contents (TOC) for each item of equipment and/or system.

1. List in its entirety, all sections pertinent to equipment operation and maintenance.

2. Provide a fly-leaf for each individual section identified by corresponding section number.

C. Content for each unit of equipment and system (as appropriate)

1. Description of unit and component parts

   a. Provide general mechanical and process descriptions, function, normal operating characteristics, and limiting conditions.

   b. Performance curves, engineering data and tests as it pertains to the performance requirements as listed in the respective specification sections.

   c. Complete nomenclature and commercial number of replaceable parts.

   d. Summary of information listed on equipment and motor data plates.

2. Operating procedures

   a. Start-up, break-in, routine and normal operating instructions.

   b. Regulation, control, stopping, shut-down and emergency instructions.

   c. Summer and winter operating instructions.

   d. Special operating instructions in the event of equipment failure or emergency situations to insure uninterrupted facility operation. Provide step-by-step instructions to initiate process alternatives.

3. Maintenance Procedures

   a. Provide instructions for maintenance procedures during routine operations.

   b. Provide a thorough, ***detailed and complete*** "***troubleshooting guide***" for all facility equipment and operational systems.

   c. Detailed procedures for disassembly, repair and reassembly.

   d. Detailed procedures for alignment, adjusting and checking.

4. Servicing and lubrication schedules required, to insure maximum product performance.

5. The manufacturer's printed operating and maintenance instructions.

6. A description of the sequence of operation by the control manufacturer.

7. The original manufacturer's parts list, illustrations, assembly drawings and diagrams required for maintenance. Also include the following in the submittal:

    a. Predicted life of parts subject to wear.

    b. Items recommended to be stocked as spare parts with manufacturers part or SKU number and the current cost for each item.

8. As-installed control diagrams by the control's manufacturer.

9. Each Contractor's coordination drawings: As-installed, color coded piping diagrams.

10. Charts of valve tag numbers identifying the location and function of each valve.

11. List of the original manufacturer's spare parts, manufacturer's current prices and recommended quantities to be maintained in storage.

12. Other data, as required, under the respective specification sections.

13. "*Approved*" record shop drawings with all corrections made, and a copy of the warranty statement, checkout memo, demonstration test procedures and demonstration test certification.

D. Content for each electric and electronic system (as appropriate)

1. Description of the system and component parts

    a. Function, normal operating characteristics, and limiting conditions.

    b. Performance curves, engineering data and tests.

    c. Complete nomenclature and commercial number of replaceable parts.

2. Circuit directories and panelboards

    a. Electrical service.

    b. Controls.

    c. Communications.

3. As installed color coded wiring diagrams.

4. Operating procedures

   a. Start-up, routine, normal, shut-down and emergency operating instructions (at a minimum).

   b. Sequences required.

   c. Special operating instructions.

5. Maintenance Procedures

   a. Provide instructions for maintenance procedures during routine operations.

   b. Provide a thorough, ***detailed and complete "troubleshooting guide"*** for all facility equipment and systems.

   c. Detailed procedures for disassembly, repair and reassembly.

   d. Detailed procedures for alignment, adjusting and checking.

6. The manufacturer's printed Operation and Maintenance instructions.

7. List of original manufacturers' spare parts, SKU/Part numbers, manufacturers' current prices, and recommended quantities to be maintained in storage.

8. Other data, as required, under the respective Specification Sections.

9. "*Approved*" record shop drawings with all corrections made, and a copy of the warranty statement, checkout memo, demonstration test procedures and demonstration test certification.

E. Prepare and include additional data when the need for such data becomes apparent during instruction of the Owner's personnel.

F. Additional requirements for Operation and Maintenance Data

1. Additional requirements for maintenance data can be found in the respective Sections of the Specifications.

2. ***In addition to standard O&M Manuals, all manufacturers supplying equipment and products specified herein shall also submit their operation and maintenance manuals and data to the System Integrator for this Project on CD/DVD/BD's in Corel WordPerfect (latest version), Microsoft Word (latest***

version), or text, "txt", formats. All graphic files shall be in BMP, PCX, CDR, JPEG, DWG or DXF formats (integrators preference for the system shall be required). All O&M Manual files shall also be submitted electronically on CD/DVD/BD's to the Engineer in both PDF (searchable) and JPEG formats, no exceptions.

3. ***The System Integrator shall be responsible to configure and compile the O&M Manuals into "hypertext" window help files for use as computer "on-line" help screens for equipment operation and maintenance. The System Integrator shall return all hypertext files to the equipment and product manufacturer's for review and approval prior to introducing them into the SCADA System at the Flagler Beach WWTF.***

1.07 Submittal Schedule

A. ***Submit two (2) copies of a "preliminary draft" of proposed formats and outlines of contents of the Operation and Maintenance Manuals to the Engineer within one hundred twenty (120) days after the Notice to Proceed***.

B. ***Submit two (2) copies of the completed data in "Preliminary Form" no later than sixty (60) days following the Engineer's review of the last shop drawing of a product and/or other submittal*** specified under Section 01300, *Shop Drawings, Submittals and Samples*, but no later than the delivery of equipment. ***One (1) copy will be returned with comments to be incorporated into the final O&M Manual copies*** and the other copies will be retained by the Engineer.

C. ***Submit three (3) copies of the "approved" Operation and Maintenance Manuals, in "Final Form" (hard copy and electronic formats {searchable PDF and JPEG})***, directly to the offices of the Engineer (CPH, LLC) within ten (10) days after the reviewed copy or last item of the reviewed copy is returned.

D. ***Provide three (3) copies of addenda to the Operation and Maintenance Manuals as applicable and certificates, as specified, within thirty (30) days after final inspection, if any.***

E. ***Failure to meet the deadlines for submittal of the "preliminary" and "final" versions of the Operation and Maintenance Manuals shall be cause for the Project to be "shut down" until such time as the documents are provided, in the proper format, to the Engineer. Any lost construction time and Contractor associated construction costs shall be borne by the Contractor based on his failure to meet the above referenced deadlines***.

F. All submittals shall be accompanied by the O&M Manual Submittal Form, Section 00980, in the Contract Documents.

1.08 Instruction of Owner's Personnel

A. ***Prior to the demonstration tests***, ***fully instruct the Owner's designated Operations and Maintenance personnel*** in operation, adjustment and maintenance of products, equipment and systems.

B. The Contractor shall provide a ***minimum ten (10) calendar day notification, in writing,*** to the Engineer of instruction of the Owner's personnel on products, equipment and systems using the form provided in Section 00980. ***Operation and Maintenance Manuals shall constitute the basis of instruction***. Review the contents of the O&M Manuals with the Owner's Operations and Maintenance personnel in full detail to explain all aspects of operations and maintenance.

C. ***The Instructors shall be fully qualified personnel of the manufacturer of the equipment*** as outlined within the individual equipment specification sections. If no specific training specifications are listed with the equipment, the Contractor shall provide the instruction with qualified Contractor personnel.

D. The Contractor shall provide a list to the Engineer and Owner indicating the date, time and the name of the instructors that will be present for all training sessions with the notification described in Article 1.08(B).

E. ***The instructors shall provide for and prepare lesson scopes and handouts*** for up to twelve (12) individuals designated by the Owner, and including the Engineer, that outline the items to be covered. Separate sessions for operation and maintenance instruction shall be provided consecutively. ***Handouts shall be submitted to the Engineer with at least fourteen (14) calendar day's notice prior to the training sessions for review and approval***.

F. ***All instruction sessions shall be filmed with a "high-quality" HD digital recording camcorder (1080p) and DVD's/BD's supplied by the Contractor***. Filming shall be conducted by a competent, professional filming firm, under the direction of the Engineer and Owner, to provide "***high quality***" digital HD video recordings (1080p), in color. ***The Contractor shall then provide three (3) copies of each filmed session to both the Engineer and Owner for final distribution***.

G. Videographer qualifications and Camera requirements are presented in Articles 1.02, 2.01 and 2.02 of Section 01390, *Preconstruction Video Recording* of these Contract Documents.

2. PRODUCTS - NOT USED

3. EXECUTION - NOT USED

END OF SECTION

SECTION 01740

WARRANTIES AND BONDS

1. GENERAL

1.01 Description

A. Scope of Work

1. Compile specified warranties and bonds, as in the *General Conditions* and as specified in these specifications.

2. Co-execute submittals when so specified.

3. Review submittals to verify compliance with the Contract Documents.

4. Submit warranties and bonds to the Engineer for review and transmittal to the Owner.

B. Related work specified elsewhere includes:

Specification Section	Title
00610	Performance Bond
00620	Labor and Materials Payment Bond
00625	Material and Workmanship Bond
00700	General Conditions
00800	Supplementary Conditions
00805 / 00806	FDEP Supplementary Conditions
01300	Shop Drawings, Submittals and Samples
01700	Project Closeout
Division	**Information**
11	Equipment

C. ***A two (2) year Maintenance Bond, or a Letter of Credit or Similar Instrument Satisfactory to the Owner, Equal to Ten Percent (10%) of the final construction costs*** shall be posted before Final Project Acceptance by the Owner and final payment can be made to the Contractor.

1.02 Submittal Requirements

A. Assemble warranties, bonds and service and maintenance contracts, executed by each of the respective manufacturers, suppliers, and subcontractors.

B. Number of original signed copies required: Two (2) each.

C. Table of Contents (TOC)

1. The Table of Contents (TOC) shall be *computer generated*, neat and presented in an orderly sequence. Provide complete and detailed information for each item including, but not limited, to the following:

   a. Product of work item.

   b. Firm, name of responsible principal, address, telephone number and e-mail address.

   c. Scope.

   d. Date of beginning of warranty, bond or service and maintenance contract.

   e. Duration of warranty, bond or service maintenance contract.

   f. Provide the following information for the Owner's personnel:

      1. Proper and detailed procedures to be followed in case of a failure.

      2. Instances which might affect the validity or warranty or bond.

   g. Contractor, name of responsible principal, address, telephone number and e-mail address.

1.03 Form of Submittals

A. ***The Contractor shall provide two (2) bound documents to the Engineer no later than sixty (60) calender days prior to Final Project Acceptance by the Owner***.

B. Format

1. Size: 8-½" x 11" (***bright white paper***, ***99+ on the paper brightness scale***), punch sheets for standard three (3) ring, D-ring view binder.

2. Fold larger sheets to 8½" x 11" to fit into the binders.

C. Cover and Spine

1. Identify each volume with the following printed title, based on the facility for which warranties and bonds are being provided, on the binder cover and spine:

FLAGLER BEACH WASTEWATER TREATMENT FACILITY

SLUDGE MANAGEMENT SYSTEM IMPROVEMENTS
(YEAR XXXX)

"WARRANTIES AND BONDS"

[Owner's Logo] [Engineer's Logo] [Contractor's Logo]

Volume No. ____

Engineer's and Contractor's Names and Addresses

D. Binders

1. Commercial quality, three (3) D-ring type view binders with durable and cleanable white plastic covers and maximum D-ring width of two and one-half (2½) inches.

2. The binders shall be presentation type with clear vinyl covers (front/back) and spine.

3. The binders shall include two (2) sheet lifters and two (2) horizontal inside pockets.

E. Electronic Submittal

1. The Contractor shall provide an "*electronic*" submittal of the Warranty and Bond Binder, ***to the Engineer no later than sixty (60) calender days prior to Final Project Acceptance by the Owner***. ***The electronic submittal shall be in both PDF and JPEG formats.***

1.04 Warranty Submittal Requirements

A. For all major pieces of equipment, submit a warranty from the equipment manufacturer. The manufacturer's warranty period shall be concurrent with the Contractor's for ***a period of two (2) years, unless otherwise specified, commencing at the time of Final Project Acceptance by the Owner***.

B. The Contractor shall be responsible for obtaining certificates for equipment warranties for all major equipment specified under Division 11, *Equipment*; Division 13, *Special Construction*; Division 15, *Mechanical*; and Division 16, *Electrical*; and which has at least a 1.0 hp motor or which lists for more than $1,000. The Engineer reserves the right to request warranties for equipment not classified as major. ***The Contractor shall still warrant equipment not considered to be "major" in the Contractor's two (2) year warranty period even though certificates of warranty may not be required*** (commencing at the time of Final Project Acceptance by the Owner).

C. In the event that the equipment manufacturer or supplier is unwilling to provide a two (2) year warranty commencing at the time of Final Project Acceptance by the Owner, the Contractor shall obtain from the manufacturer a ***three (3) year warranty commencing at the time of equipment delivery to the job site***. This three (3) year warranty from the manufacturer shall not relieve the Contractor of the two (2) year warranty, starting at the time of Final Project Acceptance by the Owner.

D. ***The Owner shall incur no labor or equipment cost during the guarantee period***.

E. The Guarantee shall cover all necessary labor, equipment, materials, and replacement parts resulting from faulty or inadequate equipment design, improper assembly or erection, defective workmanship and materials, leakage, breakage or other failure of all equipment and components furnished by the manufacturer or the Contractor.

1. PRODUCTS - NOT USED

2. EXECUTION - NOT USED

END OF SECTION

SECTION 01800

MISCELLANEOUS WORK AND CLEANUP

1. GENERAL

1.01 Description

A. This Section includes operations which cannot be specified in detail as separate items but can be sufficiently described as to the kind and extent of work involved.

B. The Contractor shall furnish all labor, materials, equipment and incidentals to ***completely and thoroughly clean the Project Site at the completion of the Work***.

C. The work of this Section includes, but is not limited to, the following:

1. Removal and legal disposal of all broken concrete, wood, scraps, wire, packaging materials, forms, debris, scaffolds and other objectionable rubble created during construction operations.
2. Cleaning of spilled mortar, concrete and metal work.
3. Removal of all temporary manufacturer's labels from and washing of all equipment.
4. Restoring of driveways and fences.
5. Crossing utilities.
6. Relocation of existing water lines, low pressure gas lines, telephone lines, electric lines, cable TV lines and storm drains.
7. Restoring easements and rights of way.
8. Incidental work.

1.02 Qualifications

A. All work shall be completed in a workmanlike manner by competent workmen in full compliance with all applicable sections of these Specifications.

2. PRODUCTS

2.01 Materials

A. Materials required for this Section shall be of at least the same type and quality as materials that are to be restored, if any.

B. Where possible, the Contractor shall reuse undamaged, existing materials that are removed and then replaced, if any.

3. EXECUTION

3.01 Restoring of Fences

A. At several locations it may be necessary for the Contractor to remove, store and replace existing fences during construction. Only the sections directed by the Engineer shall be removed.

B. If any section of fence is damaged due to the Contractor's negligence, it shall be replaced with fencing equal to or better than that damaged, and the work shall be satisfactory to the Engineer.

C. ***All restoration/repair shall be provided by the Contractor at no additional cost to the Owner***.

3.02 Crossing Utilities

A. This item shall include any extra work required in crossing culverts, watercourses, drainage ditches, drains, water mains, reclaimed water mains, wastewater lines and other utilities, including all sheeting, shoring and bracing, extra excavation and backfill, or any other work required for the crossing, whether or not shown on the Contract Drawings.

3.03 Relocations of Existing Gas Lines, Telephone Lines, Electric Lines and Cable, Utility Lines and Cable TV Lines

A. The Contractor shall notify the proper authority of the utility involved when relocation of these lines is required.

B. The Contractor shall coordinate all work by the utility so that the progress of construction will not be hampered.

3.04 Restoring Easements and Rights-of-Way

A. ***The Contractor shall be responsible for all damage to City and private property due to his operations and shall fix all damage immediately at his own cost***.

B. The Contractor shall protect from injury all walls, fences, cultivated shrubbery, pavement, underground facilities, such as water pipe, or other utilities which may be encountered along the easement.

C. If removal and replacement are required, it shall be done in a workmanlike manner so that the replacement is equivalent to that which existed prior to construction.

D. Existing lawn surfaces damaged by construction shall be ***regraded and resodded***. These areas shall be maintained until Final Project Acceptance by the Owner.

3.05 Clean up

A. The Contractor shall remove all construction material, buildings, equipment and other debris remaining on the job as the result of construction operations and shall render the site of the work in a neat and orderly condition.

B. All garbage, debris, trash, unsuitable material, etc., shall be disposed of in a legal manner by the Contractor at no additional cost to the Owner.

C. Remove excess dust and mud created by the construction of the facilities.

D. All suitable excess excavated material, as determined by the Engineer and Owner, shall be the property of the Owner and shall remain on-site.

E. Cleanup During Construction

1. During execution of the work, the Contractor shall clean the site, adjacent properties and public access roads and dispose of waste materials, debris, and rubbish to assure that building, grounds and public properties are maintained free from accumulations of waste materials and rubbish.

2. Wet down dry materials and rubbish to lay dust and prevent blowing dust.

3. Provide containers for collection and disposal of waste materials, debris and rubbish.

4. Cover or wet excavated material leaving and arriving at the Project Site to prevent blowing dust. Clean the public access roads to the site of any material falling from haul trucks.

F. Final Cleanup

1. ***At the completion of all Project Work and immediately prior to final inspection, the Contractor shall clean the entire Project Site***.

2. Clean, sweep, wash and polish all work and equipment including finishes.

3. Remove grease, dust, dirt, stains, labels, fingerprints and other foreign materials from sight-exposed interior and exterior finished surfaces.

4. Repair, patch and touch-up all marred surfaces to match the adjacent surfaces.

5. Broom clean paved surfaces and rake clean all landscaped areas.

6. Remove from the Project Site all temporary structures and all materials, equipment and appurtenances not required as a part of, or appurtenant to, the completed work.

G. The Contractor must also meet all conditions and requirements identified in Section 01560, *Environmental Protection*.

3.06 Incidental Work

A. The Contractor shall do all incidental work, not otherwise specified, but obviously necessary for the proper completion of the Contract as specified and as shown on the Contract Drawings.

B. ***All incidental work shall be accounted for in the Contractor's Bid Price for the Project***.

END OF SECTION

SECTION 02050

DEMOLITION AND SALVAGE

1. GENERAL

1.01 Scope of Work

A. Furnish all material, labor, tools, equipment, plant, appliances and services necessary to complete all demolition, modification, salvage and removal work required above and below grade as shown on the Contract Drawings and as specified herein.

The Contractor shall examine the various Contract Drawings, visit the Project site and determine the extent of work affected therein and all conditions under which the work is to be performed.

B. The Contractor shall fill in all voids in the subgrade created as a result of the removal or demolition of all materials, etc. identified in the Contract Documents.

C. ***The Contractor shall remove all of the demolished materials and spoils from the Project Site and dispose of them in a legal manner***.

D. The Contractor shall transport designated salvage material and equipment to be retained by the Owner, if any, as directed by the Engineer in accordance with the Contract Documents.

E. Work Specified Herein and Elsewhere

1. Related work specified elsewhere includes:

Division	Information
2	Sitework
11	Equipment
15	Mechanical
16	Electrical
Contract Drawings and General Provisions of the Contract	

1.02 Quality Assurance

A. Permits and Licenses

1. Conform to applicable State and local codes for demolition of structures, safety of adjacent structures, dust control, and runoff control.

2. Obtain all necessary permits and licenses for performing the Work and furnish a copy of the same to the Engineer prior to commencing the Work.

3. ***The Contractor shall pay all associated fees including disposal costs***.

4. Comply with the requirements of all permits.

B. Notices

1. Issue written notices of planned demolition, a minimum of fourteen (14) calendar days prior to starting the work, to companies or local authorities owning utility conduit, wires, pipes, etc. running to or through the project site. Comply with all of their requirements.

2. Submit copies of said notices to the Engineer.

C. Utility Services

1. Notify the Owner, utility companies or local authorities furnishing gas, water, electrical, telephone or wastewater service, a minimum of fourteen (14) calendar days prior to starting the work, to remove any equipment owned by them in structures to be demolished and to remove, disconnect, cap or plug their services to facilitate demolition.

2. Comply with all utility company or local authority requirements.

D. General

1. Do not close or obstruct roadways, sidewalks, or fire hydrants without appropriate permits.

2. Conform to applicable regulatory procedures when hazardous or contaminated materials are discovered.

1.03 Job Conditions

A. Sequence of Construction

1. ***Interruption of facility operations must be kept to a minimum and no interruption of service to the Owner's customers shall be allowed***.

2. Coordinate demolition, removal and modification work with the Engineer and Owner and agree upon a sequence of construction designed to minimize down time in operations and avoid any interruption of service.

B. ***The cost for all demolition work***, including material, labor, tools, equipment, plant, appliances, transportation, disposal costs and all appurtenances and services necessary to complete all demolition, modification, salvage and removal work ***shall be accounted for in the Contractor's Bid.***

C. ***Facility operation shall not be interrupted during the demolition activities*** unless authorized by the Engineer and Owner. The Contractor shall submit to the Engineer, in writing, any request for interruption of facility service, at least seven (7) calendar days

prior to the proposed activities. The request may or may not be approved. A rejection of the request does not relieve the Contractor from completing the work.

1.04 Project Conditions

A. Structures to be demolished will be discontinued in use and vacated by the Owner prior to starting the demolition Work.

B. The Owner assumes no responsibility for the condition of structures, materials, equipment, and ancillaries to be demolished or salvaged.

C. The conditions existing at time of inspection for Bidding purposes will be maintained by the Owner as practicable. Variations within structures, equipment, etc. may occur by the Owner's removal and salvage operations prior to start of demolition work.

D. Unless otherwise indicated in Contract Documents or specified by the Owner, items of salvageable value to the Contractor shall be removed from the Project site.

E. Storage or sale of removed items on site will not be permitted, unless otherwise directed by the Owner, and shall not interfere with other work specified in Contract Documents.

F. Explosives ***shall not*** be brought to the site or used to demolish structures.

1.05 Disposition of Demolished Materials

A. ***All demolished materials shall be legally disposed of by the Contractor***.

B. Store salvaged materials designated as property of the Owner in areas indicated by the Owner and transport them to a final storage site, if any, as directed by the Owner. The Contractor shall promptly remove all other materials from the site.

C. ***All costs associated with the legal disposal of demolished materials shall be incorporated into the Contractor's Bid.***

1.06 Project Record Documents

A. ***The Contractor shall accurately record actual locations (horizontal and vertical) of all capped utilities and subsurface obstructions*** that will remain after demolition.

B. Record documentation shall be in accordance with Section 01720, *Project Record Documents*.

2. PRODUCTS - NOT USED

3. EXECUTION

3.01 Preparation

A. All existing pipelines and utilities shown on the Contract Drawings are not to be interpreted as the exact location or as the only obstacles that may occur on the site. The Contractor shall verify all existing conditions, prior to construction activities, and proceed with caution around anticipated features.

B. Safety

1. Provide, erect, and maintain temporary safety barriers, erosion control devices, and other safety and security devices, as shown on the Contract Drawings, or as necessary, to protect the public and project personnel from injury due to the demolition work.

2. ***Protect from damage all existing work, "new" project work, landscaping materials, equipment and improvements and appurtenances that are to remain and restore all damage caused by the demolition work at no additional cost to the Owner***.

C. Prevent movement or settlement of adjacent structures. Provide bracing and shoring as needed.

D. ***Mark the location of all utilities***. Protect and maintain, in safe and operable condition, all utilities that are to remain. Prevent interruption of existing utility service to occupied or used facilities, except when authorized, in writing, by authorities having jurisdiction. Provide temporary services during interruptions to existing utilities as acceptable to the Owner and any governing authorities.

E. Salvage

1. The Contractor ***shall not proceed*** with the removal of any equipment, piping, or appurtenances without specific approval of the Engineer and Owner. Any equipment, piping or appurtenances removed without proper authorization, which are necessary for the operation of the existing system or of the proposed facilities, shall be replaced to the satisfaction of the Engineer at the Contractor's expense.

2. ***Any materials to be salvaged shall be identified by the Owner***. The Contractor shall furnish all labor and material to identify, clean, protect, crate, box and deliver/store any salvaged materials as part of the Project Work.

3. Pieces of equipment weighing 150 pounds or more shall be provided with suitable skids before storing.

4. Wherever piping is removed for disposition, adjacent pipe, and headers that are to remain in service shall be blanked off or plugged and then anchored in an approved manner.

5. Equipment to be retained by the Owner shall be carefully removed from the present location, cleaned, and immediately stored "*on-site*" or delivered to their final destination by the Contractor, as designated by the Owner, at no additional cost to the Owner.

6. The Contractor shall take all necessary precautions against damaging the material and equipment to be stored. ***The Contractor shall repair any damage resulting from his operations, as directed by and to the satisfaction of the Engineer, at no additional cost to the Owner.*** Itemized lists of materials removed and stored shall be given to the Engineer daily. An electronic copy of a final itemized list shall be furnished to the Engineer at the completion of construction. The list shall include items, method of packaging, and place of storage.

F. Equipment to be Retained

1. All equipment removed shall remain the property of the Owner unless designated otherwise by the Owner. Designated items to be salvaged shall be identified by the Owner, prior to the commencement of demolition operations, if any.

2. If the Owner elects not to retain ownership of a certain item, the item shall become the property of the Contractor and shall be removed from the site at the Contractor's expense and legally disposed of.

3.02 Performance

A. General

1. Completely remove and dispose of existing structures and appurtenances from the site as indicated on the Contract Drawings and/or specified herein. Bring in clean, organic-free, compactable fill for filling those areas where in-ground structures will be removed. All fill shall be compacted in accordance with these specifications.

2. Salvage all items indicated by the Owner, if any, and clean up the site after completion of the demolition work.

3. Perform demolition and removal in compliance with applicable laws and ordinances and in such a manner as to avoid hazard to persons and property and to prevent spread of dust and flying particles.

4. Conduct demolition operations to minimize interference with adjacent structures, walls/fencing or pavements.

5. Cease demolition operations immediately if adjacent structures appear to be in danger. Immediately notify the Owner/Engineer and authority having jurisdiction. Do not resume demolition operations until directed by the Engineer or governing authority.

6. Conduct operations with a minimum of interference to public or private access. Maintain ingress and egress at all times.

7. Obtain written permission from adjacent property owners when demolition equipment will traverse, infringe upon, or limit access to their property.

8. ***Sprinkle demolition work with water to minimize the generation of dust***. Provide hoses and water connections for this purpose.

9. Locate demolition equipment and remove materials so as to prevent excessive loading to supporting walls, floors, or framing.

10. Demolish concrete and masonry in small sections.

11. Comply with governing regulations pertaining to environmental protection.

12. ***Clean and/or repair all adjacent structures and improvements of dust, dirt, debris and damage caused by the demolition operations***. ***Return adjacent areas to their "original" condition existing prior to start of work, or to a "new" condition***.

13. The Contract Documents identify major structures and items to be demolished. Include incidental demolition to completely demolish structures whether indicated on the Contract Documents or not.

B. Equipment Removal

1. Prior to demolition of structures, remove all mechanical and electrical equipment installed therein and carefully remove all items that are to be salvaged, if any.

C. Concrete Slabs and Vaults

1. Remove and cap all piping as indicated on the Contract Drawings.

2. Remove concrete slabs, foundation walls and concrete vault walls and tops as indicated on the Contract Documents.

D. Piping and Valves

1. Remove all process and yard piping and valves which are in conflict with the proposed work and are not to remain in service.

2. Salvage valves identified by the Owner, if any, and remove all piping, fittings and valves from the property, unless otherwise noted, and dispose of them in a legal manner at the Contractor's expense.

E. Asphalt Pavement

1. Remove existing asphalt paving where shown on the Contract Drawings. Where only part of the pavement is to be removed, first mechanically saw cut the pavement along the limits of removal to prevent damage to the remaining pavement.

2. Remove the demolished material/debris from the Project site and legally dispose of the materials at no additional cost to the Owner.

F. Sidewalks/Walkways

1. Remove existing concrete sidewalks and/or walkways where shown on the Contract Drawings.

2. Where only part of the sidewalk/walkway is to be removed, first mechanically saw cut the concrete sidewalk and/or walkway along the limits of removal to prevent damage to the remaining concrete sidewalk and/or walkway.

3. Remove the material from the Project site and legally dispose of the materials at no additional cost to the Owner.

G. Modifications

1. Cut and remove all existing Work necessary for modifications and installation of the new Work with a minimum of damage to the Work that is to remain.

2. ***Repair or restore any damage done to existing facilities which are to remain, at no cost to, and to the satisfaction of the Owner***.

3. Remove on a daily basis all debris created within facilities which are to remain in service during the modification work, and clean the area at the end of each day's operation.

4. Do not subject personnel, homeowner's or the citizens of the area in which the work is to be completed to hazardous areas while performing their duties to maintain the systems in service.

5. Follow other specific instructions for the modification work given in other Sections of these Specifications and as shown on the Contract Drawings.

3.03 Filling of Voids

A. Completely fill all below grade areas and voids resulting from demolition or removal of structures, pipelines, underground fuel storage tanks, wells, cisterns, etc., using approved select fill materials consisting of clean fill, stone, gravel, and sand free from debris, trash, frozen materials, roots, and other organic matter.

B. Ensure that areas to be filled are free of standing water, frost, or unsuitable material, trash, and debris prior to fill placement.

C. Place fill materials in accordance with Division 2, *Sitework*, unless subsequent excavation for new Work is required.

D. Grade the surface to match adjacent grades and to provide positive flow of surface drainage after placement of fill and compaction. Solid sod shall then be placed.

3.04 Cleanup

A. Clean the Project site to a condition satisfactory to the Engineer, free from demolished materials, rubbish or debris. Grade the site to meet adjacent contours and provide a positive flow for surface drainage.

B. ***Restore items intended to remain that have been damaged by demolition work at no cost to, and to the satisfaction of the Owner***.

C. Return all interrupted utility services to their pre-demolition state and disconnect temporary services, unless otherwise specified.

3.05 Disposal of Demolished Materials

A. ***Remove from the Project Site and legally dispose*** of all debris, structures, piping, fittings, valving, pumps, miscellaneous metals, rubbish, concrete and other materials resulting from the demolition operations.

B. ***No burning of any material, debris, or trash on-site or off-site will be allowed***.

C. Transport materials removed from the demolition operations with appropriate vehicles and legally dispose of them off-site to areas which are approved for disposal by governing authorities and appropriate property owners, at no additional cost to the Owner.

END OF SECTION

SECTION 02075

DEWATERING AND DRAINAGE

1. GENERAL

1.01 Description

A. The Work to be performed under this Section shall include the design and installation of a temporary dewatering and drainage system until completion of project construction to remove subsurface/storm waters from structure/utility trench excavations as required.

B. ***The Contractor shall be responsible for all permitting activities, including permit fees***, associated with obtaining applicable permits from the State Water Management District having jurisdiction over the installation and operation of the dewatering systems.

C. Structures, water pipes, sanitary pipes, sanitary structures, building foundations, process structures, etc., may require dewatering. It is the Contractor's responsibility to determine the extent of the dewatering area and requirements for construction.

D. Related Work Specified Elsewhere

Specification Section	Title
01500	Temporary Facilities
01560	Environmental Protection
01570	Temporary Erosion and Sedimentation Control
02200	Earthwork
02220	Excavation, Backfilling and Compaction
Contract Drawings and General Provisions of the Contract	

1.02 Responsibility

A. ***The Contractor is solely responsible for the design, permitting, installation, operation, and subsequent removal of dewatering systems***, including well point systems, and their safety and conformity with local codes and regulations.

B. ***All costs for Project dewatering operations, if necessary, shall be incidental to the Contract and shall be included in the Contractor's Bid***.

C. ***No additional payment will be made for any supplemental measures*** to control seepage, groundwater, or artesian head.

1.03 Quality Assurance

A. Qualifications

1. The temporary dewatering system shall be designed by a firm who regularly engages in the design of dewatering systems and who is fully experienced, reputable and qualified in the design of such dewatering systems.

2. The firm shall have a successful record of operation for a ***minimum of five (5) years prior to the Bid date***. The design firm shall supply the Engineer with previous installation details of at least five (5) successful dewatering operations of a similar nature in the State of Florida.

B. In lieu of experience, the Contractor shall provide a performance and warranty bond for ***one hundred fifty percent (150%)*** of the total installed cost of the temporary dewatering system. This bond shall be executed prior to Award of the Project and/or Contract execution.

C. Standards

1. The dewatering of any excavation areas and the disposal of water during construction shall be in strict accordance with all local and state government rules and regulations.

2. If a Consumptive Use Permit (CUP) is required by the water management district, ***the Contractor shall be responsible for obtaining said permit and all associated costs therein***.

1.04 Submittals

A. ***Submit to the Engineer for review and approval***, ***within fourteen (14) days of the Notice to Proceed and before the installation of the dewatering system, the proposed method of dewatering (Dewatering Plan)***. The Engineer's review shall be for method only. The Contractor shall remain responsible for the adequacy and safety of the methods.

B. Submittals shall be in accordance with Section 01300, *Shop Drawings, Submittals and Samples,* and shall include the following:

1. Design Notes and Drawings.

2. Descriptive literature of the temporary dewatering system.

3. Layout of all piping involved.

4. Observation well locations, if used

5. Bill of materials.

1.05 Dewatering System Criteria

A. The dewatering system shall be developed to the point that is capable of dewatering such that pipe, structures, etc., can be installed and the surrounding fill compacted satisfactorily as shown on the Contract Drawings.

B. Each wellpoint system shall be capable of dewatering and maintaining groundwater levels at the respective structures, pipelines or excavations.

C. Observation wells shall be constructed for the purpose of testing each system.

D. Dewatering System Design

1. ***Design and provide a dewatering system using accepted and professional methods consistent with current industry practice*** to eliminate water entering the excavation under hydrostatic head from the bottom and/or sides. ***Design the dewatering system to prevent differential hydrostatic head*** which would result in floating out soil particles in a manner termed as a "***quick***" or "***boiling***" condition.

2. The dewatering system shall not be dependent solely upon sumps and/or pumping water from within the excavation where differential head would result in a quick condition, which would continue to worsen the integrity of the excavation's stability.

E. Observation Wells

1. ***Prior to excavation, the Contractor shall install groundwater observation wells*** at locations as directed by the Contractor's Geotechnical Engineer, who shall be registered in the State of Florida, and as approved by the Engineer, adjacent to structures under construction for the purpose of measuring water levels during

excavations. The observation well shall consist of screen, casing and cap of approved size and material of construction. The observation well shall be placed in a 2½-inch borehole which shall be carried to an elevation at least to the final bottom grade of the structure(s). The annular space surrounding the intake point and the riser pipe shall be sealed in such a way as to prevent infiltration from surface water. The observation well shall be developed in such a manner as to ensure proper indication of subsurface water levels adjacent to the well.

2. The Contractor shall be responsible for maintaining the observation wells and for observing and recording the elevation of groundwater in them until the adjacent structures and utilities are completed and backfilled. ***Each observation well shall be observed and recorded daily. Measurements shall be supplied daily to the Engineer.*** The Engineer may require that the observation wells reflect true groundwater levels by adding water to the well, recording the drop in the level from the time the water was added. Any plugged observation well shall be redeveloped, if necessary, to indicate true groundwater levels.

3. Observation wells shall be abandoned when directed by the Engineer, and in a manner acceptable to the Engineer, and applicable regulatory agencies. ***Abandoned observation wells shall be backfilled with neat cement grout*** in accordance with the Chapter 40C-3 requirements of the State Water Management District.

1.06 Pumping and Drainage

A. The Contractor shall, at all times during construction provide and maintain proper equipment and facilities to remove all water entering excavations, and shall keep such excavations dry so as to obtain a satisfactory undisturbed subgrade foundation condition until the fills, structures or pipes to be built thereon have been completed to such an extent that they will not be floated or otherwise damaged by allowing water levels to return to natural levels.

B. ***The Contractor shall submit to the Engineer, for review, a plan for dewatering systems prior to commencing Work (Dewatering Plan)***. ***The dewatering systems installed shall be in conformity with the overall construction plan, and certification of dewatering systems shall be provided by a Geotechnical Engineer*** (at the Contractor's expense). The Geotechnical Engineer shall be required to monitor the performance of the dewatering systems during the progress of the Work and require such modifications as may be required to assure that the systems are performing satisfactorily.

C. Dewatering shall at all times be conducted in such a manner as to preserve the undisturbed bearing capacity of the subgrade soils at the proposed bottom of the excavation and to preserve the integrity of adjacent structures. As a minimum, ***the water level shall be two and one-half (2.5) feet below the trench, structure or excavation bottom***. Well or sump installations shall be constructed with proper sand filters to prevent the drawing of fine-grained soil from the surrounding ground.

D. Water entering the excavation from surface runoff shall be collected in shallow ditches around the perimeter of the excavation, drained to sumps, and pumped from the excavation to maintain a bottom free from standing water.

E. The Contractor shall take all additional precautions or prevent uplift of any structure during construction.

F. ***The conveying of water in "open" ditches or trenches shall not be allowed***. Permission to use any storm sewers, or drains, for water disposal purposes shall be obtained from the Controlling Authority and Owner. ***No flooding of streets, driveways, or private property will be permitted***. Any requirements and costs for such use shall be the responsibility of the Contractor. However, the Contractor shall not cause flooding by overloading or blocking up the flow in the drainage facilities, and the Contractor shall leave the facilities unrestricted and as clean as originally found. Any damage to facilities shall be repaired or restored at no additional cost to the Owner.

G. Flotation shall be prevented by the Contractor by maintaining a positive and continuous operation of the dewatering system. The Contractor shall be fully responsible and liable for all damages which may result from failure of the dewatering system.

H. ***Removal of the dewatering equipment shall occur after the Contractor and the Engineer agree that the system is no longer required***; the material and equipment constituting the system, shall be removed by the Contractor.

I. The Contractor shall take all necessary precautions to preclude the accidental discharge of fuel, oil, etc. in order to prevent adverse effects on groundwater or receiving water quality.

J. The Contractor shall be responsible for and shall repair, without cost to the Owner, any damage to work in place, or other contractor's equipment, utilities, residences, highways, roads, railroads, private and municipal well systems, adjacent structures, natural resources, habitat, existing wells, and the excavation, including, damage to the bottom due to heave and including but not limited to, removal and pumping out of the excavated area that may result from Contractor's negligence, inadequate or improper design and operation of the dewatering system, and any mechanical or electrical failure of the dewatering system.

2. PRODUCTS

2.01 General

A. The equipment specified herein shall be standard dewatering equipment of proven ability as designed, manufactured, and installed by firms having experience in the design and production of such equipment. The equipment furnished shall be designed, constructed and installed in accordance with the best practices and methods.

B. ***The Contractor shall engage a Geotechnical Engineer registered in the State of Florida to design the temporary dewatering system for all structures. The Contractor shall submit a conceptual plan for the dewatering system prior to commencing Work (Dewatering Plan)***. The dewatering system installed shall be in conformity with the overall construction plan and certification of this shall be provided by the Geotechnical Engineer. The Geotechnical Engineer shall be required to monitor the performance of the dewatering system at the Contractor's expense during the progress of the work and require such modifications as may be required to assure that the systems will perform satisfactorily.

C. ***The Dewatering System(s) shall be designed in such a manner as to preserve the undisturbed bearing capacity of the subgrade soils at the proposed structures or utilities and to preserve the integrity of any adjacent structure(s)***.

D. ***Dewatering equipment shall be electrically driven in lieu of diesel engine driven to avoid possible problems associated with spillage of fuel***. Equipment shall have a noise (audible) limit of 67 dB at fifteen (15) feet from the equipment. No equipment is to be located within fifty (50) feet of a residential or commercial building unit.

3. EXECUTION

3.01 General Requirements

A. The Contractor shall control, by acceptable means, all water regardless of source and be fully responsible for disposal of the water.

B. Discharge water in accordance with acquired permits (if required), the regulations of any and all regulatory authorities, and the Contract Documents.

C. Commence dewatering prior to any appearance of water in the excavation operations and continue until the Work is complete to the extent that no damage results from hydrostatic pressure, flotation, or other causes.

D. The Contractor shall control groundwater in a manner that preserves the strength of foundation soils, does not cause instability or raveling of excavation slopes, and does not result in damage to existing structures. Where necessary to these purposes, lower water level in advance of excavation, utilizing wells, wellpoints, jet educators, or similar positive methods. The water level shall be maintained a minimum of two and a half (2½) feet below the trench, structure or excavation bottom.

E. Install wells and/or wellpoints, if required, with suitable screens and filters, so that continuous pumping of fines does not occur. During normal pumping, and upon development of well(s), levels of fine sand or silt in the discharge water shall not exceed five (5) ppm. Install a sand tester on the discharge of each pump during testing to verify that these levels are not exceeded.

F. Control grading around excavations to prevent surface water from flowing into excavation areas.

G. ***Remove subgrade materials rendered unsuitable*** by excessive wetting and replace with approved backfill material at no additional cost to the Owner.

H. Walls shall not be exposed to water pressure before the structural work, at the next higher level, has properly cured and the cantilever action of walls is eliminated.

3.02 Installation

A. Dewatering

1. The Contractor shall install a temporary dewatering system for the removal of subsurface water and stormwater encountered during construction of the proposed structures, piping, utilities, etc.

2. ***Dewatering shall be a continuous operation***. Interruptions due to power outages, or any other reason will not be permitted.

3. The Contractor shall provide a standby system for emergency operation in case of failure of the primary power source or mechanical failure of the system. If the dewatering requirements are not satisfied due to inadequacy or failure of the dewatering system, perform such work as may be required to restore damaged structures and foundation soils at no additional cost to Owner.

4. System maintenance shall include, but not be limited to, 24-hour supervision by personnel skilled in the operation, maintenance, and replacement of system components, and any other work required to maintain excavations in a dewatered condition.

B. Consumptive Use Permit (CUP)

1. If dewatering and pumping requirements exceed any of the following regulatory limits, the Contractor shall pay for and obtain a CUP from the local water management district for such pumped volumes:

   a. Dewatering volume greater than 100,000 gpd.
   b. Dewatering system pump capacity greater than 1.0 MGD.
   c. Pump volute equal to or greater than six (6) inches.

3.03 Inspection and Testing

A. ***The Contractor's Geotechnical Engineer shall be required to assure that the dewatering system is operating properly***.

B. ***The Contractor's Geotechnical Engineer shall monitor the performance*** and instruct any adjustment to the Contractor during construction of the Work.

3.04 Protection and Site Clean-Up

A. Continuously maintain excavations in a dry condition with positive dewatering methods during preparation of subgrade, installation of pipe, and construction of structures until the critical period of construction and/or backfill is completed to prevent damage of subgrade support, piping, structure, side slopes, or adjacent facilities from flotation or other hydrostatic pressure imbalance.

B. At all times during the progress of the work, the Contractor shall use all reasonable precautions to prevent either tampering with the wellpoints, if used, or the entrance of foreign material.

C. Immediately upon completion of the Project dewatering operations, the Contractor shall remove all of his equipment, materials and supplies from the site of the work, remove all surplus materials and debris, fill in all holes or excavations, and grade the site to elevations of the surface levels which existed before the work started or as dictated on the Contract Drawings. ***The site shall be thoroughly cleaned and graded as directed by the Engineer.***

D. ***Wells shall be removed or cut off a minimum of three (3) feet below final grade, capped, and abandoned*** in accordance with regulations by agencies having jurisdiction and/or the Engineer.

END OF SECTION

SECTION 02100

SITE PREPARATION

1. GENERAL

1.01 Description

A. Work under this Section includes, but is not limited to the following items:

1. Protection of bench marks.
2. Layout of work.
3. Protection of trees to remain.
4. Clearing and grubbing.
5. Stripping.
6. Disposal of debris.

B. Related work specified elsewhere:

Specification Section	Title
01120	Special Project Procedures
01560	Environmental Protection
01570	Temporary Erosion and Sedimentation Control
02200	Earthwork
02210	Site Grading
02220	Excavation, Backfilling and Compaction
Contract Drawings and General Provisions of the Contract	

C. This Section covers clearing, grubbing, and stripping of the Project Site, complete as specified herein, and disposal of the cleared and grubbed material. The Contractor is expected to visit the site of the work and determine the extent of the clearing and grubbing necessary for the construction operations.

D. ***The Contractor's attention is directed to any Soil Erosion and Sediment Control Ordinances in force***. The Contractor shall comply with all applicable sections of these ordinances.

E. ***The Contractor shall clear and grub all of the area within the limits of actual construction as required***, which includes, but is not limited to, roadways, trenchwork, structures, and open areas. The width of the area to be cleared shall be approved by the Engineer prior to the beginning of any clearing.

F. A line locate for any and all utilities is to be conducted prior to clearing and grubbing operations at the Project Site. The Owner of the utility or utilities known to be in the vicinity of the work is to be contacted by the Contractor to request a line locate. If lines are not located properly before work begins and the Contractor damages the line in any way, the Contractor shall pay for repair and/or replacement of the utility at no additional cost to the Owner. Once lines are located, the Contractor is to take care not to damage the existing utilities. Again, if the Contractor damages the line in any way, the Contractor shall pay for repair and/or replacement of the utility at no additional cost to the Owner.

1.02 Terminology

A. Clearing: *Remove and dispose of shrubs, brush, limbs, and other vegetative growth. Remove all evidence of their presence from the surface including sticks and branches. Remove and dispose of trash piles and rubbish that currently is scattered over the construction site or collects there during construction. Protect trees, shrubs, vegetative growth, and fencing which are not designed for removal. Clearing operations shall be conducted so as to prevent damage to existing structures and installations, and to those under construction, so as to provide for safety of employees and others.*

B. Grubbing: *Grubbing shall consist of the complete removal of all stumps, roots larger than one (1) inch in diameter, matted roots, brush, timber, logs, and any other organic or metallic debris remaining after clearing not suitable for foundation purposes, resting on, under or protruding through the surface of the ground to a depth of twenty-four (24) inches below the subgrade. All depressions excavated below the original ground surface for or by the removal of such objects, shall be refilled with suitable materials and compacted to a density conforming to the surrounding ground surface.*

C. Stripping: *Remove and dispose of all organics and sod, topsoil, grass, and grass roots, and other objectionable material remaining after clearing and grubbing from the areas designated to be stripped. Grass, grass roots and organic material in areas to be excavated or filled shall be stripped to the depth as noted in the soils report. In areas so designated, topsoil shall be stockpiled. Strippings and unsuitable material, such as organic material, shall be disposed of by the Contractor unless directed otherwise by the Engineer.*

1.03 Bench Marks and Monuments

A. Maintain all existing bench marks, monuments and other reference points; if destroyed, replacement costs will be deducted from payments due the Contractor.

1.04 Laying Out Work

A. Permanent base lines, property lines, easement lines and bench marks have been established and are shown on the Contract Drawings. If disturbed as a result of construction activities, the Contractor shall reestablish such items at his expense.

B. The Contractor shall stake out the construction, establish lines and levels, temporary bench marks, batterboards, centerlines and reference points for the work, and verify all dimensions relating to interconnection with existing features. The Contractor shall be held responsible for any errors in these lines and levels.

C. The Contractor shall report any inconsistencies in the proposed grades, lines and levels, dimensions and locations to the Engineer before commencing work.

D. Unless otherwise directed by the Owner or Engineer, the Contractor is expected to contain all construction activities within the right-of-way, easements, and property secured by the Owner, as shown on the Contract Drawings. At no time shall the Contractor disturb surrounding properties or travel on surrounding properties without written consent from the property owner. Any repair or reconstruction of damaged areas in surrounding properties shall be repaired by the contractor on an immediate basis. All costs for repairs shall be the responsibility of the Contractor.

1.05 Utilities in the Area

A. The Contractor shall notify all utility owners which have utilities in the project area and coordinate with them to avoid service interruptions and/or safety hazards.

B. Contact “Sunshine 811” to determine if there are other utilities in the area, and their location.

1.06 Preservation and Protection of Trees and Shrubs

A. Existing decorative trees, shrubbery, and other vegetative material may not be shown on the Contract Drawings. Inspect the site as to the nature, location, size, and extent of vegetative material to be removed or preserved, as specified herein. Preserve, in place, trees that are specifically shown on the Contract Drawings and designated to be preserved or undisturbed.

B. Preservation of Trees, Shrubs and Other Plant Material

1. All plant materials (trees, shrubbery and plants) beyond the limits of clearing and grubbing shall be saved and protected from damage resulting from the Work.

2. No filling, excavating, trenching, or, stockpiling of materials will be permitted within the drip line of these plant materials. The drip line is defined as *"a circle drawn by extending a line vertically to the ground from the outermost branches of a plant or group of plants*". To prevent soil compaction within the drip line area, no equipment will be permitted within this area.

3. When trees are close together, restrict entry to area within the drip line by fencing. In areas where no fence is erected, the trunks of all trees two (2) inches or greater in diameter shall be protected by encircling the trunk entirely with boards held securely by 12-gauge wire and staples (other Engineer-approved methods of protection may be used) before any work is started. This protection shall extend from ground level to a height of six (6) feet.

4. Cut and remove tree branches where such cutting is necessary to affect construction operation. Remove branches other than those required to affect the work to provide a balanced appearance of any tree. Scars resulting from the removal of branches shall be treated with a tree sealant.

1.07 Relocation of Utilities

A. Active utilities which do not interfere with the work shall be supported and protected from damage.

B. After obtaining the Engineer's approval, relocate or remove active utilities which will interfere with the Work as indicated.

C. The Contractor shall pay for all damage to active utilities and for relocation or removal of all interfering utilities which are ascertainable from Contract Drawings, surveys, site inspection or encountered during construction.

D. ***Inactive or abandoned utilities and appurtenant structures encountered shall be filled or removed to avoid interference as directed by the Engineer***. Exposed ends of abandoned lines shall be plugged or capped in a water-tight manner.

E. The Contractor shall construct the "new" stormwater management system at the Project Site, as identified on the Contract Drawings, and bring in clean fill, as necessary, to bring the project to the elevations indicated.

2. PRODUCTS - NOT USED

3.0 EXECUTION

3.01 Clearing and Grubbing

A. All excavation areas associated with the proposed improvements shall be cleared and grubbed in accordance with the Contract Drawings and Contract Documents.

B. Remove trees outside of these areas only as indicated on the Contract Drawings or as approved in writing by the Engineer.

C. All debris and refuse from the site preparation shall be removed from the Project Site and legally disposed of by the Contractor.

D. Clearing

1. The surface of the ground, for the area to be cleared and grubbed shall be completely cleared of all timber, brush, stumps, roots, grass, weeds, rubbish, and all other objectionable obstructions resting on, or protruding through, the surface of the ground.

2. Those trees which are designated by the Engineer shall be preserved as specified herein.

3. Clearing operations shall be conducted so as to prevent damage to existing structures and installations, and to those under construction, so as to provide for the safety of employees and others.

E. Grubbing

1. Grubbing shall consist of the complete removal of all stumps, roots larger than one (1) inch in diameter, matted roots, brush, timber, logs, and any other organic or metallic debris not suitable for foundation purposes, resting on, under or protruding through the surface of the ground to a depth of twenty-four (24) inches below the subgrade.

2. All depressions excavated below the original ground surface for or by the removal of such objects, shall be refilled with suitable materials and compacted to a density conforming to the surrounding ground surface.

F. Clearing and Grubbing Limits

Area	Clearing and Grubbing Limits
Roadway and Paved Area	Two (2) feet below existing grade and replace with compacted backfill
Proposed Structures	Two (2) feet below existing grade within a five (5) foot margin of each structure and replaced with compacted backfill as specified herein.
Building Site Areas Not Specifically Noted Above	Two (2) feet below existing grade within a five (5) foot margin of each structure and replaced with compacted backfill as specified herein.
All other Areas	One (1) foot below the completed surface within a five (5) foot margin of each structure and replaced with compacted backfill as specified herein.

G. ***The Contractor shall exercise extreme care during the clearing and grubbing operations to not damage existing structures, pipes or utilities***.

3.02 Stripping

A. ***All areas to be occupied by the proposed improvements shall be stripped of all brush, weeds, grass, roots and other material to a depth of four (4) inches***.

B. Stockpile areas shall also be stripped.

C. Remove all loamy, organic topsoil suitable for seeding and planting to whatever depth encountered and store separately from other excavated material. Stockpile in areas designated by the Engineer and Owner and provide for proper drainage of said materials. Cover storage piles as required to prevent windblown dust.

D. Stripped materials suitable for topsoil shall be stockpiled and shall be protected until it is replaced. Any topsoil remaining after all of the work is complete shall remain the property of the Owner.

E. In the event that inadequate space within the Project Site or work area is available for stock-piling topsoil without interfering with other construction operations, the Contractor shall contact the Owner for determination of another storage location. ***Transportation costs for "off-site" storage and retrieval of said materials shall be incidental to the Contract***.

F. Dispose of unsuitable topsoil and stripping as specified in Article 3.04 of this Specification Section.

G. Any topsoil remaining after all of the work is complete shall remain the property of the Owner. ***The excess "good" topsoil shall be relocated on the project site per the Owners directions***.

3.03 Burning

A. ***Burning is not allowed!***

3.04 Disposal of Debris

A. ***The Contractor is responsible for the removal and legal disposal of the accumulated debris, refuse, etc. at the Project Site.***

B. Any costs associated with impacts to the normal operation of the treatment facility, effluent quality, or construction activities ***shall be borne solely by the Contractor and shall be deducted from his Pay Application***.

C. ***All other project debris and materials resulting from Project operations shall become the property of the Contractor and shall be "legally" removed and disposed of "off-site" at the Contractor's cost***.

3.05 Preservation or Removal of Trees

A. Trees outside the limits of construction shall be carefully protected from damage. The Contractor shall erect such barricades, guards, and enclosures as may be considered necessary for him for the protection of the trees during all construction operations,

including damage from piled material, contact with equipment, subsurface damage to roots, soil contamination, and general construction operations. Care shall be taken to prevent damage not only to the tree trunk, but also the root system and overhanging branches and limbs.

B. When trees are close together, the Contractor shall restrict entry to the area within the drip line by fencing. In areas where no fence is erected, the trunks of all trees two (2) inches or greater in diameter shall be protected by encircling the trunk entirely with boards held securely by 12-gauge wire and staples. This protection shall extend from ground level to a height of six (6) feet above grade.

C. Cut and remove tree branches where such cutting is necessary to affect the construction operation. Remove branches other than those required to affect the work to provide a balanced appearance of any tree. Scars resulting from the removal of branches shall be treated with a tree sealant approved by a tree surgeon.

D. If found necessary, removal or trimming of trees within the limits of construction shall be in accordance with applicable local ordinances. The Contractor shall apply for and pay for all costs associated with the permitting of and removal of trees from the proposed developed area. The Contractor is required to repair or replace trees damaged or removed during construction.

E. Cutting of branches, limbs, and roots, when deemed necessary, shall be subject to the approval of the Engineer. All cutting shall be smoothly and neatly done without splitting or crushing. Cut or injured portions shall be neatly trimmed and covered with an application of grafting wax or tree healing paint. Such cutting or repairing shall be performed by a qualified tree surgeon. ***All costs shall be incidental to the Contract***.

END OF SECTION

SECTION 02200

EARTHWORK

1. GENERAL

1.01 Description

A. Scope of Work

1. This section includes materials, testing, and earthwork for excavations, fills, and embankments not under roads, in trench work, or under buildings or structures.

B. Related Work Specified Elsewhere

1. Site Grading: Section 02210
2. Excavation, Backfilling and Compaction: Section 02220

1.02 SUBMITTALS

A. Submit excavation and shoring drawings for worker protection in accordance with Section 00700, *General Conditions*, Section 00800, *Supplementary Conditions* and Section 01300, *Shop Drawings, Submittals and Samples*.

B. ***Submit three (3) copies of a certified report from a testing laboratory verifying that the material used for all backfilling, fills and structural backfills meets the specified criteria and gradation and contains less than one percent (1%) asbestos, by weight***.

1.03 TESTING REQUIREMENTS

A. Laboratory Moisture-Density Relationship

1. Determination of laboratory moisture-density relationship and maximum density shall be by the Modified Proctor Method of ASTM D-1557.

2. At least one (1) test per soil type shall be made.

B. In-Place Soil Density

1. In-place soil density shall be determined by one of the following methods:

a. Nuclear Density Meter: ASTM D-2922

b. Drive Sleeve Method ASTM D-2937

2. ***In place field densities shall be taken, in accordance with Article 1.01(C) of Section 01410, "Testing and Testing Laboratory Services" and at not greater than one (1) foot vertical intervals for all fill areas under structures and pavement. Density tests are required for all pipe and foundation work in accordance with the aforementioned Article in Section 01410.***

C. ***Fill material from "off-site" shall be tested using a minus 200 sieve wash to check grain size.*** At least one (1) such test shall be run per one hundred (100) cubic yards of material brought from "off-site" locations.

D. Sample backfill materials by ASTM D-75.

E. Determine the relative density of cohesionless soils by ASTM D-2049.

F. Compaction shall be deemed to comply with the Specifications when no tests fall below the specified relative compaction. The Contractor shall pay the costs of any retesting of work not conforming to the Specifications.

G. "*Relative compaction*" is defined as the ratio, expressed as a percentage, of the in-place density to the laboratory maximum density.

H. ***Density tests will be made for determination of specified compaction by an independent testing laboratory provided and paid for by the Contractor, as part of this Contract, and as approved by the Engineer and Owner as specified in Section 01410, Testing and Testing Laboratory Services***. Testing shall be performed in locations reviewed and approved by the Engineer. If any tests are unsatisfactory, the Contractor shall re-excavate and re-compact the fill or backfill until the desired compaction is obtained. Additional compaction tests will be taken on each side of an unsatisfactory test at locations approved by the Engineer to determine the extent of re-excavation and re-compaction necessary.

I. ***The testing report shall clearly indicate the exact location of all testing, either referenced to a visible monument or on a scaled drawing***. The vertical location of all tests shall be referenced to both finish grade and with respect to the depth of fill placed.

J. ***The Contractor shall pay for each failed compaction test and for each additional test taken to determine the extent of re-excavation and re-compaction*** as previously described and there shall be no cost to the Owner and the Contract Time shall not be increased due to failed compaction tests.

K. If based on the Geotechnical Engineers testing reports and inspection, fill which has been placed is below the density required by the Contract Documents, the Contractor shall provide additional compaction and testing prior to commencing further construction in the area. ***Copies of the testing reports and inspections shall be provided to the Engineer in an electronic format (PDF)***. Should the fill not meet the compaction requirements identified in Section 02220, *Excavation, Backfilling and Compaction*, ***the Contractor shall remove the unsuitable fill and replace it with clean fill that will meet the compaction requirements, at no additional cost to the Owner***.

2. PRODUCTS

2.01 Fill and Backfill

A. Fill and backfill shall be clean, granular sand that is free from organic matter, roots, debris, and rocks lager than two (2) inches in the greatest dimension and having less than 10 percent (10%) passing the No. 200 U.S. sieve size.

B. Water for Compaction

1. Water shall be free of acid, alkali, or organic materials and shall have a pH between 7.0 and 9.0, a maximum chloride concentration of 250 mg/L and a maximum sulfate concentration of 250 mg/L.

2. ***The Contractor shall provide all of the water needed for earthwork***.

3. The Contractor shall provide all temporary piping and valves to convey water from the source to the point of use.

4. The Contractor shall provide any meters and ancillary equipment necessary, if the water is taken from the Owner's potable or reclaimed water distribution line. ***The Contractor shall pay for all water taken from the Owner at the Owner's standard rate or a negotiated monthly fee***.

3. EXECUTION

3.01 Compaction Requirements

A. ***Unless otherwise specified or shown on the Contract Drawings, compact fill, embankments, and backfills in grassed or landscaped areas in accordance with Section 02220, Excavation, Backfilling and Compaction.***

B. Following clearing and grubbing, the exposed ground surface shall be proof-rolled with a heavy self-propelled vibration roller. Proof-rolling shall involve multiple overlapping passes to ***achieve 95% relative compaction (98% relative compaction beneath structures and paved areas) for a depth of one (1) foot or more below finished grade***. Groundwater should be lowered as necessary to two (2) feet below stripped or excavated grade elevation prior to proof-rolling.

C. Dewatering

1. Provide and operate equipment adequately to keep excavations and trenches free of water in accordance with Section 02075, *Dewatering and Drainage*.

2. Remove water during the period when concrete is being deposited, when pipe is being laid, during the placing of structural fill and backfill, and for inspection/testing of the structural subgrade.

3. Maintain the groundwater level a minimum of two and one-half (2½) feet below the bottom of the excavation for all structures and open excavations.

4. Avoid settlement or damage to adjacent property.

5. Dispose of water to an on-site drainage system, if applicable.

6. When dewatering open excavations, dewater from outside the structural limits and from a point below the bottom of the excavation.

7. Comply with all permit conditions, if any, for the dewatering operations.

8. The Contractor shall provide and maintain pumps, sumps, well points, suction and discharge lines and other dewatering system components as necessary.

D. Excavation is unclassified. Perform all excavation regardless of the type, nature, or condition of the material encountered to accomplish the construction.

E. Placing and Compacting Fill Material

1. Excavated material which conforms to the specifications may be used for fill or backfill.

2. Place all materials at optimum moisture content.

3. Place fill in lifts, as specified in the Contract Documents (Table 02220-1, Section 02220, *Excavation, Backfilling and Compaction*), and compact each lift to the extent specified.

F. Foundation Requirements

1. All structure foundation bottoms shall be re-compacted and retested after excavation to densify soils loosened in the excavation process.

2. Soils placed adjacent to footings or walls shall be carefully compacted to avoid damaging the footing or wall. Approved structural sand fills placed in footing excavations above the bearing level, in the trench of pipeline excavations within the structure area plus ten (10) feet beyond the perimeter walls, and in other areas which are expected to provide slab support and/or foundation embedment constraint shall be placed in loose lifts not exceeding six (6) inches.

3. Compaction requirements are presented in Table 02220-1 of Section 02220, *Excavation, Backfilling and Compaction*.

G. Moisture Control of the Earth Material

1. During the compaction operations, maintain the optimum practicable moisture content required for compaction purposes in each lift of the material.

2. Maintain a uniform moisture content throughout the lift. Insofar as practicable, add water to the material at the site of excavation. Supplement by sprinkling the material.

3. At the time of compaction, the water content of the material shall be at optimum water content or within two (2) percentage points above optimum.

4. Aerate material containing excessive moisture by blading, discing, or harrowing to hasten the drying process.

5. Moisture contents greater than two percent (2%) above optimum or below optimum will be permitted only if it can be clearly demonstrated, to the satisfaction of the Engineer, that satisfactory compaction is being achieved.

6. ***Flooding or puddling with water to consolidate backfill is unacceptable***.

H. Site Grading

1. Perform earthwork to the lines and grades shown on the Contract Drawings. Shape, trim and finish slopes to conform with the lines, grades and cross-sections as shown on the Contract Drawings.

2. Make slopes free of exposed roots and loose rocks exceeding two (2) inches in diameter.

3. Round tops of banks to circular curves as shown on the Contract Drawings.

4. Neatly and smoothly trim rounded surfaces. Do not over-excavate and backfill to achieve the proper grade.

5. ***Final grades shall be within ±0.02 feet of the required elevation***.

I. Disposal of Excess Excavation

1. Dispose of excess excavated suitable materials at designated on-site soil areas indicated on the Contract Drawings, if any, or as directed by the Engineer.

2. If on-site disposal is not indicated or directed by the Engineer, ***legally dispose of excess excavated materials off-site at no additional cost to the Owner***.

3. The Contractor shall make his own arrangements for the legal disposal of all excess suitable or unsuitable material and bear all costs associated with said disposal.

J. Temporary Stabilization

1. Where construction activity ceases for at least fifteen (15) days and the top soil has been disturbed, the Contractor shall stabilize the affected areas with temporary seed and mulch.

2. ***Temporary stabilization shall be in accordance with a Stormwater Pollution Prevention Plan (SPPP) to be submitted to the Engineer***.

K. Off-Site Vehicle Tracking

1. ***The Contractor shall take all necessary measures to remove truck sediment before leaving the site*** to reduce vehicle tracking of sediment off-site. Measures may include, but are not limited to, vehicle shaking devices and/or a wheel washing facility.

2. The Contractor shall maintain areas of site ingress and egress and surrounding off-site public rights-of-way from the build-up of sediment. ***Any and all sediment build-up on these areas shall be immediately cleared and removed by the Contractor at no cost to the Owner***.

END OF SECTION

SECTION 02210

SITE GRADING

1. GENERAL

1.01 Description

A. The Work in this section consists of furnishing all necessary labor, equipment, material, transportation and ancillaries necessary to bring the roads, drives, proposed buildings and structures, paved areas, open areas and the remainder of the project site to the lines and grades shown on the Contract Drawings.

B. Related Work Specified Elsewhere

Specification Section	Title
02100	Site Preparation
02200	Earthwork
02215	Finish Grading
02220	Excavation, Backfilling and Compaction
02815	Solid Sodding
Contract Drawings and General Provisions of the Contract	

C. ***The Contractor shall be responsible for the determination of earthwork quantities and the volume of material required for the site.***

D. Terminology

1. Open Areas: *Open areas are those areas that do not include building sites, paved areas, limerock areas, access and road rights-of-way and parking areas.*

2. Maximum Density: *Maximum weight, in pounds per cubic foot, lb/ft^3 (pcf), of a specific material.*

3. Optimum Moisture: *Percentage of water in a specific material at maximum density.*

4. Rock excavation: *Excavation of any hard natural substance which requires the use of explosives and/or special impact tools such as, jackhammers, sledges, chisels, or other similar devices specifically designed for use in cutting or breaking rock, but exclusive of trench excavating machinery.*

1.02 Submittals

A. Submit four (4) copies of a report from a certified testing laboratory, in accordance with Section 01300, *Shop Drawings, Submittals and Samples*, verifying that off-site borrow material, if used, conforms to the gradation specified.

1.03 Protection

A. Prevent damage to existing fencing, trees, landscaping, natural features, bench marks, pavement, structures, and utility lines. The Contractor shall correct any damage at no cost to the Owner.

1.04 Testing Requirements

A. Determination of laboratory moisture-density relationship and maximum density shall be by the Modified Proctor Method of ASTM D-1557. At least one (1) test per soil type shall be made.

B. In-place soil density shall be determined either by use of a Nuclear Density Meter per ASTM D-2922, Sand Cone Method per ASTM D-1556 or by use of the Drive Sleeve Method per ASTM D-2937. In-place field densities shall be taken in accordance with Article 1.01(C) of Section 01410, *Testing and Testing Laboratory Services, and* at not greater than one (1) foot vertical intervals for all fill areas under structures and pavement. One (1) density test is required for each pad or isolated footing and for every twenty (20) linear feet of strip/wall footing length.

C. All fill placed and compaction requirements shall be in accordance with Section 02220, *Excavation, Backfilling and Compaction*.

D. Compaction shall be deemed to comply with the Specifications when no tests fall below the specified relative compaction. The Contractor shall pay the costs of any retesting of work not conforming to the Specifications at no additional cost to the Owner.

E. Relative compaction is defined as the ratio, expressed as a percentage, of the in-place density to the laboratory maximum density.

F. Density tests will be made for determination of specified compaction by an independent testing laboratory provided by the Contractor and as approved by the Engineer and Owner as specified in Section 01410, *Testing and Testing Laboratory Services*. Testing shall be performed in locations reviewed and approved by the Engineer. If any tests are unsatisfactory, the Contractor shall re-excavate and re-compact the fill or backfill until the desired compaction is obtained. Additional compaction tests will be taken on each side of an unsatisfactory test at locations approved by the Engineer to determine the extent of re-excavation and re-compaction necessary.

G. ***The Contractor shall pay for each failed compaction test and for each additional test taken to determine the extent of re-excavation and re-compaction*** as previously described and at no additional cost to the Owner.

2. PRODUCTS

2.01 Materials

A. Suitable Materials

1. Suitable materials for fills shall be classified as A-1, A-3 or A-2-4 in accordance with AASHTO Designation M - 145 and shall be free from vegetation and organic material.

2. ***Not more than 10 percent (10%) by weight of fill material shall pass the No. 200 sieve***.

3. The Contractor shall furnish all additional fill material required for the Project from legal ***off-site*** locations.

B. Suitable Materials to be Placed in Water

1. Suitable material for fills to be placed in water shall be classified as A-1 or A-3 in accordance with AASHTO Designation M - 145.

C. Unsuitable Materials

1. Unsuitable materials are classified as A-2-5, A-2-6, A-2-7, A-4, A-5, A-6, A-7, A-8 or any material not specified in Article 2.01(A) above in accordance with AASHTO Designation M - 145.

D. Water for Compaction

1. Water shall be free of acid, alkali, or organic materials and shall have a pH between 7.0 and 9.0, a maximum chloride concentration of 250 mg/L and a maximum sulfate concentration of 250 mg/L.

2. ***The Contractor shall provide all of the water needed for earthwork***.

3. The Contractor shall provide temporary piping and valves and a means to convey water from the source to the point of use.

4. The Contractor shall provide any meters and ancillary equipment necessary, if the water is taken from the Owner's potable or reclaimed water distribution line. ***The Contractor shall pay for all water taken from the Owner at the Owner's standard rate or a negotiated monthly fee***.

3. EXECUTION

3.01 Preparation

A. The Contractor shall follow the requirements of Section 02100, *Site Preparation* and Section 02200, *Earthwork*.

3.02 Performance

A. Unless otherwise specified or shown on the Contract Drawings, compact fill, embankment and backfills to Modified Proctor Density specified in Section 02220, *Excavation, Backfilling and Compaction*.

B. Excavation

1. Excavation shall conform to the limits indicated on the Contract Drawings or specified herein. This work shall include shaping and sloping and other work necessary in bringing the earthwork to the required grade, alignment and cross section.

2. All suitable materials removed from the excavation shall be used as far as practicable in the formation of the embankments, subgrades, shoulders, building sites and other places as directed. Excavated material shall not be wasted without permission, and where necessary to waste such material, it shall be at the direction

of the Engineer. Unsuitable material shall be removed to the required depth and replaced to the satisfaction of the Engineer with suitable material. Unsuitable material existing in open areas may remain, and these open areas may be used for disposal areas for any excess suitable material only when and as directed by the Engineer.

3. All excess excavated ***suitable*** material or borrow fill shall be considered property of the Owner and disposed of as directed by the Owner or Engineer. ***Excess unsuitable material shall be legally disposed of by the Contractor at no additional cost to the Owner.***

C. Fills

1. Fills shall be formed of suitable material placed in layers in accordance with Section 02220, *Excavation, Backfilling and Compaction*, measured loose and rolled and/or vibrated with suitable equipment until compacted. Thickness of layers may be increased provided the equipment and methods used are proven by field density testing to be capable of compacting thicker layers to specified densities. Layer thickness shall be decreased if equipment and methods used are proven to be incapable of compacting the layers to specified densities.

2. Rock that will not pass through a two (2) inch diameter ring shall not be placed within the top twelve (12) inches of the surface of the completed fill. Rock that will not pass through a one (1) inch diameter ring shall not be placed within the top four (4) inches of the completed fill. Broken concrete or asphaltic pavement shall not be used in fills.

3. ***Muck or other unsuitable material shall not be used in any areas on the Project site.***

4. All fill placed as part of the improvements defined under this Project shall be compacted in maximum lifts and to a density as specified in Section 02220, *Excavation, Backfilling and Compaction*.

5. ***Final elevations shaft be within ±0.02 feet of the required elevation and surfaces shall be sloped to drain as shown on the Contract Drawings***.

D. Siltation barriers and other erosion control and pollution and erosion control measures required by regulatory agencies are to be accomplished as part of the work without additional compensation.

E. Subgrades

1. The construction of subgrades shall conform to the requirements set forth hereinafter and shall consist of bringing the top of the roadway subgrade between

the outer limits of the base course, to a surface conforming to the grades, lines and cross section shown on the Contract Drawings, of uniform density, ready to receive the base course.

2. All material of the subgrade within the indicated limits shown on the Contract Drawings which provide a Limerock Bearing Ratio of less than 40 shall be stabilized as specified under Section 02610, *Stabilized Sub-Base*.

3. In areas of pavement removal, the existing base material shall be removed and, if uncontaminated by unsuitable material, may be stock-piled for use in the proposed subbase. Excavated base material may not be utilized as base material on new pavement areas. The existing subgrade must then be reworked to meet the subgrade requirements specified herein.

4. After the subgrade has been properly shaped and stabilized, if required, it shall be brought to a firm, unyielding surface by rolling the entire area with an approved three (3) wheel power roller weighing not less than ten (10) tons. All areas inaccessible to the roller shall be thoroughly compacted with hand tampers weighing not less than fifty (50) pounds, the face of which shall not exceed one hundred square inches (100 in^2) in area. Unless the subgrade material at the time of the rolling contains sufficient moisture to insure proper compaction, it shall be watered as directed and then compacted. Subgrade material containing excess moisture, as determined by the Engineer, shall be permitted to dry to the proper consistency before being compacted.

5. The top twelve (12) inches of the subgrade, including cut and fill sections, shall be compacted to the density specified in Section 02220, *Excavation, Backfilling and Compaction*.

6. After the subgrade has been prepared, the Contractor shall maintain it free of ruts, depressions and damage resulting from the hauling and handling of any material, equipment, tools, etc. Ditches or drains shall be constructed and maintained along the completed subgrade section. Just before the base course is laid, the subgrade shall be checked for crown and elevation. ***The final elevation of the subgrade shall be within ±0.02 feet of the required elevation***.

7. Slope the grade away from buildings/structures at a minimum rate of ¼-inch per foot for ten (10) feet or a minimum of two (2) inches, whichever is greater), unless indicated otherwise on the Contract Drawings.

8. ***Cultivate subgrade to a depth of four (4) inches, where topsoil is to be placed***. Repeat cultivation in areas where equipment, used for hauling and spreading topsoil, has compacted the subsoil.

3.03 Topsoil

A. Topsoil shall be material obtained from stripping or excavation free of roots, brush, stumps or other debris and suitable for or capable of supporting the growth of grass or other plant life.

B. When this topsoil material is available from the on site excavation operations, the topsoil shall be placed to a depth of four (4) inches in all areas of new grading and in areas where seeding, sodding and grading is to occur in lieu of topsoil shipped to the site.

C. Topsoil shall be spread evenly and compacted to a thickness of not less than four (4) inches (twelve (12) inches in landscaped areas) and to the proposed elevations and grades. Grade flush with walks, curbs, and paving, or to the elevations indicated on the Contract Drawings.

D. Topsoil around trees, plants, buildings and structures shall be spread manually to prevent damage that may be caused by grading equipment. The Contractor shall be responsible to repair any and all damages at no additional cost to the Owner.

E. Topsoil specifications and placement are presented in Section 02215, *Finish Grading*, Articles 2.02 and 3.02, respectively.

3.04 Finish Grading

A. After site grading is completed, the disturbed areas shall be finish graded as specified in Section 02215, *Finish Grading*.

B. Any lumber, undesirable materials and rocks larger than the one (1) inch size shall be removed from the surface and the surface shall be prepared for sod and/or seeding and mulching.

C. The completed surface shall be shaped and sloped to drain as indicated on the Contract Drawings.

D. ***The completed surface shall be within ±0.02 feet of the finish elevations*** shown on the Contract Drawings, unless otherwise approved by the Engineer.

3.05 Moisture Control of Earth Material

A. During the compaction operations, maintain optimum practicable moisture content required for compaction purposes in each lift of material.

B. Maintain moisture content uniform throughout the lift.

C. Insofar as practicable, add water to the material at the site of excavation. Supplement by sprinkling the material.

D. At the time of compaction, the water content of the material shall be at optimum water content or within two (2) percentage points above optimum.

E. Aerate material containing excessive moisture by blading, discing, or harrowing to hasten the drying process.

END OF SECTION

SECTION 02215

FINISH GRADING

1. GENERAL

1.01 Description

A. The Work in this section consists of furnishing all necessary labor, equipment, and material necessary to bring the project site to the lines and grades shown on the Contract Drawings, including, but not limited to:

1. Finish grade subsoil.
2. Cut out areas to receive stabilizing base course materials.
3. Place, finish grade and compact topsoil.

B. Related Work Specified Elsewhere

Specification Section	Title
02100	Site Preparation
02200	Earthwork
02210	Site Grading
02220	Excavation, Backfilling and Compaction
02720	Concrete Sidewalks
02815	Solid Sodding
Contract Drawings and General Provisions of the Contract	

1.02 Protection

A. Prevent damage to existing fencing, trees, landscaping, natural features, bench marks, pavement, structures, and utility lines. ***The Contractor shall correct any damage at no cost to the Owner***.

1.03 Quality Assurance

A. When requested, the Contractor shall provide the necessary certification that the topsoil conforms to the requirements of Article 2.02 of this specification section.

2. PRODUCTS

2.01 General

A. The Contractor shall provide topsoil for use under all sodded areas.

2.02 Topsoil

A. Topsoil shall be fertile, friable, natural loam topsoil typical of the area, from well drained sites, free from subsoil, stones, plants, roots, grass, excessive amounts of weeds, or other extraneous material and shall not be used while muddy or frozen.

B. Where possible, topsoil removed during the clearing and grubbing stage shall be used. The topsoil shall be free of roots, brush, stumps or other debris and suitable for or capable of supporting the growth of grass or other plant life.

C. ***Topsoil shall contain not less than eight percent (8%) nor more than twenty-five percent (25%) organic matter (AASHTO T-194) with an acidity range (pH) of 5.5 to 7.5***. The topsoil shall consist of either natural topsoils typical of the locality and free from coarse stone aggregate or surface soils stripped from the site and enriched with humus at a rate of eight percent (8%) by volume. The soil mixture prepared by mixing surface soils and humus shall be free of oil, cinders, coarse stone, and woody root material.

D. Topsoil sample tests, if required, shall be made at the discretion of the Engineer.

3. EXECUTION

3.01 Subsoil Preparation

A. Rough grade subsoil systematically to allow for a maximum amount of natural settlement and compaction. Eliminate uneven areas and low spots. Remove debris, roots, branches, stones, etc. Remove subsoil that has been contaminated with petroleum products.

B. Cut out areas to subgrade elevation, which are to receive stabilizing base for paving, driveways, sidewalks, etc.).

C. Bring the subsoil to the required levels, profiles, and contours. ***Make gradual changes in grade. Blend slopes into level areas.***

D. ***Slope the grade away from buildings and structures a minimum of two (2) inches in ten (10) feet unless indicated otherwise on the Contract Drawings***.

E. ***Cultivate subgrade to a depth of four (4) inches, where topsoil is to be placed***. Repeat cultivation in areas where equipment, used for hauling and spreading topsoil, has compacted the subsoil.

F. All finish grading shall be done in a manner that provides positive drainage.

3.02 Placing Topsoil

A. Place topsoil in all areas of new grading and in areas where sodding, grading, planting and landscaping is to occur. Topsoil shall be spread evenly and compacted to the following minimum depths:

1. Twelve (12) inches in landscaped areas.

2. Six (6) inches for seeded areas, if any.

3. Four and one-half (4½) inches for sodded areas.

4. Four (4) inches everywhere else.

B. The topsoil shall be relatively dry and placed during dry weather.

C. Remove stone roots, grass, weeds, debris and other foreign material while spreading.

D. Topsoil around trees, plants, buildings and structures shall be spread manually to prevent damage that may be caused by grading equipment. The Contractor shall be responsible to repair any and all damages at no additional cost to the Owner.

E. Fine grade topsoil eliminating rough and low areas to ensure positive drainage. Maintain levels, profiles, and contours of subgrades.

F. Grade flush with walks, curbs, and paving, or to the elevations indicated on the Contract Drawings.

G. Lightly compact placed topsoil.

3.03 Surplus Material

A. All excess ***suitable*** material, subsoil, topsoil or borrow fill shall be considered property of the Owner and moved to either a storage location on-site or at an off-site location as directed by the Owner. ***Excess unsuitable material shall be "legally" disposed of by the Contractor at no additional cost to the Owner.***

B. Leave stockpile areas and the entire Project Site clean and raked, ready to receive landscaping, solid sodding or loaming, seeding and mulching.

END OF SECTION

SECTION 02220

EXCAVATION, BACKFILLING AND COMPACTION

1. GENERAL

1.01 Description

A. Scope of Work

1. The Work in this section consists of dewatering, excavating, trenching, sheeting/shoring, grading, backfilling, and compacting those soil materials required under, adjacent to, and for the construction of buildings, structures, piping, utilities, roads, appurtenances and the stormwater management systems as shown on the Contract Drawings and specified herein.

B. Related Work Specified Elsewhere

1.	Dewatering and Drainage:	Section 02075
2.	Site Preparation:	Section 02100
3.	Site Grading:	Section 02210
4.	Finish Grading:	Section 02215
5.	Reinforced Concrete Pipe and Fittings:	Section 02612
6.	Ductile Iron Pipe and Fittings:	Section 15060

C. ***The Contractor shall be responsible for the determination of earthwork quantities and the volume of material required for the site***.

D. Terminology

1. Maximum Density: *Maximum weight, in pounds per cubic foot, lb/ft^3 (pcf), of a specific material.*

2. Optimum Moisture Content: *The optimum moisture content shall be determined by ASTM D-1557 specified to determine the maximum dry density for relative compaction. Field moisture content shall be determined on the basis of the fraction passing the ¾-inch sieve.*

3. Rock Excavation: *Excavation of any hard natural substance which requires the use of explosives and/or special impact tools such as, jack hammers, sledges, chisels, or other similar devices specifically designed for use in cutting or breaking rock, but exclusive of trench excavating machinery.*

4. Suitable: *Suitable materials for fills shall be a non-cohesive, non-plastic, granular local sand (classified as A-1, A-3 or A-2-4 in accordance with AASHTO Designation M - 145) that shall be free from vegetation, organic material, marl, silt or muck. Not more than ten (10) percent by weight of fill material shall pass the No. 200 Sieve. The Contractor shall furnish all additional fill material required.*

5. Unsuitable: *Unsuitable materials are highly organic soil (peat or muck) classified as A-2-5, A-2-6, A-2-7, A-4, A-5, A-6, A-7, and A-B in accordance with AASHTO Designation M - 145.*

E. Plan for Earthwork

1. The Contractor shall be responsible for having determined to his satisfaction, prior to the submission of his Bid, the conformation of the ground, the character and quality of the substrata, the types and quantities of materials to be encountered, the nature of the groundwater conditions, the prosecution of the Work, the general and local conditions and all other matters that can, in any way, affect the work under this Contract according to Section 00700, *General Conditions*.

2. ***Prior to commencing the excavation, the Contractor shall submit a plan (Earthwork Plan) of his proposed operations to the Engineer for review***. The Contractor shall reflect the equipment and methods to be employed in the excavation. ***Prices established in the Proposal for the Work to be done will reflect all costs pertaining to the Work. No claims for extras based on substrata or groundwater table conditions will be allowed***.

F. Trench Safety Act

1. The Contractor shall comply with all of the requirements of the Florida Trench Safety Act (Chapter 90-96, CS/CB 2626, Laws of Florida). The Contractor shall acknowledge that included in various items of his Bid proposal and in the Total Bid Price are costs for complying with the provisions of the Act (Section 00430).

2. Additionally, the Contractor is required to break out the costs for complying with the Florida Trench Safety Act. ***FAILURE TO COMPLY WITH THE REQUEST IN THIS SECTION SHALL RESULT IN THE BID BEING DECLARED NON-RESPONSIVE***.

3. Failure to comply with the provisions of the Act shall result in a per item penalty, of a dollar amount dictated by the governing authority ($1,000 minimum), per day that the work is out of compliance.

1.02 Applicable Publications

A. All publications and standard specifications referred to herein are the latest or current issue of that publication or specification as of the specification date.

1.03 Quality Assurance

A. The requirements for testing and laboratory services are specified in Section 01410, *Testing and Testing Laboratory Services*.

B. A Testing Laboratory employed by the Contractor, as part of this Contract, and ***approved by the Engineer and Owner***, shall make such tests that are deemed advisable.

C. The Contractor shall schedule his work so as to permit reasonable time for testing before placing succeeding lifts and shall keep the laboratory informed of his progress.

D. ***Costs for all testing shall be paid by the Contractor and be included in the Contract Price***. Any and all tests that have to be repeated, because of failure of the tested material to meet specification, shall be paid for by the Contractor.

1.04 Federal and State Regulatory Requirements

A. All trench excavations which exceed four (4) feet in depth shall comply with the applicable trench safety standards as stated in the OSHA Excavation Safety Standards, 29 CFR S.1926.650, Subpart P, as regulated and administered by the Florida Department of Labor and Employment Security as the "Florida Trench Safety Act".

1.05 Job Conditions

A. If, in the opinion of the Engineer, conditions encountered during construction warrant a change in the footing elevation, or in the depth of removal of unsuitable material from that indicated in the geotechnical investigation (soils report), an adjustment may be made in the Contract Price, as provided in the General and Supplementary Conditions.

B. Locate existing underground utilities in areas of work. Provide adequate means of support and protection during earthwork operations.

C. Should uncharted, or incorrectly charted, piping or other utilities be encountered during excavation, if any, consult the utility owner immediately for directions. Cooperate with Owner and utility companies in keeping respective services and facilities in operation. Repair damaged utilities to satisfaction of utility owner at no additional cost to the Owner.

D. Do not interrupt existing utilities serving occupied facilities.

E. The use of explosives is not permitted.

F. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by vibration, settlement, lateral movement, undermining, washout and other hazards created by earthwork operations.

1.06 Pre-Construction Survey

A. Prior to commencing excavation, backfill or dewatering, ***the Engineer and Contractor shall jointly conduct a survey of those existing structures which, in the opinion of the Engineer, may be subject to settlement or distress resulting from excavation or dewatering operations.*** This shall include both private and public property, both on the project site(s) and in and adjacent to the project right-of-ways.

B. The Contractor will monitor the structures surveyed to ascertain evidence of settlement or distress. If settlement or distress becomes evident the Contractor shall be required to repair the structures to their previous condition, to the satisfaction of the Engineer. Costs shall be paid by the Contractor and shall be considered to be incidental to the Contract.

1.07 Submittals

A. Submit to the Engineer, for review, the proposed methods of construction, including dewatering, excavation, sheeting and shoring, bedding, filling, compaction and backfilling for the various portions of the Work.

B. The Engineer's review shall be for *method* only.

C. The Contractor shall remain responsible for the adequacy and safety of the methods.

2. PRODUCTS

2.01 Materials

A. General

1. All fill material from "*on-site*" and "*off-site*" sources shall be subject to the approval of the Engineer and shall contain less than 1.0% asbestos by weight or volume.

2. All fill material shall be unfrozen and free of organic material, trash, or other objectionable material. Excess or unsuitable material, as designated by the Engineer, shall be removed in a legal manner from the job site by the Contractor at no additional cost to the Owner and shall be considered incidental to the Contract.

B. Soil Materials

1. Satisfactory soil materials are ASTM D-2487 soil classification groups GW, GP, SW and SP.

2. Unsatisfactory soil materials are ASTM D-2487 soil classification groups GC, SC, ML, MH, CL, CH, OL, OH and PT.

C. Sub-Base Materials

1. Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, crushed slag, natural or crushed sand.

D. Drainage Fill

1. Washed, evenly graded mixture of crushed stone, or crushed or uncrushed gravel, with one hundred percent (100%) passing a 1½-inch sieve and not more than five percent (5%) passing a No. 4 sieve.

E. Common Fill Material

1. Common fill shall be sand not containing stones, rock, concrete or other rubble larger than one (1) inch in diameter. It shall have physical properties which allow it to be easily spread and compacted.

2. The Contractor shall utilize as much suitable excavated material as possible for reuse in accordance with the Contract Drawings and Specifications or as directed by the Engineer.

3. The Engineer shall direct the Contractor on the type of material allowed in certain sections of the earthwork operations.

F. Structural Fill

1. Structural Fill shall be well graded sand to gravelly sand having the following gradation:

U.S. Sieve Size	Percent Passing by Weight
1-inch	100
No. 4	75 - 100
No. 40	15 - 80
No. 100	0 - 30
No. 200	0 - 10

G. Class I Soils

1. Class I soils are not defined in ASTM D-2487.

2. Class I soils shall be manufactured angular, granular material, ¼-inch to 1½ - inches (6 to 40 mm) in size, including materials having significance such as crushed stone or rock, broken coral, crushed slag, cinders, or crushed shells. Sieve analysis for crushed stone is given below separately.

3. Crushed Stone shall consist of clean mineral aggregate free from clay, loam or organic matter, conforming with ASTM C-33 stone size No. 89 and with particle size limits as follows:

U.S. Sieve Size	Percent Passing by Weight
½	100
3/8	90 - 100
No. 4	20 - 55
No. 8	5 - 30
No. 16	0 - 10
No. 50	0 - 5

H. Class II Soils

1. Class II soils shall be in accordance with ASTM D-2487, Class II soils shall have less than five percent (5%) passing a No. 200 sieve as presented below:

2. **GW**: Well-graded gravels and gravel-sand mixtures with little or no fines. Fifty percent (50%) or more retained on No. 4 sieve and more than ninety-five percent (95%) retained on a No. 200 sieve. All material shall be clean.

3. **GP**: Poorly graded gravels and gravel-sand mixtures with little or no fines. Fifty percent (50%) or more retained on No. 4 sieve and more than ninety-five percent (95%) retained on a No. 200 sieve. All material shall be clean.

4. **SW**: Well-graded sands and gravelly sands with little or no fines. More than fifty percent (50%) passes a No. 4 sieve. More than ninety-five percent (95%) retained on a No. 200 sieve. All material shall be clean.

5. **SP**: Poorly graded sands and gravelly sands with little or no fines. More than fifty percent (50%) passes a No. 4 sieve. More than ninety-five percent (95%) retained on a No. 200 sieve. All material shall be clean.

I. Coarse Sand

1. Coarse sand shall consist of clean mineral aggregate with particle size limits as follows:

U.S. Sieve Size	Percent Passing by Weight
No.10	100
No. 20	0 - 30
No. 40	0 - 5

J. Other Material

1. All other material, not specifically described, but required for proper completion of the work shall be selected by the Contractor and approved by the Engineer.

3. EXECUTION

3.01 Preparation

A. Clearing and grubbing shall be performed in accordance with Section 02100, *Site Preparation*.

B. Strip and dispose of topsoil off-site, unless otherwise directed to stockpile the material by the Engineer.

3.02 Sheeting, Shoring and Bracing

A. ***Furnish, put in place, and maintain sheeting and bracing as required to support the sides of excavations***, to prevent movement which could in any way diminish the width of the excavation below that necessary for proper construction, and to protect adjacent structures, and to protect workers from hazardous conditions or other damage. Such support shall consist of braced steel sheet piling. If the Owner is of the opinion that sufficient or proper supports have not been provided, he may order additional supports be installed at the expense of the Contractor, and compliance with such order shall not relieve or release the Contractor from his responsibility for the sufficiency of such supports. Care shall be taken to prevent voids beside the sheeting, but if voids are formed, they shall be immediately filled and compacted. Where soil cannot be properly compacted to fill a void, lean concrete shall be used as backfill at no additional cost to the Owner.

B. The Contractor shall construct sheeting outside the neat lines of the foundation unless deemed otherwise for his method of operation. Sheeting shall be plumb and securely braced and tied in position. Sheeting and bracing shall withstand all pressure to which the structure or trench will be subjected. Any deformation shall be corrected by the Contractor, at his own expense, so as to provide the necessary clearances and dimensions.

C. ***Where sheeting and bracing is required to support the sides of excavations for structures, the Contractor shall engage a Professional Structural Engineer, registered in the State of Florida, to design the sheeting and bracing.*** The sheeting and bracing installed shall conform with the design, and certification of this shall be provided by the Professional Structural Engineer.

D. The installation of sheeting, particularly by driving or vibrating, may cause distress to existing structures. The Contractor shall evaluate the potential for such distress and, if necessary, take all precautions to prevent distress of existing structures because of sheeting installation.

E. The Owner may direct the Contractor, in writing, to leave in place at any time, during the progress of the Work for the purpose of preventing injury to structures, utilities, or property, whether public or private.

F. Steel sheeting shall be of adequate strength for the purpose intended. Where conditions permit, steel drag shields or trench boxes may be used. Voids left by the advancement of the shield shall be carefully backfilled and compacted in accordance with trench backfill requirements.

G. Steel sheeting above the crown elevation of pipe may be completely removed when sufficient backfill has been placed to prevent damage to the Work and/or existing structures. Care shall be exercised to prevent the opening of voids during the extraction process.

H. All sheeting placed below the crown elevation of pipe shall be cut off above the pipe crown elevations and left in place.

I. All sheeting and bracing not left in place shall be carefully removed in such manner as not to endanger the construction, or other structures, utilities, or property. All voids left or caused by withdrawal of sheeting shall be immediately refilled with sand by ramming with tools especially adapted for that purpose, or otherwise directed by the Owner.

J. The right of the Owner to order sheeting and bracing left in place shall not be construed as creating any obligation on his part to issue such orders, and his failure to exercise his right to do so shall not relieve the Contractor from liability for damages to persons or property occurring from or upon the work occasioned by negligence or otherwise, growing out of a failure on the part of the Contractor to leave in place sufficient sheeting and bracing to prevent any caving or moving of the ground.

K. The Contractor shall comply with all applicable safety regulations and laws.

L. The structural strength and safety of all sheeting, shoring, and bracing shall be the sole responsibility of the Contractor. The Contractor shall repair any damage resulting from failure to provide adequate supports at his expense.

3.03 Dewatering and Drainage

A. The Contractor shall at all times during construction, where groundwater level affect the construction activities, provide and maintain proper equipment and facilities to remove all water entering excavations, and shall keep such excavations dry so as to obtain a satisfactory, undisturbed subgrade foundation condition until the fills, structures or pipes to be built thereon have been completed to such extent that they will not be floated or otherwise damaged by allowing water levels to return to natural levels as stipulated in Section 02075, *Dewatering and Drainage*.

B. ***The Contractor shall engage the services of a Professional Geotechnical Engineer, registered in the State of Florida, to design the dewatering systems for all structures***. ***The Contractor shall submit to the Engineer, for review, a plan for dewatering systems prior to commencing Work (Dewatering Plan) in accordance with Section 02075, "Dewatering and Drainage"***. The installed dewatering system shall be in conformity with the overall construction plan, and certification of this shall be provided by the Professional Geotechnical Engineer. The Professional Geotechnical Engineer shall be required to monitor the performance of the dewatering systems during the progress of the Work and require such modifications as may be required to assure that the systems are performing satisfactorily.

C. Dewatering shall at all times be conducted in such a manner as to preserve the undisturbed bearing capacity of the subgrade soils at the bottom of the excavation and to preserve the integrity of adjacent structures. Well or sump installations shall be constructed with proper sand filters to prevent intermixing of finer grained soil from the surrounding ground.

D. Water entering the excavation from surface runoff shall be collected in shallow ditches around the perimeter of the excavation, drained to sumps, and pumped from the excavation to maintain a bottom free from standing water.

E. All water pumped or drained from the excavated area shall be disposed of in a suitable manner without undue interference with other work, without damage to the surrounding property, and in accordance with pertinent rules and regulations.

F. ***The Contractor shall take all additional precautions to prevent buoyant uplift of any structure during construction***.

G. No construction, including pipe laying, shall be allowed in water. Groundwater levels shall be maintained at least thirty (30) inches below the excavation. No water shall be allowed to come into contact with masonry or concrete within twenty-four (24) hours after being placed. The Contractor shall constantly guard against damage due to water and take full responsibility for all damage resulting from his failure to do so.

H. The conveying of dewatered liquids in open ditches or trenches will not be allowed. Permission to use any storm sewers or drains for water disposal purposes shall be obtained fro the authority having jurisdiction. Any requirements and costs for such use shall be the responsibility of the Contractor. The Contractor shall not cause flooding by overloading or blocking up the flow in the drainage facilities, and he shall leave the facilities unrestricted and as clean as originally found. Any damage to facilities shall be repaired or restored as directed by the Owner or the authority having jurisdiction, at no cost to the Owner.

I. The Contractor shall be required, at his expense, to excavate below grade and refill with approved fill material if the Owner determines that adequate drainage has not been provided.

J. ***Flotation shall be prevented by the Contractor by maintaining a positive and continuous operation of the dewatering system***. The Contractor shall be fully responsible and liable for all damages which may result from failure of this system.

K. Removal of dewatering equipment shall be accomplished after the system is no longer required; the material and equipment constituting the system, shall be removed by the Contractor.

L. The Contractor shall take all necessary precautions to preclude the accidental discharge of fuel, oil, etc. in order to prevent adverse effects on groundwater quality.

M. The Contractor shall review all of the requirements of Section 02075, *Dewatering and Drainage*, as well as the General and Supplementary Conditions (Division 0).

3.04 Excavation for Structures and Utilities

A. Excavation work shall be performed in a safe and proper manner with appropriate precautions being taken against all hazards. Excavations shall provide adequate working space and clearances for the work to be performed therein and for installation and removal of concrete forms. In no case shall excavation faces be undercut for extended footings.

B. Excavation shall be made to such dimensions as will give suitable room for bracing and supporting, for pumping and draining, for installing the pipelines, and for all other work required. ***Conform to the elevations and dimensions shown on the Contract Drawings within a tolerance of ± 0.02 feet***.

1. Excavation for precast or prefabricated structures shall be carried to an elevation two (2) feet lower than the proposed outside bottom of the structure to provide space for the structural backfill material.

2. Excavation for structures constructed or cast-in-place in dewatered or dry excavations shall be carried down to an elevation two (2) feet below the bottom of the structure where dewatering methods are such that a dry evacuation bottom is exposed and the naturally occurring material at this elevation leveled and left ready to receive construction. ***Material disturbed below the founding elevation in dewatered excavations shall be replaced with No. 57 stone or Class B concrete***.

C. Immediately document the location, elevation, size, material type and function of all new subsurface installations, and utilities encountered during the course of construction.

D. Encounters with subsurface obstructions shall be hand excavated.

E. Excavation equipment operators and other concerned parties shall be familiar with subsurface obstructions as shown on the Contract Drawings and should anticipate the encounter of unknown obstructions during the course of the Work.

F. Excavation and dewatering shall be accomplished by methods which preserve the undisturbed state of subgrade soils. ***Subgrade soils which become soft, loose, "quick" or otherwise unsatisfactory for support of structures, as a result of inadequate dewatering or other construction methods, shall be undercut a minimum of twelve (12) inches and replaced with FDOT No. 57 Stone*** as required by the Engineer at the Contractor's expense.

G. The bottom of excavations shall be rendered firm and dry before placing any structure or pipe. Excavated material not suitable for backfill shall be removed from the site and disposed of by the Contractor in a legal manner at no additional cost to the Owner. The bedding schedule for pipes shall be as shown in Table 02220-2 presented at the end of this specification section.

H. Excavated material shall be stockpiled in such a manner as to prevent nuisance conditions. Surface drainage shall not be hindered.

I. ***All structure and pipe locations and elevations as required herein, must be permanently documented by the Contractor, on the Project Record Drawings prior to the Engineer's approval of the Application for Payment for that Work***.

J. Excavated material shall be stockpiled in such a manner as to prevent nuisance conditions. Surface drainage shall not be hindered. No excavated material or other construction material shall be placed within thirty (30) feet of the edge of pavement of any roadway.

3.05 Undercut

A. If the bottom of any excavation is below that shown on the Contract Drawings or specified because of Contractor error, convenience, or unsuitable subgrade due the Contractor's excavation methods, he shall refill to normal grade with fill at his own cost. Fill material and compaction method shall be as directed by the Engineer.

3.06 Stabilization

A. Subgrades for concrete structures and trench bottoms shall be firm, dense, and thoroughly compacted and consolidated; shall be free from mud and muck; and shall be sufficiently stable to remain firm and intact.

B. ***Subgrades for concrete structures or trench bottoms which are otherwise solid, but which become mucky on top due to construction operations, shall be reinforced with one or more layers of crushed rock or gravel***. Not more than a ½-inch depth of mud or muck shall be allowed to remain on stabilized trench bottoms when the pipe bedding material is placed thereon. The finished elevation of stabilized subgrades for concrete structures shall not be above subgrade elevations shown on the Contract Drawings.

C. All stabilization work shall be performed by and at the expense of the Contractor.

3.07 Fill and Compaction

A. Materials

1. To the maximum extent available, excess earth obtained from structure and trench excavation shall be used for the construction of fills and embankments.

2. Materials used as backfill shall be free from rocks or stones larger than one (1) inch in their greatest dimension; brush, stumps, logs, roots, debris, and organic or other deleterious materials; and must be acceptable to the Engineer.

3. Backfilling and construction of fills and embankments during freezing weather shall not be done except by permission of the Engineer. No backfill, fill, or embankment materials shall be installed on frozen surfaces, nor shall frozen materials be in any backfill, fill or embankment.

B. Placement and Compaction

1. Backfill materials shall be placed in approximately horizontal layers in accordance with Table 02220-1, in uncompacted thickness. Material deposited in piles or windrows by excavating and hauling equipment shall be spread and leveled before compaction.

2. Each layer of material being compacted shall have the best practicable uniform moisture content to ensure satisfactory compaction. The Contractor will be required to add water and harrow, disc, blade, or otherwise work the material in each layer to ensure uniform moisture content and adequate compaction. Each layer shall be thoroughly compacted by rolling or other method acceptable to the Engineer, to the densities indicated in Table 02220-1 (ASTM D1557, latest revision).

3. Whenever a trench passes through a backfill or embankment, material shall be placed and compacted to an elevation twelve (12) inches above the top of the pipe before the trench is excavated.

C. Compact and backfill excavations and construct embankments for structures according to the schedule listed in Table 02220-1 provided at the end of this specification section. Backfill schedule for pipes is listed in Table 02220-2 also presented at the end of this specification section (Modified Proctor shall be ASTM D-1557, latest edition).

D. Pipe shall be laid in open trenches unless otherwise indicated on the Contract Drawings or elsewhere in the Contract Documents.

E. Excavations shall be backfilled to the original grade or as indicated on the Contract Drawings. Deviation from this grade because of settling shall be corrected. Backfill operation shall be performed to comply with all rules and regulations and in such a manner that it does not create a nuisance or safety hazard.

F. Embankments shall be constructed true to lines, grades and cross sections shown on the Contract Drawings or ordered by the Owner. Embankments shall be placed in successive layers of not more than the maximum lift thickness identified in Table 02220-1, of loose measure, for the full width of the embankment. As far as practicable, traffic over the work during the construction phase shall be distributed so as to cover the maximum surface area of each layer.

G. If the Contractor requests approval to backfill material utilizing lifts and/or methods other than those specified herein, such a request shall be in writing to the Engineer. Approval will be considered only after the Contractor has performed tests, at the Contractor's expense, to identify the material used and density achieved throughout the backfill area utilizing the method of backfill requested. The Engineer's approval will be in writing.

H. Foundation Preparation

1. ***The existing ground beneath proposed tankage, building foundations and equipment base slabs and slabs on grade shall be removed and the area proof-rolled***. Proof-rolling should consist of at least ten (10) passes of a self-propelled vibrator compactor capable of delivering a minimum impact force of 40,000 pounds per drum to the soils. To minimize the effects of compaction induced vibrations on adjacent existing structures, the compaction operation shall be limited to a distance no closer than twenty-five (25) feet from the existing structures. Each pass should overlap the preceding pass by thirty percent (30%) to insure complete coverage.

2. Backfilled areas shall be compacted, in maximum lift thicknesses (loose measure) and to the densities (ASTM D1557, (latest)) identified in Table 02220-1, ***for a depth of not less than two (2) feet below the bottom of the foundations or concrete slabs***. Any unsuitable foundation material shall be removed and replaced with suitable material.

3. Slabs On Grade

    a. Subgrades for concrete slabs shall be removed, backfilled, and compacted to the required grade.

    b. The top two (2) feet of concrete slab subgrade in cut sections and all fill material shall be compacted, in maximum lift thicknesses (loose measure) and to the densities (ASTM D1557, (latest)) identified in Table 02220-1.

3.08 Trench Excavation

A. ***The Contractor shall not open more trench in advance of pipe laying than is necessary to expedite the Work. One hundred (100) feet shall be the maximum length of open trench on any line under construction***. All trench excavation shall be open cut from the surface. The Contractor shall review the typical pipe trench sections in earth presented as Figure 02220-1 through 02220-4 at the end of this Section.

1. Alignment, Grade, and Minimum Cover

    a. The alignment and grade or elevation of each pipeline shall be fixed and determined from offset stakes.

    b. Vertical and horizontal alignment of pipes, and the maximum joint deflection used in connection therewith shall be in conformity with requirements of the section covering installation of pipe.

2. Where pipe grades or elevations are not definitely fixed by the Contract Drawings, trenches shall be excavated to a depth sufficient to provide a minimum depth of backfill cover over the top of the pipe of forty-two (42) inches where in paved or graded streets where surface grades are definitely established and thirty-six (36) inches in other locations. Greater pipe cover depths may be necessary on vertical curves or to provide necessary clearance beneath existing pipes conduits, drains, drainage structures, or other obstructions encountered at normal pipe grades.

    a. Measurement of pipe cover depth shall be made vertically from the outside top of pipe to finished ground or pavement surface elevation.

B. Limiting Trench Widths

1. Trenches shall be excavated to a width that will provide adequate working space and sidewall clearances for proper pipe installation, jointing, and embedment. However, minimum permissible sidewall clearances between the installed pipe and each trench wall, expressed in inches, shall be as follows:

Pipe Size (inches)	Minimum Sidewall Clearance (inches)
60	24
54	21
48	19
≤ 36	12

2. Stipulated minimum sidewall clearances are not minimum average clearances but are minimum clear distances which will be required.

3. Cutting trench banks on slopes to reduce earth load to prevent sliding and caving will be permitted only in areas where the increased trench width will not interface with surface features or encroach on right-of-way limits. Slopes shall not extend lower than one (1) foot above the top of the pipe.

C. Mechanical Excavation

1. The use of mechanical equipment will not be permitted in locations where its operation would cause damage to trees, buildings, culverts, and other existing property, utilities, or structures above or below ground. In all such locations, hand excavating methods shall be used.

2. Mechanical equipment used for trench excavation shall be of the type, design, and construction, and shall be so operated, that the rough trench excavation bottom elevation can be controlled, that uniform trench widths and vertical sidewalls are obtained at least from an elevation one (1) foot above the top of the installed pipe to the bottom of the trench, and that trench alignment is such that pipe when accurately laid to specified alignment will be centered in the trench with adequate clearance between the pipe and sidewalls of the trench.

   a. Undercutting the trench sidewall to obtain clearance will not be permitted.

D. Pavement Cutting

1. Cuts in concrete pavement, asphalt pavement, and asphalt base pavements shall be no larger than necessary to provide adequate working space for proper installation of pipe and appurtenances. Cutting shall be started with an asphalt or concrete saw in a manner which will provide a clean groove for the full depth of pavement along each side of the trench and along the perimeter of cuts for structures.

2. Asphalt pavement and asphalt base pavement over trenches excavated for pipelines shall be removed so that a shoulder not less than six (6) inches in width at any point is left between the cut edge of the pavement and the top edge of the trench. The trench width at the bottom shall not be greater than at the top and no undercutting will be permitted. Pavement cuts shall be made to and between straight or accurately marked curved lines which, unless otherwise required, shall be parallel to the centerline of the trench.

3. Pavement removed for connections to existing lines or structures shall not be greater than necessary for the installation as determined by the Engineer.

4. The Contractor shall review and conform to the requirements of Section 02505, *Pavement Removal and Restoration*.

E. Artificial Foundations in Trenches

1. Whenever so ordered by the Engineer, the Contractor shall excavate to such depth below grade as the Engineer may direct and the trench bottom shall be brought to grade with such material as the Engineer may order installed.

2. All piling, concrete, or other foundations made necessary by unstable soil shall be installed as directed by the Engineer.

3. Compensation for extra excavation and piling, concrete, or other foundations, except where provided by contract unit prices, shall be made in accordance with the Contract provisions for extra work.

4. Additional work and materials must be approved by the Owner and Engineer, in writing, prior to the Contractor performing said work and placing materials, or the Contractor shall not be paid for these items.

F. Bell Holes

1. Bell holes shall provide adequate clearance for tools and methods used in installing pipe.

2. No part of any bell or coupling shall be in contact with the trench bottom, trench walls, or granular embedment when the pipe is jointed.

3.09 Tests

A. As stipulated in the quality control section and Section 01410, *Testing and Testing Laboratory Services*, all tests required for preliminary review of materials shall be made by an independent testing laboratory supplied by the Contractor and approved by the Engineer and Owner.

B. Two initial gradation tests shall be made for each type of backfill material and one additional gradation test shall be made for each additional three hundred (300) tons of each material by the independent testing laboratory.

C. *Moisture-density (Proctor) tests and relative in-place density tests on the materials, and all in-place field density tests,* ***shall be made at the expense of the Contractor***.

D. Testing is specified in Section 01410, *Testing and Testing Laboratory Services*.

3.10 Drainage Maintenance

A. Trenches across roadways, driveways, walks, or other trafficways adjacent to drainage ditches or water courses shall not be backfilled prior to completion of backfilling the trench on the upstream side of the trafficway to prevent impounding water after the pipe has been laid.

B. Bridges and other temporary structures required to maintain traffic across such unfilled trenches shall be constructed and maintained by the Contractor. Backfilling shall be done so that water will not accumulate in unfilled or partially filled trenches.

C. All material deposited in roadway ditches or other water courses crossed by the line of trench shall be removed immediately after backfilling is completed and the original sections, grades, and contours of ditches or water courses shall be restored. Surface drainage shall not be obstructed longer than necessary.

3.11 Final Grading

A. After other outside work has been finished, and backfilling completed and settled, all areas on the site of the Work which are to be graded shall be ***brought to grade with***

the tolerance of ±0.02 feet at the indicated elevations, slopes, and contours where sodding or seeding is not required or, where sodding is required within three (3) inches of finished grade.

B. Use of graders or other power equipment will be permitted for final grading and dressing of slopes, provided the result is uniform and equivalent to hand work. All surfaces shall be graded to secure effective drainage. Unless otherwise shown, a slope of at least one (1) percent shall be provided.

C. After grading and where sodding or seeding is required, topsoil shall be evenly spread to a minimum depth as indicated in Article 3.02(A) of Section 02215, *Finish Grading*. Topsoil shall be from an Engineer approved source and shall be clear of trash, debris and surface vegetation.

D. Grading and surfacing shall be completed to the satisfaction of the Engineer.

3.12 Excess Excavated Materials

A. Insofar as needed, suitable excavated materials shall be used in fills and embankments shown on the Contract Drawings. All suitable excess excavated material shall be placed at an "*on-site*" stockpile area as directed by the Owner.

B. The Contractor shall segregate different types of excavated materials (i.e. sands, clayey sands, etc.) as possible in the stockpile area. All debris, junk, stones, logs, stumps, roots, and other unsuitable materials shall be disposed of by the Contractor off-site in a legal manner and at no cost to the Owner.

C. The Contractor shall slope and compact the stockpile with a light roller type vehicle to maintain stability. The Contractor shall maintain proper soil and erosion control measures.

3.13 Settlement

A. The Contractor shall be responsible for all settlement of backfill, fills, and embankments which may occur within the correction period stipulated in Section 00700, *General Conditions*.

B. The Contractor shall make, or cause to be made, all repairs or replacements made necessary by settlement within thirty (30) days after notice from the Engineer or Owner.

END OF SECTION

TABLE 02220-1

COMPACTION AND BACKFILL SCHEDULE FOR STRUCTURES

Area	Material	Maximum Lift Thickness	Compaction *
Beneath structures, foundations, slabs, and pavements (minimum 5-foot depth below concrete foundation	Structural Fill [Article 2.01(F)]	8-inch	Compacted to 98% of the soil's Modified Proctor maximum dry density. Fill should not be placed over any in-place soils until those layers have been compacted to 98% of the soil's Modified Proctor maximum dry density.
Around structures, foundations and slabs (minimum 5-foot spacing)	Structural Fill [Article 2.01(F))]	8-inch	Compacted to 98% of the soil's Modified Proctor maximum dry density. Use light rubber-tired or vibratory plate compactors
From cleared existing surface to subgrade for paved and gravel roadway surfaces	Common Fill [Article 2.01(E)]	12-inch	Compacted to 98% of the soil's Modified Proctor maximum dry density.
Disturbed area requiring solid sodding	Topsoil	12-inch	Compacted to 95% of the soil's Modified Proctor maximum dry density.
Disturbed area requiring seeding and mulching	NOT USED	-----	NOT USED

* *Percentage of the maximum density at optimum moisture content as determined by the Modified Proctor Method, ASTM D-1557 (latest revision) / AASHTO T-180.*

TABLE 02220-2

BACKFILL SCHEDULE FOR GRAVITY AND PRESSURE PIPING

Pipe Material	Pipe Size	Trench Condition	Bedding Material	Pipe Envelope				Others
				Primary Zone		Secondary Zone		
				Material	Depth[c]	Material	Depth	
Ductile Iron, Stainless Steel, Culvert Pipe and Prestressed Concrete Cylinder Pipe	< 16"	Normal[a]	Compacted Common Fill	Coarse Sand	0.50 O.D.	Coarse Sand	0.5 O.D. + 12"	
		Special[b]	Class I	Coarse Sand	0.50 O.D.	Coarse Sand	0.5 O.D. + 12"	
	≥ 16"	Normal[a]	Class II	Common Fill	0.25 O.D.	Common Fill		Class II Material should not have stones (size > 2"). Organic content < 1.1% by wt.
		Special[b]	Class I	Common Fill	0.25 O.D.	Common Fill		
Fiberglass, PVC and other Plastic Pipe	< 16"	Normal[a]	Coarse Sand	Coarse Sand	0.70 O.D.	Coarse Sand	0.3 O.D. + 12"	
		Special[b]	Class I	Coarse Sand	0.70 O.D.	Coarse Sand	0.3 O.D. + 12"	
	≥ 16"	Normal[a]	Class II	Class II	0.70 O.D.	Class II	0.3 O.D. + 12"	
		Special[b]	Class I	Class II	0.70 O.D.	Class II	0.3 O.D. + 12"	
RCP and CCP	< 48"	Normal[a]	Class II	Class II	0.50 O.D.	Common Fill		
		Special[b]	Class I	Class II	0.50 O.D.	Common Fill		

TABLE 02220-2

BACKFILL SCHEDULE FOR GRAVITY AND PRESSURE PIPING

Pipe Material	Pipe Size	Trench Condition	Bedding Material	Pipe Envelope				Others
				Primary Zone		Secondary Zone		
				Material	Depth[c]	Material	Depth	
RCP and CCP (Cont'd)	≥ 48"	Normal[a]	Class II	Class II	0.25 O.D.	Common Fill with max. stone size ≤2"	0.75 O.D. + 12"	
		Special[b]	Class I	Class II	0.25 O.D.	Common Fill with max. stone size ≤2"	0.75 O.D. + 12"	
Pipe laid in rock (min. trench req's) except for fiberglass and PVC Pipe		Rock	Class I	Class II	0.50 O.D.	Common Fill with max. stone size ≤2"	0.50 O.D. + 12"	
Gravity Pipe (not specified above)		Normal	Coarse Sand	Coarse Sand	0.50 O.D.	Common Fill	0.50 O.D. + 12"	
Pressure pipe (not specified above)		Normal	Suitable undisturbed Earth or compacted common fill	Common fill with max. stone size ≤ 2"	0.50 O.D.	Common Fill with max. stone size ≤2"	0.50 O.D. + 12"	

a Dry Soils *b Saturated Soils* *c Outside Diameter of pipe = O.D.*

Notes

1. No special bedding shall be required in the case of suitable undisturbed earth type trench bottom.

2. Bedding thickness shall be twelve (12) inches unless specified otherwise.

3. The backfill shall be compacted to 98% Modified Proctor maximum dry density and shall be placed in 6-inch lifts for the pipe envelope and in 12-inch lifts from the secondary zone to grade. Common fill shall be used as final backfill material.

4. It is intended that additional excavation be conducted to remove unsuitable material below the pipe bedding level which prevents bedding compaction as required herein and replace such materials with suitable materials. Over excavation, geotextile fabric, gravel blanket, granular fill and other acceptable stabilization methods shall be placed within four (4) feet of the bedding level or within ten (10) feet of the existing ground (whichever is greater depth) at no additional cost to the Owner. Construction required beyond these limits shall be executed in accordance with the General Conditions, as amended by the Supplementary Conditions. When indicated on the Contract Drawings, the Contractor shall remove unsuitable material below bedding level to the limits indicated and replace them with coarse sand or other acceptable stabilization method up to the bedding level without any additional compensation to the Owner.

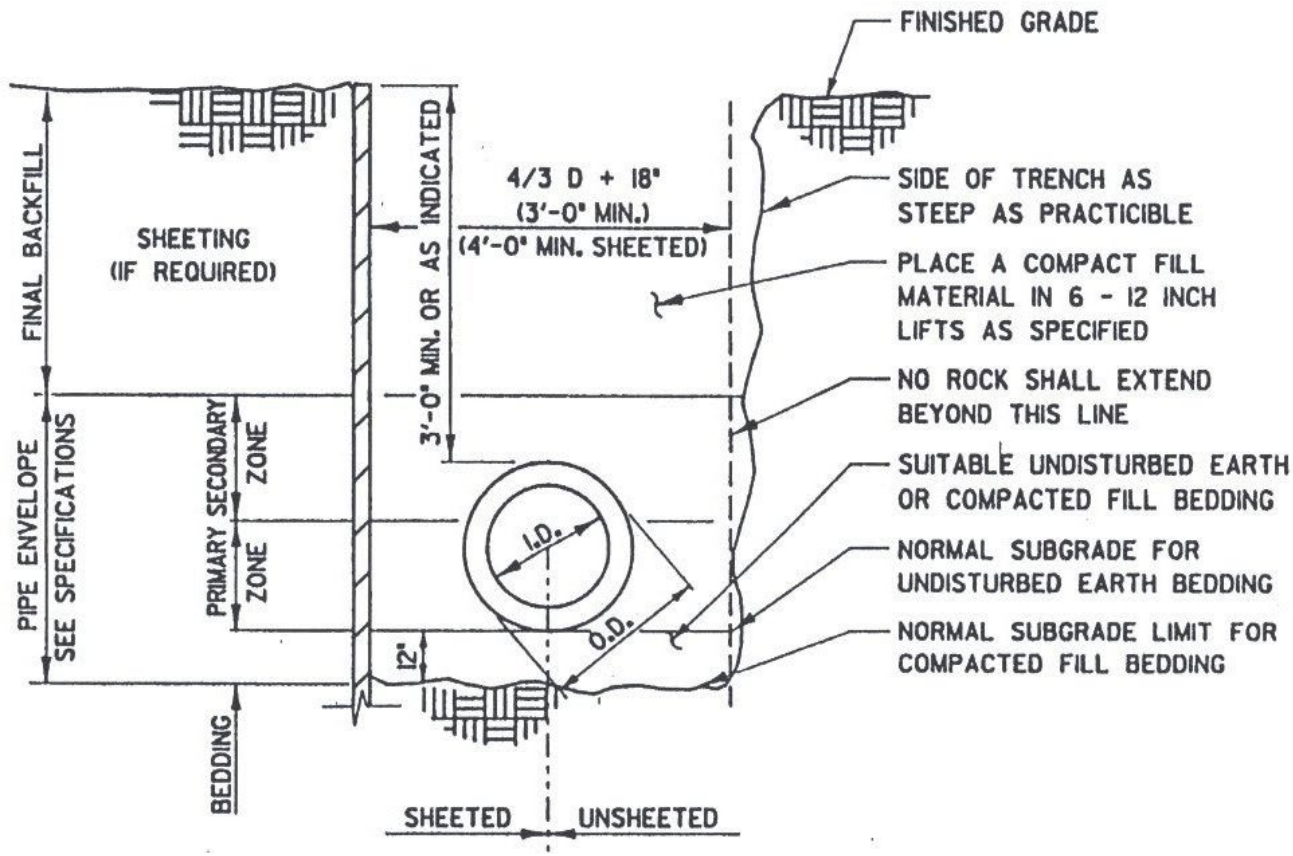


FIGURE 02220-1 **TYPICAL PIPE TRENCH SECTION IN THE EARTH**

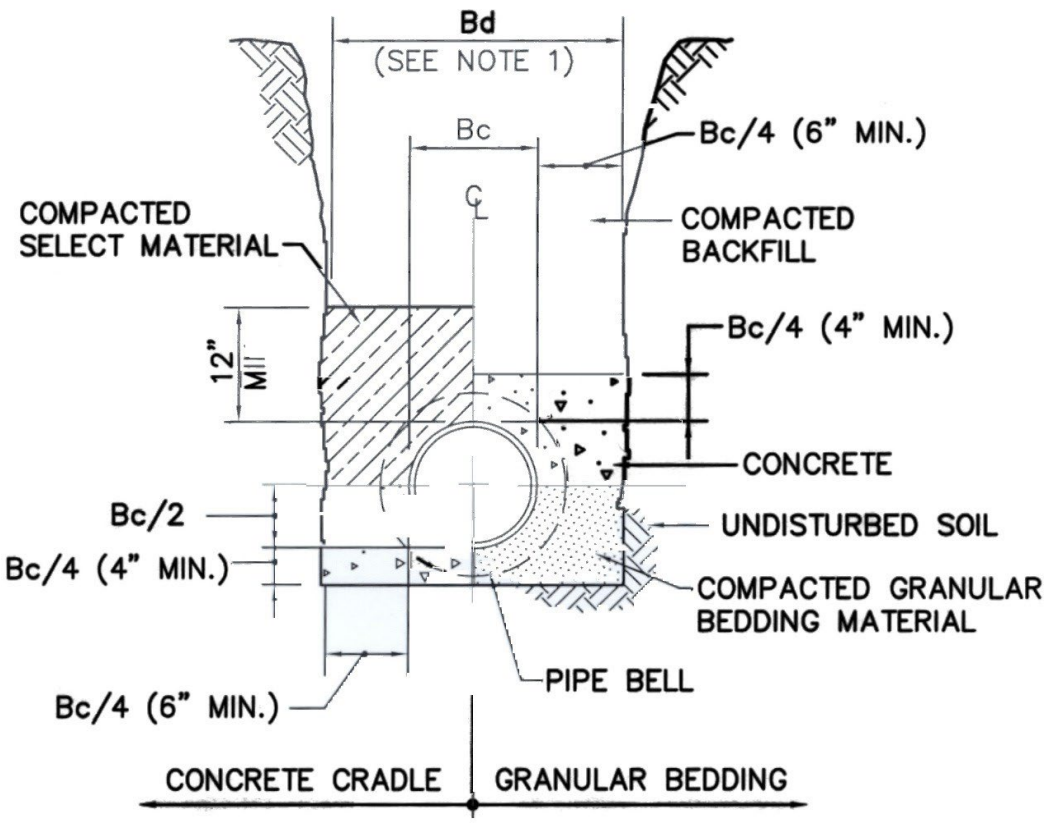


FIGURE 02220-2 **CLASS "A" BEDDING - SPECIAL CONDITIONS**

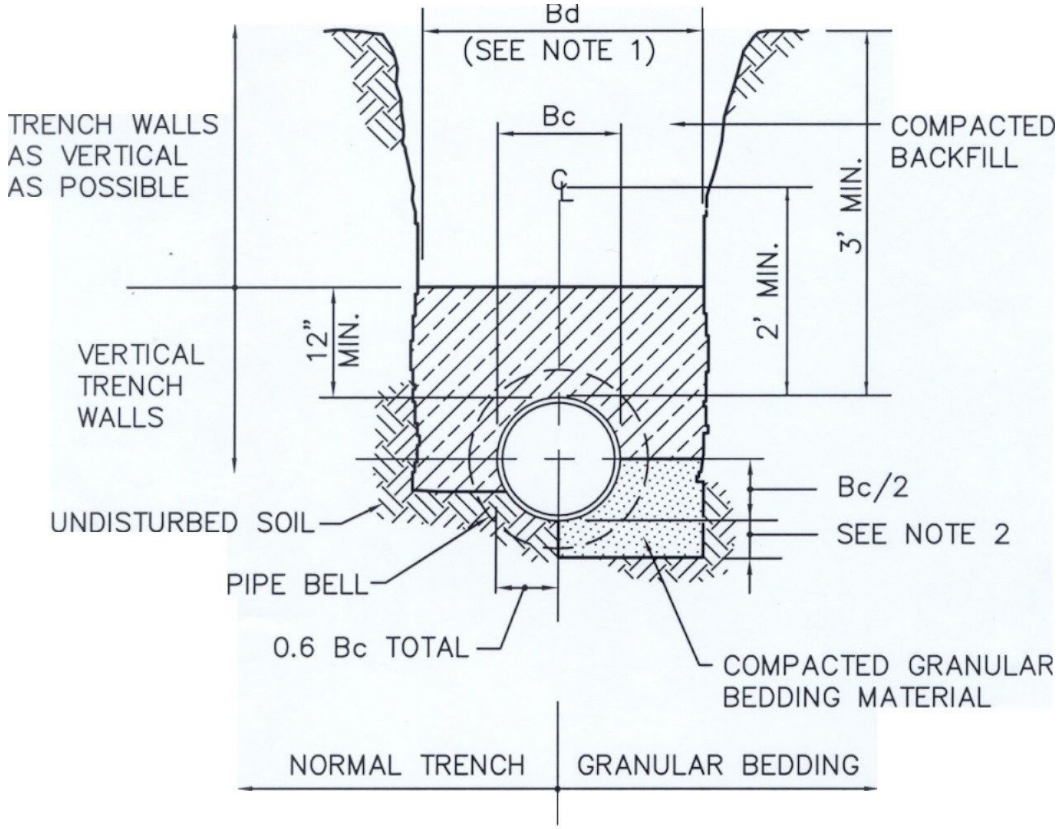
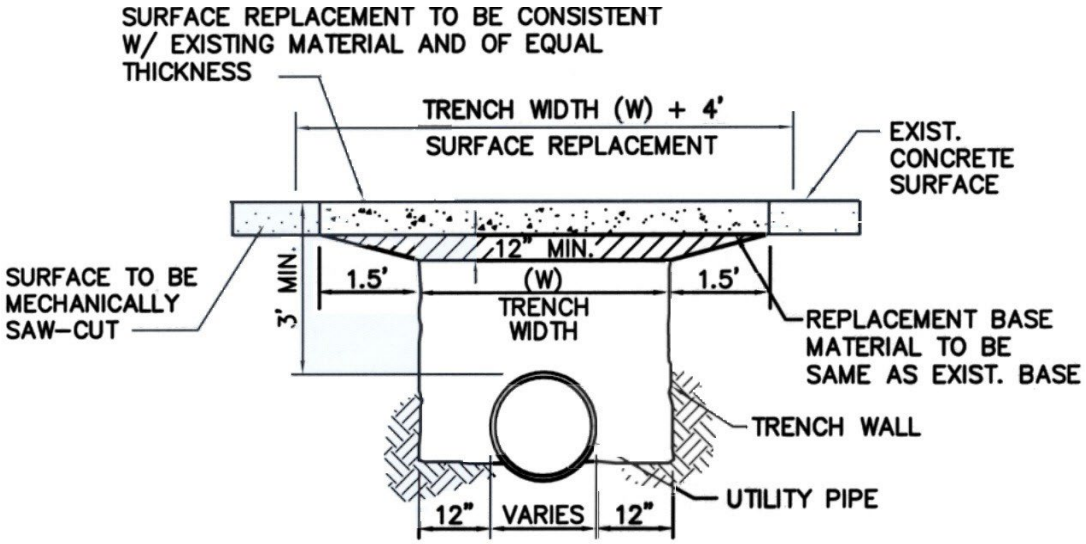


FIGURE 02220-3 **CLASS "B" BEDDING - NORMAL CONDITIONS**



NOTES:

1. BACKFILL SHALL BE IN ACCORDANCE WITH SECTION 125-8 OF THE FDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 1991 , AS AMENDED.
2. BASE MATERIALS TO BE PLACED IN TWO OR THREE LAYERS, ROLLED AND TAMPED TO SPECIFIED DENSITY FOR BACKFILL.

FIGURE 02220-4 **CLASS "C" BEDDING - FOR CONCRETE**

BEDDING AND TRENCHING NOTES

1. B_c = Pipe O.D.

   B_d = Trench Width at Top of Pipe

   Max. B_d = B_c + 24"

   Min B_c = Max. dimension of bell + 8-inches (unsheeted trench)

   = Max. dimension of bell + 12-inches (sheeted trench)

2. The depth of removal of unsuitable material shall be as required to reach a suitable foundation for non-cushioning material. The depth shall be a minimum of six (6) inches below the bottom of the utility.

3. Sheeting shall be driven below the utility invert if required for lateral support or unsuitable removal where driven below the pipe invert. Sheeting shall be cut off a minimum of twelve (12) inches above the top of the pipe, or higher as authorized by the Engineer, and left in place. In no case shall sheeting left in place extend higher than thirty (30) inches below the surface grade unless specifically approved. Bracing shall be provided as required by the Contractor.

4. Protective concrete slabs are required whenever the depth of cover is less than thirty-six (36) inches and shall be in accordance with Division 3.

5. Backfill shall be compacted to 98% density of AASHTO T-180 modified proctor in areas to be paved or receive concrete and 95% in lawn and landscaping areas. All other areas shall be compacted in accordance with this specification section.

SECTION 02276

GRAVEL AND CRUSHED ROCK BASE FOR STRUCTURES

1. GENERAL

1.01 Description

A. Scope of Work

1. The Work included in this Section consists of all labor, materials testing and installation of gravel and crushed rock bases for structures (manholes, vaults, etc.).

B. Related Work Specified Elsewhere

Specification Section	Title
00700	General Conditions
00800	Supplementary Conditions
01410	Testing and Testing Laboratory Services
02200	Earthwork
02220	Excavation, Backfilling and Compaction
03300	Cast-in-Place Concrete
Contract Drawings and General Provisions of the Contract	

1.02 Submittals

A. ***Submit three (3) copies of a report from a testing laboratory verifying that material contains less than one percent (1%) asbestos by weight or volume*** and conforms to the specified gradations or characteristics.

B. Submit the above referenced report in accordance with Section 01300, *Shop Drawings, Submittals and Samples*.

1.03 Testing for Compaction

A. ***The Contractor shall test for compaction*** as described below and in accordance with Section 01410, *Testing and Testing Laboratory Services* and Section 02220, *Excavation, Backfilling and Compaction*.

B. ***Determine the density of the gravel and rock***, in place, by the sand cone method, ASTM D-1556 or D-2167.

C. ***Determine the relative density of the gravel and rock*** by ASTM D-4253 and D-4254.

D. Sample backfill materials by ASTM D-75.

E. Compaction shall be deemed to comply with the specifications when no more than one test of any three consecutive tests falls below the specified relative compaction. The one test shall be no more than three percentage points below the specified compaction. The Contractor shall pay the costs of retesting work not conforming to the specifications.

2. PRODUCTS

2.01 Gravel and Crushed Rock

A. Crushed rock base and gravel are defined as natural or crushed rock, free from organic matter and containing less than one percent (1%) asbestos by weight or volume, and meeting the following gradation:

Sieve Size	Percent Passing By Weight
1½ inches	100
¾-inch	90 - 100
No. 4	35 - 55
No. 30	10 - 30
No. 200	0 - 5

B. The Durability Index shall be at least 40 per ASTM D-3744.

3. EXECUTION

3.01 General

A. Place crushed rock or gravel base beneath all structures, as required by the conditions, or as directed by the Engineer.

B. ***Excavate a minimum of twenty-four (24) inches below the required grade for the bottom of the structure and refill with crushed rock or gravel as specified above***. Compact the base as follows unless otherwise indicated:

Lift	Relative Density
Lower lift	98%
Upper lifts	98%

C. Place base material in maximum lifts of eight (8) inches.

END OF SECTION

SECTION 02505

PAVEMENT REMOVAL AND RESTORATION

1. GENERAL

1.01 Scope of Work

A. The Contractor shall furnish all labor, materials, tools, transportation, equipment, and incidentals required for cutting, removing, protecting and replacing existing pavements of the various types encountered, including, but not limited to, roadways, driveways, sidewalks, curb combination curb as shown on the Contract Drawings and/or specified herein.

B. This Section does not include the construction of new roadway, driveway, sidewalk or curb and gutter surfaces or the complete restoration of an existing roadway.

C. Related Work Specified Elsewhere

1. Shop Drawings, Submittals and Samples: Section 01300
2. Concrete Sidewalks, Driveways and Pads: Section 02720

1.02 Permits

A. The Contractor shall obtain the necessary permits prior to any roadway work.

B. The Contractor shall provide advance notice to the appropriate authority, as required, prior to construction operations.

1.03 Protection of Existing Improvements

A. ***The Contractor shall be responsible for the protection of all pavements, sidewalks and other improvements within the work area***. All damage to such improvements, as a result of the Contractor's operations, beyond the limits of the work of pavement replacement as described herein, shall be repaired by the Contractor at his expense.

1.04 Jurisdictional Requirements

A. All work within City of Flagler Beach public thoroughfares and easements shall conform to the City's Land Development Code, these specifications, and details contained in the Contract Drawings.

B. All work within City of Flagler Beach public thoroughfares and easements shall conform to the County's Land Development Code, these specifications, and details contained in the Contract Drawings.

C. Portions of the Standard Specifications for Road and Bridge Construction of the Florida Department of Transportation and Supplement, latest revisions, hereinafter referred to as the FDOT Specifications, are referred to herein and amended, in part, and the same are hereby made a part of this Contract to the extent of such references, and shall be as binding upon the Contract as though reproduced herein in their entirety.

1.05 Miscellaneous Provisions

A. The Contractor shall refer to Sections 01380, *Construction Photographs*, and 01390, *Preconstruction Video Recording* relative to photographs and videotaping required prior to construction.

B. All damage done, as a result of work under this Project, shall be repaired in a manner satisfactory to the Engineer. Bid prices shall include the furnishing of all labor, materials, equipment, and incidentals necessary for the cutting, repair, and restoration of the damaged areas unless pay items for specific types of repair are included in the Bid Form.

C. The Contractor shall keep the surface of the backfilled area of excavation in a safe condition and level with the remaining pavement until the pavement is restored in the manner specified herein. All surface irregularities that are dangerous or obstructive to traffic are to be removed. The repair shall conform to applicable Owner or State requirements for pavement repair and as described herein.

D. All surface irregularities that are dangerous or obstructive to traffic are to be removed. The repair shall conform to applicable Owner or State requirements for pavement repair and as described herein.

E. ***All materials and workmanship shall be "first class"*** and nothing herein shall be construed as to relieve the Contractor from this responsibility. The Owner reserves the right to require soil bearing or loading tests or materials tests, should the adequacy of the foundation or the quality of materials used be questionable. Costs of these tests shall be borne by the Contractor.

F. All street and road repair shall be made in accordance with the details indicated on the Contract Drawings and in accordance with the applicable requirements of these Specifications and meeting the approval of affected local and State agencies.

2. PRODUCTS

2.01 Materials

A. Materials, including limerock, bituminous prime and tack coat, and asphaltic concrete for the above work shall meet the requirements established therefore by the FDOT Specifications.

1. Limerock shall be Miami or Ocala Limerock.

2. Bituminous prime coat material shall be cutback asphalt Grade RC-70.

3. Bituminous tack coat material shall be emulsified asphalt Grade RS-2.

4. Asphaltic concrete shall be conform to FDOT specifications for Superpave 12.5 mm traffic level “C” asphaltic concrete, with PF76-22 Polymer Modified Binder

3. EXECUTION

3.01 Preparation

A. Where the work crosses or interferes with pedestrian crossings, extreme care shall be taken by the Contractor to insure the safety of pedestrians.

3.02 Performance

A. Removals

1. Asphaltic Pavement Removal

a. Where small amounts of existing pavement are to be removed, the surfacing shall be by mechanical saw cut prior to trench excavation, leaving a uniform and straight edge, with minimum disturbance to the remaining adjacent surfacing. The width of cut for this phase of existing pavement removal shall be minimal.

b. Where large amounts of existing pavement are to be removed from construction planned along the length of various streets, bike paths or parking lots, the surfacing shall be removed by milling. All removed material shall be stockpiled as needed to restore the lower level of road base in place of limerock up to three (3) inches thick. All milling shall be in accordance with Section 327 of the FDOT specifications.

c. ***Immediately following the specified backfilling and compaction, a temporary sand seal coat surface shall be applied to the cut areas. This temporary surfacing shall provide a smooth traffic surface with the existing roadway and shall be maintained until final restoration***. Said surfacing shall remain for ten (10) days in order to assure the stability of the backfill under normal traffic conditions. Following this period and prior to fifteen (15) days after application, the temporary surfacing shall be removed and final roadway surface restoration accomplished.

d. ***In advance of final restoration, the temporary surfacing shall be removed and the existing pavement mechanically sawed straight and clean to the stipulated dimensions***. Following the above operation, the Contractor shall proceed immediately with final pavement restoration in accordance with the requirements set forth in the governing authority's Land Development Code and these requirements.

2. Sidewalk, Drive and Curb Removal

a. Concrete sidewalks, curbs, combination curb and gutter, walks, drive ribbons, or driveways shall be removed by initially sawing the structure, with a suitable power saw, as specified above for pavement.

b. When a formed joint in the concrete exists within three (3) feet of the proposed saw cut and parallels the proposed saw cut, the removal line shall be extended to the formed joint. After sawing, the material shall be removed from the site and legally disposed of by the Contractor.

B. Restorations

1. General

a. Street or roadway pavement cut and removed in connection with trench excavation shall be replaced or restored in an "equal" or "better" condition than the original condition and as shown on the Contract Drawings.

b. The Contract Drawings indicate minimum requirements.

2. Asphaltic Pavement Restoration

   a. ***The limerock base course shall be a twelve (12) inch layer compacted to not less than one hundred percent (100%) of maximum density*** as determined by AASHTO Designation T-180. The field density of limerock base in place shall be determined by AASHTO Designation T-238.

   b. Construction methods and equipment shall generally meet the requirements therefor as established in the FDOT Specifications, but shall be modified to meet any relatively narrow strip construction conditions. Any such modifications shall be approved by the Engineer prior to their use.

   c. After the application of the prime coat on the base, the prime coat shall be allowed to cure without sanding for a period of twenty-four (24) hours. The Contractor shall take all necessary precautions to protect the primed surface against damage during this interval. If, at the end of the twenty-four (24) hour period, it is not proposed to proceed at once with the application of the surface course, the primed surface shall be given a light application of clean sand and opened to traffic.

   d. ***Joints with existing surface and base shall be straight and neat***. If necessary to obtain a straight neat joint, the Contractor shall cut out sufficient existing material and replace it with new material.

   e. The upper surface of the completed base course shall be compacted to an elevation to permit the full depth of the surface course to be constructed without deviating from the grade of the pavement surface. The completed surface shall match the line and grade of the existing surface.

   f. When pavement is removed to the edge of the roadway, the replaced base course shall extend ***not less than six (6) inches beyond the edge of the surfacing***.

3. Asphaltic Driveway Restoration

   a. Driveway pavement, with a limerock base, cut and removed in connection with project excavation shall be replaced or restored as specified above for street or roadway pavement, except the new limerock base course shall equal the existing base course in thickness.

   b. However, ***in no case shall new driveway base course be less than twelve (12) inches in thickness***. Remove and replace any muck or unsuitable material found under existing driveway construction.

4. Concrete Sidewalk, Walkway, Driveway Ribbon and Curb Restoration

   a. Concrete sidewalks, walkways, driveways, driveway ribbons and curbs required to be removed for the installation of facilities under this Contract shall be restored.

   b. Class B concrete with a 28-day compressive strength of 3,000 psi, as specified in Section 03300, *Cast-in-Place Concrete*, shall be used in all cases.

   c. Replaced portions of these items shall conform to the lines, grades and cross sections of the removed portions. Concrete sidewalks and walkways shall have a thickness of four (4) inch thickness; concrete driveways and driveway ribbons shall have a thickness of six (6) inches and heavy duty concrete pavement shall have a thickness of eight (8) inches. Replaced concrete curb and/or gutter shall joint neatly to the remaining section.

5. Concrete Pavement Restoration

   a. Rigid pavement shall be replaced, in kind, with Class B concrete, using high early strength cement.

   b. The base course for rigid pavement shall be limerock base material and compacted to a thickness to match the existing base.

6. Non-surfaced streets, alleys and driveways shall be restored with eight (8) inches of compacted limerock base material placed in the top of the trench.

3.03 Heavy Duty Concrete Pavement

A. Heavy duty concrete pavement, where shown on the Contract Drawings, shall be constructed as detailed in Figures 02505-1 through 02505-3.

3.04 Adjusting Existing Structures

A. Existing structures within the limits of the proposed Work, which do not conform to the finished grade of the proposed pavement or the finished grade designated on the Contract Drawings for such structure shall be cut down or extended and made to conform to the new grade. The materials and construction methods for this work shall be approved by the Engineer.

3.05 Miscellaneous Restoration

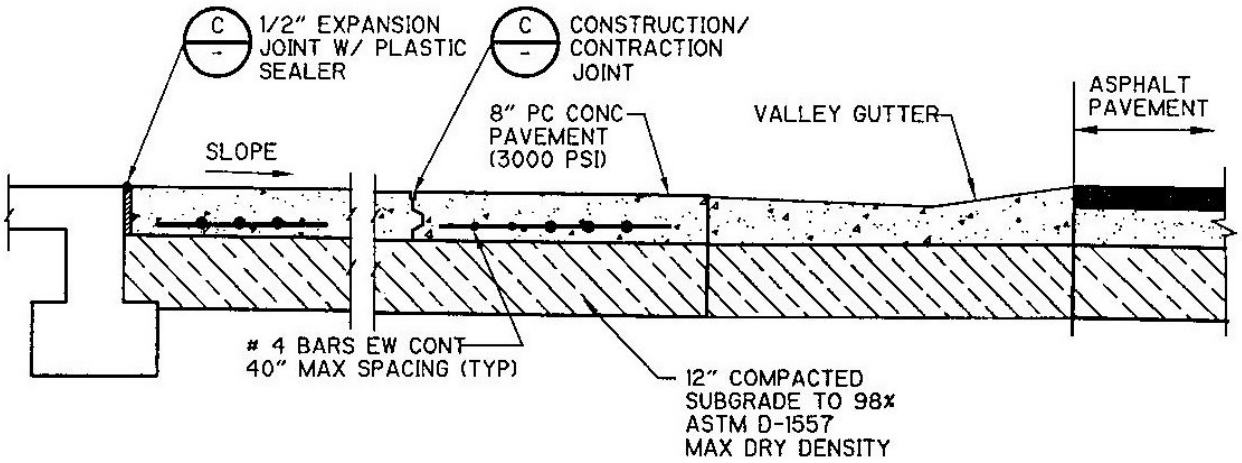
A. ***Grassed yards, shoulders and parkways shall be restored to match the existing sections with sod***, as indicated on the Contract Drawings or as specified by the Engineer, of a type matching the existing grass.

3.06 Cleanup

A. After all repair and restoration or paving has been completed, ***all excess asphalt, dirt, and other debris shall be removed by the Contractor and disposed of in a legal manner***.

B. All existing storm sewers and inlets shall be checked and cleaned of any construction debris.

END OF SECTION



HEAVY DUTY CONCRETE PAVEMENT

DETAIL A

NTS

FIGURE 02505-1 **HEAVY DUTY CONCRETE PAVEMENT - VALLEY GUTTER APPLICATION**

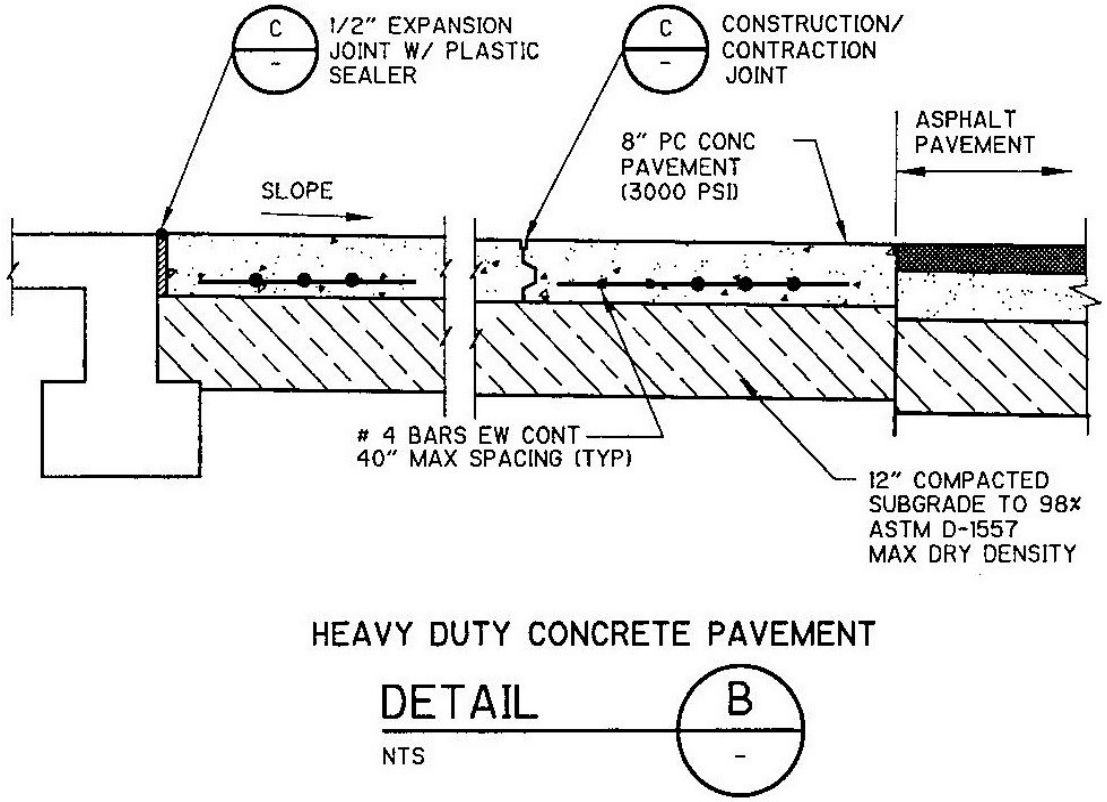
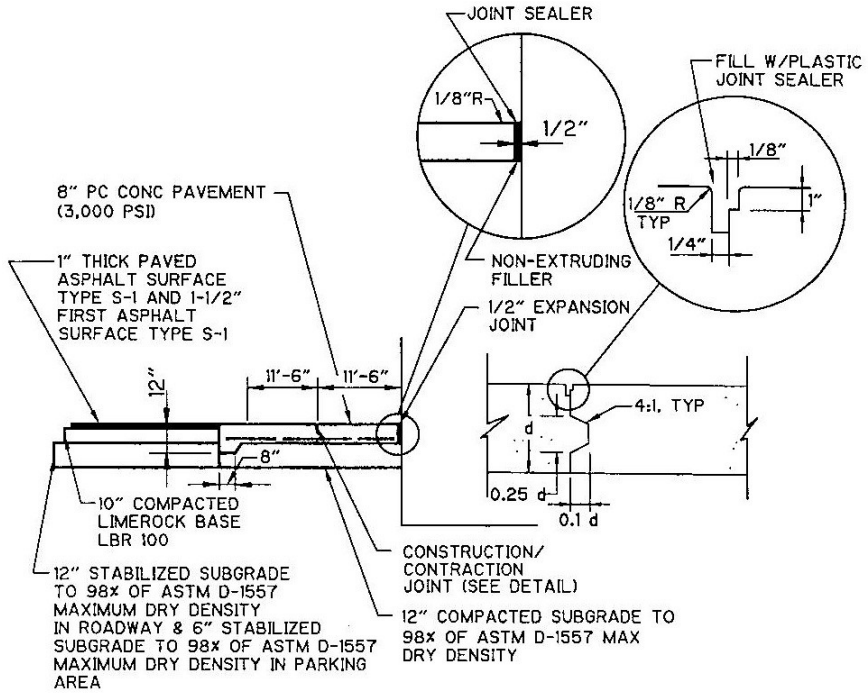


FIGURE 02505-2 **HEAVY DUTY CONCRETE PAVEMENT - ASPHALTIC ROADWAY OPTION**



CONCRETE JOINT

DETAIL C

NTS -

FIGURE 02505-3	HEAVY DUTY CONCRETE PAVEMENT - JOINT DETAILS

SECTION 02610

STABILIZED SUB-BASE

1. GENERAL

1.01 Description

A. The work included in this Section consists of furnishing all labor, material, equipment, transportation, tools and testing and for the construction of a firm and unyielding stabilized sub-base as shown on the Contract Drawings.

2. PRODUCTS

2.01 Materials

A. Use local or hauled-in clean sand or sand and clay.

2.02 Stabilizers

A. Use high bearing-value soil, sand-clay, ground limestone or crushed limestone.

B. ***Do not use muck, trash, hardpan, material having a plasticity index of more than 10 or a liquid limit greater than 40***.

3. EXECUTION

3.01 Construction Methods

A. Test local material for compliance with the required Florida Bearing value. If the natural in-place soils do not meet the required stability, uniformly mix, to depth shown in the Contract Documents, or as recommended by the Contractor's geotechnical engineer, sufficient borrow material for stabilization with the in-place soils to produce the required bearing value.

B. Compact the stabilized sub-base in both cuts and fills to a density of ninety-eight percent (98%) of the relative density as required by AASHTO T-180 (Modified).

C. Shape the sub-base to within ¼-inch of the cross section grade shown on the Contract Drawings prior to making the density tests. ***Make the density tests before other work proceeds***.

D. Maintain the required density and cross section until the base or pavement has been laid or until the aggregate materials for the base or pavement course have been spread in place.

3.02 Required Bearing Value

A. Unless otherwise specified in the Contract Documents or shown on the Contract Drawings, ***stabilized sub-base shall have a minimum Florida Bearing Value of 40***.

3.03 Tests

A. Density and bearing value tests shall be made by an independent testing laboratory in accordance with Section 01410, *Testing and Testing Laboratory Services* (Minimum testing at intervals not more than one hundred (100) feet in roadways or 1,000 ft^2 in area paving, whichever is less).

B. ***If any test results are unsatisfactory, re-excavate and recompact the sub-base until the desired compaction is obtained***. Make additional tests on each side of an unsatisfactory test to determine the extent of re-excavation, re-mixing and re-compaction necessary.

END OF SECTION

SECTION 02720

CONCRETE SIDEWALKS, DRIVEWAYS AND PADS

1. GENERAL

1.01 Scope of Work

A. The work included in this Section consists of furnishing all labor, material, equipment, transportation, and tools for the construction of the concrete sidewalks, walkways, driveways, pads and related items to the lines and grades as shown on the Contract Drawings.

B. Related Work Described Elsewhere

Specification Section	Title
02200	Earthwork
02210	Site Grading
02215	Finish Grading
02220	Excavation, Backfilling and Compaction
03100	Concrete Formwork
03200	Concrete Reinforcement
03300	Cast-in-Place Concrete
Contract Drawings and General Provisions of the Contract	

C. ***Construct all sidewalks four (4) inches thick, driveways six (6) inches thick, and heavy duty concrete pavement eight (8) inches thick***, after being thoroughly consolidated in place in accordance with the Contract Documents, unless indicated otherwise on the Contract Drawings.

1.02 Submittals

A. Submit to the Engineer, as provided in the General Conditions and in accordance with Section 01300, *Shop Drawings, Submittals and Samples*, shop drawings showing dimensions and layouts of sidewalks and reinforcement for concrete work.

B. All materials specified shall be certified by the producer or manufacturer that the furnished material meets the specific requirements of the Contract Documents.

1.03 Testing

A. Testing requirements and frequencies for concrete sidewalks, walkways, driveways, pads and related items shall be as outlined in Section 03300, *Cast-in-Place Concrete*.

B. Sample backfill materials by ASTM D-75.

C. "*Relative compaction*" is defined as the ratio, expressed as a percentage, of the in-place density to the laboratory maximum density.

D. Compaction shall be deemed to comply with the Specifications when no tests fall below the specified relative compaction. The Contractor shall pay the costs of any retesting of work not conforming to the Specifications.

E. ***Density tests will be made for determination of specified compaction by an independent testing laboratory provided by the Contractor and as approved by the Engineer*** as specified in Section 01410, *Testing and Testing Laboratory Services*. Testing shall be performed in locations reviewed and approved by the Engineer and as specified in the Contract Documents.

F. ***If any tests are unsatisfactory, the Contractor shall re-excavate and re-compact the fill or backfill until the desired compaction is obtained***. Additional compaction tests will be taken on each side of an unsatisfactory test at locations approved by the Engineer to determine the extent of re-excavation and re-compaction necessary. ***All testing shall be incidental to the Contract***.

G. ***The Contractor shall pay for each compaction test, each failed compaction test and for each additional test taken to determine the extent of re-excavation and re-compaction as previously described***.

2. PRODUCTS

2.01 Concrete

A. ***All concrete, for whatever final purpose, shall be Class B concrete with a minimum 28-day compressive strength of 3,000 psi and a maximum slump of four (4) inches*** as specified in Section 03300, *Cast-In-Place Concrete*.

B. ***Construct all sidewalks and walkways to a thickness of four (4) inches and all driveways to a minimum thickness of six (6) inches in accordance with Article 1.01(C)***, after being thoroughly consolidated in place, in accordance with the Contract Documents, unless indicated otherwise on the Contract Drawings.

C. Concrete driveways, pads and related items shall be constructed, after being thoroughly consolidated in place, to the thickness indicated on the Contract Drawings.

D. Concrete shall comply with the requirement of Division 3, *Concrete*.

2.02 Welded Wire Fabric

A. Welded wire fabric shall conform to the requirements of Section 03200, *Concrete Reinforcement*.

B. Welded wire fabric shall conform to ASTM Specification A-185, galvanized for Welded Steel Wire Fabric for Concrete Reinforcement.

C. Welded wire fabric, where required, shall be furnished in flat sheets, rolled welded wire fabric ***is not*** permitted.

2.03 Driveways

A. Heavy Duty Concrete Pavement Driveways for Commercial Vehicles and Trucks

1. Use deformed bars conforming to ASTM A-615, Grade 60, free from loose rust and scale. No welding is permitted.

B. Driveways for Passenger Vehicles and Light Trucks

1. Use welded wire mesh in accordance with Article 2.02 above.

2.04 Forming

A. Use forms of either wood or metal with a depth equal to the plan dimensions for the depth of concrete being deposited against them.

B. ***Forms shall be straight, free from warp, bends or defects, and of sufficient strength*** when staked to resist the pressure of the concrete without deviation from line and grade.

C. Clean the forms each time they are used, and oil or saturate with water prior to placing the concrete.

D. ***Provide stakes and bracing materials*** to hold the forms securely in place.

2.05 Preformed Joint Filler

A. Preformed Joint Filler shall be non-extruding, of the resilient bituminous type and shall conform to the requirements of ASTM Designation D-1751.

B. Expansion joint filler shall be of the bituminous type, ½-inch thick, and shall conform to the requirements of ASTM Designation D-994 and AASHTO.

2.06 Membrane Curing Compound

A. The Membrane Curing Compound used shall be a clear fugitive dye and shall conform to the requirements of AASHTO Designation M-148, Type 1-D.

B. Use only compounds that will not affect the bond of coatings or toppings that may be applied.

2.07 Gravel and Crushed Rock Base

A. Where called for on the Contract Drawings, gravel or crushed rock shall meet the requirements of Section 02276, *Gravel and Crushed Rock Base for Structures*.

3. EXECUTION

3.01 Foundation

A. Excavation or backfill to the required depth.

B. The finished subgrade shall be maintained in a smooth, compact condition and any areas which are disturbed prior to placing of the concrete shall be restored at the Contractor's expense. ***The subgrade shall be moist at the time the concrete is placed.*** Water shall be uniformly applied ahead of the pouring operations.

C. Large boulders and other obstructions shall be removed to a minimum depth of six (6) inches below the finished subgrade elevation, and the space shall be backfilled with clean sand. Base course material or other suitable material shall be thoroughly compacted by rolling or tamping.

D. The subgrade shall be accurately trimmed to the required elevation with a ¼-inch tolerance. High areas shall be trimmed to proper elevation. Low areas may be filled with suitable material and compacted to the specified density or filled with concrete integrally with the placing of the pavement.

E. ***Compact the foundation material upon which the concrete is to be set to at least ninety-eight percent (98%) of the maximum density as determined by AASHTO T-180***, with an even surface, true to line, grade and cross section.

3.02 Forms

A. Set the forms straight, free from warp or bends, true to line and grade, such that they rest firmly, throughout their entire length upon the compacted subgrade surface. Set forms with a $^{1}/_{16}$-inch per foot cross slope or as existing.

B. Forms shall be joined neatly and tightly and braced to resist the pressure of the concrete and the finished operations.

C. All mortar or dirt shall be completely removed from forms that have been previously used.

D. Construct all sidewalks four (4) inches thick, driveways six (6) inches thick, and heavy duty concrete pavement eight (8) inches thick, unless indicated otherwise on the Contract Drawings.

E. The alignment and grade of all forms shall be approved before and immediately prior to the placing of concrete.

F. All forms shall be oiled as specified in Section 03100, *Concrete Formwork* and Section 03300, *Cast-in-Place Concrete*, before placing concrete.

3.03 Welded Wire Fabric

A. All wire fabric shall be stored off the ground and shall be protected from moisture and be kept free from dirt, oil, or injurious coatings.

B. Before being placed in position, wire fabric shall be thoroughly cleaned of loose mill and rust scale, dirt and other coatings, including ice, that reduce or destroy its bonding capability. Where there is delay in depositing concrete after reinforcement is in place, wire fabric shall be reinspected and cleaned when necessary.

C. Set mesh in form and support so concrete will flow under it.

D. Wire mesh shall be properly supported at regular intervals so mesh will not be displaced during concrete placement.

E. Splices in welded wire fabric shall be lapped not less than 1½ courses or twelve (12) inches, whichever is greater. Wire fabric splices shall be tied together with galvanized or stainless steel wire ties, as approved by the Engineer, spaced no more than twenty-four (24) inches on center. Support, as approved by the Engineer, in the middle of slab.

F. Welded wire fabric shall be in accordance with Section 03200, *Concrete Reinforcement*.

G. In no case shall wire fabric be covered with concrete until the amount and position of the fabric have been checked by the Engineer or RPR and his permission given to proceed with the concreting.

3.04 Heavy Duty Concrete Pavement

A. Heavy duty concrete pavement, where shown on the Contract Drawings, shall be constructed as detailed in Figures 02720-1 through 02720-3.

3.05 Placing

A. Concrete shall be mixed in accordance with the requirements of Section 03300, *Cast-in-place Concrete*.

B. The concrete shall be distributed on the subgrade to such depth that, when it is consolidated and finished, the thickness required by the Contract Drawings or Specifications will be obtained at all points and the surface will at no point be below the grade specified for the finished surface.

C. The concrete shall be deposited on the subgrade in a manner which will require as little rehandling as possible.

D. Placing of the concrete shall be continuous between transverse joints, without the use of intermediate bulkheads.

E. Reinforcement shall be placed as shown on the Contract Drawings or as specified in the Contract Documents and shall be maintained at this location during the placing and finishing operations.

F. Concrete shall be thoroughly consolidated against and along the faces of all forms by means of vibrators.

G. Vibrators

1. Vibrators are used, they shall not be permitted to come in contact with the subgrade or a side form. Vibration at any one location shall not continue so long as to produce puddling or the accumulation of excessive grout on the surface.

2. In no case shall the vibrator be operated longer than fifteen (15) seconds in any one location.

3.06 Finishing Concrete

A. ***Immediately after the placing, the concrete shall be struck off, consolidated and finished***, to produce a finished product conforming to the cross section, width and surface finish required by the Contract Drawings and Specifications. Strike off the concrete by means of a wood or metal screed used perpendicular to the forms in order to obtain the required grade, and remove surplus water and laitance.

B. Straightedging and Surface Corrections

1. After floating has been completed and the excess water removed, but while the concrete is still in a plastic state, the surface of the concrete shall be tested for trueness with an accurate ten (10) foot straightedge. The straightedge shall be furnished by the Contractor. The straightedge shall be held in successive positions parallel to the walk center line, in contact with the surface, and the whole area tested from one side of the slab to the other as necessary. The advance along the walk shall be in successive stages of not more than one-half the length of the straightedge.

2. ***Any depressions shall be immediately filled*** with freshly mixed concrete and struck-off, consolidated and refinished. High areas shall be cut down and refinished.

3. Straightedge testing and surface correction shall continue until the entire surface appears to conform to the required grade and cross section. All surface irregularities exceeding ¼-inch in a ten foot straightedge span shall be corrected.

C. Preliminary Finish

1. Finishing operations shall be delayed until all bled water and water sheen have left the surface, and concrete has started to stiffen.

2. After the water sheen has disappeared, edging operations shall be completed. After edging and jointing operations, the surface shall be floated with an aluminum or magnesium float.

3. Immediately following floating, the surface shall be steel troweled. If necessary, tooled joints and edges shall be rerun before and after troweling to maintain uniformity.

D. Final Finish

1. As soon as the water sheen has disappeared and just before the concrete becomes non-plastic, the concrete shall be given a light broom finish perpendicular to the forms.

2. ***All edges, including expansion joint edges, shall be finished with an edging tool having a radius of ¼-inch***.

3. Where a new sidewalk, driveway or concrete pavement section is replacing an existing sidewalk, driveway or concrete pavement section, the Contractor shall match the finish of the existing sidewalk, driveway or concrete pavement section.

3.07 Joints

A. The Contractor shall provide control joints at right angles to the run of the sidewalk, driveway or concrete pavement section and at spacing equal to the width, unless otherwise noted on the Contract Drawings.

B. Transverse Construction Joints

1. Transverse construction joints shall be constructed at the end of all pours and at other locations where the pouring operations are stopped for as long as thirty (30) minutes.

2. Construction joints shall not be placed within five (5) feet of any other transverse joint or of either end of a section of walk.

3. If sufficient concrete has not been placed to form a slab at least five (5) feet long, the excess concrete, back to the last preceding joint, shall be removed.

4. The joints shall be formed by placing a wood or metal bulkhead accurately and securely in place, in a plane perpendicular to the profile and center line of the walk.

5. Construction joints shall have tooled edges with a ¼-inch radius.

C. Transverse Contraction (Control) Joints

1. Transverse contraction joints shall be formed at five (5) foot intervals and shall consist of planes of weakness created by an edging tool.

2. Contraction joints shall be formed as soon as possible after the concrete has set.

3. The cut in the fresh concrete, a slot approximately $^{3}/_{16}$-inch wide, shall be perpendicular to the surface of the walk, shall extend to a depth of 1½-inches below the top surface, and shall have ¼-inch radius tooled edges.

D. Transverse Expansion Joints

1. One-half (½) inch expansion joints shall be formed by placing preformed joint filler around all structures, walls, curbs, other fixed objects or one another.

2. Locate expansion joints at intervals not exceeding forty (40) feet.

3. Place expansion joints where sidewalks and driveways intersect themselves.

4. Extend expansion joints the full width and depth of the joint, protecting the top edge which shall not be more than c-inch below the finished surface.

3.08 Concrete Curing

A. After the finishing operations have been completed and as soon as the concrete has hardened sufficiently that marring of the surface will not occur, the entire surface and the edges of the newly placed concrete shall be covered and cured with membrane curing compound.

B. ***Apply clear membrane curing compound by a hand sprayer in a single coat continuous film at a uniform coverage in accordance with the manufacturers recommendation***. Thoroughly agitate the curing compound prior to application and during application as necessary to prevent settlement. Recoat immediately any cracks, checks or other defects appearing in the coating.

C. Curing compound shall not be applied during periods of rainfall. Should the film become damaged from any cause within the required curing period, the damaged portions shall

be repaired immediately with additional compound. Upon removal of side forms the sides of the slabs exposed shall immediately be coated to provide a curing treatment equal to that provided for the surface.

D. ***Continuously cure the concrete for a period of at least seventy-two (72) hours***. Replace immediately any curing material removed or damaged during the seventy-two (72) hour period. Curing will be done by the membrane curing compound method.

E. ***The concrete shall be protected from traffic and weather for at least three (3) days***.

3.09 Form Removal

A. ***After the concrete has sufficiently set a minimum of twelve (12) hours***, the Contractor shall remove the forms and shall backfill the space on each side.

B. The earth shall be compacted and graded in a satisfactory manner without damage to the concrete work. Place and thoroughly compact suitable fill material to ninety-eight percent (98%) of the maximum density as determined by AASHTO T-180.

C. Honeycombs shall be filled with sand cement mortar.

D. Plastering will not be allowed on the face of the walk.

3.10 Testing

A. Sample and cure the concrete in accordance with ASTM C-31, except take not less than two (2) 6-inch by 12-inch cylinders for each ten (10) cubic yards poured or each day's pour if less than five (5) cubic yards.

B. Take slump tests as the concrete is discharged from the mixer/truck at the point of placing. Slump tests shall be made in accordance with ASTM C-143, and test cylinders in accordance with ASTM C-39 and the requirements of Division 3, *Concrete*.

3.11 Concrete Rejection

A. Finished sidewalks, walkways, driveways, pad and related items ***shall be within ± 0.02 feet*** of the elevations shown on the Contract Drawings, and no crack other than at contraction joints.

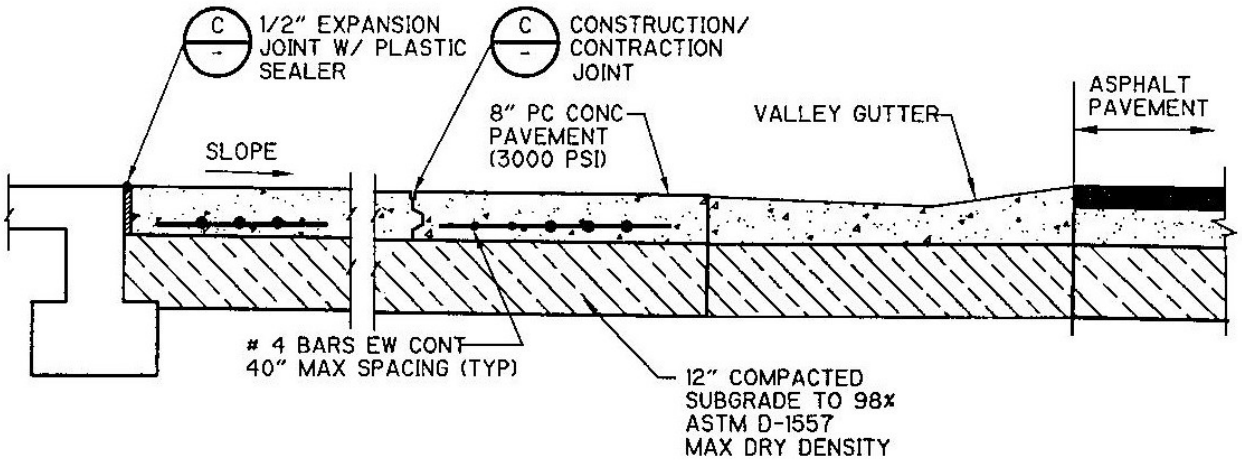
B. Remove and replace all sidewalks, walkways, driveways, pad and related items that do not meet the above requirements.

C. Rejected concrete sidewalks, walkways, driveways, pad and related items shall be removed and ***replaced by the Contractor without additional compensation***.

3.12 Cleanup

A. At the completion of the Work, the Contractor shall clean up all scraps, rubbish and surplus materials caused by this Work and haul them away from the site and legally dispose of them and leave the job site in a neat, clean and orderly condition.

END OF SECTION



HEAVY DUTY CONCRETE PAVEMENT

DETAIL A

NTS

FIGURE 02720 - 1 **HEAVY DUTY CONCRETE PAVEMENT - VALLEY GUTTER APPLICATION**

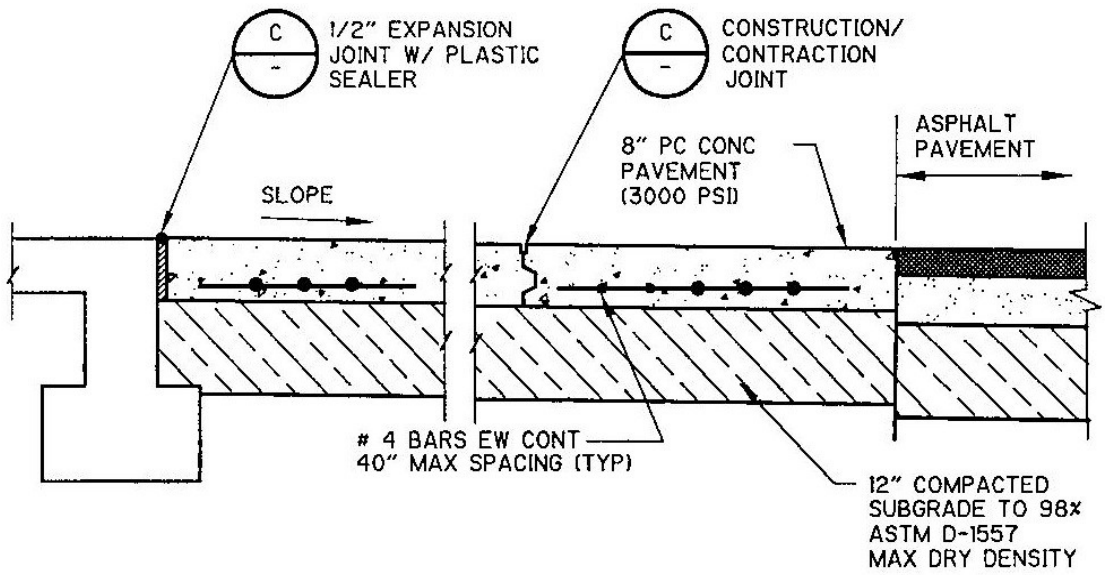
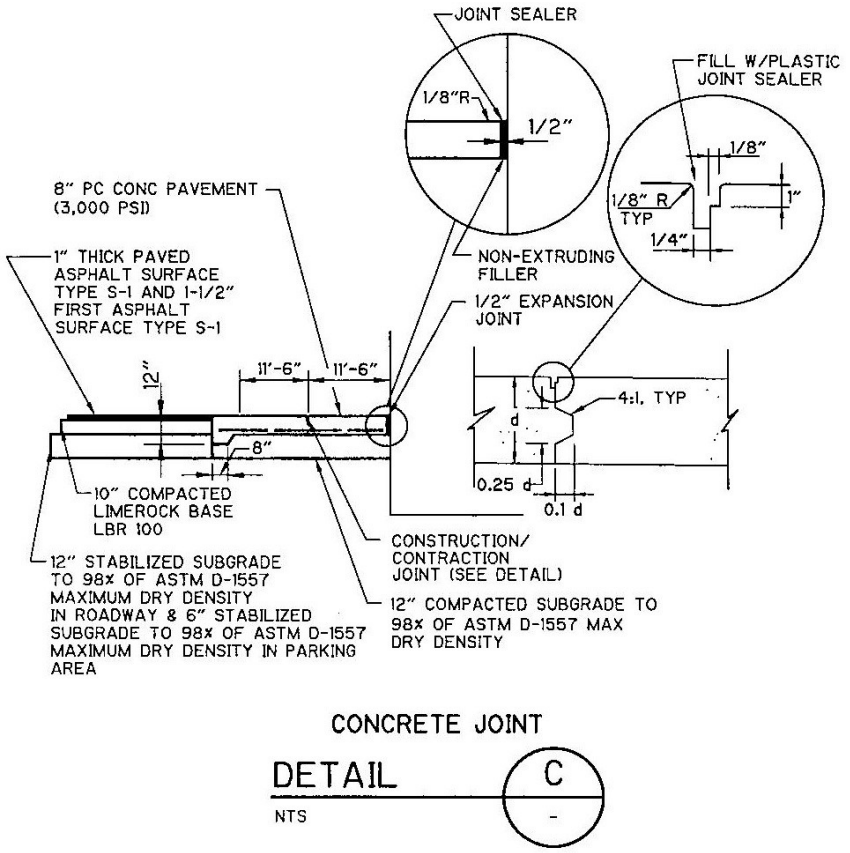


FIGURE 02720 - 2 **HEAVY DUTY CONCRETE PAVEMENT - ASPHALTIC ROADWAY OPTION**



CONCRETE JOINT DETAIL C

NTS

FIGURE 02720 - 3	HEAVY DUTY CONCRETE PAVEMENT - JOINT DETAILS

SECTION 02815

SOLID SODDING

1. GENERAL

1.01 Description

A. The Work specified in this Section consists of furnishing and placing sod and the furnishing and placing of fertilizer, water staples and stakes required for placing of sod within those areas specified on the Contract Drawings.

B. The Work shall include, but is limited to, delivery, storage, protection to the public, inspections excavation, installation, grading, backfilling, fertilizing, sod installation, rolling, sanding, watering, mowing, cleanup, maintenance and guarantee.

C. ***The sod shall be Argentine Bahia*** where indicated on the Contract Drawings. The sod shall be well matted with grass roots and free of weeds and insects.

D. Related Work Specified Elsewhere

Specification Section	Title
02100	Site Preparation
02200	Earthwork
02210	Site Grading
02215	Finish Grading
02220	Excavation, Backfilling and Compaction
Contract Drawings and General Provisions of the Contract	

1.02 Quality Assurance

A. The Engineer's Landscape Architect shall have the right, during any phase of the Work operations, to reject any and all Work and materials which do not meet the requirements of the Contract Documents.

B. Rejected Work and materials shall be immediately removed from the project area and replaced with acceptable work and material within seven (7) calendar days or as approved by the Engineer's Landscape Architect.

C. Standards

1. Botanical and common names for sod, including varieties, have been derived from accepted names of the landscape industry.

2. Grade Standards

a. Sod shall be nursery grown and shall comply with required inspections, grading standards and plant regulations as set forth by the Florida Department of Agriculture.

b. Quality grade shall be based on the standards of sod quality grades of Premium, Standard or Commercial as established by the Turfgrass Producers Association of Florida, Inc.

1.03 Submittals

A. Submit shop drawings in accordance with the General and Supplementary Conditions and Section 01300, *Shop Drawings, Submittals and Samples*.

B. ***The Contractor shall submit certificates from the sod producer stating that the sod meets the requirements for "Florida Standard Grade"*** as defined by the Turfgrass Producers Association of Florida, as set forth in the Article 2.01 of this specification. The certification of sod quality shall be delivered to the Engineer ten (10) days prior to use.

C. Fertilizer manufacturer's certificate of analysis including nitrogen, phosphorus, potash, and complete micro-nutrients in accordance with Article 2.02 of this specification.

D. Submit a copy of the certificate(s) with each delivery.

1.04 Applicable Publications

A. Portions of the publications listed below form a part of this specification only to the extent referenced:

1. Florida Department of Transportation, "Standard Specification for Road and Bridge Construction", (FDOT Specification, "Grassing" (latest edition).

2. Florida Department of Transportation, "Utility Accommodation Guide", Section 5, Paragraphs K, L, and M, except delete "as directed by the Maintenance or Resident Engineer." and delete "or otherwise, to the satisfaction of the Maintenance or Resident Engineer.", latest version.

3. Turfgrass Producers Association of Florida, "Standards of Sod Quality".

4. Florida State Plant Board Specifications.

1.05 Records

A. ***Submit written weekly records*** to the Engineer and Owner of all grassed areas for use in determining the beginning and ending of the maintenance period for each area.

B. The records shall indicate the date of grassing, fertilization and mowing, the sod type, quantity (ft^2, yd^2, or acres) and location of grassing.

2. PRODUCTS

2.01 Solid Grass Sod

A. Grass Sod shall be Argentine Bahia where indicated on the Contract Drawings. The quality grade of the sod shall be "***Standard Grade***" based on the standards of sod quality established by the Turfgrass Producers Association of Florida, Inc. The sod shall be well matted with grass roots and of firm, tough texture having a compact top growth and heavy root development. The allowable weed content shall be as follows based on the Standards for Premium and Commercial grades:

1. Premium Grade: *No weeds or any other grasses allowed. Only the species of sod specified.*

2. Standard Grade: *No casually visible broadleaf weeds, no obvious patches of weeds and no more than two percent (2%) of any other grass or weed in the total canopy.*

3. Commercial Grade: *Any sod that does not meet the weed restrictions of Premium or Standard Grade sod.*

Sod sections shall be strong enough to support their own weight and retain their size (***12" x 24", minimum***) and shape when suspended vertically from a firm grasp on the upper ten percent (10%) of the section. Sod shall be moist and relatively free of thatch.

The soil embedded in the sod shall be a clean earth, free of stones and debris. The sod shall be a ***minimum of 2-inches thick, live, fresh and uninjured at time of planting***.

B. The sod shall be certified to meet the Florida State Plant Board specifications, absolutely true to varietal type and free from weeds or other objectionable vegetation, fungus, insects and disease of any kind.

C. Mowing

1. ***The sod shall have been mowed three (3) times with a lawn mower with the final mowing not more than seven (7) calendar days prior to the sod being cut into uniform dimensions***.

D. Cutting

1. Sod shall not be harvested when the moisture content (excessively dry or wet) may adversely affect its survival and shall be live, fresh and uninjured at the time of placement.

2. After approval of the source, mow and rake as necessary to remove excessive top growth and debris.

3. Cut the sod with mechanical sod cutters, retaining native soil mat of sufficient thickness to withstand handling. The sod shall be provided in commercial pad sizes measuring not less than 12-inches by 24-inches with a uniform thickness two (2) inches in thickness and shall be live, fresh and uninjured at the time of planting.

E. ***The sod shall be harvested, delivered, and installed within a period of seventy-two (72) hours***. Sod older than this shall not be delivered to the Project site and shall be deemed "*unacceptable*".

F. The sod shall be planted as soon as possible after being dug and shall be shaded and kept moist until it is planted.

2.02 Backfill/Planting Soil

A. The topsoil shall be as described in Articles 2.02 and 3.02 of Section 02215, *Finish Grading*.

2.03 Water

A. The water used in the grassing operations shall be supplied and paid for by the Contractor and obtained as provided for in Section 01500, *Temporary Facilities*. The Contractor shall provide permanent or temporary piping and valves, and temporary trucks to convey water from the source to the point of use.

2.04 Fertilizer

A. Commercial fertilizer shall comply with all State and Federal fertilizer laws.

B. The fertilizer shall be of the granular type having an analysis of 12-6-8, derived from the following sources.

Element	Percentage	Derived From
Total Nitrogen	12%	Activated sludge urea-form, sulfur coated urea and potassium nitrate
a. Nitrate	75%	
b. Ammonia	0.0%	
c. Water Soluble	10.25%	
d. Water Insoluble	1.00%	
Phosphoric Acid	6.0%	Triple super phosphate
Water Soluble Potash	8%	Sulphate of potash magnesium, potassium nitrate, sulphate of potash, and activated sludge
Total Magnesium	2.41%	Sulphate of potash magnesium
a. Water Soluble	2.41%	
Total Manganese	0.77%	Manganese oxide
Total Boron	0.02%	Sodium borate
Total Copper	0.07%	Copper oxide
Total Zinc	0.08%	Zinc oxide
Total Iron	1.00%	Iron oxide and ferrous sulphate
Total Chlorine	2.00%	

C. The fertilizer shall be granular, uniform in composition, dry and free flowing, suitable for application by equipment intended for the purpose. Deliver the fertilizer in unopened bags fully labeled with the manufacturer's analysis.

D. Store all fertilizer in a weatherproof place and in such a manner that it will be kept dry and its effectiveness will not be impaired.

E. Comply with all State of Florida fertilizer laws.

2.05 Stakes and Staples

A. Stakes shall be manufactured of softwood, ¾-inch x ¾-inch by 8 inches long and shall be unpainted and untreated.

B. Staples shall be of manufactured of 11 gage metal type, approximately ten (10) inches long and one (1) inch wide.

2.06 Sod Transportation

A. Comply with all current restrictions for transporting sod from or through quarantine areas for the white fringed beetle, witchweed, and West Indian sugar cane borer weevil, as issued by the Division of Plant Industry, Florida Department of Agriculture and the Animal and Plant Health Inspection Service, U.S. Department fo Agriculture.

3. EXECUTION

3.01 General

A. ***Solid sod grassing shall be provided on all non-traffic areas not covered by pavement or structures that are disturbed or damaged by the construction operation*** and/or as specified on the Contract Drawings.

B. Inspect surfaces indicated to receive sod and verify that related preceding Work has been completed. Do not proceed with placement until conditions are satisfactory.

C. Construct a good healthy stand of grass as specified, free of weeds and foreign growth. Unless otherwise shown on the Contract Drawings or specified, all disturbed areas are to be solid sodded.

D. The Contractor shall be responsible to see that all planted areas receive sufficient water until ***Final Project Acceptance*** by the Owner.

3.02 Preparation

A. Remove stones, sticks, rubbish and other extraneous matter from areas to be sodded. Eliminate voids and rough areas and produce a smooth, evenly graded surface.

B. If weed growth is present in the area to be sodded, remove the top three (3) inches of existing material and weed growth.

3.03 Construction Methods for Grassing

A. General

1. ***Solid sodding shall only be applied when the soil is moist in proper condition to induce growth***. Do not sod when the ground is unduly wet or otherwise not in a tillable condition.

2. When a suitable length of roadway slopes or adjacent areas has been graded and made ready, sodding in accordance with these specifications can commence. Incorporate solid sod grassing into the Project at the earliest possible time in the life of the Contract.

B. Sequence of Operations

1. The several operations involved in the work shall proceed in the following sequence: ***preparation and fertilizing of the ground, sodding, watering and maintaining***.

C. Preparation of Areas to be Sodded

1. ***Prepare by disk-harrowing the ground over which the grassing is to be done, and thoroughly pulverize the soil to a depth of at least eight (8) inches***. The prepared soil shall be loose and reasonably smooth.

2. Where the soil is sufficiently loose and clean, the Engineer, at his discretion, may authorize the elimination of ground preparation.

3. ***Areas to be sodded shall be cleared of all rough grass, weeds, and debris and the ground brought to an even grade as shown on the Contract Drawings***.

4. ***Spread planting soil over the area to be sodded to a uniform depth of two (2) inches***.

5. ***The area shall be raked smooth, to the grades indicated on the Contract Drawings, and reasonably free of large clods, roots, debris, and other material*** which will interfere with the work or subsequent mowing and maintenance operations. Hand picking may be required.

6. No subsequent operations shall be commenced until the Engineer has approved the condition of the prepared areas.

D. Application of Fertilizer

1. ***Before applying fertilizer, the soil pH shall be brought to a range of 6.0 to 7.0. Soil samples shall be analyzed by a local certified laboratory to confirm that the soil pH is within the required range***.

2. The fertilizer shall be spread uniformly over the area to be grassed at the rate of ***five hundred twenty-five (525) pounds per acre, or twelve (12) pounds per 1,000 ft^2, or as recommended by the manufacturer***. The Contractor shall use a mechanical spreader capable of uniformly distributing the material at the specified site. Immediately after spreading, ***the fertilizer shall be mixed with the soil to a depth of approximately two (2) inches***.

3. On steep slopes, or other areas where machine-spreading may not be practicable, the fertilizer shall be spread by hand and raked in and thoroughly mixed with the soil to a depth of approximately two (2) inches.

E. The areas shall then be brought to proper grade, free of sticks, stones, or other foreign matter over one (1) inch in diameter or dimension. The surface shall conform to the finish grade identified on the Contract Documents, less the thickness of the sod, free of water-retaining depressions, the soil friable and of uniformly firm texture.

3.04 Placing Sod

A. The areas designated on the Contract Drawings and those areas which have been disturbed and/or damaged as a part of this Project are to be sodded.

B. Incorporate sodding into the Project at the earliest practical time in the life of the contract. ***Sod that has been cut for more than seventy-two (72) hours shall not be used. Sod that has not been planted within twenty-four (24) hours after cutting shall be stacked in an approved manner and maintained and properly moistened***. The sod panels shall, at all times, be protected from excessive drying and unnecessary exposure of the roots to the sun. Any pieces of sod which, after placing, show an appearance of extreme dryness shall be removed and replaced by fresh, uninjured pieces.

C. After completion of the soil conditioning as specified in Article 3.03 above, place the sod panels on the moistened, prepared surface and lay them tightly together (edges in close contact, firmly and smoothly imbedded by length) so as to make a solid sodded lawn area. On mounds or other slopes, the long dimension of the sod panel shall be laid perpendicular to the slope.

D. Where sodding is used in drainage ditches, or on slopes of 4:1 or greater, the setting of the pieces shall be staggered such as to avoid a continuous seam along the line of flow. Along the edges of such staggered areas, the offset of individual strips shall not exceed six (6) inches.

E. ***The sod shall be immediately pressed firmly into contact with a 500 pound hand roller or other suitable equipment, approved by the Engineer, that will produce a 90 psi compression grading***. The rolling operation shall provide a true and even surface and ensure knitting without displacement of sod or deformation of the surfaces of the sodded area. Hand tamp those areas inaccessible to the roller. ***The edges of the sodded area shall be staggered in a corresponding manner providing the offset along the edge does not exceed six (6) inches***. All vertical edging adjacent to sodded area shall be tamped so as to produce a feathered edge.

F. On areas where the sod may slide due to height and slope, and on slopes greater than 2:1, the Contractor shall peg the sod with wooden pegs driven through the sod blocks into firm earth at suitable intervals. Remove any pieces of sod which, after placing, show an appearance of extreme dryness.

G. Sodding shall not be performed when weather and soil conditions are, in the Engineer's opinion, unsuitable for proper results.

H. Bring the sod edge into a neat, clean manner to the edge of all paving, landscaping areas, sidewalks, roadways, concrete pads, valve and meter vault locations, etc.

I. Sanding

1. ***Top dressing with approved, clean, weed free sand shall be required to give the finished product a smooth finish.***

2. The Contractor shall pay particular attention to the need for a light layer of sand along the edges of each piece of sod. ***There shall be no holes, ruts, depressions in the sodded lawn.***

3.05 Watering

A. Water the sodded areas initially to develop uniform coverage and deep water penetration of at least six (6) inches.

B. The Contractor shall provide continuous watering of the sod in order to achieve optimum growth conditions for establishment. ***A minimum of one (1) inch of water per week shall be applied to the sodded areas***. ***The Contractor shall apply water to the sod on a regular basis until Final Project Acceptance by the Owner***.

C. ***The Contractor shall be responsible for the costs related to watering the grassed areas***.

3.06 Cleanup

A. Immediately clean spills from paved and finished surface areas.

B. The Contractor shall remove fertilizer containers, sod pallets and sodding debris and excess materials from the Project Site and legally dispose of them.

C. The Contractor shall sweep sod waste, soil and fertilizer from paved areas, curbs, driveways, sidewalks, pads and walks.

D. Cleaning and cleanup shall be in accordance with Section 01800, *Miscellaneous Work and Cleanup*.

3.07 Maintenance

A. The Contractor shall, at his expense, maintain the planted areas immediately after the sod is installed and continue, in a satisfactory condition, until ***Final Project Acceptance*** by the Owner.

B. Such maintenance shall include watering, mowing, and filling, leveling, repairing of any damaged areas where the establishment of the grass stand does not appear to be developing satisfactorily, or where erosion has washed away an area and filling and leveling are required.

C. Replanting shall be performed at the Contractor's expense except when it is determined that such replacement was due to circumstances beyond the Contractor's control.

D. The Engineer may require replanting or of any areas in which the establishment of the grass stand does not appear to be developing satisfactorily within sixty (60) days of planting or where necessary due to the Contractor's negligence, carelessness or failure to provide routine maintenance and shall be at the Contractor's expense.

E. Mowing and Edging

1. ***Mowing and edging shall be performed at least once every ten (10) days during the Project from the date of installation of the sod***.

2. ***Upon final Project Acceptance by the Owner, the Contractor shall provide a final mowing and edging of the grass***.

F. Insecticides

1. ***The Contractor shall apply all insecticides as needed, for complete control of pests and diseases***. The materials and methods shall be in accordance with highest standard horticultural practices and as recommended by the County Agent, and approved by the Engineer, prior to implementation.

2. When a chemical is being applied, the person using it shall have in their possession all labeling associated with the chemical. Also, the chemical shall be applied per the manufacturer's instructions and recommendations.

3. The spraying of insecticides and other such chemicals are to be confined to he infected area. Spraying techniques, which may introduce the material being sprayed beyond the immediate area of the individual plant, are strictly prohibited.

4. The implementation of control measures for pests and disease infestations shall be in strict compliance with all federal and local regulations. Upon request, the Contractor shall furnish documentation of such compliance.

5. All insecticides shall be applied by a licensed/certified operator only. The operator shall have the license/certification in their possession when insecticides are being applied.

G. After the sod has been laid, tamped and top dressed, areas which fail to show uniform growth and health, shall be re-sodded, as often as necessary, until all sodded areas are covered with a satisfactory lawn. Damage resulting from erosion, gullies, washouts, or other causes shall be repaired by filling with topsoil, tamping, re-fertilizing, and re-sodding by the Contractor at his expense.

H. Sodded areas shall be protected against trespassing and damage. Sod that has been damaged or injured shall be treated or replaced as directed, in compliance with the Specifications, at no additional cost to the Owner.

I. Keep sidewalks, curbs and gutters, drainage structures, driveways, parking areas, streets, terraces, decks and pavers free of grass cuttings.

J. Material rejected during the course of construction shall be removed within ten (10) calendar days and replaced before an inspection for completion will be scheduled.

K. ***The Contractor shall be responsible for the proper maintenance and the survival and condition of the sod from the time a landscape item is installed until Final Project Acceptance by the Owner***.

L. Replacement of sod shall be the responsibility of the Contractor including the possible replacement of sod resulting from removal by theft or vandalism or acts of negligence on the part of others. Sod shall be alive and in good growing condition at the time of Final Project Acceptance by the Owner.

END OF SECTION

SECTION 03100

CONCRETE FORMWORK

1. GENERAL

1.01 Description

A. The Work included in this Section consists of providing all labor, materials and equipment necessary for providing and installing formwork for concrete.

B. Work Specified Herein

1. General formwork.
2. Forms, form liners, and coatings.
3. Form ties and accessories.

C. Related Work Specified Elsewhere

Specification Section	Title
02200	Earthwork
03200	Concrete Reinforcement
03250	Concrete Accessories
03300	Cast-in-Place Concrete
Contract Drawings and General Provisions of the Contract	

1.02 General Design and Responsibility

A. All forms and shoring shall be designed at the Contractor's expense by a Professional Engineer registered in the State of Florida. Formwork shall be designed and erected in accordance with the requirements of ACI 301 and ACI 318 and as recommended in ACI 347 and shall comply with all applicable regulations and codes.

B. The design shall consider any special requirements due to the use of plasticized and/or retarded set concrete. The Contractor shall be responsible for safety in its construction, use and removal.

C. Provide camber as necessary to compensate for anticipated deflection in the formwork and concrete due to weight and pressure of fresh concrete and other construction loads.

1.03 Quality Assurance

A. Qualifications

1. Formwork shall be constructed in accordance with the specified standards, as well as all pertinent codes and regulations.

2. Where provisions of pertinent codes conflict with the requirements of this Section of the Specifications, the more stringent provisions shall govern.

B. Standards

1. Unless otherwise indicated, all materials, workmanship and practices shall conform to the following standards:

STANDARD	DESCRIPTION
American Concrete Institute (ACI)	
ACI 117	Specifications for Tolerances for Concrete Construction and Materials
ACI 301	Specifications for Structural Concrete
ACI 318	Building Code Requirements for Reinforced Concrete
ACI 347	Guide to Formwork for Concrete
American Plywood Association (APA)	
	Material grades and designations as specified
Building Codes	
	Florida Building Code
	Local Codes and Regulations

C. Pre-Placement Checklist

1. The Contractor, as part of his Quality Control Plan, shall develop and submit for approval a Pre-Placement Checklist form to cover the following items:

   a. Reference Drawings covering the placement for all trades and disciplines.

   b. Date and time scheduled for placement and the actual date and time of placement.

   c. Foreman name, placement number, number of truckloads and number of cylinders.

   d. Checklist items such as embeds (list each), subgrade, rebar, forms, alignment, plumbness, etc.

   e. Signoff's for foreman, Contractor's Quality Control representative, each subcontractor foreman (major subs, mechanical, electrical, plumbing, etc.) and Engineer.

D. ***No concrete may be placed until the checklist is properly and completely signed off***. Failure to comply with this provision can be grounds for rejecting the work. The checklist shall be weather protected and located with the foreman or at the foreman's station.

1.04 Submittals

A. Submit shop drawings and product data, in an electronic format (PDF), in accordance with Section 01300, *Shop Drawings, Submittals and Samples*, showing materials of construction and details of installation for:

1. Submit manufacturer's literature for form ties, form release agent, spreaders, corner formers, form coatings and bond breakers.

2. Location and sequence of the concrete placements. Indicate locations of joints and panel sizes and patterns. Show location of form ties on architectural surfaces.

3. Review of the pour sequence, form system, and panel layout shall be for appearance and strength of the completed structure only. Review by the Engineer of forming plans or procedures shall not relieve the Contractor of responsibility for the strength, safety or correctness of methods used, the adequacy of equipment, or from carrying out the work in full compliance with the requirements of the Contract Drawings and Specifications.

B. Samples

1. The Contractor shall demonstrate to the Engineer on a designated area of the concrete substructure exterior surface that the form release agent will not adversely affect concrete surfaces to be painted, coated or otherwise furnished and will not affect the forming material.

C. Submit the manufacturer's literature for form ties, spreaders, corner formers, form coatings, and bond breakers.

2. PRODUCTS

2.01 Form Construction and Design

A. Design forms according to the applicable portions of ACI 347, *Guide to Formwork for Concrete*. Form all concrete, except as specified otherwise.

B. Provide form windows or stage forms to allow visual observation at all times of the concrete being placed and vibrated. Provide a formwork design and placement schedule that will limit the free fall of concrete in walls as follows:

Wall Thickness	Maximum Free Fall of Concrete (feet)
8 inches or less	4.0
Greater than 8 inches	6.0

The total vertical lift made in a single pass shall not exceed two (2) feet in height.

C. ***Notify the Engineer, a minimum of seventy-two (72) hours prior to the placement of concrete.***

D. For multi-storied structures, the shoring and reshoring diagrams and procedures shall be signed and sealed by a registered Engineer in the State of Florida. These diagrams and procedures shall take into account the effect of the loads on the uncured concrete and the construction load on each floor.

E. Steel forms shall be 24 gauge, tongue and groove joints, complete with steel stakes and splice plates.

2.02 Classes of Forms

A. Class I Forms

1. Use steel forms, ply form, or smooth surface plywood ¾-inch minimum thickness for straight surfaces and ½-inch minimum thickness for curved surfaces.

2. Coat the face and edges of the forms with a two-coat system of one component polyurethane coating applied by roller at the rate of five hundred square feet (500 ft^2) per gallon.

B. Class II Forms

1. Use plywood in good condition, metal, or smooth-planed boards free from large or loose knots with tongue and groove or ship lap joints.

2. The Forms shall be oiled.

3. Class II forms may be used for exterior concrete surfaces which are one (1) foot or more below finished grade. Use Class I forms for all other surfaces.

C. Coat all forms with a form-release agent.

2.03 Form Material

A. Use plywood, lumber, steel or other approved materials as identified herein of sufficient strength and surface smoothness to produce the specified finish.

B. Tape, gasket, plug, and/or caulk joints, gaps, and apertures in forms so that the joint will remain watertight and withstand placing pressures without bulging outward or creating surface irregularities.

C. Lumber

1. The Lumber used in form construction shall be either:

a. Douglas fir, No. 2 grade, S4S, Standard Grading and Dressing Rules No. 16, West Coast Lumber Inspection Bureau; or

b. Southern Yellow Pine, No. 2, S4S, Standard Grade Rules Southern Pine Inspection Bureau.

2. All boards shall be six (6) inches or more in width and seasoned on all sides.

D. Plywood

1. Plywood used in form construction shall be Grade B-B, Class I plyform, sanded on both sides in conformance with U.S. Product Standard PS-1, mill-oiled and edge sealed, and bearing the label of the American Plywood Association.

2. The minimum thickness of the plywood shall be ¾-inch.

E. Medium Density Overlay (MDO) Plywood Forms

1. PS-1, B-B High Density Concrete Form Overlay, Class 1, unoiled.

2. Butt form panels, make contact surface fully flush and seal butting holes with sponge form tape. Chamfer edges of beams and ceilings.

3. Where medium density overlay (MDO) plywood is used to form beams, use no piece of MDO plywood that has been patched or damaged.

F. Drip Forms

1. Varnished ponderosa pine or equally rigid non-staining plastic, ½-inch wide on each leg.

G. Steel Forms

1. Uncoated steel, $^{3}/_{16}$-inch minimum thickness, fabricated to close tolerances, protected only by the specified release agent, braced so as not to bend, dent or dimple under wet concrete loads, vibrator impact, and tool impact.

2. Maintain steel forms in a "*rust-free*" condition by use of steel wool and light grinding, followed by coats of specified release agent. Use forms that can be adjusted into true alignment without stops or ridges.

H. Glass Fiber Reinforced Plastic (FRP) Forms

1. Smooth coated forms, braced so as not to bend, dent or dimple under wet concrete loads, vibrator impact and tool impact, and at least 0.11-inch thick. Design forms for external bracing at piers and columns, without use of form ties.

I. Circular Column Forms

1. Fabricated of two pieces, clamped watertight using gaskets and without horizontal joints

2. Install horizontal construction joints only where indicated or as directed by the Engineer.

J. Beam Forms

1. Provide as one length without form joints and suitable for cambering up to $^{1}/_{60}$ of the span without distortion of profile or opening of seams.

K. Forms for Hammerhead Pier Caps

1. Provide in one length with adjustable soffits, bulkhead and screeds, as necessary, to accommodate different hammerhead beam configurations.

2. Provide no construction joints in hammerhead pier caps.

3. Where three or fewer identical hammerhead pier caps occur within a line section, steel braced High Density Overlay (HDO) plywood forms may be substituted for steel forms if:

   a. Working drawings of the formwork are submitted.

   b. Internal form ties are regularly spaced no less than forty-eight (48) inches each way, and are made watertight.

   c. Form ties have removable cones, which are filled to match the concrete.

   d. Joints in panels are fully watertight.

   e. The resulting surface matches the appearance of steel formed hammerhead caps, with no visible discoloration due to form leakage.

L. Styrofoam Board

1. Expanded polystyrene extruded into board foam, closed cell, moisture resistant, and capable of maintaining the indicated clear space between concrete structures.

2.04 Form Ties

A. Locate form ties on exposed surfaces in a uniform pattern or as indicated on the Contract Drawings. Construct form ties so that the ties remain embedded in the concrete except for a removable portion at each end and do not leave an open hole through the concrete. Form ties shall have conical or spherical type inserts with a maximum diameter of one (1) inch. Construct form ties so that no metal is within one (1) inch of the concrete surface when the forms, inserts, and tie ends are removed. Ties shall withstand all pressures and maintain forms within acceptable deflection limits.

B. ***Wire ties and wood spreaders will not be permitted***.

C. Flat bar ties for panel forms shall have plastic or rubber inserts having a minimum depth of one (1) inch and sufficient dimensions to permit patching of the tie hole.

D. Ties for water-holding structures or dry structures with access, such as basements or pipe galleries, that are below finish grade shall have an integral steel waterstop that is tightly and continuously welded to the tie. The waterstop shall be ***at least two times (2X) larger*** in area than the tie cross-sectional area and shall be oriented perpendicular to the tie and symmetrical about the center of the tie. Construct the ties to provide a positive means of preventing rotation or disturbance of the center portion of the tie during removal of the ends.

E. Tapered form ties shall be tapered through-bolts at least one (1) inch in diameter at smallest end or through-bolts that utilize a removable tapered sleeve of the same minimum size.

2.05 Control Joint Filler

A. Use epoxy joint filler equal to Burke Epoxy Joint Filler to fill all voids left by saw cuts and to resist against spalling caused by vehicle traffic in concrete slabs.

2.06 Inserts

A. Galvanized cast steel or galvanized welded steel, complete with anchors to concrete and fittings such as bolts, wedges and straps. Provide hanger inserts spaced to match the grid of suspended ceilings.

2.07 Shoring

A. As designed and executed by the Contractor to support all loads.

2.08 Bond Breaker

A. Bond breaker shall be a ***non-staining*** type which will provide a positive bond prevention, such as Tilt Seal, an manufactured by Hunt Process Co., Santa Fe Springs, CA; Silcoseal 77, as manufactured by Dayton Superior Corp., Miamisberg, Ohio; or approved equal.

2.09 Form Release Agent

A. Coat all forming surfaces in contact with concrete using a form release agent that shall effectively prevent absorption of moisture by the form and prevent bond with the concrete. The form release agent shall be ***non-staining***, ***non-residual***, ***water based***, free of taste and odor, leave concrete with a coatable surface, and be *non-toxic* after thirty (30) days.

B. For steel forms, the form release agent shall prevent discoloration of the concrete due to rust.

2.10 Chamfer Strips and Moldings

A. Chamfer strips shall be polyvinyl, metal or PVC strips or approved equal, designed to be nailed in the forms to provide a ¾ -inch chamfer at all exposed edges of concrete members, unless otherwise indicated on the Contract Drawings.

B. Rectangular or trapezoidal moldings shall be placed in locations requiring sealants where specified or shown on the Contract Drawings. Sizes of moldings shall conform to the sealants manufacturer's recommendations.

3. EXECUTION

3.01 General

A. Forms shall be sufficiently strong and watertight, in accordance with ACI 301 and 347, to withstand the pressure resulting from the placement and vibration of concrete and shall be sufficiently hard and rigid to resist indentation and scratching while maintaining specified tolerances, and with ***maximum deflection between form supports of $^{1}/_{240}^{th}$ of the span length***.

B. Design, erect, shore, brace and maintain formwork, according to ACI 301, to support vertical, lateral, static and dynamic loads, and construction loads that might be applied, until the structure can support such loads.

C. Construct formwork so that concrete members and structures are of the size, shape, alignment, elevation and position indicated, within the tolerance limits of ACI 117.

D. Limit concrete surface irregularities, designated by ACI 347R as abrupt and gradual, as follows:

1. Class A: c-inch (3.2 mm) for smooth-formed finished surfaces.

2. Class B: ¼-inch (6 mm) for rough-formed finished surfaces.

E. Construct forms tight enough to prevent loss of concrete mortar.

F. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 (horizontal) to 1 (vertical).

1. Install keyways, reglets, recesses, and the like, for easy removal.

2. Do not use rust-stained steel form-facing material.

G. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve the required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.

H. Provide temporary openings for cleanouts and inspection ports where the interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.

I. Chamfer exterior corners and edges of permanently exposed concrete.

J. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine the sizes and locations from trades providing such items.

K. Coordinate with other trades and properly place and locate in position all necessary chases, dowels, bolts, anchors, anchor slots, inserts, sleeves, openings, hangers, metal ties and other fastening devices required for attachment and support of adjacent work. Securely anchor all embedded items.

L. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.

M. Coat contact surfaces of the forms with a form-release agent, according to the manufacturer's written instructions, prior to placing reinforcing. Keep form coatings off steel reinforcing, items to be embedded and previously placed concrete.

N. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.

3.02 Form Erection

A. Use facing materials that produce a hard uniform texture on the concrete. Do not use facing materials with raised grain, torn surfaces, worn edges, patches, dents or other defects. Use facing materials with maximum deflection, as reflected in concrete surfaces, ***not in excess of $^{1}/_{240}^{th}$ of the span*** between the structural members.

B. Provide means for holding adjacent edges and ends of form panels and sections tight and in accurate alignment to prevent the formation of ridges, fins, offsets, or similar surface defects in the finished concrete. Forms shall be tight and shall prevent the loss of mortar and fines during placing and vibration of concrete.

C. Insure that the forms may be removed without injury to the surface of the finished concrete.

D. Provide exterior corners in concrete members with bevels as specified.

E. Provide a positive means of adjustment of shores and struts. Insure that all settlement is taken up during concrete placing.

F. Do not embed any form-tying device or part thereof other than metal in the concrete.

G. Locate the large end of a taper tie on the "*wet*" side of the wall.

H. Use only form or form-tying methods which do not cause spalling of the concrete upon form stripping or tie removal.

I. Form ¾-inch x ¾-inch chamfers at all exposed edges of concrete members unless otherwise noted on the Contract Drawings.

J. Form surfaces of concrete members except where placement of the concrete against the ground is shown in the Contract Drawings or as indicated below. The dimensions of concrete members shown in the Contract Drawings apply to formed surfaces, except

where otherwise indicated. Add two (2) inches of concrete where concrete is placed against trimmed undisturbed ground in lieu of forms. Placement of concrete against the ground shall be limited to footings and other non-exposed concrete and only where the character of the ground is such that it can be trimmed to the required lines and will stand securely without caving or sloughing.

K. ***At construction joints, overlap the contact surfaces of the form sheathing over the hardened concrete by not more than one (1) inch***. Hold forms against the hardened concrete to prevent offsets or loss of mortar.

L. Provide temporary openings in wall forms to limit the free fall of concrete to a maximum of six (6) feet unless an elephant trunk is used. Locate such openings to facilitate placing and consolidation, and space no more than eight (8) feet apart. Provide temporary openings in the bottom of the wall and column forms and elsewhere as necessary to facilitate cleaning and observation immediately prior to cleaning.

M. Runways

1. Provide smooth and rigid runways, if needed, for moving equipment and concrete. Support runways directly on formwork or on grade and in no case on reinforcing steel or bar supports.

3.03 Form Surface Preparation

A. ***After each use and prior to placing reinforcing, clean form surfaces to be in contact with concrete of any mortar, grout and other foreign material***.

B. Coat form surfaces in contact with concrete with a form release agent prior to form installation. Do not allow the form release agent to stand in puddles in the forms, to come into contact with hardened concrete against which fresh concrete is to be placed, or with reinforcing steel and items to be embedded.

3.04 Formwork Reuse

A. Reuse only forms which provide a hard uniform surface texture on exposed concrete surfaces. Do not use facing materials with raised grain, torn surfaces, worn edges, patches, dents or other defects.

B. ***Clean and repair surfaces of forms to be reused in the Work***. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply light sanding or other surface treatment between uses to obtain such uniform texture. Apply new form-release agent.

C. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces.

D. Plug unused tie rod holes with corks, shave flush, and sandpaper the concrete surface side. Do not patch forms other than filling tie rod holes, except in the case of Class II forms.

E. Do not use metal patching discs on Class I forms.

F. Reuse of wooden forms for other than rough finish will be permitted only if a "***like new***" condition of the form is maintained.

3.05 Metal Forms

A. Metal forms shall be thoroughly cleaned and mill scale and other ferrous deposits shall be sandblasted or otherwise removed from the contact surface for all forms, except those utilized for surfaces receiving a rough finish.

B. All forms shall have the contact surfaces coated with a release agent.

3.06 Shores and Reshores

A. Comply with ACI 318 (ACI 318M) and ACI 301 for the design, installation and removal of shoring and reshoring.

B. Do not remove shoring or reshoring until the measurement of slab tolerances is complete.

C. In multistory construction, extend the shoring and reshoring over a sufficient number of stories to distribute loads in such a manner that no floor member will be exclusively loaded or will induce tensile stress in concrete members without sufficient steel reinforcement.

D. Plan the sequence of removal of shores and reshore to avoid damage to concrete. Locate and provide adequate reshoring to support construction without excessive stress or deflection.

3.07 Tolerances

A. Concrete Tolerances

1. Vertical, lateral, and level alignments and cross-sectional dimensions shall comply with ACI 117.

2. The following table indicates tolerances or allowable variations from dimensions or positions of structural concrete work:

Description	Maximum Tolerance
Sleeves and Inserts	+ ¼-inch to - ¼-inch
Projected Ends of Anchors	+ ¼-inch to 0-inch
Anchor Bolt Setting	+ ¼-inch to - ¼-inch
Finished Concrete, all locations	+ ¼-inch to - ¼-inch in 10 feet

3. The planes and axes from which the above referenced tolerances are to be measured shall be as follows:

Description	Measurement Datum
Sleeves and Inserts	Centerline of Sleeve or Insert
Projected Ends of Anchors	Plane perpendicular to the end of the anchor as located on the Contract Drawings
Anchor Bolt Setting	Centerline of the anchor bolt
Finished Concrete, all locations	The concrete surface as located on the Contract Drawings

4. Where equipment is to be installed, comply with the manufacturer's tolerances if more severe than above.

5. Failure of the forms to produce the specified concrete surface and surface tolerance shall be grounds for rejection of the concrete work. ***Rejected work shall be repaired or replaced at no additional cost to the Owner***.

B. Form Tolerances

1. Forms shall be surfaced, designed, and constructed in accordance with the recommendations of ACI 347 and shall meet the following additional requirements for the specified finishes.

2. Formed Surface Exposed to View

   a. Edges of all form panels in contact with concrete shall be flush within $^{1}/_{32}$-inch and forms for plane surfaces shall be such that the concrete will be plane within $^{1}/_{16}$-inch in four (4) feet.

   b. Forms shall be tight to prevent the passage of mortar, water and grout.

   c. The maximum deviation of the finish wall surface at any point shall not exceed ¼-inch from the intended surface as shown on the Drawings.

   d. Form panels shall be arranged symmetrically and in an orderly manner to minimize the number or seams.

3. Formed surfaces not exposed to view or buried shall meet requirements of Class "C" Surface in ACI 347.

4. Formed rough surfaces including mass concrete, pipe encasement, electrical duct encasement, and other similar installations shall have no minimum requirements for surface smoothness and surface deflections. The overall dimensions of the concrete shall be ± 1-inch.

5. Formed Concrete Surfaces to Receive Paint

   a. Surface deflections shall be limited to $^{1}/_{32}$-inch at any point and the variation in wall deflection shall not exceed $^{1}/_{16}$-inch per four (4) feet.

   b. The maximum, deviation of the finish wall surface at any point shall not exceed c-inch from the intended surface as shown on the Contract Drawings.

C. Formed Openings shall be of sufficient size to permit final alignment of the items within it without deflection or offsets of any kind and to allow space for packing where the items pass through the wall to ensure water tightness around openings so formed. Provide openings with continuous keyways with waterstops where required, and provide a slight flare to facilitate grouting and the escape of entrained air during grouting. Provide formed openings with reinforcement as indicated and specified. Reinforcing steel shall be at least two (2) inches clear from the opening.

D. Embedded Items

1. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions and directions furnished with the items to be embedded.

2. Install anchor rods, accurately located, to the elevations required and complying with the tolerances in Section 7.5 of AISC's *Code of Standard Practice for Steel Buildings and Bridges*, and hold securely in position in the forms until the concrete is placed and set

3. Install reglets to receive waterproofing and to receive through-wall flashings in the outer face of the concrete frame at exterior walls, where flashing is shown at lintels, shelf angles and other conditions.

4. Install dovetail anchor slots in concrete structures as indicated.

5. Check all special castings, channels, or other metal parts that are to be embedded in the concrete prior to and again after concreting.

6. Check all nailing, blocks, plugs and strips necessary for the attachment of trim, finish and similar work prior to concreting.

7. Coordinate with other trades for items to be embedded in the concrete and not shown on the Contract Drawings.

E. Pipes and Wall Spools Cast in Concrete

1. Install wall spools, wall flanges and wall anchors before placing concrete. Do not weld, tie or otherwise connect the wall spools to the reinforcing steel.

2. Support pipe and fabricated fittings to be encased in concrete on concrete piers or pedestals. Carry concrete supports to firm foundations so that no settlement will be possible during construction.

3. Pipes or spools located below operating water level shall have waterstop ring collars and shall be cast in place. Do not block out such piping and grout after the concrete section is cast. Pipes fitted with thrust rings shall be cast in place.

F. Beveled Edges (Chamfer)

1. ***Form ¾- inch beveled edges on exposed concrete edges and corners, beam soffit corners, and where indicated on the Contract Drawings***.

2. Reentrant corners in concrete members shall not have fillets, unless otherwise shown in the Drawings.

3. The top edges of slabs, walkways, beams, and walls may be beveled with an edging trowel in lieu of using chamfer strips.

3.08 Aluminum Surfaces in Contact with Concrete

A. Coat all aluminum surfaces in contact with concrete in accordance with Section 09900, *Painting*.

3.09 Removal of Forms

A. ***The Contractor shall be responsible for all damage resulting from removal of forms***. Forms and shoring for structural slabs or beams shall remain in place in accordance with ACI 301 and ACI 347.

B. Forms and shoring for elevated structural slabs or beams shall remain in place until the concrete has reached a compressive strength equal to the specified 28-day compressive strength as determined by test cylinders. Do not remove supports and reshore.

C. The following table indicates the minimum allowable time after the last cast concrete is placed before forms, shoring, or wall bracing may be removed. The time periods indicated in the table include all days except those in which the temperature falls below 40□F:

Description	Normal Strength Concrete	Normal High-Early Strength Concrete	Min. Compressive Strength for Form Removal (% Design Strength)
Cantilevers	12 days	7 days	90%
Over 20 ft between supports	12 days	7 days	90%
Stairways	10 days	5 days	80%
Floor slabs	10 days	5 days	80%
Free standing walls, columns and piers	10 days	5 days	80%
Walls, piers, columns, sides of beams, footings, slabs on grade, and vertical surfaces	2 days	1 day	80%
Front face form of curbs	1 day	0.5 day	70%

D. Do not remove forms from concrete which has been placed with an outside air temperature below 50□F without first determining if the concrete has properly set without regard for time. Do not apply heavy loading on green concrete. Immediately after forms are removed, the surface of the concrete shall be carefully examined and any irregularities in the surface shall be repaired and finished as specified.

3.10 Inspection

A. The Engineer shall be notified when the forms are complete and ready for inspection at least twenty-four (24) hours prior to the proposed placement of concrete.

B. ***Failure of the forms to comply with the requirements specified herein, or to produce concrete complying with the requirements of these specifications, shall be grounds for rejection of that portion of the concrete work***.

C. ***Rejected concrete shall be repaired or replaced as approved by the Engineer at no additional cost to the Owner***. Such repair or replacement shall be subject to the requirements of these specifications and approval of the Engineer.

END OF SECTION

SECTION 03200

CONCRETE REINFORCEMENT

1. GENERAL

1.01 Description

A. The work in this Section consists of providing all labor, materials, equipment and incidentals required to install all steel bars, steel wire and wire fabric required for the reinforcement of concrete, as shown on the Contract Drawings, and as specified herein.

B. Work Specified Herein: *Provisions of all reinforcement*

C. Related Work Specified Elsewhere:

Specification Section	Title
03100	Concrete Formwork
03250	Concrete Accessories
03300	Cast-in-Place Concrete
03400	Precast Concrete Structures
Contract Drawings and General Provisions of the Contract	

1.02 Quality Assurance

A. Unless otherwise indicated, all materials, workmanship and practices shall conform to the following standards:

STANDARD	DESCRIPTION
American Concrete Institute (ACI)	
ACI 117	Standard Tolerance for Concrete Construction and Materials
ACI 301	Specifications for Structural Concrete for Buildings

STANDARD	DESCRIPTION
American Concrete Institute (ACI) - Cont'd	
ACI 315	Details and Detailing of Concrete Reinforcement Manual
ACI 318	Building Code Requirements for Reinforced Concrete
ACI 350R	Environmental Engineering Concrete Structures
American Society for Testing and Materials (ASTM)	
ASTM A82	Specification for Steel Wire, Plain, for Concrete Reinforcement
ASTM A184	Specification for Fabricated Deformed Steel Bar Mats for Concrete Reinforcement
ASTM A185	Specification for Steel Welded Wire Fabric, Plain, for Concrete Reinforcement
ASTM A496	Specification for Steel Wire Deformed, for Concrete Reinforcement
ASTM A497	Specification for Welded Deformed Steel Wire Fabric for Concrete Reinforcement
ASTM A615	Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
ASTM A767	Specification for Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement
ASTM A775	Specification for Epoxy-Coated Reinforcing Steel Bars
ASTM A884	Specification for Epoxy-Coated Steel Wire & Welded Wire Fabric for Reinforcement
American Welding Society (AWS)	
AWS D1.4	Structural Welding Code - Reinforcing Steel
Concrete Reinforcing Steel Institute (CRSI)	
	CRSI Manual of Standard Practices
Building Codes	
	Florida Building Code
	Local Codes and Regulations

1.03 Submittals

A. ***Submit shop drawings*** for review in accordance with Section 00700, *General Conditions*, Section 00800, *Supplementary Conditions*, and Section 01300, *Shop Drawings, Submittals and Samples*. All shop drawings shall be submitted in an electronic format (PDF).

B. ***Submit mill test certifications*** identifying chemical and physical analyses for each load of reinforcing steel delivered. All submittals shall be in an electronic format (PDF).

C. ***Submit reinforcing bending lists and placing drawings for all reinforcing***. Placing drawings shall include wall elevations, plan views, and sections to clearly show the reinforcing placing procedures. Include bar sizes, lengths, material, grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing, and reinforcement supports.

D. ***Placing drawings shall indicate all openings*** (mechanical, electrical, equipment and architectural), ***including additional reinforcing*** at openings and intersecting wall, beam and footing arrangements as indicated on the structural drawings and specified herein. Placing drawings shall be coordinated with the concrete placing schedule.

E. Each bending list and placing drawing submitted shall be complete for each major element of a structure (grade slabs, footings, walls, deck, floor, beams or roof slabs), including all dowels and other bars required. Furnishing such lists shall not be construed that the list will be reviewed for accuracy.

F. ***The Contractor shall be wholly and completely responsible for the accuracy of the lists and for furnishing and placing reinforcing steel in accordance*** with the details shown on the plans and as specified herein.

G. Coordinate placing drawings with concrete placing schedule.

1.04 Product Delivery, Storage and Handling

A. Reinforcement shall be shipped to the Work with bars of the same size and shape fastened in bundles with metal identification tags with waterproof markings giving size and mark securely wired on.

B. The identification tags shall be labeled with the same designation as shown on the submitted bar lists and shop drawings.

C. All bars shall be stored off of the ground and shall be protected from moisture and be kept free from dirt, oil, or injurious contaminants.

2. PRODUCTS

2.01 Reinforcement

A. Reinforcement Bars

1. Concrete reinforcement in Sizes No. 3 (d- inch) and larger shall be deformed steel bars of the same sizes and shapes indicated on the Contract Drawings. The steel

shall be newly rolled stock of domestic manufacture, substantially free from mill scale, rust, dirt, grease, or other foreign matter. Bars shall be of intermediate grade, deformed billet steel conforming to ASTM Specification A-615, Grade 60, deformed, including all supplementary requirements.

2. Fabricate reinforcing steel in accordance with the current edition of the Manual of Standard Practice, published by the Concrete Reinforcing Steel Institute (CRSI).

3. Bend all reinforcing steel cold.

4. ***Rail-steel bars will not be allowed in the work***.

5. ***Reinforcement shall be accurately fabricated to the dimensions indicated on the Contract Drawings***. Particular care shall be exercised not to have stirrups oversized in order to maintain proper coverage of concrete. Stirrups and tie bars shall be made around a pin having a diameter not less than two (2) times the maximum thickness of the bar. Bends for other bars shall be made around a pin having a diameter not less than five (5) times the minimum thickness of the bar except for bars larger than one (1) inch, in which case the bends shall be made around a pin of eight (8) bar diameters. Bars reduced in section or with kinks or bends not shown on the Contract Drawings will not be accepted.

6. Deliver all reinforcing steel to the Project Site bundled and tagged with identifying tags.

2.02 Welded Wire Fabric (WWF)

A. Welded wire fabric shall conform to ASTM Specification A-185, galvanized for Welded Steel Wire Fabric for Concrete Reinforcement.

B. Welded wire fabric shall be furnished in flat sheets, rolled welded wire fabric is not permitted.

C. Where welded wire fabric is shown but not sized on the Contract Drawing, the Contractor shall use 6 x 6 x W2.1 x W2.1 WWF.

2.03 Wire Tie

A. Wire tie shall be 16-gauge minimum, zinc coated annealed, conforming to ASTM Specification A82.

2.04 Bar Supports

A. Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcement in place shall be provided and used.

B. Manufacture bar supports from steel wire, plastic or precast concrete according to CRSI's *Manual of Standard Practice*, of greater compressive strength than the concrete as follows:

1. For concrete surfaces exposed to view where legs of wire bar supports contact forms, use CRSI Class 1 plastic-coated steel wire or CRSI Class 2 stainless steel bar supports.

2.05 Bar Couplers

A. Reinforcing steel bar splicing couplers shall be a mechanical type as manufactured by Dayton Barsplice, DYWIDAG, Erico Products, Inc. or approved equal and where approved by the Engineer.

B. Use couplers which develop 125% of the specified yield strength of the reinforcing bars.

C. Make field demonstrations and sample splicing prior to splicing bars being included into the work.

2.06 Dowels

A. Smooth dowels shall be ASTM A615, Grade 60 plain-steel bars.

B. Cut bars true to length with the ends square and free of burrs.

C. Threaded dowels shall be ASTM A36.

2.07 Reinforcing Steel Accessories

Bar Supports	CRSI Bar Support Specifications
Plastic Protected	Class 1 - Maximum Protection
Stainless Steel Protected	Class 2 - Maximum Protection
Precast Concrete Block	Precast Blocks

2.08 Fabrication

A. Do not commence fabrication until receipt of the approved shop drawings from the Engineer.

B. Fabricate reinforcing steel in accordance with all requirements of the specified standards and within CRSI tolerances, and unless otherwise indicated, with the following: (1) Provide standard books; (2) ***Extend bottom bars a minimum of six (6) inches into supporting members***; (3) Provide cover indicated to the outermost stirrup, tie or bar; (4) Provide splices only where indicated on the Contract Drawings.

3. EXECUTION

3.01 Installation

A. General

1. On porous subgrade or beddings, provide a vapor barrier as specified in Section 03300, *Cast-in-Place Concrete* and Section 07050, *Vapor Barrier*. ***Do not cut or puncture the vapor barrier***. Repair any damage and reseal the vapor barrier prior to placing concrete.

2. Comply with CRSI's *Manual of Standard Practice* and ACI 315 for placing concrete reinforcement.

B. Securely tie and support reinforcement to prevent displacement during concrete placement.

C. Fastening Devices for Other Work

1. Coordinate with other trades and properly place and locate in position all necessary reinforcement, dowels, bolts, anchors, anchor slots, inserts, hangers, metal ties, and other fastening devices required for attachment and support to adjacent work.

2. Securely anchor all fixtures and embedded items.

D. Surface condition, bending, spacing, and tolerances of placement of reinforcement shall comply with the Concrete Reinforcing Steel Institute (CRSI). The Contractor shall be solely responsible for providing an adequate number of bars and maintaining the spacing and clearances shown on the Contract Drawings.

E. Place reinforcing in accordance with the following, unless otherwise indicated on the Contract Drawings:

1. ***Reinforcement indicated on the Contract Drawings is continuous throughout the structure(s) to the farthest extent possible***.

2. Unless otherwise shown, ***install reinforcement with the following clearances for concrete coverage***:

Description	Minimum Clearance
Beams and Girders	Two (2) inches outside of ties
Solid Slabs and Joists	Two (2) inches top and side; Three (3) inches cover placed against earth
Columns	Two (2) inches outside of ties
Walls	Two (2) inches top and sides
Grade Beams and Footings	Three (3) inches outside of steel, side and bottom, when cast against earth two (2) inches top and sides

3. Reinforcing steel, before being positioned and just prior to placing concrete, shall be free from loose mill and rust scale, earth, ice, foreign materials and from any coatings that may destroy or reduce the bond. Clean reinforcing steel by sandblasting or wire brushing and remove mortar, oil, paint, or dirt to remove materials that may reduce the bond.

4. Reinforcement which will be exposed for a considerable length of time after being placed shall be coated with a heavy coat of neat cement slurry.

5. ***Do not straighten or rebend reinforcing steel in the field***. Do not use reinforcing with bends not shown on the Contract Drawings.

6. ***Place reinforcement a minimum of two (2) inches clear of any metal pipe or fitting, unless noted otherwise on drawings***.

7. Position reinforcing steel in accordance with the Contract Drawings and secure by using annealed wire ties or clips at intersections and support by concrete or metal supports, spacers, or metal hangers. Do not place metal clips or supports in contact with the forms. Bend tie wires away from the forms to provide the specified concrete coverage. Bars additional to those shown on the Contract Drawings, which may be found necessary or desirable by the Contractor for the purpose of securing reinforcement in position, shall be provided by the Contractor at no additional cost to the Owner.

8. ***Set wire ties with ends directed into the concrete***, not towards exposed concrete surfaces.

9. ***Securely support and tie reinforcing steel to prevent movement during concrete placement*** by using zinc coated wire ties of not less than No. 16 gauge or suitable clips at intersections. Secure dowels in place before placing concrete.

10. ***Place reinforcement a minimum of two (2) inches clear of any metal pipe or fittings***, unless noted otherwise on drawings.

11. ***Secure reinforcing dowels in place prior to placing concrete***. Do not press dowels into the concrete after the concrete has been placed.

F. Support and tie wire mesh to prevent movement during concrete placement.

G. Wire dowels in position prior to placing concrete. Position dowels for masonry walls to occur at reinforced block cells.

H. ***No reinforcing steel bars shall be welded*** either during fabrication or erection unless specifically shown on the Contract Drawings or specified, or unless prior written approval has been obtained from the Engineer. All bars that have been welded, including tack welds, without such approval shall be immediately removed from the work. When welding of reinforcement is approved or called for, it shall comply with AWS D1.4.

I. Reinforcing steel interfering with the location of other reinforcing steel, conduits or embedded items, may be moved within the specified tolerances or one bar diameter, whichever is greater. Greater displacement of bars to avoid interference, shall only be made with the approval of the Engineer. Do not cut reinforcement to install inserts, conduits, mechanical openings or other items without the prior approval of the Engineer.

J. <u>Placement of flat sheet welded wire mesh</u>

1. Install welded wire mesh reinforcement in the longest practicable lengths on supports spaced to minimize sagging.

2. Support and tie mesh to prevent movement during concrete placement.

3. Support welded wire fabric by high chairs or bolster with baseplates, all plastic supports, and concrete blocks.

4. It is not permissible to place the WWF on the subbase and pull it up or lay the WWF on top of the concrete and walk it into the concrete.

5. Extend fabric to within two (2) inches of the edges of the slab and lap splices at least in accordance with ACI 318 but not less than twelve (12) inches. Tie laps and splices securely at ends and at least every twenty-four (24) inches with 16 gauge annealed steel wire.

6. Do not extend fabric through expansion joints or construction joints in slabs on grade except as otherwise indicated.

K. ***Reinforcing steel bars shall not be field bent except where shown on the Contract Drawings or specifically authorized in writing by the Engineer***. If authorized, bars shall be cold-bent around the standard diameter spool specified in the CRSI. Do not heat bars. Closely inspect the reinforcing steel for breaks. If the reinforcing steel is damaged, replace, Cadweld or otherwise repair as approved by the Engineer. Do not bend reinforcement after it is embedded in concrete unless specifically shown otherwise on the Contract Drawings.

3.02 Additional Reinforcement around Openings

A. Unless specific additional reinforcement around openings is shown on the Contract Drawings, provide additional reinforcing steel on each side of the opening equivalent to one half of the cross-sectional area of the reinforcing steel interrupted by an opening.

B. The bars shall have sufficient length to develop a bond at each end beyond the opening or penetration.

3.03 Splicing of Reinforcement

A. ***Splices designated as compression splices on the Drawings, unless otherwise noted, shall be thirty (30) bar diameters, but not less than twelve (12) inches***. The lap splice length for column vertical bars shall be based on the bar size in the column above. Splice horizontal bars in circular structures forty (40) bar diameters. Provide splices and laps in columns, piers and struts in a manner sufficient to transfer full stress bond. When splicing bars of different diameters, the length of lap is based on the larger bar. Stagger splices in adjacent bars.

B. ***Tension lap splices shall be provided at all laps in compliance with the applicable tables in ACI 315***. Splices in adjacent bars shall be staggered. Class A splices shall be used when 50 percent (50%) or less of the bars are splices within the required lap length. Class B splices shall be used at all other locations.

C. Except as otherwise indicated on the Contract Drawings, splices in circumferential reinforcement in circular walls shall be Class B tension splices and shall be staggered. Adjacent bars shall not be spliced within the required lap length.

D. ***Install wire fabric in as long lengths as practicable***. Splices in welded wire fabric shall be lapped in accordance with the requirements of ACI-318 but not less than twelve

(12) inches. The spliced fabrics shall be tied together with wire ties spaced not more than twenty-four (24) inches on center and laced with wire of the same diameter as the welded wire fabric. Do not position laps midway between supporting beams, or directly over beams of continuous structures. Offset splices in adjacent widths to prevent continuous splices.

3.04 Accessories

A. ***The Contractor shall be solely responsible for determining, providing and installing accessories such as chairs, chair bars, and the like in sufficient quantities and strength to adequately support the reinforcement and prevent its displacement during the erection of the reinforcement and the placement of concrete***.

B. Use precast concrete blocks where the reinforcing steel is to be supported over soil.

C. ***Stainless steel bar supports or steel chairs with stainless steel tips shall be used*** where the chairs are set on forms for a concrete surface that will be exposed to weather, high humidity, or liquid (including bottom of slabs over liquid containing areas). Use of galvanized or plastic tipped metal chairs is permissible in all other locations unless otherwise noted on the Contract Drawings or specified.

D. Alternate methods of supporting top steel in slabs, such as steel channels supported on the bottom steel or vertical reinforcing steel fastened to the bottom and top mats, may be used if approved by the Engineer.

3.05 Inspection

A. ***In no case shall any reinforcing steel be covered with concrete until the installation of the reinforcement, including the size, spacing and position of the reinforcement has been observed by the Engineer and the Engineer's release to proceed with the concreting has been obtained***.

B. ***The Engineer shall be given at least twenty-four (24) hours advance notice of the readiness of placed reinforcement for observation***.

C. The forms shall be kept open until the Engineer has finished his observations of the reinforcing steel.

END OF SECTION

SECTION 03250

CONCRETE ACCESSORIES

1. GENERAL

1.01 Description

A. The Work included in this Section consists of all labor, materials and equipment necessary to install expansion joints, construction joints, and waterstops.

B. Work Specified Herein

1. Construction and Expansion joints
2. Anchors and inserts
3. Waterstops

C. Related Work Specified Elsewhere

Specification Section	Title
03100	Concrete Formwork
03200	Concrete Reinforcement
03300	Cast-in-Place Concrete
07900	Joint Sealants
Contract Drawings and General Provisions of the Contract	

1.02 Submittals

A. Materials

1. Submit manufacturer's literature, materials and samples of waterstops and supports for reinforcing bars in accordance with the Section 00700, *General Conditions*, Section 00800, *Supplementary Conditions*, and Section 01300, *Shop Drawings, Submittals and Samples*, including a statement of compliance with ASTM and U.S. Federal Specifications.

2. The manufacturer shall demonstrate a minimum of five (5) years of continuous, successful experience in their product line.

3. Provide product data including catalog cut sheets, technical data, storage requirements, splicing methods, installation and application requirements, location of use, product life, and conformance to ASTM standards for the following items:

   a. Waterstops.

   b. Premolded Joint Fillers.

   c. Bond Breaker and Bonding Agents.

   d. Expansion Joint Dowels (include, in addition to the above, complete assembly including dowels, coatings, lubricants, spacers, sleeves, expansion caps).

   e. Compressible Joint Filler.

   f. Tongue and Groove Joint Forms.

B. ***The Contractor shall provide certifications from the manufacturers that all materials used within the joint system are compatible with each other.***

C. Provide technical data sheets for the Contractor's personnel, Engineer and the Owner covering joint preparation, priming, and sealant materials application.

D. Submit layouts for construction joints as noted on the Contract Drawings.

E. All submittals shall be in an electronic format (PDF).

1.03 Reference Standards

A. Unless otherwise indicated, all materials, workmanship and practices shall conform to the following standards:

STANDARD	DESCRIPTION
American Society for Testing and Materials (ASTM)	
ASTM A615	Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
ASTM C881	Epoxy-Resin-Base Bonding Systems for Concrete

STANDARD	DESCRIPTION
American Society for Testing and Materials (ASTM) - Cont'd	
ASTM C1059	Latex Agents for Bonding Fresh to Hardened Concrete
ASTM D1751	Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction
ASTM D1752	Preformed sponge rubber and cork expansion joint fillers for concrete paving and structural construction
U.S. Army Corps of Engineers (CRD)	
CRD C572	Specification for Polyvinylchloride Waterstops

1.04 Delivery, Storage and Handling

A. Store all products in accordance with the manufacturer's recommendations.

B. Waterstops shall be protected from moisture, oil, dirt, sunlight and other contaminants.

1.05 Manufacturer's Services

A. Prior to joint preparation for joints receiving sealant materials, the Contractor shall require that the joint manufacturer's technical representative demonstrate, at the Project Site, joint preparation, priming, and sealant materials application for the Contractor's personnel performing joint work.

2. PRODUCTS

2.01 PVC Waterstop

A. Provide ribbed, dumbell-type waterstops at construction joints exposed to water pressure, including groundwater pressure, and other joints as indicated on the Contract Drawings.

B. ***All waterstop shall be embedded in concrete*** to prevent the passage of fluids through joints and shall be resistant to oils, solvents and chemicals.

C. Waterstops shall comply with U.S. Army Corps of Engineers Specification CRD-C-572.

D. Waterstops shall be such that any cross section will be dense, homogeneous, free from porosity and other imperfections, and shall be symmetrical in shape.

E. Waterstops shall be extruded from a PVC compound and shall be 9 inches x ½-inch, non-tapered, ribbed profile for wall thicknesses of 12-inches and greater, and 6 inches x d-inch for wall thicknesses less than 12 inches. ***Provide a 6-inch split-ribbed waterstop with center bulb at all connections of new concrete structures with existing concrete***.

F. All waterstop material shall be extruded from virgin elastomeric PVC compound, resistant to chemical action-with portland cement, alkalies, acids, and not affected by mildew or fungi. It shall show no effect when immersed for ten (10) days in a 10% solution of sulfuric or hydrochloric acid, saturated lime solution or salt water.

G. Subject to compliance with requirements, manufacturer's offering products that may be incorporated into the Work include, but are not limited to, the following:

1. The Burke Company
2. Greenstreak Plastic Products Company
3. Meadows, Inc.
4. Progress Unlimited, Inc.
5. Schlegel Corporation
6. Vinylex Corporation
7. Or approved equal

H. When tested in accordance with Federal Standard No. 601, the material shall meet the following minimum requirements:

Requirement	ASTM Specification
Tensile strength (2,000 psi)	D 638
Hardness, Shore Durometer (65 - 80)	D 2240
Elongation, ultimate (280%)	D 638
Water absorption, dry wt, maximum (48 hours) - 0.32%	D 570
Specific gravity, 1.3	D 792
Stiffness in flexure, 920 psi	D 747
Cold brittleness, -35□F	D 746
Tear resistance, 290 lbs/inch	D 624

I. ***The use of reworked PVC or other substitute material will not be permitted***.

2.02 Joint Sealant for Concrete Structures

A. Joint sealant for continuous immersion shall be a multi-part, gray, non-staining non-sagging, polyurethane sealant, which cures at ambient temperature to a firm, flexible, resilient, tear-resistant rubber.

B. The joint sealant shall meet U.S. Federal Specification TT-S-00227E(3) Type I, Class A self-leveling for horizontal joints and Type II, Class A, non-sag for vertical joints.

C. In addition, the joint sealant must be recommended by the manufacturer for continuous immersion in water and said certification submitted to the Engineer along with the shop drawing submittal.

D. Provide sealants as manufactured by Products Research and Chemical Corporation, Mameco International, The Burke Company, W.R. Meadows, or approved equal.

E. Technical Requirements

Parameter	Requirement
Consistency	Gun grade
Tack free time	24 hours at 75□F and 50% R.H.
Pot life	1 - 3 hours
Hardness	35 Shore A, ±15
Elongation	500%
Tensile strength, ASTM D 412	300 psi
Peel strength on concrete	No loss of bond after 24 hours at 150% elongation
Temperature service range	-40□F to +155□F
Immersion in water	Continuous

2.03 Backing Rod for Expansion Joints

A. Backing rod shall be an extruded closed-cell polyethylene foam rod, such as Minicel backer rod, manufactured by Industrial Systems Department, Plastic Products Group of Hercules, Inc., Middletown, Delaware, or approved equal.

B. The rod shall be ¼-inch larger in diameter than the joint width. Where possible, provide full length sections for the joint and minimize splices. Apply backup rod and bond breaker tape in expansion joints.

2.04 Bond Breaker Tape

A. Bond breaker tape shall be an adhesive-backed glazed butyl or polyethylene tape which will satisfactorily adhere to the premolded joint filler material or concrete surface as required.

B. The tape shall be the same width as the joint. The tape shall be compatible with the sealant.

C. Bond breaker for concrete other than where tape is specifically called for shall be either bond breaker tape or a *non-staining* type bond prevention coating.

2.05 Preformed Control Joint

A. Preformed control joint shall be a one-piece, flexible, PVC joint former, such as Kold-Seal Zip-Per Strip KSF-150-50-50, manufactured by Vinylex. Corp., Knoxville, TN, or equal.

B. Provide the preformed control joint material in full length *unspliced* pieces.

2.06 Premolded Joint Filler

A. Structures

1. Joint filler shall be preformed, non-extruded type constructed of closed-cell neoprene conforming to ASTM D 1752, Type I, as manufactured by W. R. Grace Company of Cambridge, MA; W. R. Meadows, Inc., Elgin, IL; or approved equal.

2. ***The thickness shall be ¾-inch, minimum***.

B. Sidewalk and Roadway Concrete Pavements

1. Joints where fiber is specifically noted on the Contract Drawings, shall be asphalt-impregnated fiber board. Joint filler shall conform to ASTM D 1751.

2. Thickness shall be ¾-inch unless otherwise shown on the Contract Drawings.

C. Bituminous type, if approved, shall conform to the requirements of ASTM D 994.

2.07 Expansion Joint Dowels

A. Steel expansion joint dowels shall conform to one of following:

1. Epoxy coated steel bar dowels with a 12-mil coating thickness. Steel bar dowels shall conform ASTM A-615, Grade 60. The epoxy coating shall be in conformance with ASTM A 775; or

2. Stainless-steel bar dowels conforming to ASTM A Type 302.

B. Dowels shall be straight and clean, free of loose flaky rust and loose scale.

C. Expansion joint shall be thoroughly greased prior placing adjoining wall or slab concrete.

D. Bars shall be coated with a bond breaker on the expansion end of the dowel. Expansion caps shall be provided on the expansion end.

2.08 Epoxy Adhesive

A. Epoxy adhesive shall be a two-component, solvent-free, moisture insensitive, epoxy resin material for use on dry or damp surfaces, conforming to ASTM C881. Provide the material type, grade and class to suit Project requirements.

B. Subject to compliance with requirements, products that may be incorporated in the Work, include, but are not limited to, the following:

1. Burke-Epoxy M.V., The Burke Company
2. Spec-Bond 100, Conspec Marketing and Manufacturing Company
3. Resi-Bond (J-58), Dayton Superior
4. Euco Epoxy System #452 or #620, Euclid Chemical Company
5. Epoxtite Binder 2390, A.C. Horn, Inc.
6. Concressive Standard Liquid, Master Builders, Inc.
7. Rezi-Weld 1000, W.R. Meadows, Inc.
8. Sikadur 32 Hi-Mod, Sika Corporation
9. Or approved equal

2.09 Bonding Agent

A. Bonding agent shall be a non-reemulsifiable, acrylic emulsion or styrene butadiene conforming to ASTM C1059. Provide the material type, grade and class to suit Project requirements.

B. Subject to compliance with requirements, products that may be incorporated in the Work, include, but are not limited to, the following:

1. Acrylic Bondcrete, The Burke Company
2. Strongbond, Conspec Marketing and Manufacturing Company
3. Day-Chem Ad Bond, Dayton Superior
4. SBR Latex, Euclid Chemical Company
5. Hornweld, A.C. Horn, Inc.
6. Acryl-Set, Master Builders, Inc.
7. Intralok, W.R. Meadows, Inc.
8. Daraweld, W.R. Grace & Company
9. Or approved equal.

2.10 Compressible Joint Filler

A. The joint filler shall be a non-extruded watertight strip material used to fill expansion joints between structures. The material shall be capable of being compressed at least forty (40) percent for seventy (70) hours at 68□F and subsequently recovering at least twenty (20) percent of its original thickness in the first one-half hour after unloading.

B. Compressible Joint Filler shall be Evasote 380 E.S.P., by E-Poxy, Ravena, NY, or equal.

2.11 Fuel Resistant Joint Sealant

A. Sealant shall conform to Federal Specification SS-S-1614.

2.12 Styrofoam Filler Block

A. Styrofoam filler blocks for future construction and expansion joints shall be Styrofoam SM brand as manufactured by Dow Chemical Company, or approved equal.

2.13 Precast Concrete Block Supports for Reinforcing Bars

A. Comply with the requirements of ACI 318.

B. Provide blocks with No. 4 dowels bent 90□ to support top bars.

2.14 Vapor Barrier

A. The vapor barrier for the Project Work is specified in Section 07050, *Vapor Barrier*.

2.15 Tongue and Groove Joint Forms

A. Twenty-four (24) gauge steel forms complete with steel stakes and splice plates, designed for joints not to receive a poured seal, and equal to Burke Keyed Kold Joint as manufactured by The Burke Company.

2.16 Inserts

A. Galvanized steel to fit the proposed hanger and support

3. EXECUTION

3.01 Vapor Barrier

A. Examine the substrate and the conditions under which the vapor barrier work is to be performed. Do not proceed with the work until unsatisfactory conditions have been corrected.

B. Proceed with installation of the vapor barrier only after substrate construction and penetrating work have been completed.

C. ***The vapor barrier shall be applied parallel with the direction of the concrete pour, lapping adjacent sides and ends a minimum of twelve (12) inches***. Do not puncture the vapor barrier. The Contractor shall refer to Section 07050, *Vapor Barrier*.

D. ***Seal all joints with continuous approved 2-inch wide plastic tape***.

3.02 Precast Concrete Block Supports for Reinforcing Bars

A. Provide in sufficient quantity to support reinforcing bars in slabs formed on earth at a ***spacing not to exceed four (4) feet on centers in both directions***.

B. ***Provide blocks with dowels to support top bars***. Block supports are not required in slabs formed on tremie concrete, but may be used at the Contractor's option.

C. Blocks are not required for reinforcing bars properly supported from formwork.

D. At other locations, the Contractor shall refer to ACI 315 and CRSI MSP-1.

3.03 PVC Waterstops

A. Waterstops shall be of the shapes, dimensions, and profiles presented herein.

B. ***Waterstops shall be properly heat spliced at ends and intersections to ensure continuity***. Construct forms for construction joints in such a manner as to prevent injury to waterstops. Install waterstops in construction and expansion joints in hydraulic structures which will contain liquid or resist the entry of groundwater.

C. ***Make field splices with a thermostatically controlled heating iron*** in conformance with the manufacturer's current recommendations. Allow at least ten (10) minutes before pulling or straining the new splice in any way. The finished splices shall provide a cross section that is dense and free of porosity with tensile strength of not less than 80% of the unspliced materials.

D. ***Center waterstop in the construction joint and secure water in the correct position*** using hog rings or grommets spaced at twelve inches (12") on center along the length of the waterstop and wire tie to the adjacent reinforcing steel.

E. Provide factory made waterstop fabrications for all ***changes of direction, intersections, and transitions*** leaving only straight butt joint splices for the field.

F. Protect waterstops from dirt, oil, foreign materials and concrete spatter.

3.04 Joints

A. General

1. Construct joints true to line and faces perpendicular to the surface plane of the concrete.

B. Construction Joints

1. Locate and install construction joints so that they ***do not impair the strength or appearance of the concrete and/or structure***, as acceptable to the Engineer.

Place joints perpendicular to the main reinforcement. Continue reinforcement across construction joints, unless otherwise indicated. Do not continue reinforcement through the sides of strip placements of floors and slabs.

2. Form keyed joints as indicated. Form keyways by beveled strips or boards placed at right angles to the direction of shear. Embed keys at least three (3) inches into concrete.

3. Locate joints for beams, slabs, joists, and girders in the ***middle third of spans***. Offset joints in girders a minimum distance of twice the beam width from a beam girder intersection.

4. Locate horizontal joints in walls and columns at the underside of floors, slabs, beams, and girders and at the top of footings or floor slabs.

5. ***Use a bonding agent*** at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.

6. Provide construction joints where shown on the Contract Drawings, or as recommended by the Contractor and approved by the Engineer. In the event of an emergency, place additional construction joints. An interval of forty-five (45) minutes between two (2) consecutive batches of concrete shall constitute cause for an emergency construction joint.

7. After the pour has been completed to the construction joint and the concrete has hardened, thoroughly clean the entire surface of the joint of surface laitance, loose or defective concrete, and foreign material, and expose clean aggregate by sandblasting the surface of construction joints before placing the new concrete. At least two (2) hours before and again shortly before the new concrete is deposited, the joints shall be saturated with water. After the glistening water disappears, the joints shall be given a thorough coating of neat cement slurry mixed to a consistency of very heavy paste. The surface shall receive a coating of at least c-inch thick, well scrubbed-in by means of stiff bristle brushes where possible. New concrete shall be deposited before the neat cement dries.

8. Layout of construction joints shall be in accordance with the following guidelines:

    a. Provide horizontal construction joints at the top of foundation members and slabs on grade and at the soffit of supported slabs and beams.

    b. ***Space the corner vertical construction joints between 4 - 8 feet from the corner of walls or intersections***, unless noted otherwise on the Drawings.

    c. ***Space the construction joints at a maximum horizontal distance of twenty-five (25) feet and a maximum vertical distance of sixteen (16) feet***, unless noted otherwise on the Contract Drawings.

d. ***Space horizontal construction joints at least eight (8) inches below the bottom of slabs***, unless noted otherwise on the Contract Drawings.

C. Waterstops

1. Provide waterstops in construction joints as indicated. ***Install waterstops to form a continuous diaphragm in each joint***. Support and protect exposed waterstops during the progress of the Work.

D. Contraction Joints in Slabs-on-Grade

1. Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth (¼) of concrete thickness as follows:

a. Sawed Joints

1) Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades.

2) Cut c-inch wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.

E. Isolation Joint in Slabs-on-Grade

1. After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.

2. Extend joint-filler strips full-width and the depth of the joint, terminating flush with finished concrete surface, unless otherwise indicated.

3. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.

F. Doweled Joints

1. Install dowel bars and support assemblies at joints where indicated.

2. Lubricate or asphalt coat one-half (½) of the dowel length to prevent concrete bonding to one side of the joint.

G. For control joints of nonstructural slabs, provide partial depth plastic strips set flush with finished surface or c-inch-wide joints cut with a diamond saw. Use control joints one-quarter to one-third the depth of the slab unless otherwise indicated.

H. For slabs-on-grade that are not subject to hydraulic loading, use formed construction joints. Maximum size of pour shall be fifteen (15) feet each way for slabs with wire mesh reinforcement and thirty (30) feet each way for slabs with bar reinforcement. Allow 24 hours between pours of adjacent slabs. Provide joints as specified or shown. Set continuous expansion joint strips between slabs and abutting vertical surfaces.

I. When it is necessary to make a joint because of an emergency, furnish and place reinforcing dowels across the joint. Embed dowels 48 bar diameters each side of the joint. The size and number of dowels shall match the reinforcing in the member. Furnishing and placing such reinforcing steel shall be at the Contractor's expense.

3.05 Bonding at Construction Joints

A. ***Before depositing new concrete on or against concrete that has set, thoroughly clean the surfaces of the set concrete so as to expose the coarse aggregate and remove laitance coatings, foreign matter and loose particles***.

B. Retighten the forms.

C. Dampen, but do not saturate the hardened concrete of joints and then thoroughly cover with a coat of cement grout of similar proportions to the mortar in the concrete.

D. Place the fresh concrete before the grout has attained its initial set.

3.06 Expansion Joints

A. Construct joints true to line and faces perpendicular to the surface plane of the concrete.

B. Provide expansion joints with continuous edge reservoirs, which shall be filled with a joint sealant. Leave the material used for forming the reservoirs in place until immediately before the grooves are cleaned and filled with joint sealant.

C. After removing edge forms from the reservoir, remove grout, loose concrete, and fins; then sandblast the slots. Allow the reservoirs to become thoroughly dry; then blow out the reservoirs and immediately prime and fill with the expansion joint sealant and backup materials. The primer used shall be supplied by the same manufacturer supplying the joint sealant.

3.07 Time Between Pours

A. ***At least two (2) hours shall elapse after depositing concrete in the columns or walls before depositing in beams, girders, or slabs supported thereon***.

B. Place beams, girders, brackets, column capitals, and haunches monolithically as part of the floor or roof system.

3.08 Installation of Premolded Joint Filler

A. Install in joint accurately as indicated in the manufacturer's instructions.

B. Attach the premolded joint filler to the concrete with a bonding agent recommended by the joint sealant and joint filler manufacturer for compatibility.

3.09 Installation of Joint Sealants

A. Immediately before installing the joint sealant, clean the joint cavity by sandblasting or power wire brushing. Install bond breaker tape per manufacturer's instructions.

B. After the joints have been prepared as described above, apply the joint sealant. Apply the primer, if required, and joint sealant only with the equipment and methods recommended by the joint sealant manufacturer.

C. Application criteria for the sealant materials, such as temperature and moisture requirements and primer cure time, shall be in accordance with the recommendations of the sealant manufacturer.

D. Apply masking tape along the edges of the exposed surface of the exposed joints. Trowel the joints smooth with a tuck pointing tool wiped with a solvent recommended by the sealant manufacturer.

E. After the sealant has been applied, remove the masking tape and any sealant spillage.

3.10 Cracking

A. ***Saw joints in slabs before the formation of uncontrolled cracking*** (i.e., cracking that occurs at locations other than construction, control, or contraction joints) and as soon as the concrete has hardened sufficiently to permit cutting without chipping, spalling, or tearing. Saw joints both during the day and night as required.

B. ***If concrete cracks at locations other than construction, control, or contraction joints, the Contractor may be required to remove and replace the defective work (cracked concrete) in accordance with the provisions of this section, all at no additional cost to the Owner***.

END OF SECTION

SECTION 03250

CONCRETE ACCESSORIES

1. GENERAL

1.01 Description

A. The Work included in this Section consists of all labor, materials and equipment necessary to install expansion joints, construction joints, and waterstops.

B. Work Specified Herein

1. Construction and Expansion joints
2. Anchors and inserts
3. Waterstops

C. Related Work Specified Elsewhere

Specification Section	Title
03100	Concrete Formwork
03200	Concrete Reinforcement
03300	Cast-in-Place Concrete
03800	Leakage Testing of Hydraulic Structures
07900	Joint Sealants
Contract Drawings and General Provisions of the Contract	

1.02 Submittals

A. Materials

1. Submit manufacturer's literature, materials and samples of waterstops and supports for reinforcing bars in accordance with the Section 00700, *General Conditions*,

Section 00800, *Supplementary Conditions*, Sections 00805 and 00806, *FDEP Supplementary Conditions*, and Section 01300, *Shop Drawings, Submittals and Samples*, including a statement of compliance with ASTM and U.S. Federal Specifications.

2. The manufacturer shall demonstrate a minimum of five (5) years of continuous, successful experience in their product line.

3. Provide product data including catalog cut sheets, technical data, storage requirements, splicing methods, installation and application requirements, location of use, product life, and conformance to ASTM standards for the following items:

   a. Waterstops.

   b. Premolded Joint Fillers.

   c. Bond Breaker and Bonding Agents.

   d. Expansion Joint Dowels (include, in addition to the above, complete assembly including dowels, coatings, lubricants, spacers, sleeves, expansion caps).

   e. Compressible Joint Filler.

   f. Tongue and Groove Joint Forms.

B. ***The Contractor shall provide certifications from the manufacturers that all materials used within the joint system are compatible with each other.***

C. Provide technical data sheets for the Contractor's personnel, Engineer and the Owner covering joint preparation, priming, and sealant materials application.

D. Submit layouts for construction joints as noted on the Contract Drawings.

1.03 Reference Standards

A. Unless otherwise indicated, all materials, workmanship and practices shall conform to the following standards:

STANDARD	DESCRIPTION
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STANDARD	DESCRIPTION
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ASTM D1752	Preformed sponge rubber and cork expansion joint fillers for concrete paving and structural construction
U.S. Army Corps of Engineers (CRD)	
CRD C572	Specification for Polyvinylchloride Waterstops

1.04 Delivery, Storage and Handling

A. Store all products in accordance with the manufacturer's recommendations.

B. Waterstops shall be protected from moisture, oil, dirt, sunlight and other contaminants.

1.05 Manufacturer's Services

A. Prior to joint preparation for joints receiving sealant materials, the Contractor shall require that the joint manufacturer's technical representative demonstrate, at the Project Site, joint preparation, priming, and sealant materials application for the Contractor's personnel performing joint work.

2. PRODUCTS

2.01 PVC Waterstop

A. Provide ribbed, dumbell-type waterstops at construction joints exposed to water pressure, including groundwater pressure, and other joints as indicated on the Contract Drawings.

B. ***All waterstop shall be embedded in concrete*** to prevent the passage of fluids through joints and shall be resistant to oils, solvents and chemicals.

C. Waterstops shall comply with U.S. Army Corps of Engineers Specification CRD-C-572.

D. Waterstops shall be such that any cross section will be dense, homogeneous, free from porosity and other imperfections, and shall be symmetrical in shape.

E. Waterstops shall be extruded from a PVC compound and shall be 9 inches x ½-inch, non-tapered, ribbed profile for wall thicknesses of 12-inches and greater, and 6 inches x 3/8-inch for wall thicknesses less than 12 inches. ***Provide a 6-inch split-ribbed waterstop with center bulb at all connections of new concrete structures with existing concrete***.

F. All waterstop material shall be extruded from virgin elastomeric PVC compound, resistant to chemical action-with portland cement, alkalies, acids, and not affected by mildew or fungi. It shall show no effect when immersed for ten (10) days in a 10% solution of sulfuric or hydrochloric acid, saturated lime solution or salt water.

G. Subject to compliance with requirements, manufacturer's offering products that may be incorporated into the Work include, but are not limited to, the following:

1. The Burke Company
2. Greenstreak Plastic Products Company
3. Meadows, Inc.
4. Progress Unlimited, Inc.
5. Schlegel Corporation
6. Vinylex Corporation
7. Or approved equal

H. When tested in accordance with Federal Standard No. 601, the material shall meet the following minimum requirements:

Requirement	ASTM Specification
Tensile strength (2,000 psi)	D 638
Hardness, Shore Durometer (65 - 80)	D 2240
Elongation, ultimate (280%)	D 638
Water absorption, dry wt, maximum (48 hours) - 0.32%	D 570
Specific gravity, 1.3	D 792
Stiffness in flexure, 920 psi	D 747
Cold brittleness, -35□F	D 746
Tear resistance, 290 lbs/inch	D 624

I. ***The use of reworked PVC or other substitute material will not be permitted***.

2.02 Joint Sealant for Concrete Structures

A. Joint sealant for continuous immersion shall be a multi-part, gray, non-staining non-sagging, polyurethane sealant, which cures at ambient temperature to a firm, flexible, resilient, tear-resistant rubber.

B. The joint sealant shall meet U.S. Federal Specification TT-S-00227E(3) Type I, Class A self-leveling for horizontal joints and Type II, Class A, non-sag for vertical joints.

C. In addition, the joint sealant must be recommended by the manufacturer for continuous immersion in water and said certification submitted to the Engineer along with the shop drawing submittal.

D. Provide sealants as manufactured by Products Research and Chemical Corporation, Mameco International, The Burke Company, W.R. Meadows, or approved equal.

E. Technical Requirements

Parameter	Requirement
Consistency	Gun grade
Tack free time	24 hours at 75□F and 50% R.H.
Pot life	1 - 3 hours
Hardness	35 Shore A, ±15
Elongation	500%
Tensile strength, ASTM D 412	300 psi
Peel strength on concrete	No loss of bond after 24 hours at 150% elongation
Temperature service range	-40□F to +155□F
Immersion in water	Continuous

2.03 Backing Rod for Expansion Joints

A. Backing rod shall be an extruded closed-cell polyethylene foam rod, such as Minicel backer rod, manufactured by Industrial Systems Department, Plastic Products Group of Hercules, Inc., Middletown, Delaware, or approved equal.

B. The rod shall be ¼-inch larger in diameter than the joint width. Where possible, provide full length sections for the joint and minimize splices. Apply backup rod and bond breaker tape in expansion joints.

2.04 Bond Breaker Tape

A. Bond breaker tape shall be an adhesive-backed glazed butyl or polyethylene tape which will satisfactorily adhere to the premolded joint filler material or concrete surface as required.

B. The tape shall be the same width as the joint. The tape shall be compatible with the sealant.

C. Bond breaker for concrete other than where tape is specifically called for shall be either bond breaker tape or a *non-staining* type bond prevention coating.

2.05 Preformed Control Joint

A. Preformed control joint shall be a one-piece, flexible, PVC joint former, such as Kold-Seal Zip-Per Strip KSF-150-50-50, manufactured by Vinylex. Corp., Knoxville, TN, or equal.

B. Provide the preformed control joint material in full length *unspliced* pieces.

2.06 Premolded Joint Filler

A. Structures

1. Joint filler shall be preformed, non-extruded type constructed of closed-cell neoprene conforming to ASTM D 1752, Type I, as manufactured by W. R. Grace Company of Cambridge, MA; W. R. Meadows, Inc., Elgin, IL; or approved equal.

2. ***The thickness shall be ¾-inch, minimum***.

B. Sidewalk and Roadway Concrete Pavements

1. Joints where fiber is specifically noted on the Contract Drawings, shall be asphalt-impregnated fiber board. Joint filler shall conform to ASTM D 1751.

2. Thickness shall be ¾-inch unless otherwise shown on the Contract Drawings.

C. Bituminous type, if approved, shall conform to the requirements of ASTM D 994.

2.07 Expansion Joint Dowels

A. Steel expansion joint dowels shall conform to one of following:

1. Epoxy coated steel bar dowels with a 12-mil coating thickness. Steel bar dowels shall conform ASTM A-615, Grade 60. The epoxy coating shall be in conformance with ASTM A 775; or

2. Stainless-steel bar dowels conforming to ASTM A Type 302.

B. Dowels shall be straight and clean, free of loose flaky rust and loose scale.

C. Expansion joint shall be thoroughly greased prior placing adjoining wall or slab concrete.

D. Bars shall be coated with a bond breaker on the expansion end of the dowel. Expansion caps shall be provided on the expansion end.

2.08 Epoxy Adhesive

A. Epoxy adhesive shall be a two-component, solvent-free, moisture insensitive, epoxy resin material for use on dry or damp surfaces, conforming to ASTM C881. Provide the material type, grade and class to suit Project requirements.

B. Subject to compliance with requirements, products that may be incorporated in the Work, include, but are not limited to, the following:

1. Burke-Epoxy M.V., The Burke Company
2. Spec-Bond 100, Conspec Marketing and Manufacturing Company
3. Resi-Bond (J-58), Dayton Superior
4. Euco Epoxy System #452 or #620, Euclid Chemical Company
5. Epoxtite Binder 2390, A.C. Horn, Inc.
6. Concressive Standard Liquid, Master Builders, Inc.
7. Rezi-Weld 1000, W.R. Meadows, Inc.
8. Sikadur 32 Hi-Mod, Sika Corporation
9. Or approved equal

2.09 Bonding Agent

A. Bonding agent shall be a non-reemulsifiable, acrylic emulsion or styrene butadiene conforming to ASTM C1059. Provide the material type, grade and class to suit Project requirements.

B. Subject to compliance with requirements, products that may be incorporated in the Work, include, but are not limited to, the following:

1. Acrylic Bondcrete, The Burke Company
2. Strongbond, Conspec Marketing and Manufacturing Company
3. Day-Chem Ad Bond, Dayton Superior
4. SBR Latex, Euclid Chemical Company
5. Hornweld, A.C. Horn, Inc.
6. Acryl-Set, Master Builders, Inc.
7. Intralok, W.R. Meadows, Inc.
8. Daraweld, W.R. Grace & Company
9. Or approved equal.

2.10 Compressible Joint Filler

A. The joint filler shall be a non-extruded watertight strip material used to fill expansion joints between structures. The material shall be capable of being compressed at least forty (40) percent for seventy (70) hours at 68□F and subsequently recovering at least twenty (20) percent of its original thickness in the first one-half hour after unloading.

B. Compressible Joint Filler shall be Evasote 380 E.S.P., by E-Poxy, Ravena, NY, or equal.

2.11 Fuel Resistant Joint Sealant

A. Sealant shall conform to Federal Specification SS-S-1614.

2.12 Styrofoam Filler Block

A. Styrofoam filler blocks for future construction and expansion joints shall be Styrofoam SM brand as manufactured by Dow Chemical Company, or approved equal.

2.13 Precast Concrete Block Supports for Reinforcing Bars

A. Comply with the requirements of ACI 318.

B. Provide blocks with No. 4 dowels bent 90□ to support top bars.

2.14 Vapor Barrier

A. The vapor barrier for the Project Work is specified in Section 07050, *Vapor Barrier*.

2.15 Tongue and Groove Joint Forms

A. Twenty-four (24) gauge steel forms complete with steel stakes and splice plates, designed for joints not to receive a poured seal, and equal to Burke Keyed Kold Joint as manufactured by The Burke Company.

2.16 Inserts

A. Galvanized steel to fit the proposed hanger and support

3. EXECUTION

3.01 Vapor Barrier

A. Examine the substrate and the conditions under which the vapor barrier work is to be performed. Do not proceed with the work until unsatisfactory conditions have been corrected.

B. Proceed with installation of the vapor barrier only after substrate construction and penetrating work have been completed.

C. ***The vapor barrier shall be applied parallel with the direction of the concrete pour, lapping adjacent sides and ends a minimum of twelve (12) inches***. Do not puncture the vapor barrier. The Contractor shall refer to Section 07050, *Vapor Barrier*.

D. ***Seal all joints with continuous approved 2-inch wide plastic tape***.

3.02 Precast Concrete Block Supports for Reinforcing Bars

A. Provide in sufficient quantity to support reinforcing bars in slabs formed on earth at a ***spacing not to exceed four (4) feet on centers in both directions***.

B. ***Provide blocks with dowels to support top bars***. Block supports are not required in slabs formed on tremie concrete, but may be used at the Contractor's option.

C. Blocks are not required for reinforcing bars properly supported from formwork.

D. At other locations, the Contractor shall refer to ACI 315 and CRSI MSP-1.

3.03 PVC Waterstops

A. Waterstops shall be of the shapes, dimensions, and profiles presented herein.

B. ***Waterstops shall be properly heat spliced at ends and intersections to ensure continuity***. Construct forms for construction joints in such a manner as to prevent injury to waterstops. Install waterstops in construction and expansion joints in hydraulic structures which will contain liquid or resist the entry of groundwater.

C. ***Make field splices with a thermostatically controlled heating iron*** in conformance with the manufacturer's current recommendations. Allow at least ten (10) minutes before pulling or straining the new splice in any way. The finished splices shall provide a cross section that is dense and free of porosity with tensile strength of not less than 80% of the unspliced materials.

D. ***Center waterstop in the construction joint and secure water in the correct position*** using hog rings or grommets spaced at twelve inches (12") on center along the length of the waterstop and wire tie to the adjacent reinforcing steel.

E. Provide factory made waterstop fabrications for all ***changes of direction, intersections, and transitions*** leaving only straight butt joint splices for the field.

F. Protect waterstops from dirt, oil, foreign materials and concrete spatter.

3.04 Joints

A. General

1. Construct joints true to line and faces perpendicular to the surface plane of the concrete.

B. Construction Joints

1. Locate and install construction joints so that they ***do not impair the strength or appearance of the concrete and/or structure***, as acceptable to the Engineer.

Place joints perpendicular to the main reinforcement. Continue reinforcement across construction joints, unless otherwise indicated. Do not continue reinforcement through the sides of strip placements of floors and slabs.

2. Form keyed joints as indicated. Form keyways by beveled strips or boards placed at right angles to the direction of shear. Embed keys at least three (3) inches into concrete.

3. Locate joints for beams, slabs, joists, and girders in the ***middle third of spans***. Offset joints in girders a minimum distance of twice the beam width from a beam girder intersection.

4. Locate horizontal joints in walls and columns at the underside of floors, slabs, beams, and girders and at the top of footings or floor slabs.

5. ***Use a bonding agent*** at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.

6. Provide construction joints where shown on the Contract Drawings, or as recommended by the Contractor and approved by the Engineer. In the event of an emergency, place additional construction joints. An interval of forty-five (45) minutes between two (2) consecutive batches of concrete shall constitute cause for an emergency construction joint.

7. After the pour has been completed to the construction joint and the concrete has hardened, thoroughly clean the entire surface of the joint of surface laitance, loose or defective concrete, and foreign material, and expose clean aggregate by sandblasting the surface of construction joints before placing the new concrete. At least two (2) hours before and again shortly before the new concrete is deposited, the joints shall be saturated with water. After the glistening water disappears, the joints shall be given a thorough coating of neat cement slurry mixed to a consistency of very heavy paste. The surface shall receive a coating of at least 1/8-inch thick, well scrubbed-in by means of stiff bristle brushes where possible. New concrete shall be deposited before the neat cement dries.

8. Layout of construction joints shall be in accordance with the following guidelines:

    a. Provide horizontal construction joints at the top of foundation members and slabs on grade and at the soffit of supported slabs and beams.

    b. ***Space the corner vertical construction joints between 4 - 8 feet from the corner of walls or intersections***, unless noted otherwise on the Drawings.

    c. ***Space the construction joints at a maximum horizontal distance of twenty-five (25) feet and a maximum vertical distance of sixteen (16) feet***, unless noted otherwise on the Contract Drawings.

d. ***Space horizontal construction joints at least eight (8) inches below the bottom of slabs***, unless noted otherwise on the Contract Drawings.

C. Waterstops

1. Provide waterstops in construction joints as indicated. ***Install waterstops to form a continuous diaphragm in each joint***. Support and protect exposed waterstops during the progress of the Work.

D. Contraction Joints in Slabs-on-Grade

1. Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth (¼) of concrete thickness as follows:

a. Sawed Joints

1) Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades.

2) Cut 1/8-inch wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.

E. Isolation Joint in Slabs-on-Grade

1. After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.

2. Extend joint-filler strips full-width and the depth of the joint, terminating flush with finished concrete surface, unless otherwise indicated.

3. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.

F. Doweled Joints

1. Install dowel bars and support assemblies at joints where indicated.

2. Lubricate or asphalt coat one-half (½) of the dowel length to prevent concrete bonding to one side of the joint.

G. For control joints of nonstructural slabs, provide partial depth plastic strips set flush with finished surface or 1/8-inch-wide joints cut with a diamond saw. Use control joints one-quarter to one-third the depth of the slab unless otherwise indicated.

H. For slabs-on-grade that are not subject to hydraulic loading, use formed construction joints. Maximum size of pour shall be fifteen (15) feet each way for slabs with wire mesh reinforcement and thirty (30) feet each way for slabs with bar reinforcement. Allow 24 hours between pours of adjacent slabs. Provide joints as specified or shown. Set continuous expansion joint strips between slabs and abutting vertical surfaces.

I. When it is necessary to make a joint because of an emergency, furnish and place reinforcing dowels across the joint. Embed dowels 48 bar diameters each side of the joint. The size and number of dowels shall match the reinforcing in the member. Furnishing and placing such reinforcing steel shall be at the Contractor's expense.

3.05 Bonding at Construction Joints

A. ***Before depositing new concrete on or against concrete that has set, thoroughly clean the surfaces of the set concrete so as to expose the coarse aggregate and remove laitance coatings, foreign matter and loose particles***.

B. Retighten the forms.

C. Dampen, but do not saturate the hardened concrete of joints and then thoroughly cover with a coat of cement grout of similar proportions to the mortar in the concrete.

D. Place the fresh concrete before the grout has attained its initial set.

3.06 Expansion Joints

A. Construct joints true to line and faces perpendicular to the surface plane of the concrete.

B. Provide expansion joints with continuous edge reservoirs, which shall be filled with a joint sealant. Leave the material used for forming the reservoirs in place until immediately before the grooves are cleaned and filled with joint sealant.

C. After removing edge forms from the reservoir, remove grout, loose concrete, and fins; then sandblast the slots. Allow the reservoirs to become thoroughly dry; then blow out the reservoirs and immediately prime and fill with the expansion joint sealant and backup materials. The primer used shall be supplied by the same manufacturer supplying the joint sealant.

3.07 Time Between Pours

A. ***At least two (2) hours shall elapse after depositing concrete in the columns or walls before depositing in beams, girders, or slabs supported thereon***.

B. Place beams, girders, brackets, column capitals, and haunches monolithically as part of the floor or roof system.

3.08 Installation of Premolded Joint Filler

A. Install in joint accurately as indicated in the manufacturer's instructions.

B. Attach the premolded joint filler to the concrete with a bonding agent recommended by the joint sealant and joint filler manufacturer for compatibility.

3.09 Installation of Joint Sealants

A. Immediately before installing the joint sealant, clean the joint cavity by sandblasting or power wire brushing. Install bond breaker tape per manufacturer's instructions.

B. After the joints have been prepared as described above, apply the joint sealant. Apply the primer, if required, and joint sealant only with the equipment and methods recommended by the joint sealant manufacturer.

C. Application criteria for the sealant materials, such as temperature and moisture requirements and primer cure time, shall be in accordance with the recommendations of the sealant manufacturer.

D. Apply masking tape along the edges of the exposed surface of the exposed joints. Trowel the joints smooth with a tuck pointing tool wiped with a solvent recommended by the sealant manufacturer.

E. After the sealant has been applied, remove the masking tape and any sealant spillage.

3.10 Cracking

A. ***Saw joints in slabs before the formation of uncontrolled cracking*** (i.e., cracking that occurs at locations other than construction, control, or contraction joints) and as soon as the concrete has hardened sufficiently to permit cutting without chipping, spalling, or tearing. Saw joints both during the day and night as required.

B. ***If concrete cracks at locations other than construction, control, or contraction joints, the Contractor may be required to remove and replace the defective work (cracked concrete) in accordance with the provisions of this section, all at no additional cost to the Owner***.

END OF SECTION

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SECTION 03300

CAST-IN-PLACE CONCRETE

1. GENERAL

1.01 Description

A. The Contractor shall furnish all labor and materials required and install cast-in-place concrete complete as shown on the Contract Drawings and as specified herein. The Work specified herein includes, but is not limited to, concrete mixtures, mixing, transporting, placement schedule, depositing, consolidating, slab finishing, curing, and formed surface finishing.

B. All concrete to be used in the construction of the Flagler Beach WWTF Sludge Management System Improvements project shall be ***Class A concrete (see Table 3300-A)*** and shall have a 28-day compressive strength of ***4,000 psi*** (unless otherwise noted on the Contract Drawings).

C. Related Work Specified Elsewhere

Specification Section	Title
02200	Earthwork
02720	Concrete Sidewalks, Driveways and Pads
03100	Concrete Formwork
03200	Concrete Reinforcement
03250	Concrete Accessories
03400	Precast Concrete Structures
07900	Joint Sealants
09900	Painting
Contract Drawings and General Provisions of the Contract	

D. Cementitious Materials shall be defined as Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash and other pozzolans, ground granulated blast-furnace slag, and silica fume; subject to compliance with requirements.

1.02 Quality Assurance

A. Standards

1. Unless otherwise indicated, all materials, workmanship and practices shall conform to the latest revision of the following codes, specifications and standards, except where more stringent requirements are shown or specified:

STANDARD	DESCRIPTION
American Concrete Institute (ACI)	
ACI-211	Proportions for Normal, Heavyweight and Mass Concrete
ACI-212	Guide for Use of Admixtures in Concrete
ACI-301	Specifications for Structural Concrete for Buildings
ACI-304	Guide for Measuring, Mixing, Transporting, and Placing Concrete
ACI-305	Hot Weather Concreting
ACI-306	Cold Weather Concreting
ACI-308	Standard Practice for Curing Concrete
ACI-309	Recommended Practice for Consolidation of Concrete
ACI-318	Building Code Requirements for Reinforced Concrete
ACI-347	Guide for Concrete Formwork
ACI-350	Environmental Engineering Concrete Structures
American Society for Testing and Materials (ASTM)	
ASTM-C31	Making and Curing Concrete Test Specimens in the Field
ASTM-C33	Concrete Aggregates
ASTM-C39	Compressive Strength of Cylindrical Concrete Specimens
ASTM-C42	Obtaining and Testing Drilled Cores and Sawed Beams of Concrete
ASTM-C94	Standard Specification for Ready-Mix Concrete
ASTM-C143	Slump for Portland Cement Concrete
ASTM-C150	Standard Specification for Portland Cement
ASTM-C171	Standard Specification for Sheet Materials for Curing Concrete
ASTM-C172	Standard Practice for Sampling Freshly Mixed Concrete
ASTM-C173	Air Content of Freshly Mixed Concrete by the Volumetric Method
ASTM-C231	Air Content of Freshly Mixed Concrete by the Pressure Method
ASTM-C260	Air Entraining Admixtures for Concrete

STANDARD	DESCRIPTION
American Society for Testing and Materials (ASTM) - Cont'd	
ASTM-C309	Liquid Membrane-Forming Compounds for Curing Concrete
ASTM-C494	Chemical Admixtures for Concrete
ASTM-C618	Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Portland Cement Concrete
Other Standards and Codes	
	Florida Building Code
	Concrete Reinforcing Steel Institute (CRSI) "Manual of Standard Practice"

B. Manufacturer's Qualification

1. A firm experienced in the manufacturing of ready-mixed concrete products and that complies with ASTM C-94/C-94M requirements for production facilities and equipment.

2. The manufacturer shall be certified according to NRMCA's *Certification of Ready Mixed Concrete Production Facilities* and ASTM C-94.

C. Installer Qualifications

1. A qualified installer who employs project personnel qualified as ACI-certified Flatwork Technicians and Finishers and a supervisor who is an ACI-certified Concrete Flatwork Technician.

2. The Concrete Installation Firm shall have at least five (5) years of experience, under the current corporate name, in performing concrete work of high quality, including forming, color, texture and finishing and of the size and complexity of this Project.

D. Evaluation and Acceptance of Concrete

1. Evaluation and acceptance of concrete will be in accordance with ACI-318.

2. ***All structures that will contain either water or wastewater shall be watertight and shall be free from any perceptible leakage,*** *as determined by the Engineer*.

E. Testing Agency Qualifications

1. An independent agency, qualified according to ASTM C-1077 and ASTM E-329 for the testing indicated, as documented according to ASTM E-548.

2. Personnel conducting field tests shall be qualified as an ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-01, or an equivalent certification program.

3. Personnel performing laboratory tests shall be an ACI-certified Concrete Strength Testing Technician and Concrete Laboratory Testing Technician - Grade I. The Testing Agency laboratory supervisor shall be an ACI-certified Concrete Laboratory Testing Technician - Grade II.

4. Provide testing in accordance with Section 01410, *Testing and Testing Laboratory Services* and Article 3.11 of this Section. The Contractor shall keep the testing laboratory informed of the testing schedule.

5. The Contractor shall engage a qualified testing agency to perform evaluation tests and to design concrete mixtures.

F. Source Limitations

1. Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from one source, and obtain admixtures through one source from a single manufacturer.

1.03 Submittals

A. Shop Drawings, Samples and Certifications

1. Samples and certifications shall be submitted in accordance with Section 00700, General Conditions, Section 00800, *Supplementary Conditions*, and Section 01300, *Shop Drawings, Submittals and Samples*, and as directed by the Engineer. Unless otherwise indicated, submit certifications for all products and samples as may be specifically requested by the Engineer.

B. Plant Qualification

1. Submit certification from the National Ready Mixed Concrete Association indicating compliance with the specified qualification requirements and ASTM C-94.

C. Materials

1. Satisfactory evidence shall be submitted indicating that the materials to be used, including cement, aggregates, admixtures, etc., meet the specified requirements.

2. Provide catalog data, chemical and mechanical analyses, and conformance with ASTM requirements for the following:

   2.01 Sources of cement, pozzolan and aggregates.

   2.02 Air-entraining admixture.

   2.03 Water reducing admixture.

   2.04 High range water-reducing admixture (plasticizer).

   2.05 Sheet curing material.

   2.06 Liquid curing compound.

3. ***Provide certificates that aggregates comply with ASTM C33 and contain no asbestos***. State weathering region limits of coarse aggregates (severe, moderate, or negligible). State the basis of determining that potential reactivity is negligible. Identify certifications and tests actual materials to be used in the Work. Provide additional tests and certifications for each change in material source. Provide an alternate material source of aggregate if test indicate that aggregates are reactive or possess severe weathering potential. ***Submit a gradation analysis with the concrete design mixes***.

4. Design Mix

   4.01 ***Prepare mix designs in accordance with ACI 318-95, Chapter 4, except as modified herein.*** The design mix(es) to be used shall be prepared by qualified persons and submitted for approval at least fifteen (15) days before placing any concrete. The design of the mix is the responsibility of the Contractor subject to the limitations of the Specifications.

   4.02 Approval of this submission will be required only in that the minimum requirements of the specifications have been met. Such approval will in no way alter the responsibility of the Contractor to furnish concrete meeting the requirements of the specifications relative to strength and slump.

   4.03 ***Provide a certificate*** that the cement used complies with ASTM C-150 and these specifications.

   4.04 Submit alternate design mixtures when the characteristics of materials, project conditions, weather, test results or other circumstances warrant adjustments.

4.05 Indicate amounts of mixing water to be withheld for later addition at the Project Site.

D. Delivery Tickets

1. ***Provide delivery tickets for ready-mix concrete***, per ASTM C-94, indicating the following:

1.01 Date and time leaving the plant.
1.02 Truck number
1.03 Type of cement and weight
1.04 Weight of each size aggregate
1.05 Quantity of water and time added
1.06 Water/cement Ratio
1.07 Admixtures and weight
1.08 Class of Concrete
1.09 Site arrival time
1.10 Site leaving time
1.11 Type of fly ash and weight.

E. Epoxy Bonding Compound

1. Provide epoxy bonding compound manufacturer's specific instructions for use.

2. Provide manufacturer's certifications as to the suitability of the product to meet the job requirements with regard to surface, pot life, set time, vertical and horizontal application, and forming restrictions.

F. Non-Shrink Grout

1. Provide non-shrink grout manufacturer's certificate of compliance with these specifications.

2. Provide non-shrink grout manufacturer's specific instructions for use.

G. ***Submit a report from a testing laboratory, in a PDF format,*** verifying that aggregate and gravel material contains no asbestos and conforms to the specified gradations and characteristics.

H. Placement Schedule Certification

1. ***Submit at least twenty-four (24) hours before placing concrete, a signed certification providing the following***:

1.01 Exact location and portion of the structure to be placed.

1.02 Date and time that the concrete is to be placed.

1.03 The type of concrete to be used (mix) and the method to be used in placing the concrete.

1.04 The estimated quantity of concrete to be placed.

1.05 That the line and grade have been checked and grade properly compacted.

1.06 That location, type, size and spacing of reinforcement has been checked and conform to the Contract Drawings.

1.07 That any waterstops, construction joints, contraction and expansion joints, or seals have been placed and conform to the Contract Documents.

1.08 That any embedded pipes have been placed, are the correct size and type and conform to the Contract Documents.

1.09 That any embedded conduits, grounding wires or receptacles have been placed, are the correct size and type and conform to the Contract Documents.

1.10 That any embedded anchor bolts, bearing plates, dowels, etc., are in place, are of the correct size and are located as indicated on the Contract Documents.

1.11 That all forms are properly located and adequately braced.

I. Hot and Cold Weather concreting plans shall be submitted in accordance with Article 1.05 of this specification section.

J. ***A pouring plan shall be submitted by the Contractor to the Engineer for approval showing the location of all construction joints***.

1.04 Sample Pattern Concrete Wall Panel - NOT USED

1.05 Hot, Cold and Adverse Weather Conditions

A. Hot and cold weather concreting plans shall include the curing method and specific curing plan, ready-mixed supplier plan, contingency plans, and materials list as a minimum.

B. All hot weather plans shall meet the requirements of ACI 305.

C. All cold weather plans shall meet the requirements of ACI 306.

D. Do not mix salt, chemicals, or other foreign materials with the concrete to prevent freezing without approval of the Engineer. Maintain the temperature of concrete above 50°F for five (5) days after placement. When high early strength portland cement concrete is used, the temperature shall not be less than 70°F for two (2) days or 50 °F for three (3) days. Transition the concrete to the outside temperature at a rate of 1°F each hour for the first twenty-four (24) hours and 2°F each hour thereafter.

C. ***In no case shall the temperature of the concrete exceed 90***°F ***at the time of placement***. If insulated forms are used, the temperature of the concrete mixture shall not exceed 80□F at time of placement.

D. If the Engineer determines that heat of hydration may cause excessive concrete temperatures and subsequent detrimental effects, the concrete mixture shall not exceed 60□F at time of placement for critical pours.

1. PRODUCTS

1.01 Cementitious Material

A. Cement for all concrete shall be domestic Portland cement that conforms to the requirements of ASTM Designation C-150 Type I, Type II, or Type III, gray.

B. Type I cement may be used for buildings, pipe encasements and tremie concrete. All manholes, wet wells, valve/meter vaults, pumping stations, and structures exposed to water or wastewater shall be constructed with Type II cement. Type III cement for high early strength concrete shall be used only for special locations and only with the approval of the Engineer.

C. ***Only one (1) brand of cement shall be used in any individual structure unless approved by the Engineer***. Cement which has become damaged, partially set, lumpy or caked shall not be used and the entire contents of the sack or container which contains such cement will be rejected. No salvaged or reclaimed cement shall be used.

D. ***The maximum tricalcium aluminate content shall not exceed eight (8) percent. The maximum percent alkalies shall not exceed 0.6%.***

1.02 Fly Ash

A. ***Fly ash shall be Class F conforming to the requirements of ASTM C-618, including the requirements of Table 1 except the loss of ignition, LOI, shall be limited to three percent (3%), maximum***.

B. ***Fly ash shall not exceed twenty percent (20%)*** of the cementitious content of the mix.

C. Use one brand of cement and fly ash throughout the Project unless otherwise acceptable to the Engineer.

1.03 Aggregates

A. ***Aggregates shall comply with ASTM C-33 and shall contain no asbestos and be free from any substances that will react with the cement alkalies***.

B. Coarse aggregates shall be Size No. 67 (¾-inch). Use Size No. 8 for filling of the cells of masonry units.

C. Fine aggregate shall be free of materials with deleterious reactivity to alkali in cement.

D. In addition to requirements of ASTM C-33 for structures exposed to wastewater the following shall apply:

Description	Maximum Content
Soft particles	< 2.0 %
Chert as a soft impurity (defined in Table 3 of ASTM C-33)	< 1.0 %
Total of soft particles and chert as a soft impurity	< 2.0 %
Flat and elongated particles (Long dimension greater than 5 times short dimension)	< 15.0 %

E. For exposed exterior surfaces, do not use fine or coarse aggregates that contain substances that cause spalling.

1.04 Water and Ice

A. ***Use water and ice that is of potable water quality***, clean and free from objectionable quantities of organic matter, alkali, salts, and other impurities that might reduce the strength, durability, or otherwise adversely affect the quality of the concrete.

B. Water shall be in compliance with the requirements of ASTM C-94 / C-94M.

1.05 Air Entraining Admixture

A. ***The concrete shall contain an air entraining admixture***. The admixture shall conform to ASTM C-260, except it shall be ***non-toxic*** after thirty (30) days and shall ***contain no chlorides***, and shall be certified by the manufacturer to be compatible with other required admixtures.

B. Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

1. Monex Air or Monex NVR, Monex Resources, Inc.
2. Air-Tite, Cormix Construction Chemicals
3. Air-Mix or Perma-Air, Euclid Chemical Company
4. Darex AEA or Daravair, W.R. Grace & Company
5. MB-VR or Micro-Air, Master Builders, Inc.
6. Sealtight AEA, W.R. Meadows, Inc.
7. Sika AER, Sika Corporation
8. Or Equal

1.06 Water Reducing and Retarding Admixtures

A. Water-Reducing Admixture

1. ***Water Reducing Admixtures shall conform to ASTM C-494, Type A or D***.

2. Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

   a. Monex Resources, Inc.
   b. Chemtard, ChemMasters Corporation
   c. PSI N, Cormix Construction Chemicals
   d. Eucon WR-75, Euclid Chemical Company
   e. WRDA, W.R. Grace & Company
   f. Pozzolith Normal or Polyheed, Master Builders, Inc.
   g. Metco W.R., Metalcrete Industries
   h. Prokrete-N, Prokrete Industries
   i. Plastocrete 161, Sika Corporation
   j. Or Equal

3. The admixtures shall be ***non-toxic*** after thirty (30) days and ***contain no calcium chloride***.

B. High-Range Water Reducing Admixture

1. ***Water Reducing Admixtures shall conform to ASTM C-494, Type F or G***.

2. Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

   a. Monex SP or Mighty RD, Monex Resources, Inc.
   b. Super P, Anti-Hydro Company, Inc.
   c. Eucon 37, Euclid Chemical Company
   d. WRDA 19 or Daracem, W.R. Grace & Company
   e. Rheobuild or Polyheed, Master Builders, Inc.
   f. Superslump, Metalcrete Industries
   g. Sikament 300, Sika Corporation
   h. Or Equal

3. The admixtures shall be non-toxic after thirty (30) days contain no calcium chloride.

C. Manufacturers Job Site Representation

1. Provide services of a competent field service representative from the manufacturer of each of the admixtures selected for use to provide at the job site advice and consultation on the use of the admixture materials.

2. The manufacturer's representative will be responsible to recommend the maximum discharge time for the superplasticizer and to recommend the method and procedure to induce the superplasticizer into the mixer, and the effect on the concrete in place.

3. The manufacturer's representative will be responsible to recommend quantities of admixtures to be used if variations are required because of temperature, humidity, wind, or other environmental considerations.

4. The manufacturer's representative shall be available on call at any time requested by the Owner, Engineer, Contractor, or concrete producer.

1.07 Curing Materials

A. Evaporation Retarder

1. Waterborne, mono-molecular film forming, manufactured for application to fresh concrete.

2. Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

   a. Spray-Film, ChemMasters
   b. Confilm, MBT Protection and Repair, Division of ChemRex
   c. SikaFilm, Sika Corporation, Inc.
   d. Or equal.

B. Absorptive Cover

1. Burlap cloth made from jute or kenaf, weighing approximately 9 oz./yd^3 when dry, complying with AASHTO M - 182, Class 2.

C. Moisture Retaining Cover

1. The moisture retaining cover shall comply with ASTM C-171 and shall be one of the following:

a. Polyethylene film
b. Polyethylene coated burlap
c. Waterproof paper

D. The curing agent shall be a colorless, odorless, non-toxic, non-combustible, non-flammable, free of VOC's material such as Ashford Formula as manufactured by Curecrete Distribution, Inc. or approved equal.

2.08 Repair Materials

A. Repair Underlayment

1. A cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8-inch (3.2 mm) and that can be feathered at edges to match adjacent floor elevations.

2. Cement Binder: *ASTM C-150, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C-219.*

3. Primer: *Product of the underlayment manufacturer recommended for substrate, conditions, and application.*

4. Aggregate: *Well-graded, washed gravel, 1/8-inch to ¼-inch or coarse sand as recommended by the underlayment manufacturer.*

5. Compressive Strength: *Not less than 5,000 psi at 28 days when tested according to ASTM C-109/C-109M.*

B. Repair Overlayment

1. A cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8-inch and that can be feathered at edges to match adjacent floor elevations.

2. Cement Binder: *ASTM C-150, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C-219*

3. Primer: *Product of the underlayment manufacturer recommended for substrate, conditions, and application.*

4. Aggregate: *Well-graded, washed gravel, 1/8-inch to ¼-inch or coarse sand as recommended by the underlayment manufacturer.*

5. Compressive Strength: *Not less than 5,000 psi at 28 days when tested according to ASTM C-109/C-109M.*

C. The quantity of mixing water shall be no more than necessary for handling and placing.

2.09 Miscellaneous Materials

A. Vapor

1. Vapor barrier shall be polyethylene film, ***ten (10) mils thick***, and shall conform to Product Standard PS-17 and the requirements of Section 07050, *Vapor Barrier.*

B. Non-Slip Aggregate

1. Aggregate for non-slip finish shall be well graded between $^{1}/_{32}$-inch to ¼-inch size and composed of a minimum of sixty percent (60%) aluminum oxide or silicon carbide abrasive bonded by a vitreous ceramic material.

2. Aggregate shall be hard, homogeneous, non-glazing, rust-proof, and shall not be affected by freezing, moisture, or cleaning compounds.

C. Floor Hardener and Sealer

1. Floor hardener and sealer shall be a colorless liquid acrylic or chlorinated rubber formulated to comply with Federal Specifications TT-C-800A for Magnesium and Zinc Fluorosilicate Floor Hardeners and with Corps of Engineers Specification CE204.

E. Epoxy Resin Floor Leveler

1. Epoxy resin floor leveler shall be Sikadur Lo-Mod by Sika Chemical Corp., Epoxtite 2390 by W. R. Grace and Co., Euco Epoxy 460 by Euclid Chemical Co., or approved equal.

F. Silicon Water Repellent

1. Silicon water repellent shall be a 5% Silicon Solution complying with Fed. Spec. SS-W-110 and manufactured by W. R. Grace, W. R. Meadows, Euclid Chemical Co., or approved equal.

G. Granular Fill

1. Clean mixture of crushed stone or crushed or uncrushed gravel; ASTM D-448, Size 57, with one hundred percent (100%) passing a 1½-inch (37.5 mm) sieve and 0 - 5% passing a No. 8 (2.36 mm) sieve.

H. Fine-Graded Granular Material

1. Clean mixture of crushed stone, crushed gravel, and manufactured or natural sand; ASTM D-448, Size 10, with one hundred percent (100%) passing a 3/8-inch (9.5 mm) sieve, 10 - 30% passing a No. 10 (0.15mm) sieve, and at least 5% passing a No. 200 (0.075 mm) sieve; complying with deleterious substance limits of ASTM C-33 for fine aggregates.

I. Burlap Mats shall conform to AASHTO Specification M-182.

2.10 Bonding Compounds

A. Bonding Compounds and Epoxy Adhesives are specified in Articles 2.08 and 2.09 of Section 03250, *Concrete Accessories*.

2.11 Powdered Epoxy Coating for Anchor Bolts

A. Powdered epoxy resin as manufactured by the 3M Company, Scotchkote No. 213, Armstrong No. R349, or approved equal.

2.12 Concrete Mixtures

A. General

1. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both as specified in ACI 301, ACI 211 and ACI 350. Use a qualified independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures.

2. Concrete mix design shall comply with the Florida Building Code requirements.

3. Concrete not indicated otherwise shall be Class A concrete.

4. Conform to ASTM C-94, except as modified by these specifications.

5. Limit water-soluble, chloride content in hardened concrete to 0.1 percent (0.1%) by weight of cement.

6. Air content as determined by ASTM C-231 and shall be 4% ± 1%.

7. Limit the use of fly ash to not exceed twenty percent (20%) of the total cementitious content by weight. Fly ash shall be used as an admixture and will not be allowed to replace cement. Fly ash shall be used in all structural concrete.

8. Submit written reports to the Engineer of each proposed mix for each class of concrete at least fifteen (15) days prior to the start of the Work, in a PDF format. Do not begin concrete production until proposed mix designs have been reviewed by the Engineer.

9. Mix Design

    a. Provide concrete with compressive strengths at 28 days as presented in Table 03300 - A.

    b. Measure slump in accordance with ASTM C-143. The maximum allowable slump of the concrete, without superplasticizer, shall be as presented in Table 03300 - B.

Table 03300 - A

Compressive Strengths for Various Class Concretes

Class	Type of Work	28-day Compressive Strength (psi)	Minimum cement content (lb/yd^3)
A	Concrete for all structures and concrete not otherwise specified. Mat foundations, footings, tanks, ditches, pumping stations, tremie concrete, precast structures, structural, water retaining structures, and other structures in contact with treated waters.	4,000	564
B	Slab on grade, masonry filled cell, grout, encasements, thrust blocks, pipe supports, concrete curbs, fills and sidewalks, etc., not in contact with treated waters.	3,000	500
C	Floor grout, miscellaneous non-reinforced concrete	2,500	376
D	Prestressed concrete	5,000	630
E	Precast Concrete	5,000	630

Table 03300 - B

Allowable Concrete Slump (without Superplasticizer)

Description	Maximum Allowable Slump
Slab on Grade or heavy sections wider than 3 feet	3 inches (max)
Footings, walls, suspended slabs, beams, columns	4 inches (max)
Pavement	2 inches (max)
Floor Grout	4 inches (max)

c. Slump

1) Proportion and produce the concrete to have a maximum slump as presented in Table 03300 - B. Slump shall be measured prior to the addition of the superplasticizer.

2) A tolerance of up to one (1) inch above the indicated maximum shall be allowed for individual batches provided the average for all batches or the most recent ten (10) batches tested, whichever is fewer, does not exceed the maximum limit. Concrete of lower than usual slump may be used provided it is properly placed and consolidated.

d. Variations to the maximum allowable slump are as follows:

Concrete Type	Allowable Slump
Class A and B concrete with superplasticizer	7 inches ± 1 inch
For Tremie concrete	6 inches ± 1 inch

10. Aggregate Size

a. Aggregate size shall be ¾-inch maximum for slabs and sections eight (8) inches thick and less.

b. Aggregate size shall be one (1) inch maximum for slabs and sections greater than eight (8) inches thick and smaller than seventeen (17) inches.

c. Aggregate size shall be 1-½ inches maximum for all larger slabs and sections. Aggregate size for floor grout shall be a maximum of 3/8-inch. Coarse aggregate shall be limited to prevent harshness and honeycombing.

11. Combined aggregate grading shall be as shown in the following table:

Description	Maximum Aggregate Size			
	1½"	1"	¾"	3/8"
Aggregate Grade per ASTM C-33	467	57	67	8

12. Mix design for pumped concrete shall produce a plastic and workable mix. The percentage of sand in the mix shall be based on the void content of the coarse aggregate.

13. Water-to-Cement Ratio

Concrete Type	Water-to-Cement Ratio
Concrete with superplasticizer	0.37
Class A concrete without superplasticizer	0.45
Class B concrete without superplasticizer	0.55
Class C concrete without superplasticizer	0.65

B. Admixtures

1. General

a. Use admixtures in accordance with the manufacturer's written instructions.

2. Air Entraining Admixture

a. Use air entraining admixtures in exterior exposed concrete unless otherwise indicated. Add air-entraining admixture at the manufacturer's prescribed rate to result in concrete, at the point of placement, having a total air content of 4% ± 1%.

3. Water Reducing and Retarding Admixture

a. Use water-reducing and retarding or plasticizing admixture in concrete, as required, for placement and workability.

b. Use water reducing admixtures in pumped concrete, concrete for heavy-use industrial slabs and parking structure slabs, ***concrete required to be watertight***, and concrete with water-cement ratios below 0.50.

c. The addition of the water reducing and retarding admixture shall be separate from the air entraining mixture.

d. Admixtures shall be stored, handled and batched in accordance with the recommendations of ACI 212 and ASTM C-94.

C. In addition to the information required by ASTM C-94, delivery tickets shall indicate the parameters identified in Article 1.03(D) of this specification section. Furnish the delivery ticket for each batch of ready-mixed concrete delivered to the site.

D. Temperatures

1. The temperature of the concrete upon delivery from the truck ***shall not exceed 90***°F**,** otherwise ice, or another approved method, shall be used to reduce the temperature of the concrete as recommended by ACI.

E. Modifications to the Mix

1. No modifications to the mix shall be made in the plant or on the job that will decrease the cement content or increase the water/cement ratio beyond that specified.

2. Mix design adjustments may be requested by the Contractor when characteristics of materials, job conditions, weather, test results, or other circumstances warrant, as accepted by the Engineer. Laboratory test data for revised mix design and strength results must be submitted to and accepted by the Engineer before using in the Project Work.

3. Addition of water must be approved by the Engineer. Added water shall be incorporated by additional mixing of at least fifty (50) revolutions. All water added shall be metered and the amount of water added shall be shown on the delivery ticket. Addition of water shall be in accordance with the procedures of ASTM C-94 for slump adjustment.

2.13 Concrete Workability

A. ***The concrete shall be of such consistency and composition that it can be worked readily into the forms and around the reinforcement*** without excessive vibrating and without permitting the materials to segregate or free water to collect on the surface.

B. ***The proportions shall be adjusted to secure a plastic, cohesive mixture, and one that is within the specified slump range***.

C. To avoid unnecessary changes in consistency, obtain the aggregate from a source with uniform quality, moisture content, and grading. Handle materials to minimize variations in moisture content that would interfere with production of concrete of the established degree of uniformity and slump.

2.14 Fabricating Reinforcement

A. Fabricate steel reinforcement according to CRSI's Manual of Standard Practice" and the requirements of Section 03200, *Concrete Reinforcement*.

2.15 Ready-Mixed Concrete

A. Ready-Mixed Concrete shall be measured, batched, mixed and delivered according to ASTM C-94/C-94M, and batch ticket information shall be furnished.

B. ***When the air temperature is between 85°F and 90°F, reduce mixing and delivery time from 1½ hours to 75 minutes***.

C. When the air temperature is above 90°F, reduce mixing and delivery time to sixty (60) minutes.

3. EXECUTION

3.01 Preparations

A. ***No concrete shall be placed until the approval of the Engineer has been received***. Approval will not be granted until the forms are thoroughly clean, and reinforcing and all other items required to be set in the concrete have been placed and thoroughly secured.

B. The Engineer shall be notified a minimum of twenty-four (24) hours before the concrete is to be placed.

C. Subgrade Preparation

1. Compact the subgrade and/or bedding in accordance with Section 02220, *Excavation, Backfilling and Compaction* and the requirements of the specifications.

2. The subgrade free of frost. If placement is allowed at temperatures below freezing, provide temporary heat and protection as required to remove all frost.

3. ***Saturate the subgrade approximately eight (8) hours before placement and sprinkle ahead of the placement of concrete in areas where vapor barrier is not used***.

4. Remove all standing water, ice, mud, and foreign matter before the concrete is deposited.

D. Granular Base

1. Where indicated on the Contract Drawings or Documents, install a granular base beneath the slab on grade or a structural foundation.

2. Place the granular material on a compacted subgrade and compact the granular base to the same density as the subgrade.

E. Vapor Barrier

1. Place under structural slabs and buildings, or where indicated on the Contract Drawings or Documents.

2. ***Lay vapor barrier sheets with twelve (12) inch edge laps and tape or seal with mastic*** in accordance with Section 07900, *Vapor Barrier*.

3. Stretch and weight edges and laps to maintain their positions until concrete is placed. Coordinate with placement of reinforcement specified in Section 03200, *Concrete Reinforcement*.

3.02 Site-Mixed Concrete

A. Site-mixed concrete shall conform to ACI-304 as modified by these specifications.

B. Use a batch-type mixer capable of combining the aggregates, cement, and water within the specified time into a thoroughly mixed and uniform mass and capable of discharging the mixture without segregation.

C. Use equipment that can accurately proportion cement, coarse and fine aggregates, admixtures, and water. Proportion cement and aggregate by weight.

D. Discharge each entire batch before recharging. Do not allow any batch to exceed the manufacturer's rated capacity of the mixer.

E. Mixing time shall be as follows:

1. For mixer of a capacity of one (1) cubic yard or less, one and one-half minutes after batching is completed.

2. For mixers of capacities larger than one (1) cubic yard, one and one-half minutes plus one-half minute for each additional one-half cubic yard capacity or fraction thereof in excess of one (1) cubic yard.

3. The mixer shall revolve at a uniform rate as specified by the manufacturer for the mixing equipment.

3.03 Ready-Mixed Concrete

A. ***Provide central-mixed concrete conforming to ASTM C-94/C-94M as modified by these specifications***.

B. Convey concrete from the truck to the place of final deposit as rapidly as practicable by methods which will prevent segregation or loss of ingredients to maintain the quality of the concrete.

C. ***Place no concrete more than ninety (90) minutes after mixing has begun for that particular batch***.

D. ***If it is necessary to add water to obtain the specified slump, add water per ASTM C-94, but do not exceed the water content of the reviewed design mix***.

E. Use dry-batched concrete or jobsite mix only when the haul time is excessive. Do not retemper partially hardened concrete.

F. Keep a record showing time and place of each pour of concrete, together with transit-mix delivery tickets certifying the contents of the pour.

3.04 Conveying

A. Buckets and Hoppers

1. Buckets and hoppers shall be provided that have discharge gates with a clear opening equal to no less than one-third of the maximum interior horizontal area, or five (5) times the maximum aggregate size being used.

2. ***Side slopes shall be no less than sixty degrees (60□)***.

3. Controls on gates shall be provided to permit opening and closing during the discharge cycle. It is suggested that the Contractor provide one (1) standby bucket and hopper for use in case of equipment failure.

B. Runways

1. Provide runways as specified in Section 03100, *Concrete Formwork*.

2. Extreme care shall be exercised to avoid displacement of reinforcing during the placing of concrete.

C. Elephant Trunks

1. Hoppers, elephant trunks or drop chutes shall be used to ***prevent the free fall of concrete for more than six (6) feet***.

D. Chutes

1. Chutes shall be metal or metal lined, and shall have a slope not exceeding one (1) vertical to two (2) horizontal, and not less than one (1) vertical to three (3) horizontal.

2. Chutes more than twenty (20) feet long and chutes not meeting the slope requirements, may be used only if they discharge into a hopper before distribution.

E. Pumping Equipment

1. Pumping equipment and procedures, if used, shall conform to the recommendations contained in the report of ACI Committee 304 on "Placing Concrete by Pumping Methods", ACI 304.2R.

2. The specified slump shall be measured at the point of discharge. ***The loss of slump in pumping shall not exceed 1½ inches***.

F. Conveying Equipment Construction

1. Do not use aluminum or aluminum alloy pipe for tremies or pump lines and chutes, except for short lengths at the truck mixer.

G. Cleaning

1. Conveying equipment shall be cleaned at the and of each concrete operation.

3.05 Placing of Concrete

A. General

1. Before placing concrete, verify that installation of formwork, reinforcement and embedded items is complete and that all required inspections have been performed.

2. Placement of concrete shall conform to ACI 304, *Measuring, Mixing, Transporting and Placing Concrete,* as modified by these specifications.

3. ***Concrete shall be placed in accordance with the requirements of ACI 318 and as nearly practicable to its final position***. Place concrete only during normal working hours unless the Engineer is notified at least forty-eight (48) hours in advance. Concrete shall not be placed until the Engineer has approved the formwork, reinforcement, and embedded items and debris has been removed.

4. ***Coordinate in advance of concrete placement the sequence of placement to assure that construction joints will occur only as designed***. Provide the Engineer with a copy of the sequence of placement at least seven (7) calendar days prior to placement. Alternate sections of concrete walls and slabs may be cast simultaneously. Do not place adjacent sections of walls and slabs until seven (7) calendar days after placement of the first placed concrete.

5. Notify the Engineer of the readiness, not just intention, to place concrete in any portion of the Work. This notification shall be at least twenty-four (24) hours in advance of the placement of the concrete such that the Engineer can observe and inspect the Work at the location of the proposed concrete placing. Failure of sufficient advance notification will be cause for a delay in the placing of the concrete until the observation and inspection of the Work can be completed. Forms, steel, screeds, anchors, ties, inserts, waterstop, and other embedded items shall be in place before the Contractor's notification of readiness is given. Any delay of concrete placing due to improper Contractor notification or incomplete preparation/work will not be grounds for the addition of time to the Contract Construction period.

6. ***The Contractor shall schedule sufficient equipment for continuous concrete placing***. Provide for backup equipment and procedures to be taken in case of an interruption in placing. Provide for backup concrete vibrators at the Project Site. Test all concrete vibrators the day before placing concrete.

7. ***Do not place concrete until all free water has been removed or has been diverted*** by pipes or other means and carried out of the forms, clear of the work. Do not deposit concrete underwater, and do not allow free water to rise on any concrete until the concrete has attained its initial set. Do not permit free or stormwater to flow over the surface of the concrete so as to injure the quality or surface finish.

8. When a vapor (moisture) barrier is installed, do not puncture the moisture barrier by stakes or any other concrete accessory.

9. ***Do not place concrete during rainstorms***. Protect concrete placed immediately before rainstorms to prevent rainwater from coming into contact with freshly placed or uncured concrete. Keep sufficient protective covering ready at all times for this purpose.

B. Placement of Concrete

1. Deposit concrete continuously in one layer or in horizontal layers of such thickness such that no concrete will be placed on concrete that has hardened sufficiently to cause the formation of seams or planes of weakness, or cold joints. If a section cannot be placed continuously, provide construction joints as specified. Deposit concrete to avoid segregation at its final location.

   a. ***Deposit concrete in horizontal layers of a depth not to exceed formwork design pressures*** (***no deeper than 24 inches***) and in a manner to avoid inclined construction joints. Where placement consists of several layers, place each layer while the preceding layer is still plastic to avoid cold joints.

   b. ***Consolidate placed concrete by mechanical vibrating equipment*** supplemented by hand-spading, rodding or tamping. Use equipment and procedures for consolidation of concrete complying with ACI 309.

   c. ***Do not use vibrators to transport concrete inside forms***. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least six (6) inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit the duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing the mixture constituents to segregate. A spare vibrator shall be "on-site" for emergency use at all times.

2. ***Deposit and consolidate concrete for floors and slabs in a continuous operation***, within the limits of construction joints or expansion joints, until placement of a panel or section is complete.

   a. Consolidate concrete during placement operations so concrete is thoroughly worked around the reinforcement and other embedded items and into corners.

   b. Maintain reinforcement in position on chairs during concrete placement.

   c. Screed slab surfaces with a straightedge and strike off to correct elevations.

   d. Slope surfaces uniformly to drains where required.

   e. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane (free of humps and hollows), before excess bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.

C. Hot Weather Placement of Concrete

1. During hot weather, give proper attention to the ingredients, production methods, handling, placing, protection and curing to prevent excessive concrete temperatures or water evaporation in accordance with the provisions of ACI 301 and ACI 305 and the provisions herein. ***As much as possible, concrete should be placed during cooler hours of the day***.

2. ***Maintain concrete temperature below 90***°F ***(32***°C***) at the time of placement to eliminate early setting of the concrete***. Chilled mixing water or chopped ice may be used to control temperature, provided the water equivalent of the ice is calculated into the total amount of mixing water. Using liquid nitrogen to cool the concrete is the Contractor's option.

3. Cover reinforcing steel with water-soaked burlap if it becomes too hot, so that the steel temperature will not exceed the ambient air temperature immediately before embedding concrete.

4. Fog-spray forms, steel reinforcement and subgrade just before placing the concrete. Keep the subgrade uniformly moist without standing water, soft spots or dry areas.

5. ***Use water-reducing retarding admixtures when required by high temperatures, low humidity, or other adverse placing conditions, as acceptable to the Engineer***.

6. ***There will be no additional reimbursement to the Contractor for costs incurred for placing concrete in hot weather***.

D. Cold Weather Placement of Concrete

1. The Contractor shall provide adequate equipment for heating concrete materials and protecting the concrete work from physical damage or reduced strength that could be caused by frost, freezing action or low temperatures and shall comply with the provisions of ACI-301 and ACI-306.

2. When the air temperature has fallen to or is expected to fall below 40°F, uniformly heat water (< 140°F) and aggregates before mixing to obtain a concrete mixture temperature of not less than 55 °F and not more than 80 °F, at the point of placement. Do not allow the heated water to come in contact with the cement before the cement is added to the batch.

3. Do not use frozen materials or materials containing ice. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.

4. Do not use salt, or other materials containing anti-freeze agents or chemical accelerators unless otherwise accepted in mix designs. Calcium chloride will not be allowed.

5. Maintain the air and the forms in contact with the concrete at temperatures above 40°F for the first five (5) days after placing, and above 35°F for the remainder of the curing period. The Contractor shall provide thermometers to indicate the ambient temperature and the temperature two (2) inches inside the concrete surface.

6. ***There will be no additional reimbursement to the Contractor for costs incurred for placing concrete in cold weather***.

E. Supported Elements

1. ***At least two (2) hours shall elapse after depositing concrete in columns or walls before depositing in beams, girders, or slabs supported thereon***.

F. Concrete Fill and Tank Bottom Slab

1. Concrete fill for the tank bottoms, where shown on Contract Drawings, shall be placed within the tolerances described in this Section and as per the equipment manufacturer's recommendations for the clearance required by the mechanical equipment.

G. Seals and Tremie Concrete

1. General

a. Wherever practicable, all foundation excavations shall be dewatered and the concrete deposited in the dry. Where conditions are encountered which render it impracticable to dewater the foundation before placing concrete, a concrete foundation seal shall be placed. The foundation shall then be dewatered, and the balance of the concrete placed in the dry.

b. When seal concrete is required to be placed, the satisfactory performance of the seal in providing a watertight excavation for placing structural concrete shall be the responsibility of the Contractor. Seal concrete placed by the Contractor, which subsequently fails to perform properly, shall be repaired as necessary to perform its required function, at the expense of the Contractor.

2. Method of Placing

   a. Concrete deposited under water shall be carefully placed in the space in which it is to remain by means of a tremie, a closed-bottom dump bucket of not less than one (1) cubic yard capacity, or other approved method, and shall not be disturbed after it is deposited.

   b. All seal concrete shall be deposited in one (1) continuous pour.

   c. No concrete shall be placed in running water.

   d. ***All form work designed to retain concrete under water shall be watertight***, and the design of the form work and excavation sheeting shall be by a Professional Engineer, registered in the State of Florida.

3. Use of Tremie

   a. ***The tremie shall consist of a tube having a inside diameter of ten (10) inches***, and shall be constructed in sections having tight joints. No aluminum parts which have contact with the concrete will be permitted.

   b. The discharge end shall be entirely seated at all times and the tremie tube kept full to the bottom of the hopper. When a batch is dumped into the hopper the tremie shall be slightly raised (but not out of the concrete at the bottom) until the batch discharges to the bottom of the hopper, after which the flow shall be stopped by lowering the tremie.

   c. The means of supporting the tremie shall be such as to permit the free movement of the discharge end over the entire top surface of the work, and shall permit it being lowered rapidly when necessary to choke off or retard the flow. The flow shall preferably be continuous and in no case shall be interrupted until the work is completed. Special care shall be exercised to maintain still water at the point of deposit.

4. Use of Bottom-dump Bucket

   a. When the concrete is placed by means of a bottom-dump bucket, the bucket shall be lowered gradually and carefully until it rests upon the concrete already placed.

   b. The bucket shall then be raised very slowly during the discharge travel; the intent being to maintain, as nearly as possible, still water at the point of discharge and to avoid agitating the mixture. Aluminum buckets will not be permitted.

5. Time of Beginning Pumping

   a. Pumping to dewater a sealed cofferdam shall not commence until the seal has set sufficiently to withstand the hydrostatic pressure, and in no case earlier than seventy-two (72) hours after placement of the concrete.

H. Consolidating Concrete

1. General

   a. Concrete, with the exception of slabs less than eight (8) inches thick, shall be consolidated by means of internal vibrators operated by competent workmen.

   b. Concrete for slabs less than eight (8) inches shall be consolidated with vibrating screeds. Slabs eight (8) inches to twelve (12) inches thick shall be compacted with internal vibrators and, optionally, with vibrating screeds. Vibrators shall always be placed into concrete vertically and shall not be laid horizontally or laid over.

2. Vibrators

   a. ***Vibrators shall have a minimum head diameter of at least two (2) inches, a minimum centrifugal force of seven hundred (700) pounds and a minimum frequency of 8,000 vibrations per minute (vpm)***.

3. Vibrators for Confined Areas

   a. In confined areas, the specified vibrators shall be supplemented by others having a minimum head diameter of 1½ inches, a ***minimum centrifugal force of three hundred (300) pounds and a minimum frequency of 9,000 vibrations per minute***.

4. Spare Vibrator

   a. One (1) spare vibrator for each-three (3) in use shall be kept on the site during all concrete placing operations. ***There shall be a minimum of at least one (1) spare vibrator on-site during all concrete placing operations***.

5. Use of Vibrators

   a. ***Vibrators shall be inserted and withdrawn at points approximately eighteen (18) inches apart. The duration of each insertion shall be from 5 - 15 seconds***.

b. Concrete shall not be transported in the forms by means of vibrators.

c. Consolidation of concrete shall be in conformance with ACI 309.

I. Protection

1. ***Rainwater shall not be allowed to increase the mixing water, nor to damage the surface finish***.

2. Concrete shall be protected from construction overloads. Design loads shall not be applied until the specified strength has been attained.

J. Construction Joints

1. Except as otherwise indicated on the Contract Drawings, ***horizontal construction joints shall be provided*** at top of foundation members and slabs on grade and at the soffit of supported slabs and beams.

2. Other horizontal and vertical construction joints shall be located as indicated on the Contract Drawings. Joints will not be permitted except in the locations shown, unless recommended by the Contractor and approved by the Engineer.

K. Bonding

1. Before depositing new concrete on or against concrete that has set, the surfaces of the set concrete shall be thoroughly cleaned so as to expose the coarse aggregate and be free of laitance, coating, foreign matter and loose particles.

2. Forms shall be retightened.

3. The hardened concrete of joints shall be dampened, but not saturated, and then thoroughly covered with a coat of cement grout of similar proportions to the mortar in the concrete.

4. The grout shall be as thick as possible on vertical surfaces and at least ½-inch thick on horizontal surfaces. The fresh concrete shall be placed before the grout has attained its initial set.

L. Embedded Items

1. In addition to steel reinforcement, pipes, inserts and other metal objects as shown, specified or ordered shall be built into, set in or attached to the concrete. All necessary precautions shall be taken to prevent these objects from being displaced,

broken or deformed. Before the concrete is placed, care shall be taken to determine that all embedded parts are firmly and securely fastened in place as indicated. They shall be thoroughly clean and free from paint or other coating, rust, scale, oil, or any foreign matter.

2. Pressure test embedded pipes for leakage, as specified elsewhere, before the concrete is placed.

3. Wrap metal rainwater leaders, firelines and other such piping with at least two (2) thicknesses of thirty (30) pound roofing felt before placing the concrete.

4. No wood shall be embedded in the concrete.

5. The concrete shall be packed tightly around pipes and other metal work to prevent leakage and to secure proper adhesion. Drains shall be adequately protected from intrusion of concrete.

M. Bonding to Existing Surfaces

1. Clean existing concrete surfaces that are to have new concrete bonded thereto of all grease, oil, dust, dirt and loose particles and coat with an epoxy bonding agent just prior to placing of the new concrete.

2. Apply the bonding agent as recommended by the manufacturer and allow the agent to become "*tacky*" before the new concrete is placed.

3. Do not allow the bonding agent to overlap or be spilled on the surfaces to be exposed after the work is completed.

3.06 Concrete Finishing

A. ***As soon as the forms can safely be removed, all irregular projections shall be chipped off flush with the concrete surfaces***. ***All voids produced by spacers or any honeycombing shall be pointed up with grout and troweled flush, with the concrete surface immediately after removal of the forms and water cured to prevent shrinkage***. Honeycombing shall be cut out to expose a sound concrete surface prior to pointing. The use of mortar pointing or patching shall be confined to the repair of small defects in relatively green concrete. Where in the opinion of the Engineer substantial repairs are required, the defective concrete shall be cut out to sound concrete and repaired with gunite or the concrete shall be removed and reconstructed as directed.

B. Finishing Formed Surfaces

1. Smooth-Formed Finish

a. ***Provide a smooth-formed finish on all formed concrete surfaces or to be covered with a coating material applied directly to concrete***, or a covering material applied directly to concrete, such as waterproofing, damp proofing, veneer plaster, painting, or another similar system.

b. This is an "*as-cast*" concrete surface texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defects. ***Remove fins and other projections completely, and leave a smooth finish***.

c. The finish shall be a Class A in accordance with ACI-347.

2. Related Unformed Surfaces

a. At the tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike-off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces, unless otherwise indicated.

C. Finishing Floors and Slabs

1. Comply with ACI-302.1R recommendations for screeding, restraightening and finishing operations for concrete surfaces. Do not wet concrete surfaces.

2. Scratch Finish

a. While still plastic, texture concrete surface that has been screeded and bull-floated or darbied. Use stiff brushes, brooms, or rakes to produce a profile amplitude of ¼-inch (6 mm) in one direction.

b. Apply a scratch finish to surfaces to receive concrete floor toppings or to receive mortar setting beds for bonded cementitious floor finishes.

3. Float Finish

a. ***Apply a float finish to monolithic slab surfaces to receive a trowel finish and other finishes as specified***; slab surfaces to be covered with membrane or elastic waterproofing, membrane or elastic roofing, or sand-bed terrazzo; and where indicated.

b. After screeding, consolidating, and leveling concrete slabs, do not work surface until ready for floating. Begin floating, using float blades or float shoes only, when surface water has disappeared, or when concrete has stiffened sufficiently to permit operation of power-driven floats, or both.

c. Restraighten, cut down high spots and fill low spots.

d. Consolidate the surface with power-driven floats or by hand-floating if the area is small or inaccessible to power units. Finish surfaces to tolerances of F(F) 25 (floor flatness) and F(L) 20 (floor levelness) measured according to ASTM E-1155/E-1155M.

e. Uniformly slope surfaces to drains. Immediately after leveling, refloat surface to a uniform, smooth, granular texture.

f. The class of surface shall be a Class C surface in accordance with ACI 347-R.

4. Trowel Finish

a. After applying a float finish, apply the first troweling and consolidate the concrete by hand or power-driven trowel. Continue troweling passes and re-straighten until the surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.

1) Apply a trowel finish to surfaces exposed to view or to be covered with resilient flooring, carpet, paint or another thin-film finish coating system.

2) Finish and measure the surface so that a gap at any point between the concrete surface and an unleveled, freestanding, 10-foot (3.05 m) long straightedge resting on two (2) high spots and placed anywhere on the surface does not exceed $^{3}/_{16}$-inch (4.8 mm)

5. Trowel and Fine-Broom Finish

a. Apply a first trowel finish to surfaces where ceramic or quarry tile is to be installed by either the thick-set or thin-set method. While the concrete is still plastic, slightly scarify the surface with a fine broom.

b. Comply with the flatness and levelness tolerances for trowel finished floor surfaces.

6. Non-slip Broom Finish

a. Apply a non-slip, light broom finish to exterior concrete platforms, steps, and ramps, and elsewhere as indicated, before the surface sets.

b. Immediately after float finishing, yielding a smooth surface (relatively free of defects), slightly roughen the concrete surface by brooming with a fiber-bristle broom perpendicular to the main traffic route. Coordinate the required final finish with the Engineer before application.

D. Finishing Tolerance

1. ***All surfaces shall be uniform in texture and appearance and plane to a tolerance of 1/8-inch in ten (10) feet as determined by a ten (10) foot straightedge placed anywhere on the slab in any direction***.

E. Saw Cut Joints

1. ***Joints that are to be saw cut shall be cut not sooner than two (2) hours after the concrete is poured and not later than eight (8) hours after the pour***.

3.07 Miscellaneous Concrete Items

A. Filling In

1. Fill in all holes and openings left in concrete structures for passage of work by other trades, unless otherwise shown or directed, after work of other trades is in place.

2. Mix, place, and cure concrete as specified to blend with "*in-place*" construction.

3. Provide all other miscellaneous concrete filling indicated or required to complete the Work.

4. ***All grout shall be of the "non-shrink" type***.

B. Curbs

1. Provide a monolithic finish to interior curbs by stripping forms while the concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.

C. Equipment Bases and Foundations

1. Provide machine and equipment bases and foundations as shown on the Contract Drawings.

2. ***Set anchor bolts for machines and equipment at the correct elevations***, complying with diagrams or templates from the manufacturer furnishing the machines and equipment.

3. Grouting Machinery Foundations

   a. Block out the original concrete or finish off a sufficient distance below the bottom of the machinery base to provide for the thickness of grout shown on the Contract Drawings or required by the equipment manufacturer.

   b. After the machinery has been set in position and placed at the proper elevation by steel wedges, the space between the bottom of the machinery base and the original pour of concrete shall be filled with a pourable non-shrink grout.

   c. The grout and grouting procedure shall be in accordance with AAPI 686, Chapter 4, paragraphs 3.6 and 3.7, and Chapter 5.

D. Steel Pan Stairs

1. Provide concrete fill for steel pan stair treads, landings, and associated items. Cast-in safety inserts and accessories as shown on Contract Drawings. Screed, tamp, and trowel finish concrete surfaces.

E. Backfill Against Walls

1. Do not place backfill against walls until the concrete has obtained a compressive strength equal to the specified ***28-day compressive strength***. Where backfill is to be placed on both sides of the wall, place the backfill uniformly on both sides.

2. Do not backfill the walls of structures laterally restrained or supported by suspended slabs on grade until the slab is poured and the has reached the specified compressive strength.

3.08 Curing and Protection

A. General

1. ***Protect freshly placed concrete from premature drying and excessive cold or hot temperatures***. In hot, dry, and windy weather protect concrete from rapid moisture loss before and during finishing operations with an evaporation control material. Apply according to manufacturers instructions after screeding and bull floating, but before power floating and troweling. Comply with ACI 305 and 306 for protecting and curing concrete in hot and cold weather.

2. ***Fresh concrete shall be protected from rain*** in accordance with this specification section.

B. ***Start initial curing as soon as the free water has disappeared from concrete surfaces after placing and finishing***. Keep continuously moist for not less than fourteen (14) days as required due to weather.

C. Where the concrete surface is scheduled to receive a sealed concrete finish, the curing is to be accomplished using an application of the Ashford Formula in strict accordance with the manufacturer's recommendations.

D. Moisture Curing

1. Cure concrete according to ACI-308, "Standard Practice for Curing Concrete".

2. Provide moisture curing by the following methods:

a. Keep concrete continuously wet by covering with water for not less than fourteen (14) days with one of the following materials:

1) A continuous water-fog spray.

2) An absorptive cover, thoroughly saturate cover with water, and keep continuously wet. Place the absorptive cover to provide coverage of concrete surfaces and edges, with a twelve (12) inch lap over adjacent absorptive covers.

3. Provide moisture-retaining cover curing as follows:

a. Cover concrete surfaces with a moisture-retaining cover for curing concrete, placed in widest practicable width with sides and ends lapped at least four (4) inches and sealed by waterproof tape or adhesive. Immediately repair any holes or tears during curing period using cover material and waterproof tape.

E. Evaporation Retarder

1. Apply evaporation retarder to unformed concrete surfaces if hot, dry or windy conditions cause moisture loss approaching 0.2 lb/ft^2 x h (1.0 kg/m^2 x h) before and during finishing operations.

2. Apply according to the manufacturer's written instructions after placing, screeding and bull floating or darbying concrete, but before float finishing.

F. Formed Surfaces

1. Cure formed concrete surfaces, including the underside of beams, supported slabs, and other similar surfaces, by moist curing with forms in place for the full curing period or until the forms are removed.

2. As soon as initial set has occurred, place a soil soaker hose along the tops of all walls to keep concrete forms wet during the curing period.

3. If forms are removed, continue curing by methods specified above, as applicable, for the remainder of the curing period. If forms are removed before the end of the curing period, then the concrete shall be continuously moist for the remainder of the curing period by fog spraying or covering with water-saturated absorptive covers or moist burlap.

G. Unformed Surfaces

1. Begin curing unformed surfaces including floors and slabs, concrete floor toppings and other flat surfaces, immediately after finishing the concrete by applying the appropriate curing method.

H. Final cure concrete surfaces to receive finish flooring with a moisture retaining cover, unless otherwise directed.

I. ***Water cure cast-in-place concrete for hydraulic walls, slabs, channels, and footings by for a minimum period of fourteen (14) days prior to applying other curing methods***. Do not submerge concrete placed in the dry until it has attained sufficient strength to adequately sustain the stress involved nor subject it to flowing water across its surface until it has cured. Start the curing of concrete as soon as possible without damaging the surface and not later than two (2) hours after placing.

J. Cure concrete surfaces in accordance with the methods specified herein for the different parts of the work. These methods are considered to be the “minimum” for curing. The conditions that exist in the field during placement and curing may require additional curing procedures and efforts to ensure proper protection and curing of the concrete. The Contractor shall be responsible for selecting and implementing the appropriate curing method commensurate with climatic conditions and the nature of the concrete structure being constructed (exposed surface, water bearing surface, submerged surface, coatings being applied to the surface, etc.) and shall take the appropriate measures for curing as described in ACI 305 and 306 for protecting and curing concrete during hot and cold weather.

K. Where wooden forms are used, wet forms immediately before concreting and keep moist by sprinkling until removed. Keep exposed surfaces of formed concrete moist until the appropriate curing method is applied.

L. Use proper concrete placing and curing methods at all times to limit the amount of hazing and cracking of the structures during initial setting and shrinking of the concrete. Repair all shrinkage cracks.

3.09 Removal of Forms

A. Removal of forms shall be in accordance with Section 03100, *Concrete Formwork*, Article 3.08, *Removal of Forms*, of these specifications.

3.10 Concrete Surface Repairs

A. Defective Concrete

1. Repair and patch defective areas when approved by the Engineer. Remove and replace concrete that cannot be repaired and patched to the Engineer's approval.

B. Patching Mortar

1. Mix dry-pack patching mortar, consisting of one part Portland cement to two and one half (2½) parts fine aggregate passing a No. 16 (1.18 mm) sieve, using only enough water for handling and placing.

C. Repairing Formed Surfaces

1. Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.

   a. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than ½-inch (13 mm) in any dimension in solid concrete, but not less than one (1) inch (25 mm) in depth. Make edges of cuts perpendicular to the concrete surface. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dried. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.

   b. Repair defects on surfaces exposed to view by blending white Portland cement and standard Portland cement so that, when dry, patching mortar will match the surrounding color. Patch a test area at inconspicuous locations to verify the mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than the surrounding surface.

c. Repair defects on concealed formed surfaces that affect the concrete's durability and structural performance as determined by the Engineer. If defects cannot be repaired, remove and replace the concrete.

D. Repairing Unformed Surfaces

1. Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas as specified. Test unformed surfaces sloped to drain for trueness of slope and smoothness by using a template having the required slope.

   a. Repair finished surfaces containing defects that affect the concrete's durability. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01-inch (0.25 mm) wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, spalling, popouts, honeycombs, rock pockets and other objectionable conditions.

   b. ***After the concrete has cured at least fourteen (14) days, correct all high areas by grinding***.

   c. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete. Proprietary underlayment compounds may be used when acceptable to the Engineer.

   d. Correct other low areas scheduled to remain exposed with a repair topping. Cut out low areas to ensure a minimum repair topping depth of ¼-inch (6 mm) to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer according to the manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.

E. Repair defective areas, except random cracks and single holes 1 inch (25 mm) or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least a ¾-inch (19-mm) clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of the same materials and mixture as the original concrete except without the coarse aggregate. Place, compact, and finish to blend with the adjacent finished concrete. Cure in the same manner as the adjacent concrete.

F. Repair random cracks and single holes one (1) inch (25 mm) or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply a bonding agent. Place patching mortar before the bonding agent has dried. Compact patching mortar and finish to match the adjacent concrete. Keep patched area continuously moist for at least seventy-two (72) hours.

G. Perform structural repairs of concrete, subject to Engineer's approval, using epoxy adhesive and patching mortar.

H. Repair materials and installation, not specified above may be used, subject to Engineer's approval.

3.11 Quality Control Testing During Construction

A. Testing

1. The Contractor will engage a qualified testing agency to perform field testing of the concrete and prepare test reports. These costs shall be borne by the Contractor.

2. Tests shall be in accordance with this Section and Section 01410, *Testing and Testing Laboratory Services*" and as specified herein.

3. ***The testing agency shall be approved by the Engineer and Owner***.

4. Any retesting due to unacceptable work or materials shall be at the Contractor's expense.

B. Inspections

1. Steel reinforcement placement.

2. Steel reinforcement welding.

3. Headed bolts and studs.

4. Verification of use of required design mixture.

5. Concrete placement, including conveying and depositing.

6. Curing procedures and maintenance of curing temperature.

C. Concrete Tests

1. Testing of composite samples of fresh concrete shall be performed according to the following requirements:

a. Sampling of Fresh Concrete

1) Sampling of fresh concrete shall be in accordance with ASTM C-172, except as modified for slump to comply with ASTM C-94.

b. Testing Frequency

1) Standard laboratory ***compressive test cylinders*** will be obtained by the laboratory when concrete is discharged at the point placing (i.e., discharge end of pumping equipment), and cylinders will be made and cured.

2) ***Obtain one (1) composite sample for each day's pour of each concrete mixture exceeding five (5) yd^3, but less than twenty-five (25) yd^3, plus one (1) set for each additional fifty 50 yd^3 or fraction thereof***.

3) Sampling and curing of concrete cylinders shall be in accordance with ASTM C-31.

c. Air Content

1) Air content of the concrete mixture will be tested on ***every*** truck in accordance one of the following methods, ***prior to depositing in the forms***:

a) Pressure Method: Per ASTM C-231

b) Volumetric Method: Per ASTM C-173

d. Slump

1) Slump tests shall be in accordance with ASTM C-143.

2) One (1) test shall be performed on each delivery truck of ready-mix concrete at the point of discharge, ***prior to depositing in the forms***.

3) The Contractor shall perform additional tests when the concrete consistency seems to have changed or as directed by the Engineer.

e. Concrete Temperature

1) The concrete temperature shall be taken in accordance with ASTM C-1064, “Standard Test Method For Temperature of Freshly Mixed Concrete”.

2) The temperature of the concrete mixture will be tested on ***every*** truck and one test for each set of compressive strength specimens. The temperature shall be tested ***prior to depositing the concrete in the forms***.

f. Compression Test Specimens

1) Tests shall be in conformance with ASTM C-31/C-31M.

2) Cast and laboratory cure two (2) sets of two (2) standard cylinder specimens for each composite sample.

3) Cast and field cure two (2) sets of two (2) standard cylinder specimens for each composite sample.

g. Compressive Strength Tests

1) Compressive Strength Tests shall comply with ASTM C-39/C-39M.

2) Test one set of two laboratory cured specimens at seven (7) days and one set of two specimens at twenty-eight (28) days.

3) Test one set of two field-cured specimens at seven (7) days and one set of two specimens at twenty-eight (28) days.

4) A compressive-strength test shall be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated.

h. ***When the strength of field-cured cylinders is less than eighty-five percent (85%) of companion laboratory-cured cylinders***, the Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.

i. The strength of each concrete mixture will be satisfactory if every average of any three (3) consecutive compressive-strength test results equal or exceed the specified compressive strength and no individual compressive-strength test result falls below the specified compressive strength by more than 500 psi (3.4 MPa).

j. ***Test results shall be reported, in writing, to the Engineer, ready-mix producer, and Contractor within twenty-four (24) hours of testing***. Reports of compressive-strength tests shall contain the Project identification name and number, date of concrete placement, name of concrete testing service, concrete type and class, location of concrete batch in the Work, design compressive strength at twenty-eight (28) days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both seven (7) and twenty-eight (28) day tests.

k. Nondestructive Testing

1) Impact hammer, sonoscope, or other nondestructive device may be permitted by the Engineer but will not be used as sole basis for approval or rejection of concrete.

l. Additional Tests

1) The testing agency shall make additional tests of concrete when test results indicate that specified concrete strengths and other characteristics have not been attained in the structure/work, as directed by Engineer.

2) The testing agency may conduct tests to determine the adequacy of concrete by cored cylinders complying with ASTM C-42/C-42M or by other methods as directed by the Engineer. These additional tests shall be at the Contractor's expense.

m. Additional testing and inspecting shall be at the Contractor's expense and shall be performed to determine compliance of replaced or additional work with the specified requirements.

n. The Contractor shall correct all deficiencies in the Work that test reports and inspections indicate does not comply with the Contract Documents, at no additional cost to the Owner.

3.12 Field Control

A. ***The Contractor shall advise the Engineer of his readiness to proceed at least twenty four (24) working hours prior to each concrete placement***. The Engineer will inspect the preparations for placement of the concrete including the preparation of previously placed concrete, the reinforcing, embedded items, waterstop and the alignment and tightness of formwork. No placement shall be made without the prior approval of the Engineer.

B. ***The Contractor's Superintendent shall submit a certification that indicates his preparedness to place concrete and is in accord with the Contract Drawings and Specifications***.

C. The Engineer may have cores taken from any questionable area in the concrete work such as construction joints and other locations as required for determination of concrete quality. The results of the test(s) on such cores shall be the basis for acceptance, rejection or determining the continuation of concrete work. The coring tests shall be incidental to the Contract.

D. The Contractor shall cooperate in obtaining cores by allowing free access to the Work and permitting the use of ladders, scaffolding and such incidental equipment as may be required. The Contractor shall repair all core holes at no additional cost to the Owner.

3.13 Failure to Meet the Requirements

A. Should the strengths shown by the test specimens made and testing in compliance with the previous provisions fall below the values given in Section 2.12(A)(9), the Engineer shall have the right to require changes in proportions outlined to apply on the remainder of the Work. Furthermore, the Engineer shall have the right to require additional curing on those portions of the structure represented by the test specimens which failed. The cost of such additional curing shall be at the Contractor's expense. In the event that such additional curing does not give the strength required, as evidenced by core and/or load tests, the Engineer shall have the right to require strengthening or replacement of those portions of the structure which fail to develop the required strength. The cost of all such core borings and/or load tests and any strengthening or concrete replacement required because strengths of test specimens are below that specified, shall be entirely at the expense of the Contractor. In cases of failure to meet strength requirements the Contractor shall adjust the concrete mix to meet contract requirements.

B. When the tests on control specimens of concrete fall below the required strength, the Engineer will permit check tests for strengths to be made by means of typical cores drilled from the structure in compliance with ASTM C-42 and C-39. In case of failure of the core, the Engineer, in addition to other recourses, may require, at the Contractor's expense, load tests on any one of the slabs, beams, piles, caps, and columns in which such concrete was used. ***The tests need not be made until the concrete has aged sixty (60) days***.

3.14 Miscellaneous Work

A. ***All bolts, anchors, miscellaneous metals or other sleeves and steel work required to be set in the concrete forms for attachment of masonry, structural, and mechanical equipment shall be set or installed under this Section***. The Contractor shall be fully responsible for the setting of such materials in the forms and shaft correct all such not installed in a proper location or manner at his own expense. The Contractor shall coordinate the activities of other trades for installation of these item.

B. Electric, instrumentation and controls conduits shall be installed in the concrete as required by the Contract Drawings and specified elsewhere in these Specifications. Outlet boxes and fixtures shall be located in reference to the final floor, wall or ceiling finish and shall be as secured that they will not be displaced by concrete placing.

C. Pipes or conduits, for embedment, other than those merely passing through shall not be larger in outside diameter than one-third the thickness of the slab, wall, or beam in which they are embedded, unless indicated on the Contract Drawings, nor shall they be spaced closer than three (3) diameters on center, nor so located as to unduly impair the strength of the construction. The Engineer shall approve the location of all conduits and fixtures.

D. Concrete foundations, supports and bases for all equipment and machinery shall be built to the equipment manufacturer's requirements, as approved by the Engineer, with anchor bolts installed.

E. Sealed Finish

1. Where indicated, apply three (3) coats of floor hardener and sealer in accordance with manufacturer's printed directions. Use the quantity recommended by the manufacturer.

2. The surface shall be clean and dry before hardener and sealer is applied. Upon completion, leave concrete surfaces clean and without discoloration or traces of excess sealer.

F. Watertightness of Concrete Structures

1. ***All concrete structures which will contain liquid or are located below groundwater level shall be leak-tested in accordance with Section 03800, "Leakage Testing of Hydraulic Structures", and made watertight***.

2. ***Repair all cracks and defects that allow leakage during the guarantee period at no additional cost to the Owner***.

3.15 Clean-Up

A. ***All concrete floor construction shall have the surfaces thoroughly scrubbed and cleaned with clear water***. Cleaning shall be done immediately before application of finish flooring or coating. After cleaning, the slabs shall be protected until they are accepted for floor finishing work.

B. ***Clean all surfaces affected by the Concrete Work***. No extraneous concrete or discoloration shall be left on any construction.

END OF SECTION

SECTION 03400

PRECAST CONCRETE STRUCTURES

1. GENERAL

1.01 Description

A. The work under this Section includes the design, casting, delivery and erection of precast concrete structures/manholes as indicated on the Contract Drawings.

B. Related Work Specified Elsewhere

Specification Section	Title
02075	Dewatering and Drainage
02220	Excavation, Backfilling and Compaction
03200	Concrete Reinforcement
03300	Cast-in-Place Concrete
07100	Waterproofing
09900	Painting
Contract Drawings and General Provisions of the Contract	

1.02 Quality Assurance

A. Standards

1. Unless otherwise indicated, all materials, workmanship and practices shall conform to the following standards:

STANDARD	DESCRIPTION
American Society for Testing and Materials (ASTM)	
ASTM C-33	Standard Specification for Concrete Aggregates
ASTM C-91	Standard Specification for Masonry Cement

STANDARD	DESCRIPTION
American Society for Testing and Materials (ASTM) - Cont'd	
ASTM C-150	Standard Specification for Portland Cement
ASTM C-230	Standard Specification for Grout and Mortar
ASTM C-330	Standard Specification for Lightweight Aggregates for Structural Concrete
ASTM C-478	Standard Specification for Precast Reinforced Concrete Manhole Sections
ASTM C-857	Standard Practice for Minimum Structural Design Loading for Underground Precast Concrete Utility Structures
ASTM C-858	Standard Specification for Underground Precast Concrete Utility Structures
ASTM C-890	Standard Practice for Minimum Structural Design Loading for Monolithic or Sectional Precast Concrete Water and Wastewater Structures
ASTM C-891	Standard Practice for Installation of Underground Precast Concrete Utility Structures
ASTM C-913	Standard Specification for Precast Concrete Water and Wastewater Structures
ASTM C-923	Resilient Connectors between Reinforced Concrete Manhole Structures and Pipes
ASTM C-1037	Standard Practice for Inspection of Underground Precast Concrete Utility Structures
American Concrete Institute (ACI)	
ACI 318	Building Code Requirements for Reinforced Concrete
Other Applicable Standards	
PCI MNL 116	Manual for Quality Control for Plants and Production of Precast Concrete Products
Building Codes	
	Florida Building Code

2. Plant Inspection

   a. ***Notify the Engineer seven (7) calendar days before the units are cast and seven (7) calendar days before shipment*** is made to the Project Site to provide for an inspection of the plant, if the Engineer so directs.

1.03 Submittals

A. Submit the following information to the Engineer for approval in accordance with Section 01300, *Shop Drawings, Submittals and Samples*. All submittals shall be in an electronic form (PDF).

B. The Contractor shall not begin fabrication of any precast concrete structures/manholes until the shop drawing submittal for each structure is approved by the Engineer.

C. Submit satisfactory evidence shall be submitted that plant and production methods of the precasting company meet the requirements of PCI MNL 116, *Manual for Quality Control for Plants and Production of Precast Concrete Products*.

D. Design Submittal

1. Submit the following:

a. Manufacturer's catalog data and design data on each precast concrete item.

b. Dimensions of structures, thicknesses of walls, floors and top slabs

c. Indicate all reinforcing steel and wire.

d. Show materials of construction by ASTM reference and grade.

e. ***Manufacturer's design calculations (including shear, moment, buoyancy, camber calculations, etc.) and certification signed and sealed by a professional structural engineer registered in the state of Florida*** that the structure design and construction comply with the specified design load conditions and the referenced specifications.

1) ***The design water table shall be assumed to be at the finished grade.***

E. ***Submit tabulated drawings and schedule showing the following***:

1. Plan and profile views of structure sections.

2. Plan showing locations and sizes of equipment access hatches, cover plates, grating, handrails and ladders and stairs, as appropriate to the Project.

3. Foundation plan, showing location and sizes of sumps, floor drains, pipe penetrations, pipe hangers and equipment anchors.

4. Sections or elevations showing locations and sizes of wall penetrations for pipes. Pipe penetrations shall meet the requirements of these specifications (Division 15).

5. Order of installation and closures.

6. Transportation handling and installation instructions.

F. ***Submit erection drawings and diagrams for each structure***. Submit calculations verifying the base anchor/foundation assemblies indicated in the drawings are adequate

to accommodate the project-specific structure reactions. Show column base anchor details and anchor bolt sizes. Show all wall bracing.

G. Submit the manufacturer's product data showing successful projects within the State of Florida over the past five (5) years of similar size.

H. Manufacturer's data sheets shall be submitted on the following:

1. Joint mastic and gaskets.
2. Pipe connections.
3. Grout material.
4. Protective coatings.
5. Hatches, access frames and covers.

1.04 Delivery, Storage and Handling

A. Use only qualified personnel, using proper equipment for transportation, handling and storage of the units.

B. Lifting and supporting shall be done only at points indicated on the shop drawings.

C. Before shipment, inspect precast components/units to make certain that materials and workmanship conform to the requirements of these specifications and the manufacturer's recommendations.

D. Transport precast components to the Project site so as to prevent damage to the structures/units.

E. ***Any damaged structures/units shall be shipped back*** to the precast manufacturer and new structures/units fabricated ***at no additional cost to the Owner***. Any lost time due to re-fabrication shall be at the Contractor's expense.

1.05 Qualified Manufacturer's

A. Qualified precast concrete structure manufacturers shall include, but are not limited to, the following:

1. Taylor Precast
2. Mack Concrete Industries
3. Oldcastle Precast, Inc.
4. Or approved equal

2. PRODUCTS

2.01 Materials and Fabrication

A. Precast Concrete Structures

1. Precast concrete structures (manholes, wet wells, valve vaults, meter vaults, etc.) shall consist of precast reinforced concrete sections with flat top sections and base sections conforming, in general, to the details shown on the Contract Drawings. Design loads shall consist of dead load, live load, impact, soil loads and loads due to water table, as well as other loads that may be imposed under the structure. The precast concrete structures shall be designed and manufactured in accordance with ASTM C-478, C-858, C-890, C-891 and C-913. The concrete thickness for the precast structures shall be determined by the precast manufacturer based on the requirements of this specification section, the referenced standards, the depth and size of structure required as shown on the Contract Drawings, soil loads, and the location of the groundwater table as identified in Article 1.03(D)(1)(e)(1). ***However, in no instance shall the minimum wall thicknesses shall be less than eight (8) inches***.

2. ***Provide a minimum wall thickness of eight (8) inches for manholes, pump stations and wet wells with an internal diameter up to seven (7) feet, a minimum of ten (10) inches for internal diameters of eight (8) to ten (10) feet and a minimum of twelve (12) inches for internal diameters greater than ten (10) feet***.

3. ***Hydrostatic calculations, structure base thickness design and flotation calculations shall be generated*** using a design high groundwater table elevation at the finished grade for each structure and assuming that structure is both void of water and any associated equipment and appurtenances.

4. ***All precast concrete structure shall be "watertight"***.

5. All precast concrete structures shall be ***designed to withstand an HS-20 live load in addition to the maximum soil and hydraulic pressure for the conditions of installation***.

6. Top slabs for pumping station wet wells may be precast or cast-in-place with flat top slabs. Steel reinforcing shall be as required to meet the requirements of this section and the referenced standards. ***Concrete for top slabs shall have a compressive strength of 5,000 psi at 28 days***. ***The thickness and reinforcement of concrete for the top slabs of wet wells and valve vaults shall be designed to withstand an HS-20 loading and shall be a minimum of twelve (12) inches thick***.

7. ***Cast the bottom slab of pumping stations monolithically with the lower wall section and extend the longitudinal reinforcement into the slab***.

8. Forms used for precast concrete shall be of metal and sufficiently designed and braced to maintain their alignment under pressures of the concrete during placing. The base and first section of the precast structure shall be an integral cast.

9. Aggregates

   a. All aggregates, fine and coarse, other than lightweight aggregate, shall conform to ASTM C-33.

   b. Lightweight aggregates, fine and coarse, shall conform to ASTM C-330.

   c. Aggregates shall be free of deleterious substances causing reactivity with oxidized hydrogen sulfide.

   d. Both types of aggregate shall be graded in a manner so as to produce a homogenous concrete mix.

   e. All materials are to be accurately weighed at a central batching facility for mixing.

10. Concrete

    a. The concrete for precast concrete structures shall be in conformance with ASTM C-150, Type II cement for structures exposed to water and Type I for all other structures.

    b. ***The minimum compressive strength of concrete used for precast concrete structures shall be 5,000 psi at 28 days*** (Class E, per Section 03300, *Cast-in-Place Concrete*).

    c. ***The maximum allowable absorption of the concrete shall not exceed eight percent (8%) of the dry weight***.

    d. Coat concrete and steel in contact with aluminum fabrications, aluminum grating, or other aluminum items with two (2) coats of a bituminous epoxy coating (12 mil minimum, each coat).

    e. The precast manufacturer may provide air entraining and water reducing concrete admixtures as specified in Section 03300, *Cast-in-Place Concrete*.

11. Reinforcement

a. Design reinforcement with a ***minimum protective cover of two (2) inches***.

b. Reinforcing steel shall be sufficiently tied to withstand any displacement during the pouring operation.

c. Reinforcing steel shall be ASTM A-615 Grade 60 deformed bar, ASTM A-82 wire, or ASTM A-185 welded wire fabric.

12. Castings

a. Wall pipes, access hatches, grating, frames and other miscellaneous items required shall be cast into the precast concrete structure at the appropriate elevation as indicated on the Contract Drawings.

b. ***Aluminum access hatches shall be provided for wet wells and valve vaults*** as indicated on the Contract Drawings. Aluminum access doors shall be as specified in these Contract Documents.

c. Covers and frames shall be machined to provide plane, smooth surfaces for uniform seating and interchangeability. Rings and covers that provide imperfect seating will be rejected.

d. Steps and ladders, if specified for installation on the Contract Drawings, shall be manufactured of non-corrosive materials and shall be provided and cast in place by the precast manufacturer.

13. Placing

a. All concrete shall be handled from the mixer or transport vehicle to the place of final deposit in a continuous manner, as rapidly as practicable, and with segregation or loss of ingredients, until the approved unit is completed.

b. ***The maximum elapsed time from batching to placement shall be two (2) hours***.

c. ***Concrete shall be placed in layers not over two (2) feet deep***. Each layer shall be compacted by mechanical internal or external vibrating equipment.

d. The duration of the vibration cycle shall be limited to the time necessary to produce satisfactory consolidation without causing objectionable segregation.

14. Curing

a. For purposes of early reuse of forms, precast concrete may be steam cured after an initial set has taken place. The steam temperature shall not exceed 160°F, and the temperature shall be raised from normal ambient temperatures at a rate not to exceed 40°F per hour.

b. The steam cured unit shall not be removed from the forms until sufficient strength is obtained for the unit to withstand any structural strain. To which it may be subjected during the form stripping operation. After the stripping of the forms, further curing by means of water spraying or a membrane curing compound may be used, and shall be of a clear or white type, conforming to ASTM C-309.

15. Joints

a. Joints shall be tongue and groove pipe ends sealed one (1) inch butyl rubber gaskets conforming to Federal Specifications No. SS-5-00210-A and AASHTO-198 and shall be compounded of 100% solids, or by a flexible preformed bitumastic sealing materials equal to Ram-Nek as manufactured by R.K. Snyder and Co., Houston, TX.

b. If rubber joint ring gaskets are used, interior and exterior voids in the pipe joints shall be sealed with the flexible sealing material specified above and installed in strict accordance with the manufacturer's printed instructions.

c. If sections are sealed with a flexible preformed bitumastic sealing material, adequate material shall be applied so that "squeeze out" occurs at the interior and exterior of the joint.

d. Rubber joint ring gaskets and flexible preformed bitumastic sealing material shall be provided by the wet well manufacturer.

e. ***All precast concrete structures shall be watertight***.

16. Sealing Compound and Grout

a. Butyl rubber sealing compound shall comply with ASTM C-990.

b. Plastic sealing compound shall comply with Federal Specification SS-S-00210.

c. Mortar shall comply with ASTM C-387, Type S, or use grout complying with Section 3600, *Grout*.

17. Crushed Rock for Precast Concrete Structure Base

    a. Crushed Rock shall be used for precast concrete structure bases. The rock for concrete structure bases shall be ¾-inch.

18. Eccentric precast concrete cone sections shall be manufactured of precast concrete with reinforcing and joints as specified above for straight riser sections.

19. ***Lifting holes through the structures are not permitted***. Equally spaced lifting lugs, rings or non-penetrating inserts shall be provided.

20. Inverts for pipelines shall be precast into the concrete structure or manhole base section by the manufacturer unless prior approval is obtained from the Engineer to construct inverts in the field. The drop from inlet to outlet shall be a minimum of one (1) inch unless approved by the Engineer. The channel height of the manhole invert shall match the crown of the exit sewer. Manhole benches shall be sloped a minimum of one (1) inch per foot from the outside periphery of the manhole to the edge of the invert channel.

21. Sump pumps, *where required in precast concrete structures*, shall be provided by the Contractor as part of the Project and shall be included in his Bid.

B. Pipe Connections

1. ***Pipe connections for wet wells and manholes shall be resilient, waterproof connections*** designed in accordance with ASTM C-923, *Resilient Connectors Between Reinforced Concrete Manhole Structures and Pipes*.

2. Resilient pipe connectors shall be either cast into the manhole wall or installed following casting in a cored section of the manhole wall. Resilient connectors shall either be a gasket type connector equal to the A-Lok pipe to manhole seal, a flexible neoprene boot with stainless steel clamps equal to the KOR-N-SEAL system as manufactured by the Dukor Corporation, or approved equal. All connectors shall be “chemically” resistant to the material entering the concrete structure.

3. When the pipe is installed in the resilient structure connector, ***the pipe shall be capable of a 2□ minimum deflection in any direction***.

4. ***Pipe connections for wall penetrations for meter and valve vaults shall be provided with wall sleeves and link seals***.

5. ***All locking rings or clamps used shall be Type 304 stainless steel***.

C. Standard Concrete Structure Frames and Covers

1. Cast iron frames and covers shall be provided for all concrete structures as indicated on the Contract Drawings.

2. Standard frames and covers shall be gray cast iron castings conforming to ASTM A48, Class 30B for Gray Iron Castings and shall be smooth, true to pattern, free from blow holes, sand holes, projections and other harmful defects.

3. ***Frames and covers shall be designed and manufactured for H20 (heavy truck traffic) live load***.

4. The seating surfaces of both the frame and cover shall be machined so that the cover will not rock after it has been seated. The cover shall be provided with a precisely machined dovetail groove with a neoprene O-ring gasket to provide a self-sealing cover. The gasket shall be glued in-place at the foundry.

5. The structure cover shall be solid with two non-penetrating pick holes. Frames and covers shall be coated on all non-machined surfaces with three (3) coats of a protective bituminous. Manhole frames and covers shall be U.S. Foundry and Manufacturing Corp., No. 170-E.

6. ***Covers shall be embossed with Owner information to be approved by the Engineer prior to foundry casting.***

7. Anchor Bolts

   a. Anchor bolts for bolting the frame to the precast concrete structure or manhole shall be ¾-inch diameter galvanized all thread steel rods with a five (5) inch hook for embedment in the precast manhole top.

   b. The bolts shall be of sufficient length to provide a minimum 2-inch thread projection through the flange of the structure or manhole frame. Two (2) anchor bolts shall be cast into the precast concrete structure or manhole top section or slab, positioned at 180°, at the time of manufacture.

   c. Frames shall be drilled to match the bolt setting prior to coating.

D. Coatings

1. Exterior surfaces of precast structures shall be coated with a primer coat and three (3) finish coats of a protective bituminous epoxy for a ***finished minimum dry film thickness of thirty (30) mils***.

2. Interior surfaces of the precast structures shall be coated with a primer coat and three (3) finish coats of protective bituminous epoxy coating, using alternating colors for each coat, for a ***finished minimum dry film thickness of thirty (30) mils***.

E. Before leaving the foundry, clean all castings and subject them to a hammer inspection.

F. Wetwell Liner - NOT USED

G. Parking Bumpers - NOT USED

H. Splash Pads - NOT USED

I. Concrete Sills and Copings - NOT USED

3. EXECUTION

3.01 Inspection and Tolerances of Individual Elements

A. Fabrication

1. ***Warped, cracked or broken precast concrete units shall not be used***. Use precast components with size and dimensions within the following tolerances at the time they are placed:

   a. Overall length of members: ± 1/8-inch per ten (10) feet.

   b. Cross-Sectional Thickness Dimensions

      1) Sections less than 3 inches: ± $^{1}/_{16}$ - inch

      2) 3 inches < Section ≤ 18 inches: ± 1/8- inch

      3) Sections > 18-inches: ± ¼ - inch

   c. Deviations from straight-line in Long Member: ± ¼-inch or less in 20 feet

B. Erection

1. The alignment of the precast concrete units shall be ± 1/8-inch per ten (10) feet, vertical and horizontal.

C. The following imperfections shall be considered injurious and cause for rejection:

1. *Cracked Unit*: A single crack in the wall of a precast unit, extending through the entire thickness, regardless of the length of such crack; a single crack which extends through one-fifth ($^1/_5$) of the wall thickness and is over three (3) inches long.

2. *Surface Imperfections*: Surface imperfections such as lumps, blisters, pits, or flakes on the interior surface.

3. *Broken Unit*: A precast concrete unit section with a piece broken from it.

D. ***Any damaged structures/units shall be shipped back*** to the precast manufacturer and new structures/units fabricated ***at no additional cost to the Owner***. ***Any lost time due to re-fabrication shall be at the Contractor's expense***.

3.02 Installation

A. The Contractor shall prepare an excavation large enough to accommodate the structure and permit sealing of openings, waterproofing, and backfilling operations. The earthwork shall conform to the applicable sections of Division 2, *Earthwork*.

B. Precast concrete structures shall be constructed in a workmanlike manner at the locations and dimensions indicated on the Contract Drawings. ***Precast structures shall be set on a foundation of crushed stone, a minimum of twenty-four (24) inches thick as specified herein.*** Crushed stone material shall be a well-graded crushed stone or crushed gravel meeting the requirements of ASTM C-33, Gradation No. 67 (¾-inch to No. 4 sieve). The crushed stone base material shall extend one (1) foot beyond the outside edge of the concrete structure. The precast structures shall be constructed such that the structure will not transmit dead or live loads to the piping. Care shall be taken to prevent earth and other material from entering the precast structures.

C. Fill all interior and exterior joints between precast sections with a joint sealant, as recommended by the precast structure manufacturer.

D. Installing Precast Sections

1. Set each precast concrete unit plumb on a bed of sealant to make a watertight joint at least ½-inch thick with the concrete base or with the preceding unit. Point the inside joint and wipe off the excess sealant.

2. Assemble units so that the cover conforms to the elevations shown on the Contract Drawings.

3. Pipe connections at precast structures shall be provided at the locations shown on the Contract Drawings. ***Connections shall be resilient and waterproof***.

4. All voids in interior and exterior manhole section joints and lift holes for manhole sections shall be filled with a non-shrinking, non-metallic grout. Grout shall be applied and cured in strict accordance with the manufacturer's recommendations. The grout shall be finished smooth and flush with the wall surface of the manhole.

E. Manhole Flow Channels and Bench Walls

1. Unless prior approval is obtained from the Engineer, manhole flow channels (inverts) and bench walls shall be precast into the manhole based section as specified above in Article 2.01(A)(20).

2. Upon prior approval from the Engineer, manhole inverts may be constructed in the field. Invert channel bottoms shall be smooth and semi-circular in shape conforming to the inside of adjacent sewer sections. Changes in direction of flow shall be made with a smooth curve of as large a radius as the size of the manhole will permit. Changes in the size and grade of the channels shall be made gradually and evenly to give a smooth uninterrupted flow pattern through the manhole. Channel height shall match the crown of the connection sewer pipe exiting the manhole.

3. Manhole bench walls shall be smooth and shall slope one (1) inch per foot from the edge of the invert channel to the precast manhole wall. Invert channels may be constructed by forming in concrete or by building up brick and mortar to form the manhole bench walls on each side of the channel, and plastering over bricks with cement mortar with a minimum thickness of ½-inch. Manhole invert construction shall only be performed by experienced and qualified workmen.

4. Bricks used to construct manhole invert channels and bench walls shall be standard size (2½" (H) x 4" (W) x 8" (L)) brick in conformance with ASTM C32, "Sewer and Manhole Brick (made from clay and shale)". Mixing shall be as follows: One (1) volume of Type II Portland Cement with three (3) volumes of sand and sufficient clean water to produce a rich mass of approved consistency. Mixing mortar on the ground or any paved surface shall not be permitted. Sand to be used in making mortar shall be clean, well-graded, and shall pass a No. 4 sieve.

F. Setting Frames and Covers

1. Unless otherwise indicated on the Contract Drawings, in unpaved areas the tops of concrete structures/manholes shall be set 0.20 feet above finished grade and the

tops of wet wells and valve vaults shall be set 0.50 feet above finished grade, unless otherwise indicated on the Contract Drawings. In paved areas, the top of the cover shall be flush with the paving surface.

2. The top of all precast concrete structures/manholes may be brought to the proper grade for receiving the precast concrete structure/manhole frame by using not more than three (3) courses of brick or precast concrete grade rings. Bricks and mortar used for manhole top adjustment shall be as specified above in Article 3.01(E)(4). Precast concrete grade rings shall be precast with steel reinforcement in conformance with ASTM C-478 and concrete with a compressive strength of 4,000 psi in twenty-eight (28) days. Precast concrete grade rings shall be manufactured in half annular shapes for ease of handling. The grade ring dimensions shall be two (2) inches thick with an annular width of eight (8) inches and an inside diameter of twenty-four (24) inches.

3. Masonry construction shall be performed by experienced and qualified workmen only. All work shall be laid plumb, straight, level, square and true. Brick shall be laid in full beds of mortar and shoved into place. All joints shall be full and not more than ½-inch in thickness. The Contractor shall set in place and bond in the masonry all necessary anchor bolts and miscellaneous items specified elsewhere. The masonry walls shall be plastered on the inside and outside with a ½-inch coat of Portland Cement mortar.

4. Following curing of any masonry construction required for structure top adjustment, set the frame in a bed of ¼-inch to ½-inch thick flexible bitumastic sealing material (Ram-Nek) and anchor in place with two ¾-inch diameter anchor bolts, which shall be securely embedded in the top of the manhole. Seal the flange of the structure ring to the top of the structure with cement mortar.

G. Install piping, equipment, access frames, covers, pump guide bars, etc., in accordance with the instructions and approved shop drawings furnished by the manufacturer and as shown on the Contract Drawings.

H. All openings for pipes and joints between concrete sections shall be sealed watertight.

I. The interior coating system, if called for, shall be applied following installation of the precast structures and any piping or equipment that will penetrate or attach to the walls. Surface preparation and application of the coating system shall be in strict accordance with the manufacturer's recommendations.

J. After the structure and all appurtenances are in place and approved by the Engineer and Owner, backfill shall be place to the original ground elevation or to the limits designated on the Contract Drawings. Backfill material shall consist of sand or loose earth, free from stones, clods, and other deleterious material. It shall be placed in

horizontal layers not exceeding twelve (12) inches in depth, and shall be moistened and thoroughly compacted to a minimum relative density according to the requirements of Division 2, *Earthwork*.

K. Where an HDPE liner has been specified, the liner shall be installed per the manufacturer's recommendations. Seams shall be heat fused at the factory where practical. All field welds shall be performed by a factory trained technician and be fully warrantied for a period of five (5) years.

L. Parking Blocks - NOT USED

M. Splash Pads - NOT USED

N. Concrete Sills and Copings - NOT USED

END OF SECTION

SECTION 03600

GROUT

1. GENERAL

1.01 Description

A. Provide all labor, materials, tools, manpower, and equipment and perform all grouting as specified hereinafter and as indicated on the Contract Drawings.

B. Related Work Described Elsewhere

Specification Section	Title
03300	Cast-in-Place Concrete
03400	Precast Concrete Structures
Division	**Description**
11	Equipment
Contract Drawings and General Provisions of the Contract	

1.02 Submittals

A. The Contractor shall submit manufacturers' literature for review on the following items in accordance with Section 01300, *Shop Drawings, Submittals and Samples*:

1. Non-shrink grout data and shall include grout properties, mixing, surface preparation, and installation instructions.

2. Portland Cement Grout

3. Mix design for all other types of grout.

All submittals shall be in an electronic format (PDF).

1.03 Quality Assurance

A. Standards

1. Unless otherwise indicated, all materials, workmanship and practices shall conform to the following standards:

STANDARD	DESCRIPTION
American Society for Testing and Materials (ASTM)	
ASTM C-33	Standard Specification for Concrete Aggregates
ASTM C-109	Standard Test Method for Compressive Strength of Hydraulic Cement Mortars
ASTM C-150	Standard Specification for Portland Cement
ASTM C-191	Standard Test Method for Time of Setting of Hydraulic Cement
ASTM C-1107	Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Non-shrink)
U.S. Army Corps of Engineers (COE)	
CRD-C-588	Standard Specification for Grout
CRD-C-621	Standard Specification for Grout
Building Codes	
	Florida Building Code

1.04 Product Delivery, Storage and Handling

A. Grouting materials shall be delivered and stored in unbroken containers with seals and labels intact as packaged by the manufacturer.

B. Prevent damage to or contamination of the grouting materials.

1. PRODUCTS

1.01 Materials

A. Portland Cement Grout

1. To be used for grouting CMU cells and similar items.

a. Grout Characteristics

1) Portland Cement: ASTM C-150, Type I

2) Sand: ASTM C-33, Fine Aggregate

3) Water: Potable

4) Pea Gravel: ASTM C-33; coarse aggregate, graded so that at least 90% passes a 3/8-inch sieve and 90% is retained by a No. 4 sieve.

2. Grout Mortar for use as fillets and leveling.

a. Grout Characteristics

1) Portland Cement: ASTM C-150, Type I

2) Sand: ASTM C-33, Mason's Sand

3) Water: Potable

4) Mix: One (1) part Portland cement to three (3) parts sand.

B. Non-Shrink Grout

1. Non-shrink grout shall conform to the Corps of Engineers Specification for Non-shrink Grout, CRD-C-588, CRD-C-621, ASTM C-1107 and to these specifications.

2. Use only a nongas-lubricating type, cement base, pre-mixed product requiring only the addition of water for the required consistency. Components shall be "inorganic".

3. Non-shrink grout for setting bearing plates for structural steel, machinery and other equipment shall be mixed as recommended by the manufacturer to give the necessary consistency for placing and to give a minimum compressive strength of 3,000 psi in three (3) days, and 6,800 psi in twenty-eight (28) days.

4. Subject to compliance with requirements, non-shrink grout shall be:

a. Master Flow 713, Master Builders, Co.

b. Euco N-S, Euclid Chemical Co.

c. Five Star Grout, Five Star Products, Inc.

d. Or equal.

C. Non-shrink, Metallic Grout

1. Master Builders Embeco 636 Grout, pre-mixed type, or equal.

D. Expansive Grout

1. Premixed, cementitious mixture with a minimum 28-day strength of 3,500 psi. Provide air entraining content as recommended by the manufacturer.

E. Epoxy Grout

1. Mix the two components of epoxy bonding compound in compliance with the manufacturer's instructions. Use sand that is oven dry and meets the following gradation requirements for epoxy grout:

Sieve Size	No. 8	No. 50	No. 100
% Passing	100	30 ± 15	5 ± 5

2. Sikadur 42 Grout-Pak, or equal, for grouting sleeves for anchor bolts, etc.

3. EXECUTION

3.01 Procedures

A. Installation methods and procedures shall be approved by the Engineer and shall be in accordance with the manufacturer's printed specifications before work is begun.

3.02 Preparation

A. Surface preparation shall be in accordance with the manufacturer's written instructions.

B. ***Remove defective concrete, laitance, dirt, oil, grease and other foreign material from the concrete surfaces to be grouted*** by bush-hammering, chipping, or other similar means, until a sound, clean concrete surface is achieved.

C. ***Lightly roughen the concrete***, but not enough to interfere with the proper placement of the grout. Cover concrete areas with a waterproof membrane until ready to grout. Immediately before grouting, remove the waterproof membranes and clean any contaminated surfaces.

D. ***Remove all foreign materials from metal surfaces in contact with grout***. Align, level and maintain final positioning of components to be grouted.

E. ***Saturate concrete surfaces with clean water***; remove excess water and leave none standing.

3.03 Placing of Grout

A. Non-shrink Grout

1. Non-shrink, non-metallic grout shall be used for grouting column base plates, concrete wall panel connections, anchor bolts, reinforcing bars, pipe sleeves, machinery supports and pump base plates. Use epoxy grout for anchor bolts, etc., where indicated on the Contract Drawings.

2. Non-shrink grout shall be mixed and placed as recommended by the manufacturer. After the grout has been mixed, do not add any more water for any reason.

3. Grout shall be mixed as close to the work area as possible and transported quickly to its final position in a manner that will not permit segregation of materials.

4. Place grout in accordance with the manufacturer's written instructions.

5. ***Place non-shrink grout quickly and continually by the most practical means*** permissible; pouring, pumping or under gravity pressure.

6. ***Apply grout from one side to avoid entrapping air***. The final grouting installation shall be thoroughly compacted and free from air pockets.

7. Do not vibrate the placed grout mixture or allow it to be placed if the area is being vibrated by nearby equipment.

8. Do not remove leveling shims for at least twenty (20) days after the grout has been placed. After shims have been removed, fill all voids with Portland cement grout.

9. After non-shrink grout has reached initial set, rake out exposed edges approximately one (1) inch into the grouted area and paint with Portland cement mortar.

3.04 Grouting Machinery Foundations

A. Block out the original concrete or finish off a sufficient distance below the bottom of the machinery base to provide for the thickness of grout shown on the Contract Drawings.

B. After the machinery has been set in position and wedged to the proper elevation by steel wedges, the space between the bottom of the machinery base and the original pour of concrete shall be filled with a pourable non-shrink grout.

C. Grout and grouting procedures shall be in accordance with API 610, Seventh Edition, Appendix L.

3.05 Curing

A. ***Non-shrink grout shall be cured with water saturated burlap for at least three (3) days or with Super Rez Seal cure and seal compound, or equal, applied immediately after grout placement***.

B. Machinery set on grout pads shall not be operated until the grout has cured for at least thirty-six (36) hours.

END OF SECTION

SECTION 03800

LEAKAGE TESTING OF HYDRAULIC STRUCTURES

1. GENERAL

1.01 Description

A. Description of Work

1. Hydrostatically test all concrete hydraulic structures, dichlorination chamber, that are intended to contain liquid to determine that they are watertight and free of detectable leaks as described herein.

2. PRODUCTS

2.01 General

A. Water: *Reclaimed Water (tertiary effluent after filtration and disinfection)*.

B. Piping: *As required to fill and empty structures*.

C. Equipment: *As required to fill and empty structures*.

3. EXECUTION

3.01 Inspection and Testing

A. ***Prior to testing, clean all exposed surfaces*** by thoroughly hosing and removing all surface laitance and loose matter from the walls, slabs and/or structures.

B. ***Remove wash water and debris from the structures*** by means other than washing through the plant piping.

C. ***Conduct testing before backfill is placed against walls and after all concrete has attained the specified compressive strength, the concrete has cured, and the joint sealants have set and cured a minimum of fourteen (14) days***. The Contractor shall use the form presented in Section 00965, *Concrete Tank - Hydraulic Test Form*.

D. ***Fill the hydraulic structure(s) to be subjected to leakage tests with water to the normal liquid level line***. ***Filling shall not exceed three (3) feet of water depth per day***, unless otherwise approved by the Engineer. Filling shall be at a uniform rate over a twenty-four (24) hour period with continuous monitoring. ***For structures with adjacent bays, fill all bays simultaneously***. Empty adjacent bays alternately. Repair any running leaks that appear during filling before continuing.

E. ***As required by the Project Engineer, seed the floor slab of each hydraulic structure with one bag of cement per 1,000 square feet of surface area***. Seeding shall take place after the test filling has reach eighteen (18) inches in depth. Detect leaks in construction and expansion joints with the aid of a diver, as required by the Engineer. Stir cementitious deposits on the floor. Observe cement deposits flowing toward leaks and repair where the defect is located.

F. ***After the structure has been kept full for forty-eight (48) hours, it will be assumed, for the purposes of the test, that the absorption of moisture by the concrete in the structure is complete***. Then, close all valves and gates to the structure and measure the change in water surface elevation each day for a five (5) day period.

G. During the test period, examine all exposed portions of the structure, and ***mark all visible leaks or damp spots***. Repair such leaks or damp spots after dewatering. ***If the drop in the water surface in a twenty-four (24) hour period exceeds 0.03 percent (0.03%) of the normal volume of liquid contained in the structure, the leakage will be considered excessive***.

H. ***Evaporation and precipitation rates shall be independently measured, by an Engineer-approved consultant, as part of the leakage test***. Subtract the water loss due to evaporation and add the water gain due to precipitation from the measured water elevation in the structure to determine the water loss due to leakage.

I. ***If the leakage is excessive, drain the structure, repair leaks and damp spots, refill the structure and again test for leakage***. Continue this process until the drop in water surface elevation in a twenty-four (24) hour period, with the structure full, ***is less than 0.03 percent (0.03%) of the normal volume of liquid in the structure.***

J. Repair any running or flowing leaks, whether leakage exceeds the allowable leakage rate or not.

K. Repairs and additional filling and testing (including the cost of the water) shall be made by the Contractor at no additional cost to the Owner.

L. Apply specified coatings only after acceptance of leakage testing by the Engineer and in accordance with the coating manufacturer's specific instructions.

3.02 Repair Methods

A. Repair concrete not passing the leakage test in conformance with the applicable provisions of Division 3, *Concrete*, and to the satisfaction of the Engineer and Owner.

END OF SECTION

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SECTION 05025

METAL MATERIALS, METHODS AND FASTENING

1. GENERAL

1.01 Description

A. This Section includes the basic materials and methods required for the work of Division 5, *Metals*.

B. Related work specified elsewhere includes:

Specification Section	Title
03300	Cast-in-Place Concrete
05140	Structural Aluminum
05500	Metal Fabrications
05510	Metal Stairs and Walkways
05520	Handrails and Accessories
05530	Grating, Plates and Frames
05570	Miscellaneous Metal Assemblies
09900	Painting
Contract Drawings and General Provisions of the Contract	

1.02 Quality Assurance

A. Standards

1. Unless otherwise indicated, all materials, workmanship and practices shall conform to the following standards:

Standard	Description
American Institute of Steel Construction (AISC)	
	Code of Standard Practice for Steel Buildings and Bridges
	Specification for the Design, Fabrication and Erection of Structural Steel for Buildings
Steel Structures Painting Council (SSPC)	
	Surface Preparation Specifications
American Society for Testing and Materials (ASTM)	
ASTM A-36	Standard Specification for Structural Steel
ASTM A-53	Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
ASTM A-123	Standard Specification for Zinc (Hot-Dipped Galvanized) Coatings on Iron and Steel Products
ASTM A-307	Standard Specification for Carbon Steel Externally Threaded Standard Fastener
ASTM A-325	Standard Specification for High Strength Bolts for Structural Steel Joints
ASTM A-500	Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes
ASTM A-501	Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing
American Welding Society (AWS)	
AWS A5.1	Specification for Carbon Steel Electrodes for Shielded Metal Arc Welding
AWS D1.1	Structural Welding Code - Steel
Building Codes	
	Florida Building Code
	Local Building Code

1.03 Submittals

A. Submit shop drawings in accordance with the General Conditions, Supplementary Conditions, and Section 01300, *Shop Drawings, Submittals and Samples*. All submittals shall be in an electronic format (PDF).

B. Submit manufacturer's catalog data for bolts, washers, and concrete anchors. Show dimensions and reference materials of construction by ASTM designation and grade.

C. Submit shop drawings detailing fabrication and erection of each metal fabrication item indicated. The shop drawings should include plans, elevations, sections, and details of metal fabrications and their connections. Show all anchorage and accessory items. Provide templates for all anchors and bolts specified for installation under other sections.

1.04 Delivery, Storage and Handling

A. Deliver all hardware (anchors, bolts, nuts, washers, eyebolts, etc.) to the Project Site in sufficient time to permit their timely installation. Provide proper setting drawings, templates, and directions for their installation. Store all hardware in the manufacturer's original, unopened, waterproof containers, properly labeled with the type of hardware, ASTM designation, and the location that the hardware is to be installed.

B. ***Store all structural metal members above the ground on platforms, skids or other supports***. Keep the material free from dirt, grease, and other foreign matter and protect from corrosion.

C. ***Cover all metalwork in protective polyethylene wrap to avoid exposure to the elements until the material is to be installed***.

1. PRODUCTS

1.01 Metal Surfaces - General

A. For metal fabrications exposed to view in the completed work, provide materials selected for their surface flatness, smoothness, and freedom from surface blemishes. Do not use materials with exposed pitting, seam marks, roller marks, rolled trade names, or roughness.

B. The Contractor, prior to the punchlist walkthrough, shall clean all metal surfaces and remove all dust, dirt, grease, foreign matter, construction markings, etc.

1.02 Steel

A. Steel plates, shapes and bars shall comply with ASTM A-36 / A-36M, unless otherwise specified.

B. Rolled Steel Floor Plates, if used, shall comply with ASTM A-786 / A-786M.

C. Steel tubing

1. Cold-Formed Steel Tubing: ASTM A-500, Grade B

2. Hot-Formed Steel Tubing: ASTM A-501.

a. For exterior installations and where indicated, provide tubing with hot-dip galvanized coating per ASTM A-53

D. Steel pipe

1. Steel pipe shall comply with ASTM A-53, standard weight (Schedule 40), unless otherwise indicated, or another weight required by structural loads.

a. Black finish, unless otherwise indicated.

b. Galvanized finish for exterior installations and where indicated.

E. Gray-Iron Casting shall comply with ASTM A-48, Class 30, unless otherwise indicated on the Contract Drawings.

F. Malleable-Iron Casings shall comply with ASTM A-47, Grade 3510 (ASTM A47M, Grade 22010).

G. Cast-in-Place Anchors shall be of corrosion resistant material capable of sustaining, without failure, the load imposed within a safety factor of 4.0, as determined by testing per ASTM E-488, conducted by a qualified independent testing agency.

H. Welding Rods and Bare Electrodes shall be selected according to AWS Specifications for the metal alloy to be welded.

I. Structural Steel Sheet shall be hot-rolled, ASTM A-570, or cold-rolled ASTM A611, Class 1; of the grade required for the design loading.

J. Galvanized Structural Steel Sheet shall comply with ASTM A-446, and be of the grade required for the design loading. Coating designation as indicated, or if not indicated, G-90.

K. Brackets, Flanges, and Anchors shall be cast or formed metal of the same type material and finish as the supported rails, unless otherwise indicated.

L. Concrete Inserts shall be of the threaded or wedge type, galvanized ferrous castings, either ASTM A-47 (ASTM A-47M) malleable iron or ASTM A-27 (A-27M) cast steel. Provide bolts, washers, and shims as required, hot-dip galvanized, ASTM A-153.

M. Galvanized sheet metal shall be commercial quality with 0.20 percent copper, ASTM A-525; G-90 hot-dip galvanized, mill phosphatized where indicated for painting; 24 gauge thickness except as otherwise indicated.

1.03 Stainless Steel

A. Stainless steel shall comply with ASTM A-167, Type 304 or 316, as specified herein and in the Contract Documents.

1.04 Aluminum

A. Aluminum for structural and rolled shapes shall be Aluminum Association alloy 6061-T6.

B. Aluminum for extruded shapes shall be Aluminum Association alloy 6063-T6.

C. Aluminum for pipe shall be Aluminum Association alloy 6063-T6.

D. Aluminum for castings shall be Aluminum Association alloy F-514, or approved equal.

1.05 Fasteners

A. ***Provide plated stainless steel fasteners*** complying with ASTM B-633, Class Fe/Zn 25 for electro-deposited zinc coating, ***for exterior use or where built into exterior walls***. Select fasteners for the type, grade, and class required.

B. Bolts and Nuts

1. Regular hexagon-head stainless steel bolts, ASTM A-307, Grade A (ASTM F-568, Property Class 4.6), with hex nuts, ASTM A-563 (ASTM A-563M), and, where indicated, stainless steel flat washers.

C. Stainless Steel Bolts

1. Stainless steel bolts shall be ASTM A-193, Grade B8M or ASTM F 593, Type 316, unless specified otherwise

2. Nuts shall be ASTM A 194, Grade 8M or ASTM F 594, Type 316. Use ASTM A 194 nuts with ASTM A 193 bolts; use ASTM F 594 nuts with ASTM F 593 bolts.

3. Provide washer for each nut and bolt head. Washers shall be of the same material as the nuts.

D. Machine Screws

1. Machine screws shall comply with ANSI B18.6.3.

E. Lag Bolts

1. Lag bolts shall comply with ANSI B18.2.1 (ANSI B18.2.3.8M).

F. Wood Screws

1. Wood screws shall be of the flat head type, Type 316 stainless steel, and shall comply with ANSI B18.6.1

G. Plain washers

1. Plain washers shall be round, Type 316 stainless steel, and shall comply with ANSI B18.22.1.

2. Washers for American Standard beams and channels shall be square or rectangular, tapered in thickness, smooth, hot-dipped galvanized, and conforming to ASTM F 436.

H. Lock Washers

1. Lock washers shall be of the helical, spring type, Type 316 stainless steel, and shall comply with ANSI B18.21.1.

I. Expansion Anchors

1. Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, ***a load equal to 6.0 times (6X) the load imposed when installed in unit masonry and equal to 4.0 times (4X) the load imposed when installed in concrete*** as determined by testing per ASTM E-488 conducted by a qualified independent testing agency.

   a. Stainless steel components, zinc plated to comply with ASTM B-633, Class Fe/Zn 5.

   b. Group 1 Alloy, Type 316 stainless steel bolts and nuts complying with ASTM F-593 (ASTM F-738M) and ASTM F-594 (ASTM F-836M).

J. Toggle Bolts

1. Toggle bolts shall be FS FF-B-588, tumble-wing type, Class and Style as required.

K. Beveled Washers

1. Washers for American Standard beams and channels shall be square or rectangular, tapered in thickness, smooth, and Type 316 stainless steel.

L. Drilled Anchors

1. Unless otherwise indicated on the Drawings, drilled anchors shall be Type 316 stainless steel wedge anchors as manufactured by Hilti, or approved equal.

2. Anchors shall have ICBO-approved testing.

M. Anchor Bolts

1. Anchor bolts and connection bolts for aluminum shall be Type 316 stainless steel.

2. Steel anchor bolts shall conform to ASTM F1554, Grade 36, galvanized.

N. Epoxy Anchors

1. Epoxy anchors shall be Type 316 stainless steel threaded rod adhesive anchors, unless specified otherwise.

2. Epoxy adhesive shall comply with ASTM C 881, Type IV, Grade 3, Class B or C.

3. Adhesive shall be Rawl Power-Fast, Hilti HSE 2421, Simpson Epoxy-tie with SET epoxy, Hilti HY-200, or equal.

4. Epoxy anchor assemblies shall be ICBO approved.

O. Embedded Eyebolts

1. Eyebolts shall be of the welded-eye or forged type, Type 316 stainless steel.

P. Threaded Carbon Steel Lifting Eyes

1. Threaded carbon steel lifting eyes shall comply with ASTM A-489, Type 1, Style B.

Q. Threaded Alloy Steely Eyebolts

1. Threaded alloy steel eyebolts shall comply with ASTM F-541 and ASME/ANSI B18.5, Type 1, long length.

1.06 Welding Electrodes

A. Filler metal for welding shall comply with AWS D1.1, Structural Welding Code.

1.07 Grout

A. Grout for bedding and grouting structural steel shall be non-shrink grout as specified in Section 03600, *Grout*.

1.08 Fabrication

A. General

1. Fabricate all metal parts to comply with the design indicated on the Contract Drawings. Make field measurements and prepare templates as required to ensure proper fit. Assemblies shall be fitted together in the shop and delivered to the site complete and ready for installation.

2. Form metal shapes with sharp lines and angles, and finish with smooth surfaces. Shearings and punchings shall be clean and true. In general, holes for bolts shall be drilled or reamed $^{1}/_{16}$-inch larger than the diameter of the bolt. Holes for anchor bolts shall be 1A times the anchor bolt diameter.

3. Metal thicknesses, assembly details, and supports shall provide ample strength and stiffness. Joints shall be designed to prevent trapping of moisture.

B. Shop Coatings

1. Prepare and shop prime ferrous metal in compliance with Section 09900, *Painting*. Do not shop prime stainless steel, aluminum, galvanized or plated metals, bronze, or machined bearing surfaces.

2. Anchors, sleeves, and metal parts built into masonry or concrete shall be stainless steel.

3. Castings for exterior exposure shall be cleaned and coated per Section 09900, *Painting*.

4. Hot-dip galvanizing for products fabricated from steel shapes, plates, bars, and strips shall comply with ASTM A-123. Hot-dip galvanizing for assembled steel products shall comply with ASTM A-386. Except for bolts and nuts for field assembly, galvanize all subassemblies immediately after fabrication. Hardware shall be galvanized in compliance with ASTM A-153.

5. Aluminum in direct contact with dissimilar metals, concrete, or masonry shall be covered with a neoprene gasket, non-absorptive insulating tape, or coated with a heavy-bodied bituminous paint. The method used must be approved by the Engineer prior to placement or application.

C. Fasteners and Connections

1. Provide fastening devices as required, as specified herein, and in compliance with the Drawings and shop drawings. Provide welded shop connections or concealed fastenings wherever practicable.

2. Power-driven fasteners shall be of the types and sizes recommended by the manufacturer for the particular application. Power-driven fasteners that will be exposed to view shall be set through a steel finishing disc. When set in concrete or masonry, the minimum penetration of power-driven fasteners shall be six (6) times the diameter of the shank.

3. ***Structural joints made using high strength bolts, hardened washers, and nuts*** tightened to a high bolt tension shall comply with the "Specification for Structural Joints Using ASTM A-325 or A-490 Bolts", issued by the Research Council on Riveted and Bolted Structural Joints of the Engineering Foundation.

4. Welded joints shall comply with AWS D1.1, Structural Welding Code, and AISC "Specification for the Design, Fabrication and Erection of Structural Steel for Buildings". All welds shall be made by operators who have been previously qualified as prescribed by AWS B3.0, Welding Procedure and Performance Qualification. All welds exposed to view shall be dressed smooth.

5. ***Anchor holes in concrete or masonry for grouted bolts shall be a minimum of 1½ times the bolt shank diameter***. Anchor holes in concrete and masonry for expansion type anchor bolts shall comply with the bolt manufacturer's recommendations.

6. Lock washers and nylock washers shall be provided to prevent nut loosening.

1.09 Templates, Leveling Plates, and Appurtenances

A. Provide all templates, leveling plates, and appurtenances required for the installation of metal work.

3. EXECUTION

3.01 Delivery, Storage and Handling of Materials

A. Delivery, storage and handling of all materials shall be in accordance with Article 1.04 of this Specification Section.

3.02 Galvanizing

A. Other than A325 bolts, zinc coating for bolts, anchor bolts, and threaded parts shall be in accordance with ASTM A 153.

3.03 Installing Connection Bolts

A. Use steel bolts to connect structural steel members. Use stainless steel bolts to connect structural aluminum members.

B. Install washers per AISC Specification for ASD.

C. Bolt holes in structural members shall be $^{1}/_{16}$-inch in diameter larger than bolt size. Measure cast-in-place bolt locations in the field before drilling companion holes in structural steel beam or assembly.

D. Slotted holes, if required in the Contract Documents, shall conform to AISC Specifications, Chapter J, Section J3, Table J3.1.

E. Drive bolts accurately into the holes without damaging the thread. Protect boltheads from damage during driving. Boltheads and nuts or washers shall rest squarely against the metal. Where bolts are to be used on beveled surfaces having slopes greater than 1 in 20 with a plane normal to the bolt axis, provide beveled washers to give full bearing to the head or nut. Where self-locking nuts are not furnished, bolt threads shall be upset to prevent the nuts from backing off.

F. Bolts shall be of the length that will extend entirely through but not more than ¼-inch beyond the nuts. Draw boltheads and nuts tight against the work. Tap boltheads with a hammer while the nut is being tightened.

3.04 Installing Anchor Bolts

A. Preset bolts and anchors by the use of templates. For mechanical equipment (pumps, compressors, and blowers), do not use concrete anchors set in holes drilled in the concrete after the concrete is placed.

B. For static items (storage tanks and heat exchangers), use preset anchor bolts or drilled anchors with ICBO report data.

C. After anchor bolts have been embedded, protect projecting threads by applying grease and having the nuts installed until the time of installation of the equipment or metalwork.

D. The ***minimum*** depth of embedment of drilled mechanical anchors shall be as recommended by the manufacturer, but no less than that shown on the Contract Drawings.

E. The ***minimum*** depth of embedment of epoxy anchors shall be as recommended by the manufacturer, but no less than that shown on the Contract Drawings.

F. Prepare holes for drilled and epoxy anchors in accordance with the anchor manufacturer's recommendations prior to installation.

3.05 Erection

A. Before starting work, verify locations and elevations of bearings and anchor bolts. Immediately report inaccuracies.

B. Work under this Section includes responsibility for accurate bearing of steel and correct location of anchorage.

C. Erection shall be in accordance with the requirements of the specified standards.

D. Weld field connections or bolt as indicated.

E. Bolting

1. As erection progresses, bolt up work to take care of all dead loads, construction live loads, lateral forces and erection stresses.

2. Unless otherwise noted, erection bolts used in welded construction may be either tightened securely and left in place or removed and the holes filled with plug welds.

3. Drift pins may be used for assembling parts provided the metal is not distorted or holes enlarged. Ream holes requiring enlargement to admit bolts. Misaligned holes will subject members to rejection.

4. Make all metal to metal connections by high strength bolting except where field welding is specifically shown. Provide not less than two ¾-inch bolts per connection and use not less than ¼-inch thick clip angles (Type 316 stainless steel).

5. Tighten bolted connections designated as beating-type connections to the snug tight condition. Where specified, tighten other bolted connections to full pretension by turn-of-nut or calibrated wrench tightening.

6. Perform cutting, drilling, and fitting required for installing miscellaneous metal fabrications. Set metal fabrication accurately in its proper location, alignment and elevation; with edges and surfaces level, plumb, true and free of rack; and measured from established lines and levels.

7. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop-welded because of shipping size limitations.

F. Welding

1. Field welding shall be done only where shown or specified and only be certified welders qualified for the procedures used. No welding shall be done when surfaces are wet, exposed to rain or wind, or when welders are exposed to inclement conditions that will hamper good workmanship.

2. Each certified welder shall be assigned an identification mark. This mark shall be made at each completed connection with a paint stick.

G. Temporary Bracing

1. Introduce, wherever necessary, temporary bracing to provide for all loads to which the structure is subjected including erection equipment and its operation.

2. Leave the temporary bracing in place until it is no longer required for safety.

3. Make proper provisions for construction loads, piles of materials, equipment, etc., carried by the structural frame during erection.

H. After erection, clean all fixed connections (bolts and welds) and the structural members and repair as necessary.

I. Preset bolts and anchors by the use of templates. For mechanical equipment (pumps, compressors, air compressors, etc.), do not use concrete anchors set in holes drilled in the concrete after the concrete is placed.

J. For static items (storage tanks and heat exchangers), use preset anchor bolts or drilled anchors.

K. After the anchor bolts have been embedded, protect their threads by applying grease and by having the nuts screwed on until the time of installation of the equipment or metalwork.

3.06 Inspection

A. The Engineer shall have free access to the Work. ***The Contractor shall notify the Engineer in writing four (4) days in advance of any welding or high strength bolting operations.***

B. High-strength bolting may be visually inspected. All high-strength bolts shall have the turned portion marked with reference to the metal being connected after the nut has been made snug and prior to final tightening. These marks shall be considered in the inspection. Rejected bolts shall be either replaced or retightened as required. In cases of disputed bolt installations, the bolts in question shall be checked by a calibrated wrench certified by an independent testing laboratory selected by the Engineer.

C. ***Field welding will be inspected visually by AWS certified welding inspectors*** provided by the Contractor. Magnetic particle testing or ultrasonic testing may be used in the inspection, if deemed necessary, by the welding inspector. A welding certification report shall be submitted to the Engineer based on the results of the welding inspection. The Contractor shall comply with all requests of inspector to correct deficiencies.

D. ***All costs for testing and inspection required as a result of defection work, repairs, or retests shall be paid for by the Contractor and are incidental to the Contract***.

E. ***Any material or workmanship which is rejected by the Engineer, either at the shop, mill or building must be promptly replaced by the Contractor to the Engineer's entire satisfaction, at no additional cost to the Owner***.

F. The fact that metal work has been accepted at the shop and mill shall not prevent its final rejection at the site, or even after it has been erected, if it is found to be defective in any way.

G. Any metal work rejected at the site shall be removed by the Contractor from the premises within ten (10) working days from the time the Contractor is notified of the rejection.

3.07 Field Quality Control

A. Erection Tolerances

1. ***Erect individual pieces so that the deviation from plumb, level and alignment shall not exceed 1:500.***

END OF SECTION

SECTION 05120

STRUCTURAL STEEL

1. GENERAL

1.01 Description

A. The work in this Section includes providing all labor, materials, equipment and incidentals necessary for fabrication and erection of structural steel, including framing members, support members, base plates, bearing plates, beams, columns and miscellaneous shapes and plates, bracing, welding, bolting, shimming and grouting required as shown on the Contract Drawings and specified herein.

B. Furnish anchor bolts with templates to be installed under Division 3, *Concrete*. Furnish and install nuts and washers for anchor bolts.

C. Install portions of masonry ties to be welded to structural steel as shown on the Contract Drawings and as specified herein.

D. Structural Steel is defined as elements of structural steel frame, as classified by AISC's "Code of Standard Practice for Steel Buildings and Bridges", that support design loads.

E. Related Work Specified Elsewhere

Specification Section	Title
01410	Testing and Laboratory Services
03300	Cast-in-Place Concrete
03600	Grout
04050	Masonry
05025	Metal Materials, Methods, and Fastening
05500	Metal Fabrications
05570	Miscellaneous Metal Assemblies
09900	Painting
Contract Drawings and General Provisions of the Contract	

1.02 Quality Assurance

A. Unless otherwise indicated, all materials, workmanship and practices shall conform to the following standards:

Standard	Description
American Institute of Steel Construction (AISC)	
	Code of Standard Practice for Steel Buildings and Bridges and Commentary
	Load and Resistance Factor Design Specification for Structural Steel Bldg's
	Specification for the Design of Steel Hollow Structural Sections
	Specification for Load and Resistance Factor Design of Single-Angle Members
	Specification for the Design, Fabrication and Erection of Structural Steel for Buildings and including the "Commentary" and "Supplements" thereto
Steel Structures Painting Council (SSPC)	
	Surface Preparation Specifications
American Society for Testing and Materials (ASTM)	
ASTM A-6	Standard Specification for General Requirements for Rolled Structural Steel Bars, Plates, Shapes, and Sheet Piling
ASTM A-36	Standard Specification for Structural Steel
ASTM A-53	Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
ASTM A-108	Standard Specification for Steel Bar, Carbon and Alloy, Cold-Finished
ASTM A-123	Standard Specification for Zinc (Hot-Dipped Galvanized) Coatings on Iron and Steel Products
ASTM A-153	Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
ASTM A-307	Standard Specification for Carbon Steel Externally Threaded Standard Fastener
ASTM A-325	Standard Specification for High Strength Bolts for Structural Steel Joints
ASTM A-436	Standard Specification for Austenitic Gray Iron Castings
ASTM A-490	Standard Specification for Structural Bolts, Alloy Steel, Heat Treated, 150 ksi Minimum Tensile Strength
ASTM A-500	Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes
ASTM A-501	Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing
ASTM A-563	Standard Specification for Carbon and Alloy Steel Nuts

Standard	Description
American Society for Testing and Materials (ASTM) - Cont'd	
ASTM A-568	Standard Specification for Steel, Sheet, Carbon, and High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, General Requirements for
ASTM A-572	Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel
ASTM A-847	Standard Specification for Cold-Formed Welded and Seamless High Strength, Low Alloy Structural Tubing with Improved Atmospheric Corrosion Resistance
ASTM C-1107	Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink)
American Welding Society (AWS)	
AWS A5.1	Specification for Carbon Steel Electrodes for Shielded Metal Arc Welding
AWS D1.1	Structural Welding Code - Steel
Other Standards and Building Codes	
	RCSC's "Spec. for Structural Joints using ASTM A-325 or A-490 Bolts"
	Florida Building Code

B. Any material or operation specified by reference to the published specification of a manufacturer shall comply with the requirements of the standards listed herein. In case of a conflict between the referenced specification and the Contract Documents, the Contract Documents shall govern

C. AISC Code of Standard Practice

1. Make the following modifications:

a. Delete Paragraph 3.3. and substitute the following: "All things which, in the opinion of the Contractor, appear to be deficiencies, omissions, contradictions or ambiguities in the Contract Documents shall be brought to the attention of the Engineer. The Contract Documents will be corrected or a written interpretation of the alleged deficiency, omission, contradiction or ambiguity will be made by the Engineer ***before*** the effected work proceeds."

b. Qualifications for Welding Work

1) Qualify welding processes and welding operators in accordance with the AWS "Standard Qualification Procedure".

2) Provide certification that welders to be employed in the work have satisfactorily passed AWS qualification tests within the previous twelve (12) months. If re-certification of welders is required, re-testing shall be the Contractor's responsibility.

c. Quality Control

1) The Contractor is responsible for all quality control. The Contractor shall be responsible to correct structural steel which does not conform to the specified requirements.

d. Quality Control Monitoring

1) The Contractor will monitor quality control by means of employing an testing agency to provide inspection, testing and reports as specified below:

a) High Strength Bolted Connections

(i) Inspect and test in accordance with AISC “Specification for Structural Joints”.

(ii) ***The Contractor is solely responsible to perform the work*** in accordance with the Contract Documents and all referenced standards and requirements. The Contractor shall promptly remove and replace materials or fabricated components which do not comply with requirements of the Contract Documents.

b) Design of Connections

(i) ***The Contractor is responsible for the design and adequacy of all connections*** that are not designed on the Contract Documents.

(ii) ***The Contractor shall retain a professional engineer*** registered in the state of Florida to design and be responsible for all connections not shown or only partially shown on the Contract Documents.

(iii) Design beam connections to support half of the allowable load on the beam, defined in the AISC Beam Tables as Wc/2L, or the reaction shown on the Contract Documents, whichever is greater.

c) Detailing of Members

(i) All details shown are typical, similar details apply to similar conditions, unless otherwise indicated. Verify dimensions at the Project site wherever possible without causing delay in the Work.

(ii) Promptly notify the Engineer whenever the design of members for any portion of the structure is not clearly indicated.

D. Installer Qualifications

1. A qualified installer who participates in the AISC Quality Certification Program and is designated an AISC-Certified Erector, Category CSE.

E. Fabricator Qualifications

1. A qualified fabricator who participates in the AISC Quality Certification Program and is designated an AISC-Certified Plant, Category Sbd.

F. Shop-Painting Applicators

1. Qualified according to AISC's Sophisticated Paint Endorsement P2 or SSPC-QP 3, "Standard Procedure for Evaluating Qualifications of Shop Painting Applicators".

G. Fabrication and erection shall be performed by a qualified fabricator and erector approved by the Engineer. Preparation of shop drawings shall not begin until the fabricator and erector have been approved.

1.03 Submittals

A. Submit shop drawings for the work in accordance with the General Conditions, Supplementary Conditions, and Section 01300, *Shop Drawings, Submittals and Samples.*

B. ***Complete shop drawings, including material lists, fabrication, schedules for fabrication and shop assembly, data for all structural steel, working drawings and erection drawings shall be submitted for review***. Drawings shall bear the seal of professional Engineer registered in the State of Florida. Approval will be for strength only and shall not relieve the Contractor of responsibility for proper fit of members, of connections not detailed on the Drawings, or for supplying all material required by the Contract Documents. Mark numbers painted on the shop assembled pieces of steel shall be the same mark numbers used on the detailed shop and erection drawings.

1. Include details of cuts, connections, splices, camber, holes and other pertinent data.

2. Include embedment drawings.

3. Indicate welds by standard AWS symbols, distinguishing between shop and field welds, and show size, length, and type of each weld.

4. Indicate type, size, and length of bolts, distinguishing between shop and field bolts. Identify pre-tensioned and slip-critical high-strength bolted connections.

5. Provide setting drawings, templates and directions for the installation of anchor bolts and other anchorages to be installed under other Section of Work.

6. Erection drawings and shop details shall clearly show the capacity of the connection.

7. The Engineer's review of Shop Drawings is for general conformance with design concepts only. Compliance with the requirements for materials, fabrication and erection of structural steel is the Contractor's responsibility.

C. Mill Test Reports

1. ***Certified mill test reports, signed by the manufacturer's*** certifying that the following products comply with the requirements:

a. Structural steel including chemical and physical properties.

b. Bolts, nuts and washers including mechanical properties and chemical analyses.

c. Non-shrink grout.

D. Certifications that welders are qualified, in accordance with AWS D1.1, on the shop and field welding procedures to be used.

E. Fabrication shall not be approved until the shop drawing submission has been approved.

1.04 Delivery, Storage and Handling

A. Deliver materials to the site at such time intervals to insure uninterrupted progress of the Work.

B. Deliver anchor bolts and other anchorage devices which are to be embedded in cast-in-place concrete or masonry, in sufficient time to permit their timely installation. Provide proper setting drawings, templates and directions for installation of these items.

C. Store materials to permit easy access for inspection and identification. Keep steel members above the ground and spaced by using pallets, platforms or other supports and spacers. Protect steel members and packaged materials from erosion and deterioration.

D. ***Store fasteners in a protected place***. Clean and relubricate bolts and nuts that become dry or rusty before use.

E. ***Do not store materials on the structure in a manner that may cause distortion, damage, or overload to members or supporting structures***.

F. Store all fasteners and welding electrodes in a weather-tight and dry place until ready for use.

G. Store packaged materials in their original containers.

H. Repair or replace damaged materials or structures as directed.

2. PRODUCTS

2.01 Materials

A. ***All steel shall be manufactured in the United States of America and shall meet all ASTM codes, standards and requirement***.

B. W-Shapes

1. ASTM A-572 / A-572M, Grade 50 (345).

C. Channels, Angles and Shapes

1. ASTM A-36 / A-36M.

D. Plate and Bar

1. ASTM A-36 / A-36M.

E. Cold-Formed Hollow Structural Sections

1. ASTM A-500, Grade B, structural tubing.

F. Corrosion Resisting Cold-Formed Hollow Structural Sections

1. ASTM A-847, structural tubing.

G. Steel Pipe Columns

1. ASTM A-53, Grade B.

H. Hollow Structural Stainless Steel Tubing

1. Hollow structural stainless steel tubing shall conform to ASTM A-554, Grade MT-316.

I. Stainless Steel Plate and Members

1. Except where otherwise specified, stainless steel shall be Type 316, ASTM A-24 0. Stainless steel pipe conform to ASTM A-312, Grade TP316.

2. Wrought stainless fittings shall conform to ASTM A-403, Class WP316.

J. Welding Electrodes

1. Welding electrodes for structural steel shall conform to AWS Requirements.

2. Welding electrodes for stainless steel shall conform to AWS Requirements. Use electrodes as follows:

Stainless Steel Material	Welding Electrode Material
Type 304	E-308
Type 304L	E-347
Type 316	E-316
Type 316L	E-318

K. Drilled-in Expansion Bolts

1. Drilled in expansion bolts shall be “Kwik Bolts” by Hilti; “Redhead Anchors” by ITT Phillips Drill Co.; WEJ-IT by WEJ-IT Corporation or approved equal.

2. Diameter and minimum capacity shall be as indicated on the Contract Drawings, or if not shown, ***the Contractor shall be responsible for the design and adequacy of all connections*** that are not designed on the Contract Documents.

3. ***A “minimum” safety factor of four (4) shall be provided***.

2.02 Bolts, Connectors and Anchors

A. High-Strength Bolts, Nuts, and Washers (HDZC)

1. ASTM A 325 (ASTM A 325M), Type 1, heavy hex steel structural bolts.
2. ASTM A 563 (ASTM A 563M) heavy hex carbon-steel nuts.
3. ASTM F 436 (ASTM F 436M) hardened carbon-steel washers.
4. Finish: Hot-dip zinc coating, ASTM A 153/A 153M, Class C.

B. High-Strength Bolts, Nuts, and Washers

1. ASTM A 490 (ASTM A 490M), Type 1, heavy hex steel structural bolts.
2. ASTM A 563 (ASTM A 563M) heavy hex carbon-steel nuts
3. ASTM F 436 (ASTM F 436M) hardened carbon-steel washers, plain.

C. Headed Anchor Rods

1. ASTM A-307, Grade A (ASTM F-568M, Property Class 4.6), straight.
   a. Nuts: ASTM A-563 (ASTM A-563M) heavy hex carbon steel.
   b. Plate Washers: ASTM A 36 / A-36M carbon steel.
   c. Washers: ASTM F-436 (ASTM F-436M) hardened carbon steel.
   d. Finish: Hot-dip zinc coating, ASTM A-153 / A-153M, Class C.

D. Clevises and Turnbuckles

1. ASTM A-108, Grade 1035, cold-finished carbon steel.

E. Eye Bolts and Nuts

1. ASTM A-108, Grade 1030, cold-finished carbon steel.

F. Sleeve Nuts

1. ASTM A-108, Grade 1018, cold-finished carbon steel.

2.03 Primer

A. SSPC-Paint 25, Type II, iron oxide, zinc oxide, raw linseed oil, and alkyd.

2.04 Non-Metallic, Shrinkage-Resistant Grout

A. The non-metallic, shrinkage-resistant grout shall comply with ASTM C-1107.

B. Factory-packaged, non-metallic aggregate grout, non-corrosive, non-staining, mixed with water to the consistency suitable for application and a thirty (30) minute working time.

C. Non-shrink grout shall be used under steel base plates and bearing plates.

D. All grouting shall be performed in accordance with the recommendations of ACI and the grout manufacturer's printed specifications and instructions for site preparation, product mixing and placing.

E. The minimum compressive strength of non-shrinking grout when tested in accordance with ASTM C-109, "Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. Cube Specimens)", shall be 7,000 psi after seven (7) days.

2.05 Fabrication

A. Fabrication shall be in accordance with the specified standards.

B. Splices not indicated on the Contract Drawings will not be permitted.

C. Fabricate and assemble structural steel in the shop to the greatest extent possible. Fabricate according to AISC's "Code of Standard Practice for Steel Buildings and Bridges", AISC's "Load and Resistance Factor Design Specification for Structural Steel Buildings" and the final "approved" shop drawings.

1. Camber structural steel members where indicated.

2. Identify high-strength structural steel according to ASTM A-6/ A-6M and maintain markings until the structural steel has been erected.

3. Properly mark and match-mark materials for field assembly. Fabricate for delivery sequence which will expedite erection and minimize field handling materials.

4. Ream unmatched holes in shop assembly of field connections. Reject and replace with new pieces any piece weakened by reaming to a point where the strength of the joint is impaired.

5. Complete structural steel assemblies, including welding of the units, before starting shop-priming operations.

6. Where shop painting is required, complete the assembly, including welding of units, before the start of finishing operations. Provide finish surfaces of members exposed in the final structure free of markings, burrs and other defects.

D. Thermal Cutting

1. Perform thermal cutting by machine to greatest extent possible.

2. Plane thermally cut edges to be welded to comply with requirements AWS D1.1.

E. Weld connections or bolt as indicated. Weld shop connections not otherwise shown. Eccentric connections are not permitted unless shown in detail on the structural Drawings. Bolted connections shall have a minimum of two (2) bolts.

F. Bolt Holes

1. Cut, drill or punch standard bolt holes perpendicular to the metal surfaces.

G. Finishing

1. Accurately finish the ends of columns and other members transmitting bearing loads.

H. Cleaning

1. Clean and prepare steel surfaces that are to remain unpainted according to SSPC-SP 1, "Solvent Cleaning".

I. Holes

1. Provide holes required for securing other work to structural steel and for passage of other work through steel framing members.

2. Cut, drill, or punch holes perpendicular to steel surfaces. Do not thermally cut bolt holes or enlarge holes by burning.

3. Base-Plate Holes: Cut, drill, mechanically thermal cut, or punch holes perpendicular to steel surfaces.

4. Weld threaded nuts to framing and other specialty items indicated to receive other work.

2.06 Shop Connections

A. Bolt field connections, except where welded connections or other connections are included on the Drawings. Provide high-strength threaded fasteners for all bolted connections.

B. High-Strength Bolts

1. Shop install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A-325 or A-490 Bolts" for the type of bolt and type of joint specified except that “X” type bearing connections shall not be used.

2. All bolts shall be tightened to the “snug-tight” condition in accordance with Supplement No. 1 of the AISC Code.

C. Weld Connections

1. Comply with AWS D1.1 for welding procedure specifications, tolerances, appearance, and quality of welds and for methods used in correcting welding work.

2. Remove backing bars or runoff tabs, back gouge, and grind steel smooth.

2.07 Shop Priming

A. Shop prime steel surfaces except the following:

1. Surfaces embedded in concrete or mortar. Extend priming of partially embedded members to a depth of two (2) inches (50 mm).

2. Surfaces to be field welded.

B. Surface Preparation

1. Clean surfaces to be painted. Remove loose rust and mill scale and spatter, slag, or flux deposits. Prepare surfaces according to the following specifications and standards:

   a. Steel Structures Painting Council (SSPC) SP 2, "Hand Tool Cleaning".

C. Priming

1. Immediately after surface preparation, apply primer according to the manufacturer's written instructions and at rate recommended by SSPC to provide a ***uniform dry film thickness of not less than 2.0 mils (0.051 mm)***. Use painting methods that result in full coverage of joints, corners, edges, and exposed surfaces.

2. ***Apply two (2) coats of shop paint to inaccessible surfaces*** after assembly or erection. Change color of second coat to distinguish it from the first coat.

D. Painting

1. Apply a one (1) coat, non-asphaltic primer complying with SSPC-PS Guide 7.00, "Painting System Guide 7.00: Guide for Selecting One-Coat Shop Painting Systems", to provide a ***dry film thickness of not less than 2.0 mils (0.051 mm)***.

2.08 Galvanizing

A. Hot-Dip Galvanized Finish

1. Apply a zinc coating by the hot-dip process to structural steel according to ASTM A-123 / A-123M.

2. Fill vent holes and grind smooth after galvanizing.

2.09 Source Quality Control

A. The Contractor will engage an independent testing and inspecting agency to perform shop tests and inspections and prepare test reports. Provide a testing agency with access to places where structural steel work is being fabricated or produced to perform tests and inspections.

B. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.

C. Bolted Connections

1. Shop-bolted connections will be tested and inspected according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts".

D. Welded Connections

1. In addition to visual inspection, shop-welded connections will be tested and inspected according to AWS D1.1 and the following inspection procedures, at testing agency's option:

   a. Ultrasonic Inspection: ASTM E-164, “Standard Practice for Ultrasonic Contact Examination of Weldments”.

   b. Radiographic Inspection: ASTM E-94, “Standard Guide for Radiographic Examination”.

3. EXECUTION

3.01 Examination

A. Verify elevations of concrete and masonry-bearing surfaces and locations of anchor rods, anchor bolts, bearing plates, and other embedments, with the steel erector present, for compliance with the requirements.

B. Examine the areas and conditions under which structural steel work is to be installed, and notify the Engineer, in writing, of conditions detrimental to the proper and timely completion of the Work.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 Storage of Materials

A. Store structural material, either plain or fabricated, above ground on platforms, skids, or other supports. Keep material free from dirt, grease, and other foreign matter and protect from corrosion.

3.03 Preparation

A. Prepare temporary shores, guys, braces and other supports during erection to keep structural steel secure, plumb, an in alignment against temporary construction loads and loads equal in intensity to the design loads.

B. Remove temporary supports when permanent structural steel, connections and bracing are in place, unless otherwise indicated.

C. All Work under this Section includes responsibility for accurate bearing of steel and correct location of anchorage.

3.04 Fabrication and Erection

A. ***Fabricate miscellaneous metal items to straight lines and true curves***. ***Drilling and punching shall not leave burrs or deformations. Continuously weld permanent connections along the entire area of contact***. Exposed work shall have a smooth finish with welds ground smooth. Joints shall have a close fit with corner joints coped or mitered and shall be in true alignment. Unless specifically indicated in the Contract Drawings, there shall be no bends, twists, or open joints in any finished member nor any projecting edges or corners at intersections. Conceal fastenings wherever possible. Built-up parts shall be free of warp. Exposed ends and edges of metal shall be slightly rounded.

B. ***Clean the surfaces of metalwork to be in contact with concrete of rust, dirt, grease, and other foreign substances before placing concrete***.

C. Set embedded metalwork accurately in position when concrete is placed and support rigidly to prevent displacement or undue vibration during or after the placement of concrete. Unless otherwise specified, where metalwork is to be installed in recesses in formed concrete, said recesses shall be made, metalwork installed, and recesses filled with dry-pack mortar in conformance with Section 03300, *Cast-in-Place Concrete*.

D. Set structural steel accurately in locations and to elevations indicated and according to AISC's "Code of Standard Practice for Steel Buildings and Bridges", and “Commentary” as modified herein; "Load and Resistance Factor Design Specification for Structural Steel Buildings”; and the requirements of all other specified standards.

E. <u>Base and Bearing Plates</u>

1. Clean concrete- and masonry-bearing surfaces of bond reducing materials, and roughen surfaces prior to setting base and bearing plates. Clean the bottom surface of base and bearing plates.

2. Set loose and attached base plates and bearing plates for structural members on wedges, shims, setting nuts or other adjusting devices. Tighten the anchor bolts after the supported members have been positioned and plumbed. Weld plate washers to the top of base plate.

3. Snug-tighten anchor rods after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of base or bearing plate before packing with grout.

4. Promptly pack grout solidly between bearing surfaces and base or bearing plates to ensure that no voids remain. Neatly finish exposed surfaces; protect installed materials and allow grout to cure. Comply with the manufacturer's written installation instructions for shrinkage resistant grouts.

F. Maintain erection tolerances of structural steel within AISC's "Code of Standard Practice for Steel Buildings and Bridges".

G. Set structural frames to the lines and elevations indicated. Align and adjust various members forming part of the complete frame or structure before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that will be in permanent contact with members. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.

1. ***Level and plumb individual members*** of the structure within specified AISC tolerances.

2. ***Make allowances for difference between the temperature*** at the time of erection and the mean temperature when the structure is completed and in service.

H. Bolting

1. Furnish anchor bolts and other connectors required for securing structural steel to foundations and other in place work.

2. Furnish templates and other devices, as necessary, for presetting bolts and other anchors to accurate locations.

3. As erection progresses, bolt up work to take care of all dead loads, construction live loads, lateral forces and erection stresses.

4. Unless otherwise noted, erection bolts used in welded construction may be either tightened securely and left in place or removed and the holes filled with plug welds.

5. Drift pins may be used for assembling parts provided the metal is not distorted or holes enlarged. Ream holes requiring enlargement to admit bolts. Misaligned holes will subject members to rejection.

6. Make all steel to steel connections by high strength bolting except where field welding is specifically shown. Provide not less than two ¾-inch bolts per connection and use not less than ¼-inch thick clip angles.

7. Tighten bolted connections designated as bearing-type connections to the snug tight condition. Where specified, tighten other bolted connections to full pretension by turn-of-nut or calibrated wrench tightening.

8. Install expansion bolts in strict accordance with the manufacturer's recommendations including spacing and edge distances.

I. Welding

1. Field welding shall be done only where shown or specified and only be welders qualified for the procedures used. No welding shall be done when surfaces are wet, exposed to rain or wind, or when welders are exposed to inclement conditions that will hamper good workmanship.

2. ***Each welder shall be assigned an identification mark***. This mark shall be made at each completed connection with a paint stick.

3. ***Perform welding on steel by the shielded metal arc welding (SMAW) process***. Welding shall conform to the AWS Structural Welding Code-Steel, D1.1-98, except as modified in AISC Section J2.

4. ***Perform welding on stainless steel by the gas tungsten arc (TIG) process***. All welds shall be full penetration and smooth unless otherwise indicated on the Contract Drawings. Provide inert gas on the inside of pipe during welding to reduce oxidation.

5. ***Provide a minimum of two (2) passes for metal in excess of $^{5}/_{16}$-inch thickness***.

6. Welds

   a. ***Produce welds, uniform in width and size***, throughout its length with each layer of weldment smooth; free of slag, cracks, pinholes, and undercuttings; and completely fused to the adjacent weld beads and base metal.

   b. Avoid irregular surface, non-uniform bead pattern, and high crown.

c. ***Form fillet welds of the indicated size of uniform height and fully penetrating***. Accomplish repair, chipping and grinding of welds in a manner that will not gouge, groove or reduce the base metal thickness.

J. Temporary Bracing

1. Provide temporary shoring and bracing members with connections of sufficient strength to bear imposed loads including erection equipment and its operation.

2. Leave in place until no longer required for safety.

3. Make proper provisions for construction loads, piles of materials, equipment, etc., carried by structural frame during erection.

4. Remove temporary members and connections when permanent members are in place and final connections made.

5. Provide temporary guy wires to achieve proper alignment of the structures as erection proceeds.

K. Provide temporary planking and working platforms as necessary to effectively complete the Work.

L. Comply with AISC Specifications for bearing, adequacy of temporary connections, alignment and the removal of paint on surfaces adjacent to welds.

M. Do not use gas cutting torches in the field for correcting fabrication errors in the structural framing. Cutting will be permitted only on secondary members which are not under stress only when approved by the Engineer. Finish gas-cut sections equal in accordance with the requirements of Section 3.2.2 of AWS D1.1 when permitted.

N. Splice members only where indicated.

O. No alterations will be performed in the field without the written approval of the Engineer.

3.05 Field Connections

A. High-Strength Bolts

1. Shop install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A-325 or A-490 Bolts" for the type of bolt and type of joint specified except that “X” type bearing connections shall not be used.

2. All bolts shall be tightened to the “snug-tight” condition in accordance with Supplement No. 1 of the AISC Code.

B. Weld Connections

1. Comply with AWS D1.1 for welding procedure specifications, tolerances, appearance, and quality of welds and for methods used in correcting welding work.

2. Comply with AISC's "Code of Standard Practice for Steel Buildings and Bridges" and "Load and Resistance Factor Design Specification for Structural Steel Buildings" for bearing, adequacy of temporary connections, alignment, and removal of paint on surfaces adjacent to field welds.

3. Remove backing bars or runoff tabs, back gouge, and grind steel smooth.

3.06 Field Quality Control

A. Testing Agency

1. The Contractor will engage a qualified independent testing and inspecting agency to inspect field welds and high-strength bolted connections.

B. Welded Connections

1. Field welds will be visually inspected according to AWS D1.1.

2. In addition to visual inspection, field welds will be tested according to AWS D1.1 and the following inspection procedures, at testing agency's option:

a. Ultrasonic Inspection: ASTM E-164, “Standard Practice for Ultrasonic Contact Examination of Weldments”.

b. Radiographic Inspection: ASTM E-94, “Standard Guide for Radiographic Examination”.

C. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents at no additional cost to the Owner.

D. ***Erect individual pieces so that the deviation from plumb, level and alignment shall not exceed 1:500***.

3.07 Repairs and Protection

A. ***Repair damaged galvanized coatings on galvanized items*** with galvanized repair paint according to ASTM A-780 and the manufacturer's written instructions.

B. Touch-up Painting

1. After installation, promptly clean, prepare, and prime or reprime field connections (bolts and welds), rust spots, and abraded surfaces of prime-painted joists and accessories, bearing plates, and abutting structural steel.

2. Clean and prepare surfaces by SSPC-SP 2 hand tool cleaning or SSPC-SP 3 power tool cleaning.

3. Apply a compatible primer of the same type as the shop primer used on adjacent surfaces.

4. Finish painting shall be as specified in Section 09900, *Painting*.

5. Zinc coating which has been burned by field welding, abraded, or otherwise damaged shall be cleaned and repaired after erection of the structural steel. The damaged area shall be thoroughly cleaned by wire brushing and all traces of welding flux and loose or cracked zinc coating removed prior to painting. The cleaned area shall be painted with two (2) coats of zinc oxide-zinc dust paint.

3.08 Inspection

A. The Engineer shall have free access to the Work. The Contractor shall notify the Engineer, in writing, four (4) days in advance of any welding or high strength bolting operations.

B. High-strength bolting may be visually inspected. All high-strength bolts shall have the turned portion marked with reference to the steel being connected after the nut has been made snug and prior to final tightening. These marks shall be considered in the inspection. Rejected bolts shall be either replaced or retightened as required.

In cases of disputed bolt installations, the bolts in question shall be checked by a calibrated wrench certified by an independent testing laboratory selected by the Owner.

C. ***All costs for testing and inspection required as a result of defection work, repairs, or retests shall be paid for by the Contractor***.

D. Any material or workmanship which is rejected by the Engineer either at the shop, mill or building must be promptly replaced by the Contractor to the Engineer's entire satisfaction.

E. The fact that steel work has been accepted at the shop and mill shall not prevent its final rejection at the site, or even after it has been erected, if it is found to be defective in any way.

F. ***Any steel work rejected at the site shall be removed by the Contractor from the premises within ten (10) working days from the time the Contractor is notified of the rejection***.

END OF SECTION

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SECTION 05140

STRUCTURAL ALUMINUM

1. GENERAL

1.01 Description

A. The work in this Section includes providing all labor, materials, equipment and incidentals necessary for fabrication and erection of structural aluminum, tubing, sheets, checkered plate, etc. as shown on the Contract Drawings and specified herein.

B. Related Work Specified Elsewhere

1. Related work specified elsewhere includes:

Specification Section	Title
01300	Shop Drawings, Submittals and Samples
03300	Cast-in-Place Concrete
03600	Grout
05025	Metal Materials, Methods, and Fastenings
05500	Metal Fabrications
05510	Metal Stairs and Walkways
05520	Handrails and Accessories
05570	Miscellaneous Metal Assemblies
Contract Drawings and General Provisions of the Contract	

1.02 Quality Assurance

A. Unless otherwise indicated, all materials, workmanship and practices shall conform to the following standards:

STANDARD	DESCRIPTION
American Society for Testing and Materials (ASTM)	
ASTM A-167	Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip
ASTM B-209	Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate
ASTM B-221	Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes
ASTM B-241	Standard Specification for Aluminum and Aluminum-Alloy Seamless Pipe and Seamless Extruded Tube
ASTM B-308	Standard Specification for Aluminum-Alloy 6061-T6 Standard Structural Profiles
Other Standards and Building Codes	
	OSHA
	Aluminum Construction Manual, latest edition, by the Aluminum Association
	Florida Building Code

B. Fabrication and erection shall be performed by a qualified fabricator and erector approved by the Engineer. Preparation of shop drawings shall not begin until the fabricator and erector have been approved.

C. Quality Control

1. ***The Contractor is responsible for all quality control***. The Contractor shall be responsible to correct structural aluminum which does not conform to the specified requirements.

D. Quality Control Monitoring

1. The Contractor will monitor quality control by means of employing an testing agency to provide inspection, testing and reports as specified below:

   a. High Strength Bolted Connections

      1) Inspect and test structural aluminum joints for compliance with referenced bolting connection industry standards for the proposed applications.

      2) ***The Contractor is solely responsible to perform the work in accordance with the Contract Documents and all referenced standards and requirements***. The Contractor shall promptly remove and replace materials or fabricated components which do not comply with requirements of the Contract Documents.

b. Design of Connections

1) ***The Contractor is responsible for the design and adequacy of all connections*** that are not designed on the Contract Documents.

2) ***The Contractor shall retain a professional engineer registered in the State of Florida to design and be responsible for all connections not shown or only partially shown on the Contract Documents***.

3) Design beam connections to support the allowable load on the beam, or the reaction shown on the Contract Documents, whichever is greater.

c. Detailing of Members

1) All details shown are typical, similar details apply to similar conditions, unless otherwise indicated. Verify dimensions at the Project site wherever possible without causing delay in the Work.

2) Promptly notify the Engineer whenever the design of members for any portion of the structure is not clearly indicated.

E. Fabrication and erection shall be performed by a qualified fabricator and erector approved by the Engineer. Preparation of shop drawings shall not begin until the fabricator and erector have been approved.

1.03 Submittals

A. Shop Drawings

1. Submit shop drawings for the work in accordance with the General Conditions, Supplementary Conditions, and Section 01300, *Shop Drawings, Submittals and Samples*. All submittals shall be in an electronic format (PDF).

2. Complete shop drawings, including material lists, fabrication and erection drawings shall be submitted for review. Complete shop drawings, including material lists, fabrication, schedules for fabrication and shop assembly, data for all structural aluminum, working drawings and erection drawings shall be submitted for review. Drawings shall bear the seal of professional Engineer registered in the State of Florida. Approval will be for strength only and shall not relieve the Contractor of responsibility for proper fit of members, of connections not detailed on the Drawings, or for supplying all material required by the Contract Documents. Mark numbers painted on the shop assembled pieces of aluminum shall be the same mark numbers used on the detailed shop and erection drawings.

a. Include details of cuts, connections, splices, camber, holes and other pertinent data.

b. Include embedment drawings.

c. Indicate welds by standard AWS symbols, distinguishing between shop and field welds, and show size, length, and type of each weld.

d. Indicate type, size, and length of bolts, distinguishing between shop and field bolts. Identify pre-tensioned and slip-critical high-strength bolted connections.

e. Provide setting drawings, templates and directions for the installation of anchor bolts and other anchorages to be installed under other Section of Work.

f. Erection drawings and shop details shall clearly show the capacity of the connection.

g. The Engineer's review of Shop Drawings is for general conformance with design concepts only. Compliance with the requirements for materials, fabrication and erection of structural aluminum is the Contractor's responsibility.

3. Fabrication shall not be approved until the shop drawing submission has been approved.

1.04 Delivery, Storage and Handling

A. Deliver materials to the site at such time intervals to insure uninterrupted progress of the Work.

B. Deliver anchor bolts and other anchorage devices which are to be embedded in cast-in-place concrete or masonry, in sufficient time to permit their timely installation. Provide proper setting drawings, templates and directions for installation of these items.

C. Store materials to permit easy access for inspection and identification***. Keep aluminum members above the ground and spaced by using pallets, platforms or other supports and spacers. Protect aluminum members and packaged materials from erosion and deterioration***.

D. Store fasteners in a protected place. Clean and relubricate bolts and nuts that become dry or rusty before use.

E. Do not store materials on the structure in a manner that may cause distortion, damage, or overload to members or supporting structures.

F. Store all fasteners and welding electrodes in a weather-tight and dry place until ready for use.

G. Store packaged materials in their original containers.

H. Repair or replace damaged materials or structures as directed.

2. PRODUCTS

2.01 Materials

A. Aluminum Sheet

1. Aluminum sheet shall conform to ASTM B-209, Alloy 3003, H 14 temper.

B. Structural Aluminum

1. Aluminum Structural members shall conform to ASTM B-308, Alloy 6063-T6.

2. Aluminum bars and rods shall conform to ASTM B-221, Alloy 6063-T6.

C. Aluminum Tubing

1. Aluminum seamless pipe and tubing shall conform to ASTM B-241, Alloy 6063-T6. Wall thickness shall be Schedule 80, per ANSI H35.2, unless otherwise shown on the Drawings.

D. Standard Threaded Fasteners

1. Fasteners shall be manufactured of stainless steel, shall comply with ASTM A-167, Type 316 and shall be in accordance with Section 05025, *Metal Materials, Methods and Fastening*.

E. Welding Electrodes

1. Welding electrodes for aluminum shall be ER 4043 filler metal.

F. Checkered Plate

1. ***All checkered plates shall be aluminum, mill finish, and designed for a live load of 150 pounds per square foot of the gross projected area and a 250 pound concentrated load***, with the limits for deflections as specified in Federal Specification RR-G-6610.

2. ***Aluminum checkered plates shall have a minimum thickness of** 3/8**-inch standard pattern "non-slip" plates of minimum** 3/8**-inch thickness and sizes*** shown on the Contract Drawings. Stiffener angles (aluminum) shall be provided as required to meet the superimposed live load requirements specified above. Stiffeners, if utilized, shall be concealed. All checkered plate sections shall be cut to the dimensions shown on the Contract Drawings. Flush type lifting handles shall be provided for each plate, unless otherwise noted on the Contract Drawings.

3. ***Plate shall be 6063-T6 alloy aluminum***. Raised lugs shall be diamond shaped and have an angled and opposed pattern.

4. Provide U-bolt lifting handles located on opposite ends on each removable section. Steel plates, including angle edgings, support angles, and lifting handles shall be Type 316 stainless steel.

2.02 Fabrication

A. Fabrication shall be in accordance with the specified standards.

B. Splices not indicated on the Contract Drawings will not be permitted.

C. Fabricate miscellaneous aluminum metal items to straight lines and true curves. Drilling and punching shall not leave burrs or deformations.

D. Surface Treatment is required only if indicated on the Contract Drawings.

3. EXECUTION

3.01 Examination

A. Verify elevations of concrete and masonry-bearing surfaces and locations of anchor rods, anchor bolts, bearing plates, and other embedments, with the aluminum erector present, for compliance with the requirements.

B. Examine the areas and conditions under which structural aluminum work is to be installed, and notify the Engineer, in writing, of conditions detrimental to the proper and timely completion of the Work.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 Preparation

A. Prepare temporary shores, guys, braces and other supports during erection to keep structural aluminum secure, plumb, an in alignment against temporary construction loads and loads equal in intensity to the design loads.

B. Remove temporary supports when permanent structural aluminum, connections and bracing are in place, unless otherwise indicated.

C. All Work under this Section includes responsibility for accurate bearing of aluminum and correct location of anchorage.

3.03 Erection

A. Erection shall be in accordance with the specified standards and as indicated on the Contract Drawings.

B. Base and Bearing Plates

1. Clean concrete and masonry-bearing surfaces of bond reducing materials, and roughen surfaces prior to setting base and bearing plates. Clean the bottom surface of base and bearing plates.

2. Set loose and attached base plates and bearing plates for structural members on wedges, shims, setting nuts or other adjusting devices. Tighten the anchor bolts after the supported members have been positioned and plumbed. Weld plate washers to the top of base plate.

3. Snug-tighten anchor rods after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of base or bearing plate before packing with grout.

4. Promptly pack grout solidly between bearing surfaces and base or bearing plates to ensure that no voids remain. Neatly finish exposed surfaces; protect installed materials and allow grout to cure. Comply with the manufacturer's written installation instructions for shrinkage resistant grouts.

C. ***Set structural frames to the lines and elevations indicated***. Align and adjust various members forming part of the complete frame or structure before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that will be in permanent contact with members. ***Perform necessary adjustments to compensate for discrepancies in elevations and alignment***.

1. ***Level and plumb individual members*** of the structure within specified tolerances.

2. ***Make allowances for difference between the temperature*** at the time of erection and the mean temperature when the structure is completed and in service.

D. Bolting

1. Furnish anchor bolts and other connectors required for securing structural aluminum to foundations and other in place work.

2. Furnish templates and other devices, as necessary, for presetting bolts and other anchors to accurate locations.

3. As erection progresses, bolt up work to take care of all dead loads, construction live loads, lateral forces and erection stresses.

4. Unless otherwise noted, erection bolts used in welded construction may be either tightened securely and left in place or removed and the holes filled with plug welds.

5. Drift pins may be used for assembling parts provided the metal is not distorted or holes enlarged. Ream holes requiring enlargement to admit bolts. Misaligned holes will subject members to rejection.

6. Make all aluminum to aluminum connections by high strength bolting except where field welding is specifically shown. Provide not less than two ¾-inch bolts per connection and use not less than ¼-inch thick clip angles.

7. Tighten bolted connections designated as bearing-type connections to the snug tight condition. Where specified, tighten other bolted connections to full pretension by turn-of-nut or calibrated wrench tightening.

8. Install expansion bolts in strict accordance with the manufacturer's recommendations including spacing and edge distances.

E. Maintain erection tolerances of structural aluminum within specified standard practices.

F. Welding

1. Welding on aluminum shall be performed by the Gas Metal Arc (MIG) or Gas Tungsten Arc (TIG) Process. Welding shall conform to the AWS Structural Welding Code - Aluminum, D1.2-90.

2. Provide a minimum of two (2) passes for metal in excess of $^{5}/_{16}$-inch.

3. Produce a weld uniform in width and size throughout its length with each layer of weldment smooth; free of slag, cracks, pinholes, and undercuttings; and completely fused to the adjacent weld beads and base material. Avoid irregular surface, non-uniform bead pattern, and high crown. Form fillet welds of the indicated size of uniform height and fully penetrating. Accomplish repair, chipping, and grinding of welds in a manner that will not gouge, groove, or reduce the base metal thickness.

G. Fabricate miscellaneous aluminum metal items to straight lines and true curves. Drilling and punching shall not leave burrs or deformations. Continuously weld permanent connections along the entire area of contact. Exposed work shall have a smooth finish with welds ground smooth. Joints shall have a close fit with corner joints coped or mitered and shall be true in alignment. Unless specifically indicated on the Drawings, there shall be no bends, twists, or open joints in any finished member nor any projecting edges or corners at intersections. Conceal fasteners wherever possible. Built-up parts shall be free from warp. Exposed ends and edges of metal shall be slightly rounded.

H. Clean the surfaces of aluminum metalwork to be in contact with concrete, rust, dirt, grease and other foreign substances before placing concrete.

I. Set embedded metalwork accurately in position when concrete is placed and support rigidly to prevent displacement or undue vibration during or after the placement of concrete. Unless otherwise specified, where metalwork is to be installed in recesses in formed concrete, said recesses shall be made, metalwork installed, and recesses filled with dry-pack mortar in conformance with Section 03600, *Grout*.

J. No painting is required.

3.04 Corrosion Protection of Aluminum Surfaces

A. ***Coat aluminum surfaces to be embedded or which will be in contact with concrete or masonry*** per Section 09900, *Painting*, before installation. Allow the coating to dry before the aluminum is placed in contact with the concrete.

B. ***Where the contact of dissimilar metals may cause electrolysis and where aluminum will come into contact with dissimilar metals, except stainless steel, keep the dissimilar metallic surfaces from direct contact by use of neoprene gaskets or washers***. Where aluminum will contact concrete, mortar or plaster, the contact surface of the metals shall be separated using not less than one (1) coat of zinc chromate primer and one (1) heavy coat of aluminum pigmented asphalt paint on each surface; or where deemed necessary by the Engineer, not less than one (1) course of asphalt saturated cotton fabric cemented to both metals with flashing cement, shall be used.

C. Finished works shall be cleaned and excess cement removed.

D. All work shall be adequately anchored in place at proper elevations, planes and locations. Allow the coating to dry before the aluminum is placed in contact with the concrete.

E. ***Where aluminum surfaces come in contact with dissimilar metals, keep the dissimilar metallic surfaces from direct contact by use of neoprene gaskets***.

END OF SECTION

SECTION 05500

METAL FABRICATIONS

1. GENERAL

1.01 Description

A. The work in this Section includes providing all labor, materials, equipment and incidentals necessary to install miscellaneous metals, shapes and sheets, metal items and fasteners not specified elsewhere in these Specifications.

B. Related Work Specified Elsewhere

Specification Section	Title
00700	General Conditions
01300	Shop Drawings, Submittals and Samples
03300	Cast-in-Place Concrete
03600	Grout
05025	Metal Materials, Methods and Fastening
05510	Metal Stairs and Walkways
05520	Handrails and Accessories
05570	Miscellaneous Metal Assemblies
09900	Painting
Division	**Information**
8	Doors and Windows
Contract Drawings and General Provisions of the Contract	

C. All materials, practices and workmanship shall conform to the Florida Building Code.

1.02 Submittals

A. Shop Drawings

1. Submit shop drawings for the work in accordance with the General Conditions, Supplementary Conditions, and Section 01300, *Shop Drawings, Submittals and Samples.*

2. Submit product data for non-slip aggregates and non-slip aggregate surface finishes, prefabricated building columns, cast nosings, treads and thresholds, steel floor plate, paint products, and grout.

3. ***The Contractor shall submit shop drawings detailing fabrication and erection of each metal fabrication indicated***. Include plans, elevations, sections, and details of metal fabrications and their connections. Show sizes of members, fastenings, supports, clearances, and anchorage and accessory items. Provide templates for anchors and bolts specified for installation under other Sections.

4. The Contractor shall provide samples representative of the materials and finished products as may be requested per Section 01300, *Shop Drawings, Submittals and Samples*.

5. The Contractor shall submit welder certificates, signed by the Contractor, certifying that the welders to be used on this Project comply with the requirements specified under Article 1.03 of this Specification Section ("*Quality Assurance*").

6. The Contractor shall submit Qualification data for firms and persons specified in Article 1.03 of this Specification Section ("*Quality Assurance*") to demonstrate their capabilities and experience. Include a list of completed projects with project names, addresses, names and addresses of engineer's, architect's and Owner's, and other information specified.

7. Shop drawings shall be approved by the Engineer before fabrication begins.

1.03 Quality Assurance

A. Fabricator Qualifications

1. Firm experienced in producing metal fabrications similar to those indicated for this Project with a record of successful in-service performance, and with sufficient production capacity to produce the required units without delaying the Work.

B. Welding Standards

1. Comply with, at a minimum, the applicable provisions of:

   a. AWS D1.1 "Structural Welding Code-Steel".

   b. AWS D1.2 "Structural Welding Code-Aluminum".

   c. AWS D1.3 "Structural Welding Code-Sheet Steel".

2. Certify that each welder has satisfactorily passed AWS qualification tests for welding processes involved and, if pertinent, has undergone re-certification.

C. Inserts and Anchorages

1. Furnish inserts and anchoring devices that must be set in concrete or built into masonry for installation of miscellaneous metal work. Provide setting drawings, templates, instructions, and directions for installation of anchorage devices. Coordinate delivery with other-work to avoid delay.

2. See Concrete and Masonry Sections (Divisions 3 and 4) of these Specifications for installation of inserts and anchorage devices.

D. Shop Assembly

1. Pre-assemble items in shop to the greatest extent possible to minimize field splicing and assembly.

2. Disassemble units, only as necessary, for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation.

1.04 Project Conditions

A. Where metal fabrications are indicated to fit walls and other construction, the Contractor shall verify dimensions by accurate field measurements before fabrication and indicate said measurements on the shop drawings.

B. Coordinate the fabrication schedule with the construction progress schedule to avoid delaying the Work.

C. Where field measurements cannot be made without delaying the work, guarantee dimensions and proceed with fabricating products without field measurements. Coordinate construction to ensure that actual dimensions correspond to guaranteed dimensions. Allow for trimming and fitting.

2. PRODUCTS

2.01 General

A. For metal fabrications exposed to view in the completed Work, provide materials with smooth, flat surfaces without blemishes. Do not use materials with exposed pitting, seam marks, roller marks, rolled trade names, or roughness.

2.02 Ferrous Metals

A. Miscellaneous steel plates, shapes, bars and connections shall conform to the requirements of ASTM A-36 / ASTM A-36M.

B. Rolled steel floor plates shall conform to the requirements of ASTM A-786 / ASTM A-786M.

C. Hot-Rolled Carbon Steel Bars (and Bar size shapes) shall conform to ASTM A-575, grade as selected by fabricator.

D. Hot-Rolled Carbon Steel Sheets and Strips shall conform to ASTM A-568 and ASTM A-569, pickled and oiled.

E. Cold-Rolled Carbon Steel Sheets shall conform to ASTM A-366.

F. Galvanized Carbon Steel Sheets shall conform to ASTM A-526 with 1.25 oz. *commercial* galvanizing per ASTM A-525.

G. Steel Tubing

1. Product type (manufacturing method) and as follows:

   a. Cold-formed Steel Tubing shall conform to the requirements of ASTM A-500.

   b. Hot-formed Steel Tubing shall conform to the requirements of ASTM A-501.

2. For exterior installations and where indicated, provide tubing with hot-dip galvanized coating per ASTM A-53.

H. Steel Pipe

1. Steel pipe shall comply with ASTM A-53, standard weight, Schedule 40, unless otherwise indicated, or another weight required by structural loads.

   a. Black finish unless otherwise indicated.

   b. Galvanized finish where indicated or directed by the Engineer.

I. Malleable-Iron Casting shall conform to ASTM A-47, Grade 32510 (ASTM A-47M, Grade 22010).

J. Masonry Anchorage Devices

1. Expansion shields as follows:

   a. Lead expansion shields for machine screws and bolts ¼-inch and smaller, head-out embedded nut type, single unit class.

   b. Lead expansion shields for machine screws and bolts larger than ¼-inch in size, head-out embedded nut type, multiple unit class.

K. Welding rods and bare electrodes shall be selected according to AWS specifications for the metal alloy to be welded.

2.03 Stainless Steel

A. Except where otherwise specified use Type 316, ASTM A-167 stainless steel plate, members, and hardware and washers.

B. Use ASTM A-193, Grade B8M bolts and ASTM A-194, Grade 8M nuts.

2.04 Structural Aluminum

A. The Contractor shall refer to the requirements of Section 05140, *Structural Aluminum*.

B. Aluminum Structural members shall conform to ASTM B-308, Alloy 6063-T6.

C. Aluminum bars and rods shall conform to ASTM B-221, Alloy 6063-T6.

D. Structural shapes and plates shall conform to ASTM B-241, Alloy 6063-T6.

E. Aluminum Extrusions shall conform to ASTM B-221 / ASTM B-221M, alloy 6063-T6.

F. Aluminum-alloy rolled tread plate shall conform to ASTM B-632 / ASTM B-632M, Pattern 1, alloy 6061-T6.

2.05 Cast-in-Place Anchors in Concrete

A. Unless otherwise indicated on the Drawings, use Type 316 stainless steel wedge anchors as manufactured by Phillips Drill Company or approved equal.

B. Where steel anchors are indicated, use a one-piece design with expander ring consisting of steel zinc coated and chrome plated as manufactured by McCullough Industries, Inc., Kwik Bolt, or approved equal.

C. ***Anchors shall be capable of sustaining, without failure, a load equal to four (4) times the design load imposed*** when installed in concrete, as determined by testing per ASTM E-488, conducted by a qualified independent testing agency.

2.06 Fasteners

A. General

1. Provide Type 316 stainless steel fasteners for exterior use and zinc-plated fasteners with electro-deposited zinc coating complying with ASTM B-633, Class Fe/Zn 25, unless specified otherwise, where built into exterior walls. Select fasteners for type, grade, and class required.

2. Bolts for securing equipment, above grade piping and aluminum structures shall be stainless steel.

B. Bolts and Nuts shall be regular hexagon-head bolts, ASTM A 325, Type I, heavy hex steel structural bolts and heavy hex carbon steel nuts.

C. Anchor Bolts shall comply with ASTM F-1554, Grade 36.

D. Machine Screws shall comply with ASME B18.6.3 (ASME B18.6.7M).

E. Lag bolts shall comply with ASME B18.2.1 (ASME B18.2.3.8M).

F. Toggle bolts shall comply with FS FF-B-588 and shall be of the tumble-wing type, class and style as required.

G. Wood screws shall be of the flathead, carbon steel type and shall comply with ASME B18.6.1.

H. Plain washers shall be of the round, carbon steel type and shall comply with ASME B18.22.1 (ASME B18.22M).

I. Lock washers shall be of the helical, carbon steel, spring type and shall comply with ASME B18.21.1 (ASME B18.21.2M).

J. Expansion Anchors

1. Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, ***a load equal to six (6) times the load imposed when installed in unit masonry***, as determined by testing per ASTM E-488, conducted by a qualified independent testing agency.

a. Material for Anchors in Exterior Locations shall be Alloy Group 1 (A1) stainless steel bolts complying with ASTM F-593 (F-738M) and nuts complying with ASTM F-594 (ASTM F-836M).

b. Material for Anchors in Interior Locations shall be carbon steel components, zinc-plated, to comply with ASTM B-633, Class Fe/Zn 5.

2.07 Paint

A. Shop Primer for Ferrous Metal

1. Organic zinc-rich primer, complying with SSPC - Paint 20 and compatible with topcoat.

2. The Contractor is also referred to Section 09900, *Painting*.

3. Products

a. Subject to compliance with requirements, provide one of the following:

1) Carboline 621; Carboline Company.

2) Aquapon Zinc-Rich Primer 97-670; PPG Industries, Inc.

3) Tneme-Zinc 90-97; Tnemec Company, Inc.

4) Or approved equal.

B. Galvanizing Repair Paint

1. High-zinc-dust content paint for regalvanizing welds in galvanizing steel, with a dry film containing not less than ninety-four percent (94%) zinc dust by weight, and complying with DOD-P-21035 or SSPC-Paint 20.

C. Bituminous Paint

1. Cold-applied asphaltic mastic complying with SSPC-Paint 12, except containing no asbestos fibers.

2.08 Grout

A. Grout shall be of the non-shrink, non-metallic type and shall be factory-packaged, non-staining, non-corrosive, non-gaseous and comply with ASTM C-1107.

B. Provide grout specifically recommended by the manufacturer for interior and exterior applications.

2.09 Galvanizing

A. Galvanizing shall comply with ASTM A-153 for galvanizing iron and steel hardware.

B. Galvanizing shall comply with ASTM A-123 for galvanizing rolled, pressed and forged steel shapes, plates, bars and strip c-inch thick and heavier.

C. Galvanizing shall comply with ASTM A-386 for galvanizing assembled steel products.

2.10 Fabrication - General

A. Shop Assembly

1. ***Preassemble items in the shop to the greatest extent possible*** to minimize field splicing and assembly.

2. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.

B. Form metal fabrications from materials of the size, thickness and shapes indicated but not less than that needed to comply with the performance requirements indicated. Work to the dimensions indicated or accepted on shop drawings, using proven details of fabrication and support. Use the type of materials indicated or specified for various components of each metal fabrication.

C. Form exposed work true to line and level with accurate angles and surfaces and straight sharp edges.

D. ***Allow for thermal movement*** resulting from the following maximum change (range) in ambient temperature in the design, fabrication and installation of installed metal assemblies to prevent buckling, opening up of joints, and overstressing of welds and fasteners. Base design calculations on actual surface temperatures of metals due to both solar heat gain and nighttime sky heat loss:

1. Temperature Change: 100□F (55.5□C)

E. Shear and punch metals cleanly and accurately. Remove burrs.

F. Ease exposed edges to a radius of approximately $^{1}/_{32}$-inch (0.8 mm), unless otherwise indicated. Form bent-metal corners to the smallest radius possible without causing grain separation or otherwise impairing the Work.

G. Remove sharp or rough areas on exposed traffic surfaces.

H. Weld corners and seams continuously to comply with the following:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.

2. Obtain fusion without undercut or overlap.

3. Remove welding flux immediately.

4. At exposed connections, finish exposed welds and surfaces smooth and blended so that no roughness shows after finishing, and contour of welded surface matches those adjacent.

I. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners where possible. Use exposed fasteners of the type indicated or, if not indicated, Phillips flat-head (countersunk) screws or bolts. Locate joints where least conspicuous.

J. Provide for anchorage of the type indicated and coordinate with supporting structure. Fabricate and space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.

K. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.

L. Fabricate joints that will be exposed to weather in a manner to exclude water, or provide weep holes where water may accumulate.

2.11 Loose Bearing and Leveling Plates

A. Provide loose bearing and leveling plates for steel items bearing on masonry or concrete construction, made flat, free from warps or twists, and of the required thickness and bearing area.

B. Drill plates to receive anchor bolts and for grouting as required. Galvanize after fabrication.

2.12 Loose Steel Lintels

A. Fabricate loose structural steel lintels from steel angles and shapes of size indicated for openings and recesses in masonry walls and partitions at locations indicated.

B. Weld adjoining members together to form a single unit where indicated.

C. Size loose lintels for equal bearing of one (1) inch per foot (85 mm per m) of clear span but not less than eight (8) inches (200 mm) bearing at each side of openings, unless otherwise indicated. The minimum size shall be 5" x 3½" x $^{5}/_{16}$" for each four (4) inch thickness of masonry supported.

D. Galvanize loose steel lintels located in exterior walls.

2.13 Shelf and Relieving Angles

A. Fabricate shelf and relieving angles from steel angles of the sizes indicated and for attachment to concrete framing. Provide slotted holes to receive ¾-inch (19mm) bolts, spaced not more than six (6) inches (150 mm) from ends and not more than twenty-four (24) inches (600 mm) on-center, unless otherwise indicated.

B. For cavity walls, provide vertical channel brackets to support shelf/relieving angles from back-up masonry and concrete. Align expansion joints in angles with indicated control and expansion joints in cavity wall exterior wythe.

C. Galvanize shelf angles to be installed on exterior concrete framing.

D. Furnish wedge-type concrete inserts, complete with fasteners, to attach shelf angles to cast-in-place concrete.

2.14 Miscellaneous Framing and Supports

A. Provide steel framing and supports for applications indicated that are not a part of structural steel framework as required to complete the Work.

B. Fabricate units to sizes, shapes, and profiles indicated and required to receive other adjacent construction retained by framing and supports. Fabricate from structural steel shapes, plates, and steel bars of welded construction using mitered joints for field connection. Cut, drill, and tap units to receive hardware, hangers, and similar items.

C. Equip units with integrally welded anchors for casting into concrete or building into masonry. Furnish inserts if units must be installed after concrete is placed. Except as otherwise indicated, space anchors twenty-four (24) inches (600 mm) on-center and provide minimum anchor units in the form of steel straps 1¼ inches (32 mm) wide by ¼-inch (6 mm) thick by eight (8) inches (200 mm) long.

D. Galvanize miscellaneous framing and supports in the following locations:

1. Exterior locations.

2. Interior locations, where indicated.

2.15 Miscellaneous Steel Trim

A. Unless otherwise indicated, fabricate units from structural steel shapes, plates, and bars of profiles shown with continuously welded joints, and smooth exposed edges. Miter corners and use concealed field splices wherever possible.

B. Provide cutouts, fittings, and anchorages as required to coordinate assembly and installation with other Work. Provide anchors, welded to trim, for embedding in concrete or masonry construction, spaced not more than six (6) inches (150 mm) from each end, six (6) inches (150 mm) from corners, and twenty-four (24) inches (600 mm) on-center, unless otherwise indicated.

C. Galvanize miscellaneous steel trim in the following locations:

1. Exterior locations.

2. Interior locations, where indicated.

2.16 Floor Plate

A. Fabricate raised-pattern floor plates from rolled-steel floor plate or aluminum (location and material as indicated on the Contract Drawings) of the thickness and in the pattern indicated below:

1. Thickness: 3/8-inch, minimum

2. Pattern: As selected from manufacturer's standard patterns.

2.17 Bollards (Truck Guards)

A. Provide truck guards (bollards) and covers where indicated on the Contract Drawings.

B. ***The bollards shall be 7-inch (galvanized) standard weight steel pipe*** as specified in ASTM A-53.

C. Anchor posts in concrete as indicated and fill solidly with Class B (3,000 psi) concrete conforming to Section 03300, *Cast-in-Place Concrete*.

D. Bollard Covers

1. ***The bollard cover (post sleeve) shall be of the blow molded type, constructed from 1/8-inch thick High Density Polyethylene (HDPE) for weather resistant durability and long service life***.

2. ***The bollard covers shall have a bright "safety yellow" color with UV stabilizers for protection from the sun and dual 3M "red" reflective-tape bands*** shall be integrally provided for enhanced visibility for day and night protection.

3. The bollard covers shall be as manufactured by Thermoprene, Inc., or equal.

2.18 Abrasive Metal Nosings, Treads and Thresholds

A. Abrasive stair nosings shall be provided for all concrete stairs.

B. ***Nosings shall extend the full width of the stair***.

C. Cast-Metal Units shall be ***cast aluminum***, with an integral abrasive finish consisting of aluminum oxide, silicon carbide, or a combination of both. Fabricate units in sizes and configurations indicated and in lengths necessary to accurately fit openings or conditions.

D. ***Nosings shall be cross-hatched units, three (3) inches (75 mm) wide safety groove treads with a one (1) inch (25 mm) lip, for casting into concrete steps***. The nosings shall Type 46 aluminum as manufactured by one of the following manufacturers:

1. American Safety Tread Co., Inc.
2. Wooster Products, Inc.
3. Balco, Inc.
4. Barry Pattern & Foundry Co., Inc.
5. Safe-T-Metal Co.
6. Or approved equal.

E. Provide anchors for embedding units in concrete, as standard with manufacturer.

F. Apply bituminous paint to concealed bottoms, sides, and edges of cast-metal units set into concrete.

2.19 Finishes - General

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations relative to applying and designating finishes.

B. Finish metal fabrications after assembly.

2.20 Steel and Iron Finishes

A. Galvanizing

1. For those items indicated for galvanizing, apply zinc coating by the hot-dip process complying with the following requirements:

   a. ASTM A-153 / A-153M, for galvanizing iron and steel hardware.

   b. ASTM A-123 for galvanizing both fabricated and unfabricated iron and steel products made of uncoated rolled, pressed, and forged shapes, plates, bars, and strip, 0.0299-inch (0.76 mm) thick or thicker.

B. Preparation for Shop Priming

1. Prepare uncoated ferrous metal surfaces to comply with the minimum requirements indicated below for SSPC surface preparation specifications and environmental exposure conditions of installed metal fabrications:

a. Exteriors (SSPC Zone 1 B): SSPC-SP 6/NACE No. 3 "Commercial Blast Cleaning."

b. Interiors (SSPC Zone 1A): SSPC-SP 3 "Power Tool Cleaning."

C. Apply shop primer to uncoated surfaces of metal fabrications, except those with galvanized finishes and those to be embedded in concrete, sprayed-on fireproofing, or masonry, unless otherwise indicated. Comply with requirements of SSPC-PA 1, "Paint Application Specification No. 1" for shop painting.

2.21 Aluminum Finishes

A. Finish designations prefixed by AA conform to the system established by the Aluminum Association for designating aluminum finishes.

B. As-Fabricated Finish

1. AA-M10 (Mechanical Finish: as fabricated, unspecified).

3. EXECUTION

3.01 Preparation

A. Coordinate and furnish anchorages, setting drawings, diagrams, templates, instructions, and directions for installing anchorages, including concrete inserts, sleeves, anchor bolts, and miscellaneous items having integral anchors that are to be embedded in concrete or masonry construction. Coordinate the delivery of such items to Project site.

B. Center nosings on tread widths with noses flush with riser faces and tread surfaces.

C. ***Set sleeves in concrete with tops flush with finish surface elevations***. Protect sleeves from water and concrete entry.

3.02 Installation

A. Fastening to In-Place Construction

1. Provide anchorage devices and fasteners where necessary for securing metal fabrications to in-place construction. Include threaded fasteners for concrete and masonry inserts, toggle bolts, through-bolts, lag bolts, wood screws, and other connectors as required.

2. Provide setting drawings, templates, instructions and directions for installation of anchorage devices. Coordinate delivery with other work to avoid delay.

3. Do not use concrete anchors set in holes drilled in the concrete after the concrete is placed in place of cast-in-place anchor bolts.

4. After anchor bolts have been embedded, protect their threads by applying grease and by having the nuts screwed on until the time of installation of the equipment or metalwork.

B. Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.

C. Set embedded metalwork accurately in position when concrete is placed and supported rigidly to prevent displacement or undue vibration during or after the placement of concrete. Unless otherwise specified, where metalwork is to be installed in recesses in formed concrete, said recesses shall be made, metalwork installed, and recesses filled with grout in conformance with Section 03600, *Grout*.

D. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.

E. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.

F. Comply with the following requirements for all field welding:

1. ***Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals***.

a. Welding on steel shall be performed by the Shielded Metal Arc Welding (SMAW) process. Welding procedures shall comply with AWS B3.0.

b. Welding on aluminum shall be performed by the Gas Metal Are (MIG) or Gas Tungsten Arc (TIG) process, per the AWS Welding Handbook.

2. Provide a minimum of two (2) passes for metal of $^{3}/_{16}$-inch thickness plus one (1) additional pass for each additional 1/8-inch in metal thickness. Produce a weld uniform in width and size throughout its length with each layer of weldment smooth; free of slag, cracks, pinholes, and under-cuttings; and completely fused to the adjacent weld beads and base metal. Avoid irregular surface, nonuniform bead pattern, and high crown. Form fillet welds of the indicated size. Accomplish repair, chipping, and grinding of welds in a manner that will not gouge, groove, or reduce the base metal thickness.

3. Obtain fusion without undercut or overlap. Remove welding flux immediately.

4. At exposed connections, finish exposed welds and surfaces smooth and blended so that no roughness shows after finishing, and contour of welded surface matches those adjacent.

5. Pre-assemble items in the shop to the greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation.

6. Form exposed work true to line and level with accurate angles and surfaces and straight sharp edges. Ease exposed edges to a radius of approximately $^{1}/_{32}$-inch unless otherwise shown. Form bent metal corners to the smallest radius possible without causing grain separation or otherwise impairing the Work.

7. Weld corners and seams continuously, complying with the AWS recommendations. Grind exposed welds smooth and flush, to match and blend with adjoining surfaces.

8. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners where possible. Use exposed fasteners of the type indicated or, if not indicated, use Phillips flat-head (countersunk) screws or bolts. Locate joints where least conspicuous.

9. Cut, reinforce, drill, and tap miscellaneous metal work as required to receive finish hardware, screws, and similar items.

3.03 Installing Miscellaneous Framing and Supports

A. Install framing and supports to comply with the requirements of the items being supported, including the manufacturers' written instructions and requirements indicated on the “approved” shop drawings, if any.

B. Anchor supports for operable partitions securely to and rigidly brace from the building structure.

C. Support steel and aluminum on solid grouted masonry or concrete. Secure with anchor bolts embedded in grouted masonry or concrete or with bolts through top plates.

3.04 Setting Loose Plates

A. Clean concrete and masonry bearing surfaces of bond-reducing materials, and roughen to improve the bond to surfaces. Clean the bottom surface of the bearing plates.

B. Set loose leveling and bearing plates on wedges or other adjustable devices. After the bearing members have been positioned and plumbed, tighten the anchor bolts. Do not remove wedges or shims, but if protruding, cut off flush with the edge of the bearing plate before packing with grout.

1. Use non-shrink, metallic grout in concealed locations where not exposed to moisture; use non-shrink, non-metallic grout in exposed locations, unless otherwise indicated.

2. Pack grout solidly between bearing surfaces and plates to ensure that no voids remain.

3.05 Installing Pipe Bollards

A. ***Anchor bollards in concrete with pipe sleeves preset and anchored into concrete***. After bollards have been inserted into the sleeves, fill the annular space between the bollard and sleeve solidly with non-shrink, non-metallic grout, mixed and placed to comply with the grout manufacturer's directions.

B. ***Fill bollards solidly with concrete, mounding the top surface***.

C. ***Clean the exterior of the bollards*** of all concrete spoils, debris and other materials. ***Install the pipe bollard covers*** in accordance with the manufacturers instructions.

3.06 Painting and Protective Coatings

A. All ferrous metal, except stainless steel and galvanized surfaces, shall be properly cleaned and given one shop cost of primer compatible with the coating system specified in Section 09900, *Painting*.

B. ***Anchors that are built into masonry shall be coated with asphalt paint unless specified to be galvanized***.

C. Metal work to be encased, in concrete shall be left unpainted unless specified or noted otherwise.

D. Where hot-dip galvanized or zinc coated metal is specified or shown, it shall be shop primed unless specifically not required.

E. Castings that are to be left unpainted shall be cleaned and coated with a coal-tar-pitch varnish.

F. Aluminum to be placed adjacent to masonry shall be protected with an isolating coating of bitumastic, and/or neoprene or felt.

3.07 Dissimilar Metal Contact

A. Where the contact of dissimilar metals may cause electrolysis and where aluminum will contact concrete, mortar or plaster, the contact surface of the metals shall be separated using not less than one (1) coat of zinc chromate primer and one (1) heavy coat of aluminum pigmented asphaltic paint on each surface; or where deemed necessary by the Engineer, not less than one (1) course of asphalt saturated cotton fabric cemented to both metals with flashing cement, shall be used.

B. ***Finished works shall be cleaned and excess cement removed***.

C. All work shall be adequately anchored in place at proper elevations, planes and locations.

3.08 Adjusting and Cleaning

A. Cleaning and touch-up painting of field welds, bolted connections, and abraded areas of the shop paint on miscellaneous metal is specified in Section 09900, *Painting*.

B. Galvanized Surfaces

1. ***Repair or replace metal with damaged galvanized surfaces at no additional cost to the Owner***.

2. Clean field welds, bolted connections, and abraded areas and apply galvanizing repair paint to comply with ASTM A-780.

3. The materials referred to above shall be applied in accordance with the manufacturer's instructions.

END OF SECTION

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SECTION 05520

HANDRAILS AND ACCESSORIES

1. GENERAL

1.01 Description

A. This Section includes providing all labor, materials and equipment necessary to fabricate and install aluminum railings and accessories. All handrails shall consist of two (2) horizontal rails.

B. Related Work Specified Elsewhere

Specification Section	Title
01300	Shop Drawings, Submittals and Samples
03300	Cast-in-Place Concrete
05025	Metal Materials, Methods, and Fastenings
05500	Metal Fabrications
05510	Metal Stairs and Walkways
Contract Drawings and General Provisions of the Contract	

1.02 Quality Assurance

A. Standards

1. Unless otherwise indicated, all materials, workmanship and practices shall conform to the following standards:

Standard	Description
American National Standards Institute (ANSI)	
A21.1	Safety Requirements for Floor and Wall Openings, Railings and Toe Boards
A58.1	Minimum Design Loads in Buildings and Other Structures

Standard	Description
American National Standards Institute (ANSI) - Cont'd	
A117.1	Specifications for Making Buildings and Facilities accessible to and Usable by Physically Handicapped People
Z97.1	Safety Performance Specifications and Methods of Test for Safety Glazing Materials Used in Building
American Society for Testing and Materials (ASTM)	
ASTM B-26	Standard Specification for Aluminum-Alloy Sand Castings
ASTM B-108	Standard Specification for Aluminum-Alloy Permanent Mold Castings
ASTM B-209	Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate
ASTM B-210	Standard Specification for Aluminum and Aluminum-Alloy Drawn Seamless Tubes
ASTM B-214	Standard Test Method for Sieve Analysis of Metal Powders
ASTM B-221	Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes
ASTM B-247	Standard Specification for Aluminum and Aluminum-Alloy Die Forgings, Hand Forgings, and Rolled Ring Forgings
ASTM B-429	Standard Specification for Aluminum-Alloy Extruded Structural Pipe and Tube
Occupational Safety and Health Administration (OSHA)	
	OSHA Standards, latest edition
Aluminum Association (AA)	
AA 30	Specifications for Aluminum Structures
	Aluminum Construction Manual, latest edition
American Society of Civil Engineers (ASCE)	
ASCE 7	Minimum Design Loads for Buildings and Other Structures
ASCE 8	Specifications for the Design of Cold-Formed Stainless Steel Structural Members
Miscellaneous	
ABH-21	Aluminum Brazing Handbook
ASD-1	Aluminum Standards and Data
DAF–45	Designation System for Aluminum Finishes
SAA-46	Standards for Anodized Architectural Aluminum
	Life Safety Code 101
	AWS "Structural Welding Code"
	Florida Building Code (Design standards may exceed OSHA Design Standards).

B. ***Obtain each type of handrail, railing and kickplate through one source from a single manufacturer***.

C. Welding, if required depending on the type of handrail identified in this specification section, shall be in accordance with AWS "Standard Qualification Procedure".

D. ***The Contractor shall verify handrail and railing dimensions by field measurements prior to preparation of shop drawings and fabrication***. Coordinate the fabrication schedule with the construction progress to avoid delaying the Work. Where field dimensions cannot be made without delaying the Work, establish dimensions and proceed with fabricating handrails, railing and kickplate without field measurements. Coordinate construction to ensure that the actual dimensions correspond to the established dimensions.

E. Preassemble items in the shop to the greatest extent possible, so as to minimize splicing and assembly of units at the Project Site. Disassemble units only to the extent necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinate installation.

1.03 Performance Requirements

A. Structural Performance of Handrails and Railing

1. Provide handrails and railings capable of withstanding the following structural loads without exceeding allowable design working stresses of materials for handrails, railings, anchors, and connections:

   a. Top rail of guards shall be capable of withstanding the following loads applied as indicated:

      1) ***Concentrated load of 200 lb_f (890 N)*** applied at any point and in any direction.

      2) ***Uniform load of 50 lb_f/ft (730 N/m) applied horizontally and concurrently with a uniform load of 100 lb_f/ft (1460 N/m) applied vertically downward***.

      3) Concentrated and uniform loads above need not be assumed to act concurrently.

   b. Handrails not serving as Top Rails shall be capable of withstanding the following loads applied as indicated:

1) ***Concentrated load of 200 lb_f (890 N) applied at any point and in any direction***.

2) ***Uniform load of 50 lb_f/ft (730 N/m) applied in any direction***.

3) Concentrated and uniform loads above need not be assumed to act concurrently.

c. The infill area of guards shall be capable of withstanding a ***horizontal concentrated load of 200 lb_f (890 N) applied to one (1) ft^2 (0.09 m^2) at any point in system***, including panels, intermediate rails, balusters, or other elements composing infill area.

1) The load above need not be assumed to act concurrently with loads on top rails in determining stress on guard.

B. Thermal Movements

1. Provide handrails, railings and kickplate that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss:

a. Temperature Change (Range): 120°F (67°C), ambient; 180°F (100°C), material surfaces.

C. Control of Corrosion

1. Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.

1.04 Submittals

A. Materials, Shop Drawings and Product Data

1. Shop drawings, calculations and product data for aluminum handrailing and accessories shall be submitted for review in conformance with Section 01300, *Shop Drawings, Submittals and Samples*. All shop drawing submittals shall be submitted in an electronic format (PDF). The submittal shall include, at a minimum:

a. Layout of fabricated sections.

b. Removable handrailing and gate details.

c. Kickplate details.

d. Safety chain details, if used.

e. Expansion joint details.

f. Connection and joining methods and details.

g. Materials and finishes.

2. Show dimensions and reference materials of construction by ASTM designation and grade. Show design criteria.

3. Submit erection drawings that indicate locations of the handrail, kickplate, safety chains, etc. Reproductions of the Contract Drawings will not be accepted for this purpose.

4. ***All shop drawings and calculations shall bear the signature and seal of a Professional Engineer registered in the State of Florida***.

5. Fabrication shall not begin until the Engineer's review is complete and the shop drawings are approved.

1.05 Delivery and Storage

A. Deliver packaged materials to the site in the manufacturer's original, unopened containers. Arrange deliveries to provide sufficient quantities to permit continuity of erecting of any phase of work.

B. Deliver such items to the Project Site in time for installation.

C. ***Store structural material, either plain or fabricated, above ground on platforms, skids, or other supports in a well ventilated, weather-tight place***.

D. Keep the material free from dirt, grease, and other foreign matter and protect from corrosion.

E. Stacking shall be done in a way which will prevent bending.

F. Cover the handrails, railing and kickplate in protective polyethylene wrap to avoid damage to the finish. Keep handling on site to a minimum.

1.06 Coordination and Scheduling

A. Coordinate installation of anchorages for handrails and railings. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry.

B. Schedule installation so that handrails, railings and kickplate are mounted only on completed walls.

C. Do not support temporarily by any means that does not satisfy structural performance requirements.

2. PRODUCTS

2.01 Handrails

A. Provide aluminum handrails, railings, kickplate and swing gates where indicated on the Contract Drawings. Railings shall be two-rail, non-welded, forty-two (42) inches high, and of the configurations indicated on the Contract Drawings. ***Centerlines of posts and rails shall be in the same plane***.

B. Aluminum

1. Alloy and temper recommended by the aluminum producer and finisher for the type of use and finish indicated, and with not less than the strength and durability properties of alloy and temper designated below for each aluminum form required.

Item	Material
Extruded Aluminum Bar and Tube	ASTM B-221, Alloy 6063-T5
Extruded Aluminum Structural Pipe and Tube	ASTM B-429, Alloy 6063-T6, minimum nominal diameter of 1½-inches (O.D. of 1.9 inches)
Drawn Aluminum Seamless Tube	ASTM B-210, Alloy 6063-T832
Aluminum Plate and Sheet	ASTM B-209, Alloy 6061-T6
Aluminum Die and Hand Forgings	ASTM B-247, Alloy 6061-T6
Aluminum Casting	ASTM B-108, Alloy 214
Finish	Anodized

C. Fittings shall be fastened to pipe members by either inert gas shielded metal arc welding as per Alcoa's Welding Alcoa Aluminum, latest edition, or by internal, mechanical, self tapping screws, combined with a stainless steel, blind, rivet-locking component fastener system.

D. ***Railings and posts shall be joined by either mechanically-fastened slip-type fittings or an inner-wedge type system***. All fittings, elbows, wall returns, and caps shall be flush type. Exposed fasteners shall be set flush or recessed. Post spacing shall not exceed five (5) feet for horizontal railing and four (4) feet for stair railing.

E. ***Posts and rails shall be continuous throughout their sectional lengths***. Curved members shall be formed to true radii, free from dye marks or surface abrasions. Furnish railings in shop fabricated sections, complete with accessories, including gates, hardware, closure caps for rail terminations, base trim, and anchorages. Provide expansion joints at not greater than twenty-four (24) foot spacing.

F. Provide drain holes in all railings and posts to prevent trapping of moisture.

G. ***Safety Chains at openings between sections of railing will not be allowed***. The Contractor shall provide either a removable section of handrail at these areas or fabricate a hinged swing gate with a locking hasp.

H. Handrails attached to walls shall be mounted with Type 316 stainless steel brackets. Each bracket shall be fastened with a minimum 3/8-inch diameter stainless steel stud set into the wall and tapped into the bracket. Brackets shall have a 3-inch projection from the wall and shall be uniformly spaced approximately four (4) feet with the end brackets not more than 12-inches from the ends of the handrail.

I. Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work, include, but are not limited to, the following:

1. Golden Railings
2. Alumaguard
3. Craneveyor Corporation
4. Superior Aluminum Products
5. Aluminum Tube Railings
6. Moultrie Manufacturing
7. Or approved equal.

2.02 Kickplates

A. ***Aluminum kickplates shall be furnished and installed at the edges of all walkways and landings unless noted otherwise on the Contract Drawings***

B. ***Clear anodized aluminum kickplates*** fabricated of ¼-inch angle or plate stock, depending on the specific walkway edge detail, meeting OSHA requirements and shall project four (4) inches above the walkway surface. Kickplates shall be fabricated from the same material as that of the handrailing. All mounting brackets and hardware shall be Type 316 stainless steel.

C. ***Aluminum kickplates and accessories shall be anodized with a clear architectural Class I satin finish***. The anodic coating shall be a minimum thickness of 0.7 mils and a minimum coating weight of thirty-two (32) milligrams per square inch, in accordance with the Aluminum Association Designation AA-M12-C22A41.

D. ***The kickplates shall not infringe on the minimum walkway width and shall not interfere with the removal of the grating panels***.

2.03 Removable Handrailing and Swing Gates

A. Provide aluminum removable handrailing and swing gates where indicated on the Contract Drawings.

B. The Contractor shall submit shop drawings of the removable handrailing and swing gates shown on the mechanical drawings. The handrailing shall be of the same material and details required by these specifications.

C. ***Aluminum removable handrailing and swing gates shall be anodized with a clear architectural Class I satin finish***. The anodic coating shall be a minimum thickness of 0.7 mils and a minimum coating weight of 32 milligrams per square inch, in accordance with the Aluminum Association Designation AA-M12-C22A41.

D. Removable railings shall have vertical pipe supports fastened as indicated on the Contract Drawings. Unless otherwise indicated, fabricate removable railings in unit sections not over ten (10) feet long with at least three vertical supports, including one at each end.

2.04 Stainless Steel Handrail Safety Chains

A. Handrail safety chains, where applicable, shall be fabricated from Type 316 stainless steel.

B. Safety chains shall be of the proof coil style, $^{3}/_{16}$-inch in diameter with at least twelve (12) links per foot and with snaphooks at each end. Snaphooks shall be fabricated from Type 316 stainless steel.

2.05 Fasteners and Anchoring

A. Anchorage of Handrails and Railing to Other Construction

1. For aluminum handrailing, use fasteners fabricated from Type 316 stainless steel.

B. Interconnecting Handrails and Railing Components

1. Use fasteners fabricated from the same basic material as the fastened metal, unless otherwise indicated. Do not use metals that are corrosive or incompatible with materials joined.

2. Provide concealed fasteners for interconnecting handrail and railing components and for attaching them to other work, unless otherwise indicated.

C. Cast-in-Place and Post-Installed Anchors

1. Anchors of the type indicated below, fabricated from corrosion resistant materials with the capability to sustain, without failure, a load equal to six (6) times the load imposed when installed in unit masonry and equal to four (4) times the load imposed when installed in concrete, as determined by testing per ASTM E-488 conducted by a qualified independent testing agency.

2.06 Grout and Anchoring Cement

A. Non-shrink, non-metallic grout shall be premixed, factory-packaged, non-staining, non-corrosive, non-gaseous grout complying with ASTM C-1107. Provide grout specifically recommended for this type of application.

B. Erosion resistant Anchoring Cement shall be factory-packaged, non-shrink, non-staining, hydraulically-controlled expansion cement formulation for mixing with water at the Project Site to create pourable anchoring, patching, and grouting compound. Provide a formulation that is resistant to erosion from water exposure without needing protection by a sealer or waterproof coating and that is recommended by the manufacturer for exterior use.

2.07 Fabrication

A. Fabricate handrails and railings to comply with the requirements indicated for design, dimensions, member sizes and spacing, details, finish, and anchorage, but not less than that required to support structural loads.

B. ***Assemble handrails and railings in the shop to the greatest extent possible to minimize field splicing and assembly***. Disassemble unit only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation. Use connections that maintain the structural value of joined pieces.

C. Form changes in direction of railing members as follows:

1. As detailed.
2. By bending.
3. By radius bends of the radius indicated.
4. By flush radius bends.
5. By mitering at elbow bends.
6. By inserting prefabricated flush-elbow fittings.
7. By any method indicated above, applicable to the change in direction involved.

D. ***Form simple and compound curves by bending members in jigs to produce uniform curvature*** for each repetitive configuration required; maintain cylindrical cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of handrail and railing components.

E. Welded Connections - NOT USED

F. Non-welded Connections

1. Fabricate handrails and railings by connecting members with concealed mechanical fasteners and fittings, unless otherwise indicated.

2. Fabricate members and fittings to produce flush, smooth, rigid, hairline joints.

3. Fabricate splice joints for field connection using an epoxy structural adhesive where this is the manufacturer's standard splicing method.

G. Welded Connections for Aluminum Pipe - NOT USED

H. Brackets, Flanges, Fittings, and Anchors

1. Provide wall brackets, flanges, miscellaneous fittings, and anchors to interconnect handrail and railing members to other work, unless otherwise indicated.

I. Provide inserts and other anchorage devices for connecting handrails and railings to concrete or masonry work. Fabricate anchorage devices capable of withstanding loads imposed by handrails and railings. Coordinate anchorage devices with supporting structure.

J. ***For railing posts set in concrete, provide preset sleeves of galvanized steel not less than five (5) inches (150 mm) long with inside dimensions not less than ½-inch (12 mm) greater than the outside dimensions of post, and steel plate forming bottom closure***.

K. For removable railing posts, fabricate slip-fit sockets from steel tube whose ID is sized for a close fit with the posts; limit movement of post without lateral load, measured at the top, to not more than one-fortieth ($^1/_{40}$) of the post height. Provide socket covers designed and fabricated to resist being dislodged.

1. Provide chain with eye, snap hook, and staple across gaps formed by removable railing sections at locations indicated. Fabricate as indicated in Article 2.04 herein.

L. Shear and punch metals cleanly and accurately and remove burrs from exposed edges.

M. Ease exposed edges to a radius of approximately $^1/_{32}$-inch (0.8 mm), unless otherwise indicated. Form bent-metal comers to the smallest radius possible without causing grain separation or otherwise impairing the Work.

N. Cut, reinforce, drill, and tap components, as indicated, to receive finish hardware, screws, and similar items.

O. Provide weep holes or another means to drain entrapped water in hollow sections of handrail and railing members that are exposed to exterior or to moisture from condensation or other sources.

P. Fabricate joints that will be exposed to weather in a watertight manner.

Q. Close exposed ends of handrail and railing members with prefabricated end fittings.

R. Provide wall returns at ends of wall-mounted handrails, unless otherwise indicated. Close ends of returns, unless clearance between end of railing and wall is ¼-inch (6 mm) or less.

S. Fillers

1. Provide fillers made from suitably crush-resistant material, where needed to transfer wall bracket loads through wall finishes to structural supports.

2. Size fillers to suit wall finish thicknesses and to produce adequate bearing area to prevent bracket rotation and overstressing of substrate.

T. ***All work shall be square, plumb, straight and true, accurately fitted with tight joints and intersections***. Exposed work shall be finished smooth. The completed work shall conform to both OSHA Standards.

2.08 Aluminum Finishes

A. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.

B. Handrailing, posts, kickplate, and fittings shall be ***anodized with a clear architectural Class I satin finish***. The anodic coating shall be a minimum thickness of 0.7 mils and a minimum coating weight of thirty-two (32) milligrams per square inch, in accordance with the Aluminum Association Designation AA-M12-C22A41.

3. EXECUTION

3.01 Examination

A. Examine all handrails, railing and kickplate. Any damaged materials shall be immediately returned and new materials supplied at no additional cost to the Owner.

B. Examine the areas and conditions under which handrails, railing and kickplate are to be installed and correct any conditions detrimental to the proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions have been corrected.

3.02 Dissimilar Metals

A. Where the contact of dissimilar metals may cause electrolysis and where aluminum will contact concrete, mortar or plaster, the contact surface of the metals shall be separated using not less than one (1) coat of methacrylate lacquer (zinc chromate) primer and one (1) heavy coat of aluminum pigmented asphalt paint on each surface; or where deemed necessary by the Engineer, not less than one (1) course of asphalt saturated cotton fabric cemented to both metals with flashing cement, or neoprene shall be used.

B. When bronze and aluminum components come into contact with dissimilar metals, surfaces shall be kept from direct contact by painting the dissimilar metal with a heavy coat of a proper primer to be recommended/approved by the aluminum manufacturer.

C. ***Finished works shall be cleaned and excess cement and markings removed***.

3.03 Preparation

A. Furnish setting drawings, diagrams, templates, instructions and directions for the installation of anchorages, such as concrete inserts, anchor bolts and miscellaneous

items having integral anchors which are to be embedded in concrete or masonry construction.

B. Set embedded metalwork accurately in position when concrete is placed and support it rigidly to prevent displacement or undue vibration during or after the placement of concrete.

C. Unless otherwise specified, where metalwork is to be installed in recesses in formed concrete, said recesses shall be made, metalwork installed, and recesses filled with dry-pack mortar in conformance with Section 03300, *Cast-in-Place Concrete*.

D. Coordinate the delivery of such items to the Project site in accordance with the Project Work Schedule.

3.04 Installation

A. Install handrails, railing and kickplate in accordance with the “approved” shop drawings and the manufacturer’s instructions.

B. Erect work horizontal or parallel to rake of steps or ramps and concrete walls, free from distortion or defects detrimental to appearance or performance.

C. Perform cutting, drilling, and fitting required for installation of handrails, railing and kickplate. Set the work accurately in location, alignment, and elevation, plumb, level, true and free from rack, measured from established lines and levels.

D. Do not weld, cut, or abrade surfaces of handrail and railing components that have been coated or finished after fabrication and that are intended for field connection by mechanical or other means without further cutting or fitting.

E. Railings shall be installed by the fabricator or in strict compliance with the fabricator's instructions. Install railings plumb and within a tolerance of $^{1}/_{16}$-inch maximum deviation either side of the longitudinal centerline.

F. Align rails so variations from level for horizontal members and from parallel with rake of steps and ramps for sloping members do not exceed 1/8-inch in 12 feet.

G. Adjust handrails and railings before anchoring to ensure matching alignment at abutting joints. Space posts at interval indicated, but not less than that required by structural loads.

H. ***Posts embedded in concrete shall be set in sleeves with quick-setting non-shrink grout***.

I. Removable railing units shall be installed freestanding in close fitting pipe sleeves of the same material as the railing. Removable railings shall not be attached to walls or other railings, unless otherwise indicated.

J. Kickplates shall be installed on all handrailing throughout the Project.

3.05 Railing Connections

A. Non-welded Connections

1. Use mechanical or adhesive joints for permanently connecting railing components. Use wood blocks and padding to prevent damage to railing members and fittings.

2. Seal recessed holes of exposed locking screws using plastic cement filler colored to match finish of handrails and railings.

B. Welded Connections - NOT USED

C. Expansion Joints

1. Install expansion joints at locations indicated but not farther apart than required to accommodate thermal movement.

2. Provide slip-joint internal sleeve extending two (2) inches (50 mm) beyond joint on either side, fasten internal sleeve securely to one side, and locate joint within six (6) inches (150 mm) of post.

3.06 Anchoring Posts

A. ***Anchor posts in concrete by means of pipe sleeves set and anchored into the concrete***. Provide galvanized steel pipe sleeves, not less than five (5) inches long and having an inside diameter not less than ½-inch greater than the outside diameter of the inserted pipe post. Provide galvanized steel plate closures secured to the bottom of the sleeve and of a width and length of not less than one (1) inch greater than the outside diameter of the sleeve. After the posts have been inserted into the sleeves, fill the annular space with non-shrink, nonmetallic grout or anchoring cement, mixed and placed to comply with anchoring material manufacturer's written instructions.

B. Cover the anchorage joint with an aluminum flange finished to match the post.

C. Anchor posts to metal surfaces with oval flanges, angle type, or floor type as required by conditions, connected to posts and to metal supporting members as follows:

1. For aluminum pipe railings, attach posts as indicated using fittings designed and engineered for this purpose.

D. Install removable railing sections, where indicated, in slip-fit metal sockets cast in concrete.

3.07 Anchoring Railing Ends

A. Anchor railing ends into concrete and masonry with round flanges connected to railing ends and anchored into wall construction with post-installed anchors and bolts.

B. Anchor railing ends to metal surfaces with flanges bolted to metal surfaces using non-welded connections.

3.08 Attaching Handrails to Walls

A. Attach handrails to wall with wall brackets. Provide a bracket with 1½-inch (38-mm) clearance from the inside face of handrail and finished wall surface.

B. Locate the brackets as indicated or, if not indicated, at spacing required to support structural loads.

C. Secure wall brackets to building construction as follows:

1. For concrete and solid masonry anchorage, use drilled-in expansion shields and hanger or lag bolts.

2. For hollow masonry anchorage, use toggle bolts.

3.09 Protection

A. Protect finishes of handrails and railings from damage during construction period with temporary protective coverings approved by railing manufacturer. Remove protective coverings at the time of Project Substantial Completion.

B. ***Restore finishes damaged during installation and construction period so no evidence remains of correction work***. Return items that cannot be refinished in the field to the shop; make required alterations and refinish entire unit, or provide new units at no additional cost to the Owner.

3.10 Cleaning

A. Aluminum Handrails, Railing and Kickplate

1. ***Clean all aluminum handrails, railing and kickplate*** by washing them thoroughly with clean water and soap and rinsing with clean water.

2. Do not use an acid solution, steel wool or other harsh abrasives.

3. ***If the stain remains after washing, the piece shall be removed and replaced at no additional cost to the Owner***.

B. ***Clean all aluminum handrails, railing and kickplate completely and remove all miscellaneous markings and debris prior to the punchlist inspection*** by the Engineer and Owner.

3.11 Repair of Defective Work

A. Remove stained or otherwise defective work and replace with material that meets the specification requirements, at no additional cost to the Owner.

END OF SECTION

SECTION 05530

GRATING, PLATES AND FRAMES

1. GENERAL

1.01 Description

A. Furnish all labor, materials, and incidentals required to install the aluminum grating, plates and frames, access hatches, structural supporting members, angles, connections, fastenings and concrete inserts attached to or supporting the grating, plates and frames or those structural members as shown on the Contract Drawings, or specified herein.

B. Related Work Specified Elsewhere

Specification Section	Title
05025	Metal Materials, Methods, and Fastenings
05140	Structural Aluminum
05510	Metal Stairs and Walkways
05570	Miscellaneous Metal Assemblies
Contract Drawings and General Provisions of the Contract	

1.02 Quality Assurance

A. Standards

1. Unless otherwise indicated, all materials, workmanship and practices shall conform to the following standards:

STANDARD	DESCRIPTION
American Society for Testing and Materials (ASTM)	
ASTM A-240	Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications

STANDARD	DESCRIPTION
American Society for Testing and Materials (ASTM) - Cont'd	
ASTM A-666	Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar
ASTM B-209	Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate
ASTM B-210	Standard Specification for Aluminum & Aluminum-Alloy Drawn Seamless Tubes
ASTM B-221	Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes
ASTM B-308	Standard Specification for Aluminum-Alloy 6061-T6 Standard Structural Profiles
ASTM B-429	Standard Specification for Aluminum-Alloy Extruded Structural Pipe and Tube
National Association of Architectural Metal Manufacturers (NAAMM)	
	Metal Bar Grating Manual, latest edition
Aluminum Association	
	Aluminum Construction Manual, latest edition
Miscellaneous	
	AWS "Structural Welding Code"
	Florida Building Code

B. ***Obtain each type of material (grating, plates, checkered plate) through one source from a single manufacturer***.

C. Welding, if required depending on the type of handrail identified in this specification section, shall be in accordance with AWS "Standard Qualification Procedure".

D. ***The Contractor shall verify all dimensions for grating, plates, checkered plate, etc. by field measurements prior to preparation of shop drawings and fabrication***. Coordinate the fabrication schedule with the construction progress to avoid delaying the Work. Where field dimensions cannot be made without delaying the Work, establish dimensions and proceed with fabricating said materials without field measurements. Coordinate construction to ensure that the actual dimensions correspond to the established dimensions.

1.03 Submittals

A. ***Submit shop drawings*** for review in accordance with Section 00700, *General Conditions*, Section 00800, *Supplementary Conditions*, and Section 01300, *Shop Drawings, Submittals and Samples* and in an electronic format (PDF).

B. Submit drawings of fabricated items, such as grating, access covers, cover plates, etc. Show dimensions and reference the materials of construction by ASTM designation and grade. The Contractor shall also show the design criteria.

C. Submit ***structural calculations for the design of the supporting system for all grating, plates and materials*** identified in this specification section.

D. Submit ***complete fabrication, placing and erection drawings showing the locations of all fabricated items***. Reproductions of the Contract Documents will not be accepted for this purpose.

E. ***All shop drawings and structural calculations shall bear the signature and seal of a Professional Engineer registered in the State of Florida***.

F. Fabrication shall not begin until the Engineer's review is complete and the shop drawings have been approved.

1.04 Design Criteria

A. Aluminum grating, floor plates and miscellaneous cover plate systems shall be designed for a ***live load of one hundred-fifty pounds per square foot (150 psf) of gross projected area*** with a deflection ***not to exceed $^{1}/_{360}$ of the span***.

2. PRODUCTS

2.01 Aluminum Gratings, Floor Plates, Frames and Miscellaneous Cover Plates

A. ***All bar grating, frames and miscellaneous cover plates shall be aluminum***, unless otherwise indicated on the Contract Drawings. Provide attachment anchors, bearing frames, saddle clips, and all other necessary fastening devices subject to the approval of the Engineer. The design criteria for the grating, frames and plates is detailed in Article 1.04(A) of this specification section.

B. Provide fastening devices for all gratings adjacent to removable sections and at all locations where the lateral movement of gratings is not otherwise restrained. Sections of grating designated to be removable shall not be fastened.

C. No single piece of grating, floor plate, etc., ***shall weigh more than eighty (80) pounds***.

D. The length of individual pieces ***shall not exceed 1.5 times the width***, unless limited by the installation, and approved by the Engineer.

E. Field measure grating and cover plates for proper cutouts and sizes.

F. Configuration

1. Grating shall be pressure locked aluminum having "I" shaped bearing bars spaced at $1^{3}/_{16}$-inch centers with swage-locked crossbars at four (4) inches on center. The grating shall be banded on all sides and at all openings for piping and conduits. Unless otherwise indicated on the Contract Drawings, the size of bearing bars shall be as follows:

Maximum Clear Span	I-Bar Size	Rectangular Bar Size	¼" Thick Frame Angle Size	
			Vertical Leg	Horizontal Leg
3' - 6"	1¼" x ¼"	1 ¼" x $^{3}/_{16}$"	1½"	2"
5' - 0"	1¾" x ¼"	1-$^{3}/_{4}$" x $^{3}/_{16}$"	2"	2½"
6' - 6"	2¼" x ¼"	2 ¼" x $^{3}/_{16}$"	2½"	3"
7' - 0"	2½" x ¼"	2½" x $^{3}/_{16}$"	2¾"	3"

2. ***All grating surfaces shall be of the "slip-resistant" serrated type***.

3. The minimum width of individual grating pieces shall be fifteen (15) inches, except for locations requiring a single piece and for designated removable sections.

G. Extruded Aluminum Grating

1. In lieu of aluminum bar grating, extruded aluminum grating of the interlocking type may be used, if approved by the Engineer. Extruded grating shall be manufactured from 6063-T6 aluminum alloy and assembled into three (3) foot wide sections. The depth of extruded aluminum grating shall be as follows:

Maximum Clear Span	Grating Depth	Frame Angle Size
2' - 6"	¾"	1"
4' - 0"	1 ¼"	1½"
5' - 6"	1¾"	2"
7' - 0"	2 ¼"	2½"

H. Materials

1. Bearing bars shall be of extruded aluminum meeting all requirements of ASTM B-221-76, Alloy 6061-T6 or 6063-T6. Cross bars shall be drawn or extruded aluminum meeting all requirements of ASTM B-210-76 or B-221-76.

2. The frames and supports of gratings shall be aluminum alloy 6061-T6, 6063-T6, or Type 316 stainless steel with a mill finish. Unless otherwise indicated on the Contract Drawings, frames and supports shall be ¼-inch thick with 1-inch by ¼-inch by eight (8) inch long bent bars welded to the frame at eighteen (18) inch centers for embedment in concrete. Corners of embedded angle frames shall be mitered and welded with the welds ground smooth.

3. Fabrication shall meet all of the requirements of the NAAMM Metal Bar Grating Manual. The finish shall be mill finish.

4. Welding Electrodes

a. Welding electrodes for structural steel shall conform to AWS A5.5. Use electrodes in the E-70 Series.

b. Welding electrodes for aluminum shall be ER4043 filler metal.

c. Welding electrodes for stainless steel shall conform to AWS A5.4. Use Electrodes E-308 for Type 304 stainless steel and E316 for Type 316 stainless steel.

I. Aluminum in contact with concrete or dissimilar metals shall be protected as indicated in Article 3.04(B) of this specification section.

2.02 Aluminum Sheet

A. Aluminum Sheet shall conform to ASTM B-209, Alloy 3003, H-14 temper.

2.03 Aluminum Shapes

A. Aluminum shapes shall be as indicated on the Contract Drawings and as detailed in Section 3 of the Aluminum Construction Manual.

B. All aluminum shapes shall meet the requirements of ASTM B-209 or B-308 for Alloy 6061-T6.

2.04 Aluminum Fastenings

A. Aluminum fasteners shall not be permitted.

B. ***All connections of aluminum to aluminum shall be Type 316 stainless steel*** as required under Article 2.09, *Stainless Steel Fastenings*, of this Specification Section.

2.05 Access Hatches - NOT USED

2.06 Aluminum Checkered Cover Plates

A. All checkered plates shall be aluminum, mill finish, and designed for a ***live load of 150 pounds per square foot of the gross projected area and a 250 pound concentrated load***, with the limits for deflections as specified in Federal Specification RR-G-6610.

B. ***All checkered plates shall be fabricated of aluminum and shall have a minimum thickness of*** *3/8****-inch, standard pattern "non-slip***" plates of the sizes and shapes shown on the Contract Drawings. Stiffener angles (aluminum) shall be provided as required to meet the superimposed live load requirements specified above. Stiffeners, if utilized, shall be concealed. All checkered plate sections shall be cut to the dimensions shown on the Contract Drawings. Flush type lifting handles shall be provided for each plate, unless otherwise noted on the Contract Drawings.

C. Aluminum checkered plate shall be 6063-T6 alloy aluminum. Raised lugs shall be diamond shaped and have an angled and opposed pattern.

D. Provide U-bolt lifting handles located on opposite ends on each removable section. Steel plates, including angle edgings, support angles, and lifting handles shall be Type 316 stainless steel.

2.07 Stainless Steel Shapes

A. Stainless steel members supporting aluminum grating or members embedded in concrete shall be stainless steel plate AISI, Type 316, formed as indicated.

B. Anchor straps shall be stainless steel shop welded to the stainless steel shapes.

2.08 Stainless Steel Plate and Members

A. Except where otherwise noted, stainless steel plate and members shall be Type 316 or 316L and shall be in accordance with ASTM A-240 or ASTM A-666.

2.09 Stainless Steel Fastenings

A. Connections of stainless steel to aluminum or concrete shall be stainless steel bolts of AISI Type 316. Nuts shall be AISI Type 430 stainless steel.

2.10 Steel Gratings and Frames - NOT USED

2.11 Checkered Floor Plate

A. ***Checkered floor plate shall be fabricated of aluminum or Type 316 stainless steel (as noted on the Contract Drawings) and shall have a non-skid surface pattern approved by the Engineer and shall have a minimum thickness of*** *3/8****-inch***.

B. Plates shall be of such strength and size necessary to carry superimposed vehicular or pedestrian loads. Unless otherwise indicated, ***minimum pedestrian live load capacity shall be 150 psf and a 250 pound concentrated load***.

C. ***Deflection under load shall not exceed*** $^{1}/_{360}$***.*** Stiffeners, if utilized, shall be concealed.

3. EXECUTION

3.01 Storage of Materials

A. Store structural material, either plain or fabricated, above ground on platforms, skids, or other supports.

B. Keep material free from dirt, grease, and other foreign matter and protect from corrosion.

3.02 Installation and Erection

A. ***Clean the surfaces of metalwork to be in contact with concrete of rust, dirt, grease, and other foreign substances before placing concrete***.

B. ***Set grating seats and frames and checkered plate frames and supports accurately in position when concrete is placed and support it rigidly to prevent displacement or undue vibration during or after the placement of concrete***. Unless otherwise specified, where metalwork is to be installed in recesses in formed concrete, said recesses shall be made, metalwork installed, and recesses filled with dry-pack mortar in conformance with Section 03300, *Cast-in-Place Concrete*.

C. Set seat angles for grating so that the grating will be flush with the floor. Maintain the grating and floor plates flush with the floor. Seat angles and anchors shall be stainless steel or aluminum, unless otherwise indicated in the drawings.

3.03 Welding

A. Perform welding on steel by the shielded metal arc welding (SMAW) process. Welding shall conform to the AWS Structural Welding Code-Steel, D1.1-88, except as modified in AISC Section J2.

B. Perform welding on aluminum by the gas metal arc (MIG) or gas tungsten arc (TIG) process. Welding shall conform to the AWS Structural Welding Code-Aluminum, D1.2-90.

C. Perform welding on stainless steel by the gas tungsten arc (TIG) process. All welds shall be full penetration and smooth. Provide inert gas on the inside of pipe during welding to reduce oxidation.

D. Provide a minimum of two (2) passes for metal in excess of $^{5}/_{16}$-inch thickness.

E. Produce weld uniform in width and size throughout its length with each layer of weldment smooth; free of slag, cracks, pinholes, and undercuttings; and completely fused to the adjacent weld beads and base metal. Avoid irregular surface, non-uniform bead pattern, and high crown. Form fillet welds of the indicated size of uniform height and fully penetrating. Accomplish repair, chipping, and grinding of welds in a manner that will not gouge, groove, or reduce the base metal thickness.

3.04 Corrosion Protection of Aluminum Surfaces

A. Coat aluminum surfaces to be embedded or which will be in contact with concrete or masonry per Section 09900, *Painting*, before installation.

B. Where the contact of dissimilar metals may cause electrolysis and where aluminum will contact concrete, mortar or plaster, the contact surface of the metals shall be separated

using not less than one (1) coat of zinc chromate primer and one (1) heavy coat of aluminum pigmented asphalt paint on each surface; or where deemed necessary by the Engineer, not less than one (1) course of asphalt saturated cotton fabric cemented to both metals with flashing cement, or neoprene shall be used.

C. ***Finished works shall be cleaned and excess cement removed***.

D. All work shall be adequately anchored in place at proper elevations, planes and locations. Allow the coating to dry before the aluminum is placed in contact with the concrete.

E. ***Where aluminum surfaces come in contact with dissimilar metals, keep the dissimilar metallic surfaces from direct contact by use of neoprene gaskets***.

END OF SECTION

SECTION 05570

MISCELLANEOUS METAL ASSEMBLIES

1. GENERAL

1.01 Description

A. Scope of Work

1. This Section includes providing all labor, materials and equipment to install miscellaneous metals, shapes and sheets, fittings, plates, lintels, angles, fasteners, wirework, Contractor fabricated pipe and equipment supports, frames, manual barscreens, stop plates, truck guards, etc., not specified elsewhere in these specifications.

B. Related Work Specified Elsewhere

Specification Section	Title
01300	Shop Drawings, Submittals and Samples
03300	Cast-in-Place Concrete
03600	Grout
05025	Metal Materials, Methods, and Fastenings
05140	Structural Aluminum
05500	Metal Fabrications
05510	Metal Stairs and Walkways
05520	Handrails and Accessories
05530	Grating, Plates and Frames
09900	Painting
Contract Drawings and General Provisions of the Contract	

1.02 Quality Assurance

A. Unless otherwise indicated, all materials, workmanship and practices shall conform to the following standards:

STANDARD	DESCRIPTION
Steel Structures Painting Council (SSPC)	
	Surface Preparation Specifications
American Society for Testing and Materials (ASTM)	
ASTM A-36	Standard Specification for Structural Steel
ASTM A-53	Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
ASTM A-123	Standard Specification for Zinc (Hot-Dipped Galv'd) Coatings on Iron and Steel Products
ASTM A-167	Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip
ASTM A-193	Standard Specification for Alloy-Steel and Stainless Steel Bolting Materials for High-Temperature Service
ASTM A-194	Standard Specification for Carbon and Alloy Steel Nuts for Bolts for High Pressure or High Temperature Service, or Both
ASTM A-500	Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes
ASTM A-501	Std Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing
ASTM B-209	Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate
ASTM B-221	Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes
ASTM B-241	Standard Specification for Aluminum and Aluminum-Alloy Seamless Pipe and Seamless Extruded Tube
ASTM B-308	Standard Specification for Aluminum-Alloy 6061-T6 Standard Structural Profiles
American Welding Society (AWS)	
AWS A5.1	Specification for Carbon Steel Electrodes for Shielded Metal Arc Welding
AWS D1.1	Structural Welding Code - Steel
Other Standards and Building Codes	
	OSHA Standards
	AISC Specifications for the Design, Fabrication & Erection of Structural Steel for Bldgs
	Aluminum Construction Manual, latest edition, by the Aluminum Association
	Florida Building Code

1.03 Submittals

A. ***Submit shop drawings*** for review in accordance with Section 00700, *General Conditions*, Section 00800, *Supplementary Conditions*, and Section 01300, *Shop Drawings, Submittals and Samples*. All submittals shall be in an electronic format (PDF).

B. Submit drawings of fabricated miscellaneous metal assemblies/items and show, at a minimum, the following:

1. Assembly dimensions, sizes of members, method of assembly, anchorage, and connection to other members.

2. Reference the materials of construction by ASTM designation and grade.

3. Assembly design criteria.

C. ***The Contractor shall submit complete fabrication, placing and erection drawings*** showing the locations of all fabricated items. Reproductions of the Contract Documents will not be accepted for this purpose.

D. ***All shop drawings and structural calculations shall bear the signature and seal of a Professional Engineer registered in the State of Florida***.

E. Fabrication shall not begin until the Engineer's review is complete and the shop drawings have been approved.

1.04 Coordination and Scheduling

A. The work of this Section shall be completely coordinated with the work of other Sections. Verify at the site both the dimensions and work of other trades adjoining items of work in this Section before fabrication and installation of items specified herein.

B. Furnish to the pertinent trades all items included under this Section that are to be built into the work of other Sections.

C. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry, as necessary for the miscellaneous metal assemblies.

D. Do not support temporarily by any means that does not satisfy structural performance requirements.

1.05 Delivery, Storage and Handling

A. Deliver packaged materials to the site in the manufacturer's original, unopened containers. Deliver materials to the site at such time intervals to insure uninterrupted progress of the Work.

B. Deliver anchor bolts and other anchorage devices which are to be embedded in cast-in-place concrete or masonry, in sufficient time to permit their timely installation. Provide proper setting drawings, templates and directions for installation of these items.

C. Store materials to permit easy access for inspection and identification. ***Store miscellaneous metal assemblies, either plain or fabricated, above ground on platforms, skids, or other supports in a well ventilated, weather-tight place***.

D. Store fasteners in a protected place. Clean and relubricate bolts and nuts that become dry or rusty before use.

E. Do not store materials on the structure in a manner that may cause distortion, damage, or overload to members or supporting structures.

F. Store all fasteners and welding electrodes in a weather-tight and dry place until ready for use.

G. Keep the material free from dirt, grease, and other foreign matter and protect from corrosion.

H. Store packaged materials in their original containers. ***Stacking shall be done in a way which will prevent bending or damage to the materials or their finishes***.

I. Repair or replace damaged materials or structures as directed.

2. PRODUCTS

2.01 Structural Steel

A. Miscellaneous steel plates, shapes, bars, etc., and connections shall conform to the requirements of ASTM Designation A-36 and shall be galvanized by the hot dip method after fabrication in accordance with ASTM Designation A-123.

2.02 Steel Pipe

A. Steel pipe used for miscellaneous members and connections shall conform to the requirements of ASTM Designation A-53, Schedule 40, galvanized, except as noted.

2.03 Hot-Dip Galvanizing (Zinc Coatings)

A. Hot dip galvanizing or zinc coatings applied on products fabricated from rolled, pressed or forged steel shapes, plates, bars and strips shall comply with ASTM A-123. The weight of coatings shall be designated in the ASTM Standard for the class and thickness of material to be coated.

B. Galvanized surfaces for which a shop coat of paint is specified shall be chemically treated to provide a bond for the paint.

C. Except for bolts and nuts, all galvanizing shall be done after fabrication.

2.04 Stainless Steel

A. Except where otherwise specified, use Type 316, ASTM A-167 stainless steel plate, members and washers.

B. Use ASTM A-193, Grade B8M bolts and ASTM A-194, Grade 8M nuts.

2.05 Structural Aluminum

A. The Contractor shall refer to the requirements of Section 05140, *Structural Aluminum*.

B. Aluminum Structural members shall conform to ASTM B-308, Alloy 6063-T6.

C. Aluminum bars and rods shall conform to ASTM B-221, Alloy 6063-T6.

D. Miscellaneous structural aluminum shapes and plates shall conform to ASTM B-241, Alloy 6063-T6.

E. Aluminum sheet shall conform to ASTM B-209, Alloy 3003, H 14 temper.

F. Aluminum seamless pipe and tubing shall conform to ASTM B-241, Alloy 6063-T6. Wall thickness shall be Schedule 80, per ANSI H35.2, unless otherwise shown on the Drawings.

2.06 Welding Electrodes

A. Welding electrodes for structural steel shall conform to AWS A5.5, E70XX. Use 4043 filler metal for aluminum.

B. Use a type E308 electrode where the base metal is Type 304 stainless steel and type E309 where the base metal is Type 316 stainless steel or when stainless steel is welded to carbon steel.

C. Field welding of galvanized steel shall not be acceptable.

2.07 Materials, Fabrication, and Connections

A. Materials, fabrication, shop coatings, and fasteners and connections shall comply with Section 05025, *Metal Materials, Methods and Fastening*.

B. Bolts for securing equipment, above grade piping and aluminum structures shall be stainless steel.

C. Anchor Bolts and Fasteners

1. Anchor bolts securing equipment or any assemblies subject to vibrations or movements, shall be stainless steel hook anchors conforming to ANSI 316 and ASTM A-193, Grade B8M, unless otherwise noted. Hook anchors shall be to the farthermost layer of reinforcing.

2. The minimum length protruding from the face of the concrete shall be six (6) inches and the minimum length of the hook shall be six (6) inches. All dimensions and sizes of anchor bolt shall comply with the manufacturer's recommendations.

3. Anchor bolts and fasteners not securing equipment or assemblies subject to vibrations or movements, shall be stainless steel wedge or adhesive anchors conforming to ANSI 316 and ASTM A-193, Grade B8M, unless otherwise noted. Wedge anchors shall be as manufactured by "HILTI" or approved equal. Adhesive anchors shall consist of a self-contained vinylester adhesive cartridge and anchor rods. Adhesive anchors shall be AVA adhesive anchoring system as manufactured by "HILTI", or approved equal.

4. Where steel anchors are indicated, use a one-piece design with expander ring consisting of steel zinc coated and chrome plated as manufactured by McCullough Industries, Kwik Bolt, or equal.

2.08 Caged Ladder - NOT USED

2.09 Aluminum Stairs

A. The Contractor shall refer to Specification Section 05510, *Metal Stairs and Walkways*.

2.10 Aluminum Stair Treads and Nosings

A. The Contractor shall refer to Specification Section 05510, *Metal Stairs and Walkways*.

2.11 Castings - NOT USED

2.12 Lintels, Plates, and Miscellaneous Angles

A. Provide lintels, plates, and miscellaneous angles as indicated on the Contract Drawings or required.

B. Lintels shall have a minimum eight (8) inch bearing at each end unless otherwise indicated. Weld or bolt members together to form a complete assembly.

C. Install plates and angles as indicated on the Contract Drawings. Where bolts and straps are shown, attached to plates, angles, and lintels, provide a 1¾-inch diameter by fifteen (15) inch long anchor bolt or 2¼-inch by one (1) inch by eight (8) inch long strap anchor at each end, unless otherwise indicated on the Contract Drawings.

D. Properly embed fasteners into concrete or masonry.

2.13 Equipment Supports

A. Provide equipment supports as indicated on the Contract Drawings or required to support and anchor mechanical equipment, including roof-mounted items.

B. The Contractor shall ***verify with the equipment manufacturer*** that the supports are ample for the equipment being supported.

C. ***A certification letter from the equipment supplier and Contractor shall be submitted*** to the Engineer during the shop drawing review process.

2.14 Fabricated Frames

A. Provide fabricated frames for openings in floors and walls as indicated on the Contract Drawings. Construct frames of channels, angles, and flat or bent plates or combinations of shapes and materials as detailed using non-corrosive materials for the environment in which they are to be constructed.

B. Frames shall be accurately squared, mitered, butted, or coped as necessary, shall be fully welded, and all welds on exposed surfaces shall be ground smooth.

C. Weld straps or anchors of sizes and spacing indicated to the back of frames for anchoring into concrete or masonry. Where size and spacing of anchors are not indicated, use ¼-inch x 2" x 8" straps with ends hooked two (2) inches, and space the straps not more than eighteen (18) inches apart.

D. Frames shall be aligned and accurately leveled to finish flush with adjacent surfaces.

2.15 Pit and Trench Covers and Frames

A. Provide frames and non-skid plate covers where indicated on the Contract Drawings. Unless otherwise indicated, provide one (1) inch x eight (8) inch long bent bar anchors, welded to frames and spaced not more than eighteen (18) inches on center.

B. Frames shall be aligned and accurately leveled to finish flush with adjacent surfaces. Covers shall be in sections not more than four feet long and shall abut adjacent cover leaving no discernable gaps. The covers shall have a minimum thickness of 3/8-inch.

C. Provide hinges and suitable lift-holes near the ends of each section of cover.

D. ***Provide H-20 loading covers where indicated*** on the Contract Documents.

E. ***The Contractor is responsible for providing the design and structural support for all frames and covers***.

2.16 Bollards (Truck Guards)

A. Provide truck guards (bollards) and covers where indicated on the Contract Drawings. ***The bollards shall be 7-inch (galvanized) standard weight steel pipe*** as specified in ASTM A-53.

B. Anchor posts in concrete as indicated and fill solidly with Class B (3,000 psi) concrete conforming to Section 03300, *Cast-in-Place Concrete*.

C. Bollard Covers

1. ***The bollard cover (post sleeve) shall be of the blow molded type, constructed from 1/8-inch thick High-Density Polyethylene (HDPE) for weather resistant durability and long service life***.

2. ***The bollard covers shall have a bright "safety yellow" color with UV stabilizers for protection from the sun and dual 3M "red" reflective-tape bands*** shall be integrally provided for enhanced visibility for day and night protection.

3. The bollard covers shall be as manufactured by Thermoprene, Inc., or approved equal.

2.17 Stainless Steel Safety Chains

A. Safety chains shall be fabricated from ***Type 316 stainless steel, proof coil style, 3/16-inch diameter, with a minimum of twelve (12) links per foot***, and with snap hooks on each end and installed where indicated on the Contract Drawings.

B. Snap hooks shall be boat type and eye bolts for attachment of chains shall be fabricated of Type 316 stainless steel 3/8-inch bolt with ¾-inch eye diameter, anchored as indicated.

C. Two (2) chains, four (4) inches longer than the anchorage spacing, shall be supplied for each guarded area and shall be mounted 3.5 feet and 2.0 feet above the floor.

2.18 Manual Barscreen - NOT USED

2.19 Drain Trays - NOT USED

2.20 Catch Basin Grating - NOT USED

2.21 Guard Rails - NOT USED

2.22 Stop Plates and Grooves

A. Stop Plates for weirs and baffles shall be fabricated from 3/8-inch minimum aluminum alloy 6061-T6 or 6063-T6 or fiberglass, as indicated on the Contract Drawings. Corners shall be rounded approximately 1/8-inch radius for smooth sliding.

B. Stop Plate Grooves for weirs and baffles shall be extruded aluminum alloys 6061-T6 or 6063-T6 as indicated on the Contract Drawings. Grooves shall be one piece, have integral concrete anchors and welded miter corners, and be designed for the thickness of stop plates plus 1/8-inch. Grooves shall be as manufactured by Washington Aluminum Co., Baltimore, MD; Neenah Foundry Co., Neenah, WI; or equal. All aluminum in contact with or embedded in concrete shall be protected in accordance with the AA Specification.

C. Aluminum Angles shall be attached in pairs to form grooves on the face of existing concrete. Use 2-inch by 2-inch by 3/8-inch angles and expansion anchors, unless otherwise indicated on the Contract Drawings. Protect all aluminum in contact with dissimilar materials in accordance with AA recommendations.

3. EXECUTION

3.01 Installation

A. General

1. Insofar as possible, fabricated material shall be fitted and shop assembled ready for erection.

2. Welding and equipment shall conform to the American Welding Society's (AWS) Code for Welding in Building Construction, latest edition.

3. All work shall be square, plumb and true, accurately fitted with tight joints and intersections. Exposed work shall be finished smooth with welds ground smooth.

B. Fabrication and Erection

1. Fabricate miscellaneous metal items to straight lines and true curves. ***Drilling and punching shall not leave "burrs" or "deformations"***. Continuously weld permanent connections along the entire area of contact. Exposed work shall have a smooth finish with welds ground smooth.

2. ***Joints shall have a close fit*** with corner joints coped or mitered and shall be in true alignment. Unless specifically indicated, there shall be no bends, twists, or open joints in any finished member nor any projecting edges or corners at intersections. Conceal fastenings wherever possible. Built-up parts shall be free of warp. Exposed ends and edges of metal shall be slightly rounded. All bolt holes shall be $^{1}/_{16}$-inch in diameter larger than bolt size.

3. Measure cast-in-place bolt locations in the field before drilling companion holes in structural steel beam or assembly.

4. Clean the surfaces of metalwork to be in contact with concrete of any rust, dirt, grease, and other foreign substances before placing concrete.

5. Set embedded metalwork accurately in position when concrete is placed and supported rigidly to prevent displacement or undue vibration during or after the placement of concrete.

6. Unless otherwise specified, where metalwork is to be installed in recesses in formed concrete, said recesses shall be made, metalwork installed, and recesses filled with grout in conformance with Section 03600, *Grout*.

C. Welding

1. Welding on steel shall be performed by the Shielded Metal Arc Welding (SMAW) process. Welding procedures shall comply with AWS B3.0.

2. Welding on aluminum shall be performed by the Gas Metal Arc (MIG) or Gas Tungsten Arc (TIG) process, per the AWS Welding Handbook.

3. Provide a minimum of two (2) passes for metal of $^{3}/_{16}$-inch thickness plus one (1) additional pass for each additional 1/8-inch in metal thickness.

4. Produce weld uniform in width and size throughout its length with each layer of weldment smooth; free of slag, cracks, pinholes, and undercuttings; and completely fused to the adjacent weld beads and base metal.

5. Avoid irregular surface, nonuniform bead pattern, and high crown. Form fillet welds of the indicated size.

6. Accomplish repair, chipping, and grinding of welds in a manner that will not gouge, groove, or reduce the base metal thickness.

D. Anchor Bolts and Anchors

1. Preset bolts and anchors by the use of templates. Do not use concrete anchors set in holes drilled in the concrete after the concrete is placed in place of cast-in-place anchor bolts.

2. After anchor bolts have been embedded, protect their threads by applying grease and by having the nuts screwed on until the time of installation of the equipment or metalwork.

E. Control of Flame Cutting

1. Do not use flame cutting by the use of a gas-cutting torch in the field for correcting fabrication errors on any member in structural framing.

2. Use a flame-cutting torch only on minor members when the member is not under stress.

F. Repair of Galvanized Surfaces

1. ***The Contractor shall repair or replace all metal with damaged galvanized surfaces at no additional cost to the Owner***.

2. The repair of galvanized surfaces shall be affected by use of the following, or equal, applied in accordance with the manufacturer's instructions:

   a. DRYGALV as manufactured by the American Solder and Flux Company.

   b. Cold Galvanizing Repair Compound as manufactured by Rust-O-leum.

G. Painting and Protective Coating

1. All ferrous metal, except stainless steel and galvanized surfaces, shall be properly cleaned and given one shop coat of the fabricator's standard primer (compatible with the metal being used).

2. Anchors that are built into masonry shall be coated with asphalt paint unless specified to be galvanized.

3. Metal work to be encased in concrete shall be left unpainted unless specified or noted otherwise.

4. Where hot-dip galvanized or zinc coated metal is specified or shown, it shall be shop primed unless specifically not required.

5. Castings that are to be left unpainted shall be cleaned and coated with a coal-tar-pitch varnish.

6. Aluminum to be placed adjacent to masonry or dissimilar metals shall be protected with an isolating coating of bitumastic and/or felt.

7. The Contractor is referred to Section 09900, *Painting*, for any additional painting and/or protective coating requirements.

H. Dissimilar Metal Contact

1. Where the contact of dissimilar metals may cause electrolysis and where aluminum will contact concrete, mortar or plaster, the contact surface of the metals shall be separated using not less than one (1) coat of zinc chromate primer and one (1) heavy coat of aluminum pigmented asphalt paint on each surface; or where deemed necessary by the Engineer, not less than one (1) course of asphalt saturated cotton fabric cemented to both metals with flashing cement, shall be used. Neoprene can also be used as approved by the Engineer.

2. ***Finished works shall be cleaned and excess cement removed***.

3. All work shall be adequately anchored in place at proper elevations, planes and locations.

I. Installing Pipe Bollards

1. Anchor bollards in concrete with pipe sleeves preset and anchored into concrete. After bollards have been inserted into the sleeves, fill the annular space between the bollard and sleeve solidly with non-shrink, non-metallic grout, mixed and placed to comply with the grout manufacturer's directions.

2. ***Fill bollards solidly with concrete, mounding the top surface***.

3. ***Clean the exterior of the bollards of all concrete spoils, debris and other materials. Install the pipe bollard covers in accordance with the manufacturers instructions***.

J. ***Clean all miscellaneous metal assemblies and remove any markings by washing them thoroughly with clean water and soap and rinsing with clean water***. Do not use an acid solution, steel wool or other harsh abrasives. If any staining remains after washing, the piece shall be removed and replaced at no additional cost to the Owner.

K. ***Remove stained or otherwise defective work and replace with material that meets the specification requirements, at no additional cost to the Owner***.

END OF SECTION

SECTION 06600

FABRICATED FIBERGLASS REINFORCED PLASTIC (FRP) PRODUCTS

1. GENERAL

1.01 Description

A. This Section covers Fiberglass Reinforced Plastic (FRP) products for use on this Project. Applications include, but are not limited to, miscellaneous shapes, structural components and other specified items for use in reclaimed water, wastewater and sodium hypochlorite disinfection processes.

B. Related Work Specified Elsewhere

1. Equipment: Division 11

1.02 Qualifications and Experience of the Manufacturer

A. The Manufacturer shall be a specialist in the design and fabrication of Fiberglass Reinforced Plastic (FRP) products intended for use in wastewater and biosolids applications, and ***shall have at least five (5) years experience in this specialty***.

B. The Manufacturer shall have such production facilities as will insure prompt manufacture and shipment of these fiberglass products. The Manufacturer shall continually monitor production in order to insure that the control of quality is maintained. Upon request, the Manufacturer shall furnish certified test reports on the raw materials used in fabrication.

C. ***The Manufacturer shall have on his staff a full-time registered professional engineer having no less than five (5) years experience in the design and fabrication of fiberglass reinforced plastic products***, who will be in responsible engineering charge of the work to be done. ***All shop drawings shall carry the seal of such registered Professional Engineer***.

1.03 Quality Assurance

A. Reference Standards

1. Comply with applicable provisions and recommendations of the following, except as otherwise shown or specified:

STANDARD	DESCRIPTION
American Society for Testing and Materials (ASTM)	
ASTM D-570	Standard Test Method for Water Absorption of Plastics
ASTM D-635	Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position
ASTM D-638	Standard Test Method for Tensile Properties of Plastics
ASTM D-695	Standard Test Method for Compressive Properties of Rigid Plastics
ASTM D-732	Standard Test Method for Shear Strength of Plastics by Punch Tool
ASTM D-790	Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials
ASTM D-792	Standard Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement
ASTM E-84	Standard Test Method for Surface Burning Characteristics of Building Materials
Other Standards	
	National Bureau of Standards, Voluntary Product Standard PS 15
	Florida Building Code

1.04 Shop Drawings

A. Shop Drawings and Manufacturers Literature

1. For all fiberglass reinforce plastic components and products to be furnished under this section, the Contractor shall submit all material required to establish compliance with this Section and Section 01300, *Shop Drawings, Submittals and Samples*. All submittals shall be in an electronic format (PDF).

2. The Shop Drawings shall indicate the specific dimensions and thicknesses.

3. ***A detail of the intended support members with certification*** demonstrating their adequacy for the application and intended loads.

4. Submit color samples for selection of colors.

5. The Shop Drawings must be approved by the Engineer before production may proceed.

B. The Manufacturer shall secure from the appropriate regulatory agencies, approval for the use of its Fiberglass Reinforced Plastic (FRP) products for use in wastewater, reclaimed water and sodium hypochlorite disinfection applications, if required by the Project.

1.05 Design

A. The assembled Fiberglass Reinforced Plastic (FRP) products, anchoring systems and each of their structural components, both laminated and prefabricated, ***shall be designed for all live and dead loads, including 140 mph winds***.

B. Empirical designs of assembled Fiberglass Reinforced Plastic (FRP) products shall be acceptable provided they are substantiated by a satisfactory service history of ***no less than ten (10) years***.

1.06 Warranty and Guarantees

A. ***The Manufacturer shall guarantee workmanship and materials on the finished fiberglass reinforced plastic products for a period of five (5) years from the date of Final Project Acceptance by the Owner***.

B. If defects appear within the five (5) year period, the Manufacturer shall proceed to replace said components or equipment, upon written notice from the Owner that such defects have been found, immediately, and at no additional cost to the Owner.

C. The manufacturer's warranty period shall run concurrently with the Contractor's warranty period. No exception to this provision shall be allowed.

D. Refer to the General Conditions for additional guarantee and warranty requirements as well as Section 01740, *Warranties and Bonds*.

1.07 Product Delivery, Storage and Handling

A. The manufacturer shall examine all FRP products and components prior to packaging and delivery to the Project Site and shall provide a letter to the Engineer, submitted at

the time of shipping, indicating that the products produced meet the requirements of the specifications, were examined prior to delivery, and were shipped free of defects and of high workmanship quality.

B. All equipment and accessories shall be properly protected so that no damage or deterioration will occur during a prolonged delay from the time of shipment until installation is complete and the equipment is ready for operation.

C. Upon delivery of the FRP components to the Project Site, the Contractor shall inspect the components for damage during transit. ***If damage has occurred, the FRP components shall be returned to the manufacturer and components shall be provided at no additional cost to the Owner***.

D. The Contractor shall handle the FRP components during delivery, storage and installation in a manner to prevent damage of any nature in accordance with the manufacturer's approved written instructions and in accordance with instructions given on-site by the manufacturer's representative.

1. PRODUCTS

1.01 Resins

A. Polyester Resin

1. The Resin shall be a polyester material, possessing inherent UV (UV-8 or greater), fire, and chemical resistance. The resin material shall be fire rated for Class I flame spread and flammability ratings as per ASTM E-84 and D-635.

2. ***The resin shall be of a commercial grade*** that has been evaluated by the testing of previous service, and found to be acceptable for the specific environment.

3. ***The resin shall be resistant to the corrosive nature and action of water, wastewater, and sodium hypochlorite disinfected reclaimed water.***

B. Catalyst

1. The polyester resin shall be cured by polymerization in a hard, rigid, solid product.

2. The catalyst used for polymerization shall be MEK peroxide, Reichhold 46-700 or approved equal.

C. Gel Coat

1. Gel Coat shall consist of polyester resin, a catalyst, and a colorant. White gel coat shall be Ferro VF-4060, or approved equal.

2. Green gel coat shall be Ferro VF8640, or approved equal.

1.02 Glass Fiber Reinforcing Materials

A. Glass fiber reinforcing materials shall be of commercial grade.

B. To insure chemical adherence between the glass reinforcement and the polyester resin, a special silane treatment shall be applied to the glass filaments. One or more of the following glass fiber reinforcing materials shall be used:

1. Chopped Roving

a. Multiple strands of monofilament glass fibers made into a continuous untwisted ribbon and automatically chopped to approximately one (1) inch lengths, and placed by machine in the spray-up method of fiberglass manufacture.

2. Reinforcing Mat

a. Made from roving chopped to approximately two (2) inch lengths, then uniformly dispersed and manufactured into a smooth mat with weights ranging from ¾ oz. to 1½ oz. per square foot, suitable for the hand lay-up method of fiberglass manufacture.

b. In the manufacture of the reinforcing mat, the glass strands shall be bonded together into the mat shape with a styrene soluble binder.

3. Woven Roving

a. Made from continuous roving, and woven into a heavy fabric suitable for the hand lay-up method of fiberglass manufacture.

4. Woven Cloth and Tape

a. Made from twisted yarns of glass fiber strands, and woven into a light fabric suitable for the hand lay-up method of fiberglass manufacture.

1.03 Laminated Fiberglass Components

A. Laminate Construction

1. Laminated fiberglass components shall be manufactured by a combination of the spray-up method and the hand lay-out method.

2. The laminate shall consist of a series of resin and glass reinforcement applied upon a mold made specifically for the end product being manufactured. The surface of the mold shall be free of cracks, pits and crazing. The mold shall have a smooth surface finish.

3. ***The initial coating placed against the mold shall be a gel coat of no less than 20 to 25 mils thick***. VF-4060 white gel coat shall be used for molded surfaces which will be exposed to the weather. VF-8640 green gel coat shall be used for molded surfaces that may be exposed to wastewater or domestic biosolids.

4. ***The second layer in the laminate shall be no less than twenty-five (25) mils thick and shall consist of polyester resin reinforced with no less than thirty percent (30%) chopped roving and reinforcing mat***.

5. The remaining thickness of the laminate shall be designed and manufactured to provide the strength necessary to meet tensile and flexural requirements and shall consist of layers of polyester resin and any one of a combination of glass fiber reinforcing materials described under Article 2.02 herein.

6. If multiple layers of woven roving or woven cloth are used, a layer of chopped roving shall be placed in alternate layers.

7. ***The glass fiber content of the completed laminate shall be no less than thirty percent (30%) by weight***. Throughout the laminate, the resin shall thoroughly saturate the glass fiber reinforcement.

B. Laminate Appearance

1. ***The fiberglass product shall be of uniformly high quality***. The finished mold surface shall be free of visual defects, foreign inclusions, dry spots, crazing, air bubbles, pin holes and delaminations. The edges shall be straight and true.

2. The finished lay-up surface shall be smooth and shall be thoroughly coated with gel coat. There shall be no exposed glass fibers or sharp projections. All cut edges shall be straight, and shall be coated with gel coat so that no glass fibers are exposed, and so that all voids are filled.

C. Laminate Thickness

1. The fiberglass reinforced plastic laminate shall have ***a thickness of no less than ¼-inch***.

2. At no point in the laminate shall the thickness be less than this minimum.

D. Laminate Properties

1. The fiberglass reinforced plastic laminate shall have the following physical properties, and where required, shall be tested in accordance with the ASTM Standards indicated:

Physical Property	Value	ASTM Standard
Water Absorption, 24 hours	0.50%	D-570
Ultimate Tensile Strength	30,000 psi	D-638
Ultimate Compressive Strength	30,000 psi	D-695
Ultimate Shear Strength	15,000 psi	D-732
Ultimate Flexural Strength	30,000 psi	D-790
Specific Gravity	1.5	D-792

2. ***The design of all components shall use a factor of safety of 4.0 based on the ultimate strength***.

3. The average Barcol hardness of the laminate shall be no less than 30. The Barcol Impressor, Model GYZJ 934-1, shall be used for the determination of the hardness. Calibration of the Barcol instrument shall be verified by comparing a blank specimen having a known hardness reading of 85 - 87. For each fiberglass component, ten (10) readings on the clean laminate surface shall be made. After eliminating the two high and two low readings, the average of the remainder shall be the reported hardness reading.

1.04 Prefabricated Fiberglass Structural Components

A. Prefabricated structural components used in the manufacture of all fiberglass products shall be made of polyester resin reinforced with glass fibers and produced by a continuous forming process.

B. Prefabricated structural components shall have the following physical properties:

Physical Property	Value	ASTM Standard
Water Absorption, 24 hours	0.75%	D-570
Ultimate Tensile Strength	30,000 psi	D-638
Ultimate Compressive Strength	30,000 psi	D-695
Ultimate Shear Strength	4,500 psi	D-732
Ultimate Bearing Strength	30,000	
Specific Gravity	1.5	D-792
Barcol Hardness	50	

C. ***The design of all components shall use a factor of safety of 4.0 based on the ultimate strength***.

1.05 Fasteners

A. Chemical Application Areas

1. All fasteners used in the assembly and erection of fiberglass reinforced plastic products, in chemical application areas, shall be ***chemical and corrosion resistant fasteners***, provided by the manufacturer, for the particular type of chemical being used in an area.

B. Non-Chemical Application Areas

1. ***All fasteners used in the assembly and erection of fiberglass reinforced plastic products, in non-chemical application areas, shall be Type 316 stainless steel***.

C. A ratio of fastener diameter to fiberglass thickness (D/t) of no less than one (1) shall be used.

3. EXECUTION

3.01 Inspection

A. ***The FRP products shall be inspected by the manufacturer prior to delivery*** and by the Contractor at time of delivery to ensure that the products are free, as commercially possible, from visual defects such as foreign inclusions, delamination, blisters, resin burrs, air bubbles and pits.

B. ***Any defective or improperly fabricated FRP products shall either not be shipped from the manufacturer or shall be returned to the manufacturer, by the Contractor, at the time of delivery***. All FRP products shall be "new" and any defective grating or ancillary materials shall be rejected and replaced immediately ***at no additional cost to the Owner***.

3.02 Installation

A. The Contractor shall install all grating and ancillary materials in strict accordance with the manufacturer's instruction and erection drawings. Fiberglass products shall be installed at the locations shown on the Contract Drawings.

B. ***All work shall be erected level and plumb, and shall meet required heights, layout and details precisely***. All work shall be adequately fastened, anchored or braced. All fasteners shall be corrosion resistant and compatible for use with the fluid or chemical being used in the area of erection. All fasteners shall be as indicated in Article 2.05 herein.

C. All work shall be executed in accordance with the best practices of the trade, by persons skilled in the craft.

D. Installation shall be in strict accordance with the manufacturer's instructions and recommendations.

3.03 Inspection and Testing

A. A final acceptance test shall demonstrate that the fiberglass products have been properly installed, are structurally sound and secure, are in the correct alignment and meet the loading requirements specified herein.

END OF SECTION

SECTION 06605

FIBERGLASS REINFORCED PLASTIC (FRP) GRATING

1. GENERAL

1.01 Description

A. Furnish all labor, materials, equipment and incidentals to design, fabricate and install a fiberglass reinforced plastic (FRP) grating system, and associated miscellaneous items specified herein, with all appurtenances, accessories and incidentals necessary to produce a complete, operable and serviceable installation as shown on the Contract Drawings (covering of pipe trench) and as specified herein, and in accordance with the requirements of the Contract Documents.

1.02 Quality Assurance

A. Reference Standards

1. Comply with applicable provisions and recommendations of the following, except as otherwise shown or specified:

STANDARD	DESCRIPTION
American Society for Testing and Materials (ASTM)	
ASTM D-635	Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position
ASTM E-84	Standard Test Method for Surface Burning Characteristics of Building Materials
Other Standards	
	National Bureau of Standards, Voluntary Product Standard PS 15
	OSHA Standards (pertaining to worker safety and walking/working surfaces)
	Florida Building Code

B. Obtain each type of material (grating, embedding frames, supports, plates, etc.) through ***one source from a single manufacturer***.

C. ***The Contractor shall verify all dimensions for grating, plates, supports, etc. by field measurements prior to preparation of shop drawings and fabrication***. Coordinate the fabrication schedule with the construction progress to avoid delaying the Work. Where field dimensions cannot be made without delaying the Work, establish dimensions and proceed with fabricating said materials without field measurements. Coordinate construction to ensure that the actual dimensions correspond to the established dimensions.

1.03 Qualifications and Experience of the Manufacturer

A. The Manufacturer shall be a specialist in the design and fabrication of fiberglass reinforced plastic (FRP) grating and structural shapes intended for use in wastewater applications, and ***shall have at least five (5) years experience in this specialty***.

B. The Manufacturer shall have such production facilities as will insure prompt manufacture and shipment of these fiberglass products. The Manufacturer shall continually monitor production in order to insure that the control of quality is maintained. Upon request, the Manufacturer shall furnish certified test reports on the raw materials used in fabrication.

C. ***The Manufacturer shall have on his staff a full-time registered professional engineer having no less than five (5) years experience in the design and fabrication of fiberglass reinforced plastic products***, who will be in responsible engineering charge of the work to be done. ***All shop drawings shall carry the seal of such registered Professional Engineer***.

1.04 Shop Drawings

A. Prior to beginning fabrication, the Manufacturer shall submit a complete set of detailed shop drawings for the FRP products to be furnished in accordance with Section 01300, *Shop Drawings, Submittals and Samples* and in an electronic format (PDF). The shop drawings shall include, at a minimum, the following:

1. Structural engineering calculations and a structural grating support design by a Structural Engineer registered in the State of Florida.

2. Load and deflection tables.

3. Material sizes, types and styles, dimensions and thicknesses.

4. ***The manufacturer shall provide color samples for selection by the Engineer and Owner.***

5. Part or catalog numbers.

6. The Contractor shall submit complete fabrication, placing and erection drawings showing the locations of all fabricated items including location, type and sizes of fasteners, clips, angles, member sizes and connection details. Reproductions of the Contract Documents will not be accepted for this purpose.

B. The Contractor shall submit the manufacturer's published literature including structural design data, structural properties data, grating load/deflection tables, corrosion resistance tables, certificates of compliance, test reports as applicable, concrete anchor systems and their allowable load tables, and design calculations for systems not sized or designed in the contract documents.

C. The Contractor shall submit sample pieces of each item specified herein for acceptance by the Engineer as to quality and color. Sample pieces shall be manufactured by the method to be used in the Work.

D. ***The shop drawings must be approved by the Engineer before production may proceed***.

1.05 Product Delivery and Storage

A. The manufacturer shall examine all FRP products and components prior to packaging and delivery to the Project Site and shall ***provide a letter to the Engineer***, submitted at the time of shipping, indicating that the products produced meet the requirements of the specifications, were examined prior to delivery, and were shipped free of defects and of high workmanship quality.

B. All equipment and accessories shall be ***properly protected so that no damage or deterioration will occur during a prolonged delay*** from the time of shipment until installation is complete and the equipment is ready for operation.

C. Manufactured materials shall be delivered in original, unbroken pallets, packages, containers, or bundles bearing the label of the manufacturer.

D. Upon delivery of the FRP components to the Project Site, ***the Contractor shall inspect the components for damage during transit***. If damage has occurred, the FRP components shall be returned to the manufacturer and components shall be provided at no additional cost to the Owner.

E. The Contractor shall handle the FRP components during delivery, storage and installation in a manner to prevent damage of any nature in accordance with the manufacturer's approved written instructions and in accordance with instructions given on-site by the manufacturer's representative. All materials shall be carefully handled to prevent them from abrasion, cracking, chipping, twisting, other deformations, and other types of damage.

F. Store items in an enclosed area, ***off of the ground***, and free from contact with soil and water.

G. Adhesives, resins and their catalysts and hardeners shall be crated or boxed separately and noted as such to facilitate their movement to a dry indoor storage facility between 70 and 85□F (21 and 29□C) until they are required.

1.06 Warranty and Guarantee

A. ***The Manufacturer shall guarantee workmanship and materials on the finished fiberglass reinforced plastic products for a minimum period of five (5) years from the date of Final Project Acceptance by the Owner***.

B. If defects appear within the warranty/guarantee period, the ***Manufacturer shall proceed to replace said components or equipment***, ***upon written notice from the Owner that such defects have been found, immediately, and at no additional cost to the Owner.***

C. The manufacturer's warranty period shall run concurrently with the Contractor's warranty period. No exception to this provision shall be allowed.

D. Refer to the General Conditions for additional guarantee and warranty requirements as well as Section 01740, *Warranties and Bonds*.

2. PRODUCTS

2.01 General

A. Products shall be furnished by manufacturers having a minimum of five (5) years experience in the manufacture of similar items with a record of successful installations.

B. Support members shall be as designed for the particular application by the fabricator to ensure functionality, integrity and structural stability.

2.02 Materials

A. Grating

1. Reference is made here to Division 5, *Metals*, for requirements of material fastenings. All metal fastening systems and hardware shall be corrosion resistant and suitable for use with sodium hypochlorite, biosolids and raw wastewater.

2. All fiberglass grating, located where indicated on the Contract Drawings, shall be a ***minimum of 1½-inches in depth***, and able to ***withstand a 350 lb. concentrated load and a 150 lb/ft^2 uniformly distributed load on a four (4) foot span with a deflection no greater than 0.15 inches under the concentrated load***.

3. The depth of the fiberglass grating shall be determined by the manufacturer in accordance with the span and load requirements shown on the Contract Drawings.

4. The fiberglass grating shall be pulltruded from standard fiberglass chemical resistant vinylester resin which meets ASTM E-84, Class 1, Flame Rating, and self-extinguishing requirements of ASTM D-635.

5. Cut edges or cut openings shall be sealed.

6. The grating shall be manufactured with an integral grit molded into the surface to provide an non-skid walking surface. Color shall be selected by the Owner.

7. Grating support members shall be of similar resin material as grating, fastened to concrete as per manufacturer's recommendations.

8. FRP grating, supports and associated ancillary materials shall be as manufactured by Fibergrate Composite Structures, Inc.; American Grating; Safe-T Grate, Seasafe, Inc.; Imco Reinforced Plastics; or equal.

B. Fiberglass Structural Shapes (as applicable)

1. Structural FRP members supplied under this specification section shall be manufactured using the "*pulltrusion*" process. The composite shall consist of a glass fiber reinforced vinylester resin matrix, approximately fifty percent (50%) resin to glass ratio.

2. Glass reinforcement shall be of three varieties:

   a. A surface mat shall be used on all exterior surfaces for maximum chemical resistance.

   b. Continuous strand mats shall be used internally for transverse strength.

c. Continuous glass strand rovings shall be used internally for longitudinal strength.

3. Resin shall be a polyester material, possessing inherent ultraviolet (UV-8), fire, and chemical resistance. Material shall be fire rated for Class I flame spread and flammability ratings as per ASTM E-84 and D-635.

4. The following minimum mechanical properties shall apply:

Mechanical Property	Value
Ultimate Tensile Strength (longitudinal direction)	30,000 psi
Ultimate Tensile Strength (transverse direction)	9,000 psi
Ultimate Tensile Strength (full section in bending)	25,000 psi
Ultimate Compressive Strength (longitudinal direction)	30,000 psi
Ultimate Compressive Strength (transverse direction)	18,000 psi
Ultimate Compressive Strength (full section in bending)	25,000 psi
Ultimate Shear Strength (either direction)	4,500 psi
Ultimate Bearing Strength (either direction)	30,000 psi
Modulus of Elasticity (full section in bending)	2.8×10^6
Barcol Hardness Test	50

2.03 Fabrication

A. Measurements

1. Grating supplied shall meet the dimensional requirements and tolerances as shown or specified.

2. ***The Contractor shall provide and/or verify measurements "in the field" for work fabricated to fit field conditions as required by grating manufacturer to complete the Work***.

B. Layout

1. ***Each grating section shall be readily removable by a single man without any mechanical assistance***, except where indicated on Contract Drawings.

2. The manufacturer shall provide openings and holes where located on the contract drawings or as required to meet the requirements of this specification section.

3. Grating openings which fit around protrusions (pipes, cables, machinery, etc.) shall be discontinuous at approximately the centerline of opening so each section of grating is readily removable.

4. ***All FRP grating shall be fabricated free from warps, twists, or other defects which affect appearance and serviceability***.

C. Sealing

1. All shop fabricated grating cuts shall be coated with vinyl ester resin to provide maximum corrosion resistance.

2. All field fabricated grating cuts shall be coated similarly by the Contractor in accordance with the manufacturer's instructions.

D. Hardware

1. Chemical Application Areas

a. Chemical and corrosion resistant hold-down clips shall be provided by the grating manufacturer, for the particular type of chemical being used in an area, and spaced at a maximum of four (4) apart with a minimum of four (4) per piece of grating, or as recommended by the manufacturer.

2. Non-Chemical Application Areas

a. ***Type 316 stainless steel hold-down clips*** shall be provided and spaced at a maximum of four (4) apart with a minimum of four (4) per piece of grating, or as recommended by the manufacturer.

3. EXECUTION

3.01 Inspection

A. The grating shall be inspected by the manufacturer prior to delivery and by the Contractor at time of delivery to ensure that the grating is free, as commercially possible, from visual defects such as foreign inclusions, delamination, blisters, resin

burrs, air bubbles and pits. The surface of the grating shall have an integral grit finish so as to provide a non-skid walking surface.

B. Any defective or improperly fabricated grating shall either not be shipped from the manufacturer or shall be returned to the manufacturer, by the Contractor, at the time of delivery. ***All grating shall be "new"*** and any defective grating or ancillary materials shall be rejected and replaced immediately at no additional cost to the Owner.

3.02 Installation

A. The Contractor shall install all grating and ancillary materials in strict accordance with the manufacturer's instruction and erection drawings.

B. All work shall be erected ***level and plumb***, and shall meet required heights, layout and details precisely. ***All work shall be adequately fastened, anchored or braced***. ***All fasteners shall be corrosion resistant and compatible*** for use with the chemicals (sodium hypochlorite, sodium hydroxide, sulfuric acid, etc.), domestic biosolids or raw wastewater being used in the area of erection.

C. All work shall be executed in accordance with the best practices of the trade, by persons skilled in the craft.

D. Fiberglass grating, fiberglass structural members and other fiberglass products shall be designed and installed at the locations shown on the Contract Drawings.

3.03 Final Inspection and Testing

A. A final acceptance test shall demonstrate that the fiberglass products have been properly installed, are structurally sound and secure, are in the correct alignment and meet the loading requirements specified herein.

END OF SECTION

SECTION 06702

DOUBLE WALL CHEMICAL STORAGE TANK

1. GENERAL

1.01 Description

A. Scope of Work

1. Furnish all labor, materials, appurtenances and accessories required to install "*new*" and "*unused*", upright, high density linear polyethylene (HDLPE) double walled, flat bottom chemical storage tanks for the following chemicals at the following locations as shown on the Contract Drawings and as specified herein.

No. of Tanks	Volume (gal)	Chemical
1	500	Polymer
1	500	Sodium Bisulfite Dechlorination of Facility Effluent

2. The tanks shall be manufactured and equipped for storage and use of the aforementioned chemical(s) and shall have a specific gravity of 1.9.

B. The double walled tank(s) shall consist of an inner *primary* tank and one outer *secondary* tank. Each tank shall be of the vertical extrusion wound type. The tank(s) are designed for above-ground, vertical installation and shall be capable of containing chemicals at atmospheric pressure. The tank system(s) shall be designed to prevent rainwater from entering the containment tank.

C. The design shall allow direct primary tank base retention for up to Seismic Zone 4 conditions per UBC code requirements***. The containment tank shall be designed to hold a minimum of 108% of the normal fill capacity of the primary tank***.

D. The tank(s) shall be manufactured and equipped for the storage of chemicals as noted.

E. The chemical storage tank(s) and all associated piping shall meet the requirements of ANSI/NSF Standard 14 or Standard 61 and German DVS 2205.

F. ***All above grade chemical piping shall be insulated using polyurethane foam with a density of 2.0 - 3.0 lb/ft^3 with a "R" value of 8.33/in and a nominal thickness of 1-inch***.

G. Related Work Specified Elsewhere

1. Materials and Equipment: Section 01650

2. Piping and Fittings: Division 15

1.02 Quality Assurance

A. Standards

1. All work shall be executed and installed in accordance with the requirements of applicable codes.

2. Unless otherwise indicated, all materials, workmanship and practices shall conform to the following standards:

STANDARD	DESCRIPTION
American Society for Testing and Materials (ASTM)	
ASTM D-618	Conditioning Plastics and Electrical Insulating Materials for Testing
ASTM D-638	Tensile Properties of Plastics
ASTM D-790	Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials
ASTM D-883	Definitions of Terms Relating to Plastics
ASTM D-1505	Density of Plastics by the Density-Gradient Technique
ASTM D-1525	Test Method for Vicat Softening Temperature of Plastics
ASTM D-2837	Method for Obtaining Hydrostatic Design Basis for Thermoplastic Pipe Materials
ASTM D-3892	Practice for Packaging/Packing Plastics
ASTM F-412	Definitions of Terms Relating to Plastic Piping Systems
Association of Rotational Molders (ARM) Standards	

STANDARD	DESCRIPTION
	Low Temperature Impact Resistance (Falling Dart Test Procedure)
American National Standard Institute (ANSI)	
B-16.5	Pipe Flanges and Flanged Fittings
Occupational Safety and Health Administration (OSHA) Standards	
29 CFR 1910.106	Flammable and Combustible Liquids
Other Standards	
	Florida Building Code
	Uniform Building Code (Latest Edition)

B. Chemical Compatibility

1. Chemical compatibility shall be according to the following chemical resistance guides:

   a. Pruett, Kenneth M., "Chemical Resistance Guide for Elastomers", Compass Publications.

   b. Pruett, Kenneth M., "Compass Corrosion Guide II", Compass Publications.

2. These references shall be considered as general guidelines only.

C. Equipment Manufacturer

1. All chemical storage tanks required as part of this project shall be provided by one (1) manufacturer that has at least five (5) years prior experience in construction of extrusion wound polyethylene tanks for similar applications and comparable size.

2. All tanks shall meet the requirements of DVS 2205.

3. The chemical storage tanks shall be as manufactured by one of the following manufacturers:

   a. Houston PolyTank
   b. Snyder Industries
   c. Approved equal

1.03 Submittals

A. Shop Drawings and Manufacturers Literature

1. For all equipment to be furnished under this Section, the Contractor shall submit all material required to establish compliance with this Section and Section 01300, *Shop Drawings, Submittals and Samples*, including, but not limited to, the following:

   a. Dimensions of tank, fittings and attachments.

   b. Locations of fittings, anchor bolts, attachments and joints.

   c. Resin used and description of chemical.

   d. Weight of tanks.

   e. Manufacturer's catalog information, descriptive literature, specifications, and identification of materials of construction. Include complete resin system information.

   f. Design calculations and inspection records, if requested. DVS 2205 design calculations shall be provided and shall be for record only.

   g. The manufacturer shall present a certificate of theoretical and practical training in hot gas hand welding and hot gas extrusion welding of polyethylene completion, if requested.

   h. Written instructions for handling, storage, and installation of tanks. These instructions shall include bolt torque values and detailed instructions for pipe connections.

   i. A detail of the intended support members with certification demonstrating their adequacy for the application and intended loads.

   j. Submit color samples for selection of colors and manufacturer’s recommendations for the chemical(s) being stored in said tank(s).

2. Quality Control Submittals

   a. A copy of the manufacturer's quality assurance program.

   b. Quality Control Inspection Report, prepared by the manufacturer's quality assurance supervisor. The report shall include, as minimum:

      1) The names of production personnel who worked on the tank.

2) The type and quantity of materials used for the tank construction.

3) The visual inspection results for individual components taken before and after assembly.

c. A Factory Test Report, prepared by the manufacturer's quality assurance supervisor, including certification by signature of results.

d. A Field Inspection and Test Report available if applicable, prepared by manufacturer's shop inspector.

1.04 Product Marking, Packing and Packaging

A. Each chemical storage tank shall be marked to identify the product, date (month and year) of manufacture, capacity, and serial number. Each chemical storage tank shall be shipped with a 3 of 9, HRI bar code label containing tank description, manufacturing order number, part number, serial number, manufacturer, and date.

B. The proper caution or warning signs, as prescribed by OSHA standard 29 CFR 1910.106, shall be provided.

C. All packing, packaging, and marking provisions of ASTM Practice D-3892 shall apply to this standard.

D. ***Each tank shall be shrink-wrapped and bagged prior to delivery***.

1.05 Product Delivery, Storage and Handling

A. The high density linear polyethylene tank(s) (HDLPE) and all accessories shall be factory assembled and tested and shall be delivered to the site for installation fully assembled.

B. The high density linear polyethylene (HDLPE) tanks shall be capable of being set in place and field erected by the Contractor with only minimal field assembly.

C. Flange faces shall be covered with plastic flange covers.

D. All equipment and accessories shall be properly protected so that no damage or deterioration will occur during a prolonged delay from the time of shipment until installation is complete and the equipment is ready for operation.

E. Tanks shall be mounted on padded cradles, skids or protective framework so constructed as to provide for easy handling for crane, fork truck or similar.

F. Upon delivery of the tank(s) to the Project Site, the Contractor shall inspect the tank(s) for damage during transit. If damage has occurred, the tank(s) shall be returned to the manufacturer and a new tank(s) shall be provided at no additional cost to the Owner.

G. Nozzles, manholes, or other fittings shall not be used for lifting.

H. The Contractor shall handle during deliver, storage and installation in a manner to prevent damage of any nature in accordance with the manufacturer's approved written instructions and in accordance with instructions given on-site by the manufacturer's representative.

1.06 Warranty and Guarantees

A. All equipment supplied under this Section shall be ***warranted for a period of five (5) years by the manufacturer and Contractor. The warranty period shall commence upon Final Project Acceptance by the Owner***.

B. ***The equipment shall be warranted to be free from defects in workmanship, design and materials***. If any part of the equipment should fail during warranty period, it shall be replaced at no expense to the Owner.

C. The manufacturer's warranty period shall run concurrently with the Contractor's warranty period. No exception to this provision shall be allowed. Refer to the General Conditions for additional guarantee and warranty requirements as well as Section 01740, *Warranties and Bonds*.

2. PRODUCTS

2.01 General

A. ***The chemical storage tank(s) and all equipment, accessories and hardware shall be non-corrosive and compatible with the chemical being stored***.

B. *The chemical storage tank(s) shall be complete including all specified accessories*. The tanks shall be designed and proportioned to have liberal strength, stability and stiffness and to be especially adapted to the work to be done and chemical to be stored.

C. ***The finished surfaces shall be free from visual defects*** such as foreign inclusions, air bubbles, pin holes and craters.

D. The chemical storage tank(s) shall be constructed of high density linear polyethylene (HDLPE) with welded components, suitable for installation as shown on the Contract Drawings.

E. Each tank shall have a diameter and height or length (straight side) and minimum capacity as specified herein. ***Flexible connections to the tanks shall be provided by the Contractor in accordance with the manufacturer's recommendations***.

F. Design Requirements

1. Design of polyethylene equipment for fabrication under these specifications shall be provided by the manufacturer. The design shall allow for the most severe combinations of conditions in accordance with DVS 2205 and ASTM requirements. Tank design calculations determined using the RITA tank design program in accordance with German DVS 2205 standard will become part of each design package. Where applicable, calculations shall include, but are not limited to, the following considerations:

    a. Design and upset temperatures.

    b. Specific gravity of material.

    c. Wind loading.

    d. Flanges, lugs, or ring supports.

    e. Configuration: Flat-bottom, flat top, vertical

2. The minimum required wall thickness for the cylinder straight shell must be sufficient to support its own weight in an upright position without any external support. Flat areas shall be provided to allow locating large fittings on the cylinder straight shell.

3. ***Secondary containment tanks shall be designed to the proper thickness to support its own weight in an upright position without any external support***. The secondary containment tank shall be configured to allow shipment of the primary tank inside of the secondary tank. The shipment shall be done without the aid of additional spacer blocks.

4. Tanks in excess of 2,000 gallons of capacity shall have a minimum of three (3) lifting lugs integrally molded into the top head. The lifting lugs shall be designed to

allow erection of an empty primary and secondary tank. The tanks shall be capable of being lifted into position as a unit (primary and secondary tanks).

5. The minimum thickness of the top head shall be equal to the top of the straight wall. The primary tank top shall be configured to prevent rainwater from entering the secondary containment tank. The primary tank shall be keyed to the secondary tank preventing primary tank rotation. The secondary containment tank shall have a capacity of one hundred eight percent (108%) of the normal fill capacity of the primary tank.

6. The tank shall be designed to provide a minimum of four (4) tie-down lugs integrally molded into the top head. The tie-down lugs shall be designed to allow tank retention in wind and seismic loading situations without tank damage. The primary/secondary tank unit shall be configured to allow direct primary tank base retention for seismic load conditions. The base retention unit shall be anchor bolted to an appropriate structure and not require additional spacer blocks. The Contractor is referred to Article 2.04(J) for tank tie-down accessories.

G. Dimensions and Tolerances

1. All dimensions shall be taken with the tank in the vertical position, unfilled. The tank dimensions will represent the exterior measurements.

2. The tolerance for the outside diameter, including out of roundness, shall be per ASTM D-1998.

3. The tolerance for fitting placements shall be ±0.5 inches in elevation and 2 ° radial at ambient temperature.

H. Test Methods

1. Test specimens shall be taken from fitting location areas.

2. Low Temperature Impact Test

a. Test specimens shall be conditioned at -40 °F for a minimum of two (2) hours.

b. The test specimens shall be impacted in accordance with the standard testing methods as found in ASTM D-1998.

1) Test specimens with a thickness less than ½-inch shall be tested at 100 ft-lb.

2) Test specimens with a thickness greater than ½-inch shall be tested at 200 ft-lb.

3. Ultrasonic Tank Thickness Test

   a. All tanks shall be measured for tank wall thickness at 6-inches, 1 foot, 2 feet and 3 feet on the tank sidewall height at 0° and 180° around the tank circumference with 0° being the tank manway and going counter-clockwise per ANSI standard drafting specifications.

   b. ***All tanks shall meet design thickness requirements and tolerances and a test report provided upon delivery of the tank(s)***.

4. Hydrostatic Water Test

   a. ***The hydrostatic water test shall consist of filling the tank to brim full capacity for a minimum of four (4) hours and conducting a visual inspection for leaks***.

I. Workmanship

1. The finished tank wall shall be free of visual defects such as foreign inclusions, air bubbles, pinholes, pimples, crazing, cracking and delamination that will impair the serviceability of the vessel.

2. All cut edges where openings are cut into the tanks shall be trimmed smooth.

J. ***The tank supports shall be able to withstand normal lifting and handling loads without distortion or cracking***.

K. ***All materials shall be compatible and non-corrosive with the chemical being stored within***.

L. Tank Specifics

1. The extrusion wound, high density linear polyethylene double wall tank(s) required shall be ANSI/NSF 61 certified and shall meet the following specifications:

2. Chemical Storage Tank Characteristics

Property	Polymer[1]	Bisulfite[2]
Type of Tank	Flat top, flat bottom, double-walled containment	
No. of Tanks	1	1
Diameter, ID - Primary Tank (inches)	48	48
Height - Primary Tank (inches)	103	103

Property	Polymer[1]	Bisulfite[2]
Diameter, ID - Secondary Tank (inches)	50	50
Height - Secondary Tank (inches)	104	104
Working Capacity, each (gallons)	500	500
Full Capacity, each (gallons)	500	500
Specific Gravity	1.9	1.9
Exterior Access Ladder	Yes	Yes
Exterior Handrail	None	None
Exterior Sight Gauge	Yes	Yes
Ultrasonic Level Indicator	Yes	Yes
Maximum Ambient Temperature (□F)	100	100
Leak Detection Unit	Yes	Yes
Tank Top Manway	Yes	Yes
External Fill Pipe	Yes	Yes
Internal Down Pipes	Yes	Yes
Vents	Yes	Yes
Tie-Down System	Yes	Yes
Location	Outdoors	Outdoors

1 Polymer for sludge dewatering operations
2 Sodium bisulfite for dechlorination operations

M. The Owner shall provide the chemical fills. The Contractor is responsible for coordinating with the Owner to ensure delivery of chemicals does not delay operation or startup of the system.

N. The high density linear polyethylene tanks shall be manufactured via the spiral extrusion wound process or approved equal.

O. The polyethylene tanks shall be designed and constructed in accordance with DVS 2205 standard. The tanks shall be capable of storing the specified chemicals at temperatures up to 140°F.

P. ***The sodium hypochlorite tanks shall be constructed using the spiral extrusion wound process***.

Q. The chemical storage tanks shall be designed so that no external bracing, ribs, hoops, or support wires are required.

R. The entire thickness of the cylindrical shell (inner surface, interior layer, and exterior layer) shall be built up prior to removal of the shell from the mandrel.

S. The top shall have a minimum thickness of ¼-inch. Flat bottoms shall have a minimum thickness as required by DVS 2205 but not less than ½-inch provided on the shop drawings submitted for approval.

T. The chemical storage tanks shall be completely fabricated in the shop. No field assembly is permitted.

2.02 Materials and Equipment

A. Size and Capacity

1. Each tank shall have a minimum capacity, straight side height, and bottom and top construction as noted above in Article 2.01(L).

2. The tank shall be manufactured in accordance with the German DVS 2205 standard.

3. The tank wall thickness shall be determined using the RITA tank design program or equivalent. The minimum total wall thickness shall be at least ½-inch thick.

B. Resin

1. The resin to be used in the fabrication of the chemical storage tank(s) shall be virgin, polyethylene, or equal, fully formulated, with low warpage and shrinkage.

2. The resin shall be as recommended by the resin manufacturer for the conditions of service for maximum chemical resistance and extended service life.

3. A UV inhibitor shall be added to the exterior layer for improved weather resistance.

4. Pigments added for tank coloring shall not exceed 0.25% (dry blended) of the total weight. The tank color shall be as selected by the Owner (manufacturer's recommendations for the chemicals being stored in said tanks shall be submitted).

5. The chemical storage tank(s) shall be suitable for outdoor chemical storage applications, as noted on the Contract Drawings, and shall be food contact approved.

2.03 Tank Attachments and Accessories

A. ***All tank fitting attachments shall be equipped with flexible couplers or other movement provisions provided by the tank manufacturer***. The tank will deflect based upon tank loading, chemical temperature, and storage time duration. ***Tank piping flexible couplers shall be designed to allow at least four percent (4%) design movement***. Movement shall be considered to occur both outward in tank radius and downward in fitting elevation from the neutral tank fitting placement.

B. ***Flexible connections to each chemical storage tank shall be provided by the Contractor in accordance with the manufacturer's recommendations***.

C. A tank sight level gauge, and all associated appurtenance, shall be provided with each tank provided as part of this Project.

D. The extrusion wound polyethylene tanks shall be equipped with the following accessories:

1. A top access port with bolted lid (24-inch), Viton gasket, and Type 316 stainless steel hardware.

2. Nozzles shall be sized as follows:

a. 4-inch welded ANSI flange (vent).

b. 2-inch welded ANSI flange (fill-primary tank).

c. 3-inch welded ANSI flange (suction-primary tank).

d. 3-inch welded ANSI flange (overflow).

e. 6-inch welded ANSI flange (level).

f. 3-inch welded ANSI flange (drain-secondary tank).

g. 3-inch welded ANSI flange (vent-secondary tank).

E. The area on the back of all flanges around each bolt hole and the diameter of the standard washer shall be flat and parallel to the flange face. This area shall be spot faced if necessary to meet this requirement.

F. All nozzles shall be flanged. The flange outer diameters and drilling shall be per ANSI 16.5. All flange faces shall be flat and true.

1. Unless otherwise specified, nozzles on top or bottom heads shall have flanged faces perpendicular to the vertical centerline of the tank and nozzles on side walls shall have flanged faces perpendicular to radial centerlines.

2. Nozzles shall be of the flush type installation. Gaskets shall be suitable for the intended chemical use.

G. Ultrasonic Level Indicator

1. The ultrasonic level indicator shall consist of a two (2) or three (3) inch, 4 - 20 mA output PVC sensor and a 3½-inch digit display unit.

2. The sensor shall be equipped with male pipe threads and be connected to the tank with a PE bulkhead fitting, or the sensor may be Teflon faced and flange bolted to the tank with encapsulated Type 316 stainless steel bolts. The sensor shall be connected to a display unit that is mounted at a location to be designated by the Engineer and Owner.

3. The display unit box shall be NEMA 4 rated and factory pre-wired for 110 VAC power. All connections shall be labeled to prevent errors in field installation. The display unit shall be pre-programmed for each individual the tank required by the Project.

4. The display will read directly in ***level (to the nearest 0.01 feet) and gallons***.

5. ***The signal and level of chemical in each tank shall be incorporated into the facility's SCADA system***.

H. Leak Detector Unit

1. ***A leak detector unit shall be provided with each double-walled chemical storage tank and shall be incorporated into the facility's SCADA system***.

2. The leak detector unit shall consist of a proximity sensor, a welded 2 inch FPT connection, a two (2) inch bung plug with a ¾-inch strain relief, and an indicator box. The sensor shall be placed in the interstitial space between the primary and secondary tanks approximately one (1) inch above the tank bottom. The indicator box shall be NEMA 4 rated and factory pre-wired for 110 VAC power.

3. All connections shall be labeled to prevent errors in field installation. The indicator box will show a green light when the power is "on" and the sensor is not detecting

a liquid. The light is a push to test light allowing the operator to test for a power outage or malfunction. If the green light goes out there are two possibilities:

a. The green light does not come on when the button is pushed. This would indicate a lack of power to the unit or the light bulb is burned out.

b. If the green light comes on when pushed, then a possible leak condition is indicated.

I. Bolted Sealed Top Manway

1. Sealed manways shall be provided for each tank to be provided as part of this Project.

2. The manways shall be liquid tight for maximum loading condition and suitable for the intended chemical use.

3. Manways shall be made the same as for flanged nozzles of the same diameter.

4. The cover shall be fume tight furnished with Viton gaskets, and corrosion resistant bolts as recommended by the manufacturer for the chemical to be stored. The tolerance of flatness shall be the same as for the flanges.

J. External Fill Pipes

1. All external fill pipes shall be supported at three (3) foot maximum intervals with a support structure independent of the tank (ground supported).

2. All external fill pipes shall be constructed of PVC or other material recommended by the manufacturer for the chemical to be stored and shall be corrosion-resistant materials.

K. Internal Down Pipes

1. Internal down pipes shall be installed in the locations indicated on the Contract Drawings.

2. All internal down pipes shall be supported at five (5) foot maximum intervals with a support structure welded to the inside of the primary tank. The support design may utilize a PVC clamp or other manufacturer recommended material for the intended use, function and chemical stored.

3. All internal down pipes shall be constructed of PVC or other material recommended by the manufacturer for the chemical to be stored and shall be corrosion-resistant materials.

L. Vents

1. ***Each tank shall be properly vented to the exterior of the chemical feed facility for the type of material and flow rates expected***.

2. The vents must comply with OSHA 1910.106 (F) (iii) (2) (IV) (9) normal venting for atmospheric tanks or other accepted standard, or shall be as large as the filling or withdrawal connection, whichever is larger but ***in no case less than three (3) inch nominal inside diameter***.

3. ***All vents shall have a "rain-cap" and be screened with a very fine mesh, non-corrosive material*** to eliminate the possibility of pests, insects, etc. from entering the tank.

4. All vents shall be constructed of PVC or other material recommended by the manufacturer for the chemical to be stored.

M. Flange Adapters

1. Flange adapters shall be provided as indicated on the Contract Drawings or as required to adapt threaded or socket fitting outlets to 150 lb. flange connections for connection to piping system components.

2. Flange adapters are available in PVC, CPVC or other material recommended by the manufacturer for the chemical to be stored.

3. Flange adapter construction shall utilize Schedule 80 components.

N. Tie-Down Systems

1. ***The tie down system shall be designed to withstand 150 MPH wind loads***. Tie down systems must meet Seismic Zone 4 requirements per UBC 1993 code.

2. Anchor bolts shall be provided by the Contractor per the manufacturer's instructions and the base plates required for the system.

3. The tie-down system shall be provided in either Type 316 stainless steel or other material recommended by the manufacturer for the chemical to be stored. The material shall be compatible and non-corrosive with respect to the material being stored within.

O. Equipment Platforms - NOT USED

P. Cone Bottom Tanks Stands - NOT USED

Q. Certification Plates

1. A corrosion resistant, non-metallic plate, suitable for use with the stored chemical, shall be installed below the storage tank nameplate. The following data shall be included on the certification plate:

   a. Name of tank fabricator.

   b. Date of manufacture.

   c. Product to be stored.

   d. Maximum allowable concentration, specific gravity, and temperature of the specified chemical solution that can be stored safely.

   e. Mechanical properties of the polypropylene.

   f. Tank characteristics (diameter, height, volume)

   c. Product to be stored.

R. Fastening Hardware

1. All fastening hardware used to with the tank(s) shall be ***corrosion resistant and compatible for use with the chemical to be stored***.

S. Tank Lifting Lugs

1. Bulk tanks shall be provided with a suitable means to lift the tanks during shipping and handling that prevents distortion.

2. ***Any permanent lifting system such as lifting lugs shall be made of corrosion resistant material compatible with the chemical to be stored within***.

T. The Contractor shall be responsible for coordinating all piping and equipment connections to the tank and the tank manufacturer shall provide all adapters, fittings, connectors, etc., necessary.

1. ***All O-rings, gaskets, etc. for fittings shall be suitable for use with the chemical being stored within the tank(s)***.

U. Chemical Storage Tank Gasket/Diaphragm

1. ***The Contractor shall install a non-degradable, non-corrosive gasket, between***

the chemical storage tank bottom and elevated housekeeping pad.

2. The gasket shall be the same diameter as the chemical storage tank.

V. The tank manufacturer shall submit a certification that the double wall HDLPE tank is suitable for the chemical being stored. If the HDLPE tank is unacceptable, the tank manufacturer shall submit an alternative tank material that is best suited for the chemical to be stored.

3. EXECUTION

3.01 Shop Inspection and Quality Control

A. The polyethylene tank manufacturer shall have a quality control procedure adequate to ensure that all fabrication complies with the requirements specified herein.

B. The Manufacturer's Quality Assurance Supervisor shall perform a final inspection of all tanks prior to factory testing. Final inspections shall include checks for dimensions, wall thickness, hydro tests, and visual inspections.

C. A Quality Control Inspection Report, approved and signed by the Manufacturer's Quality Assurance Supervisor shall be provided for each chemical storage tank. The report shall include all tank inspection records covering the following information:

1. Thickness measurements.

2. Measurements showing compliance with dimensions and tolerances in diameters, lengths, fittings and flanges, and flatness of flanges.

D. Upon completion of fabrication and inspection, the following factory tests shall be performed for each polyethylene chemical storage tank:

1. A Hydrostatic Leak Test shall be conducted on each chemical storage tank. It shall be filled to the top nozzle and let stand for 24 hours with no leakage, evidence of weeping, or capillary action.

2. A Factory Test Report, approved and signed by the Manufacturer's Quality Assurance Supervisor, shall be submitted to the Engineer for review and approval. The report shall include, at a minimum, the following items:

a. Inspection records. b. Results of hydrostatic testing.

E. An inspection shall be performed for each chemical storage tank and a report shall be made for each tank. Inspection records shall be provided to the Engineer for review.

3.02 Installation

A. Upon delivery, check the chemical storage tanks closely for defects and damage.

B. The tanks shall be installed in strict accordance with the manufacturer's instructions, and in the location shown on the Contract Drawings.

C. The tanks shall be installed on a level, smooth concrete pad designed for load weight. All debris and protrusions shall be removed before setting the tank.

D. The tanks shall be anchored to the floor or housekeeping pad as directed by the tank manufacturer for this application using materials and hardware that are corrosion resistant and suitable for use with the chemical to be stored. Anchor bolts shall be drilled after arrival and setting of the tank on a concrete pad.

E. ***Flexible connections to each chemical storage tank shall be provided by the Contractor*** in accordance with the manufacturer's recommendations. Flexible connections are required to avoid continuous weight such as pipes, valves, and all accessories. All weight shall be supported by the ground and not supported solely by flanges on the tank.

F. The chemical storage tanks shall be isolated from any vibration source using adapters such as, but not limited to, expansion joints.

G. All chemical feed pumping systems drawing chemical from these chemical storage tank(s), installed as a part of this Project, shall be vented into the chemical storage tank(s).

3.03 Inspection and Testing

A. The tank shall be hydrostatically tested for leaks by filling with water in the presence of the Engineer. ***The tank shall be checked for leaks after it has been filled for at least forty-eight (48) hours. No leaks, evidence of weeping, or capillary action is permitted***.

B. The Engineer may request that the beginning and end of this test be performed in his presence.

C. If the tank(s) do not meet the specifications, corrective measures will be taken or the piece of equipment shall be removed and replaced with equipment which satisfies the conditions specified at no additional cost to the Owner.

D. After testing, the Contractor shall thoroughly clean and dry the tank(s) before use.

3.04 Cleaning

A. All interior surfaces of the vessel shall be cleaned before shipment. This includes all loose or removable polyethylene accessories.

B. Each surface to be cleaned shall be cleaned with a mild detergent capable of removing grease, oil, or other residue, no abrasive cleaning agents shall be used. This detergent shall then be thoroughly rinsed off with fresh water through a spray mechanism. Care shall be taken in order to not damage the surface being cleaned.

END OF SECTION

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SECTION 09750

PROTECTIVE FLOOR COATING

1. GENERAL

1.01 Description

A. Scope of Work

1. The work included in this Section consists of furnishing and applying a protective floor coating on the concrete floor surfaces and equipment pad surfaces at the Dewatering Building.

B. All areas identified above shall receive the ***"high gloss", slip-resistant, protective epoxy floor coating*** after the floors have been properly cleaned.

1.02 Field Quality Control

A. The Contractor shall provide the manufacturer's field service consisting of scheduled site visits for inspection of the coating system application.

B. Inspections shall be scheduled following surface preparation, application of primer, application of intermediate coat and application of finish coat.

1.03 Submittals

A. Submit the manufacturer's descriptive literature, catalog data, illustrations, specifications, samples and other pertinent data for the entire protective floor coating system in accordance with Section 01300, *Shop Drawings, Submittals and Samples*.

B. The Contractor shall also ***submit the following materials to the Engineer prior to ordering any material*** or commencing with any of the work operations:

1. Color chart of manufacturer's standard colors.

2. Test results from a qualified testing laboratory attesting to conformance with all specifications.

3. Certification of flooring applicator's qualification to install this product.

1.04 Product Delivery, Storage and Handling

A. Do not deliver the materials until required in the general sequence of construction for the Project.

B. All coating containers shall be properly sealed and bear the manufacturer's label, batch number, date of manufacture and shelf life.

C. The coating containers shall be stored off of the ground, inside, away from direct contact with the elements, in a cool dry area. Normal storage temperature limits shall be between 50□F and 98□F.

D. All coating containers shall come from the same batch.

E. ***Surface preparation and the installation of the seamless epoxy flooring shall not begin until at least thirty (30) days after the concrete has been placed***.

2. PRODUCTS

2.01 Materials

A. The material must be one hundred percent (100%) percent solids, self-leveling polymer/epoxy based blend capable of being applied at a range of 1/8-inch to ¼-inch in one (1) coat to a properly prepared concrete surface.

B. The material must conform to applicable Federal, State and local VOC regulations.

C. The material must be able to withstand immersion in following chemicals for five (5) days per ANSI N5.12:

Chemical Constituent	Solution Concentration
Nitric Acid	5%
Disodium Phosphate	5%
Sulfuric Acid	50%
Ammonium Hydroxide	5%

Chemical Constituent	Solution Concentration
Hydrazine	5%
Sodium Fluoride	0.5M
Sodium Hydroxide	50%
Hydrogen Peroxide	0.3 M
Sodium Hypochlorite	20%
Sodium Borate	5%
Citric Acid	5%
Trisodium Phosphate	1.0 lb/gal

D. The material must have the following minimum physical properties as per ASTM:

Parameter	ASTM Standard	Value
Compression	ASTM C-579	14,000 psi
Flammability	ASTM D-635	self-extinguishing
Tensile	ASTM C-190	2,200 psi
Flexural	ASTM C-790	5,500 psi
Elasticity	ASTM C-580	3.0×10^6
Water Absorption	ASTM D-570	0.10% maximum
Linear Shrinkage	ASTM C-531	0.01% maximum

E. Abrasion resistance must not exceed 25 mg lost after being exposed to 1,000 cycles on CS 17 wheels per Taber Abrasion Test, ASTM D4060 CS.

F. The flame spread shall be 10 or less per Underwriters Laboratory (UL).

G. Aggregate is to be a suitable silica substitute to resist exposure to sodium hypochlorite, alum, supplemental carbon chemical(s) and hydrofluosilicic acid.

H. Acceptable Slip-Resistant Flooring System Manufacturer's

1. Sika 700 Novalac Resin.

2. Perma TEC 5000. A Non-Skid roughness of first coat shall be equal to 60 grit sandpaper.

3. Sanitile 945, aggregate floor system as manufactured by Carboline, Inc.

4. Stonshield, slip resistant flooring system, as manufactured by Stonehard, Inc.

5. Or approved equal.

I. ***The color of the "high gloss", slip-resistant, protective epoxy floor coating shall be selected by the Engineer and Owner from the manufacturer's standard color wheel***.

3. EXECUTION

3.01 Preparation of the Concrete Surfaces

A. Any oil and grease deposits shall be cleaned prior to abrasive blasting with a trisodium phosphate solution or Surface Cleaner No. 3. The cleaned area shall be thoroughly rinsed and tested with pH paper to assure that no TSP residue remains.

B. Abrasive blasting shall be performed using a low pressure sweep of sufficient intensity to remove any laitance layers and reveal a dull matte finish.

C. Sand, dust, and other contaminants shall be removed from the blasted surface by vacuuming or compressed air blasting. The air used shall be free of oil and/or water.

D. A matte finish should be achieved similar to 60 - 80 grit sandpaper.

E. Mechanical methods can sometimes create deep profiles and create excessive porosity. In such cases, provide a cementitious based repair material such as Chemproof Perma Grout E, to repair all such areas.

F. Other Surface Preparation Methods

1. High pressure water blasting (minimum 10,000 psi).

2. Acid etching (i.e., muriatic acid, citric acid, phosphoric acid). The Contractor shall be responsible for protecting piping, equipment, and walls and repairing any damages caused by acid etching operations.

3. Roto Peen.

4. Blast Trac.

G. If an acid etch methodology is used, the concrete must be flushed with fresh potable water after each etching to obtain a neutral or slightly alkaline pH content (pH 8.0 to 9.0).

H. Surface profile shall be witnessed by the representative of coating manufacturer before application of the system. Written conformation of this review shall be provided.

3.02 Mixing

A. All mixing of components for the epoxy flooring system shall be in strict accordance with the flooring system manufacturer's printed instructions.

B. ***No thinning of the epoxy flooring system materials shall be allowed unless specifically allowed and approved by the manufacturer***.

3.03 Application of Seamless Epoxy Flooring

A. ***The material shall be applied at an even thickness of not less than ¼-inch by an applicator trained and approved by the coating manufacturer***. Proper tools must be on hand prior to job start-up. Apply the material when the substrate and ambient temperature is 65 - 90□F.

B. Apply the floor topping by one of the methods approved by the manufacturer and to the thickness required by the manufacturer to provide the chemical protection, durability and traffic bearing capacity as specified herein. ***The minimum dry film thickness (DFT) shall be 75 mils, minimum***.

C. ***Apply the floor topping in a wet sequence*** such that fresh material is continually being applied to the previously applied wet edge. Do not allow previously applied film to stiffen to avoid creating ridges and/or discoloration.

D. Applicators shall be equipped with spike shoes to walk onto the applied topping film and backroll with a spike roller. As soon as the applicators have drawn out the first pass, the person on spike shoes shall walk onto the wet surface and begin backrolling.

E. Applicators shall broad-cast the aggregate onto the wet film surface of the seamless epoxy floor system to provide a uniform non-skid surface.

3.04 Application of a "High Gloss" Finish Coat

A. ***The "high gloss" finish coat material shall be applied at an even film thickness of twenty (20) mils by an applicator trained and approved by the coating manufacturer***. Proper tools must be on hand prior to job start-up.

B. ***Minimize traffic on the epoxy flooring coat prior to finish coat***. Thoroughly vacuum or blow down the area.

C. Pour finish coat onto the work surface in manageable portions. Saturate a ¼-inch mohair roller with material, then begin slowly spreading the coating on the surface. Spread the coating by pulling the finish coat toward you. Minimize the number of passes to avoid entraining air.

D. Spike roll the finish coat. The applicator conducting the spiking shall use a brush to spread out the coating into any missed areas. Areas where the desired finish coat thickness is not attained shall have a second coat applied.

END OF SECTION

SECTION 09900

PAINTING

1. GENERAL

1.01 Description

A. This specification defines the methods of surface preparation, coating systems, and methods of application for painting of surfaces as outlined herein.

B. The Contractor shall furnish all supervision, materials, labor, tools, equipment, scaffolding or other structures, incidentals required for transportation, unloading, storage and application of paint and protective coating systems and associated products for the surfaces listed herein and not otherwise excluded. All surfaces described shall be included within the scope of this Section. Surface preparation, priming, and coats of paint specified are in addition to shop-priming and surface treatment specified under other sections of the work.

C. "***Paint***", as used herein, means all coating systems, materials, including primers, emulsions, enamels, epoxies, sealers and fillers, and other applied materials whether used as a prime, intermediate, or finish coats.

D. The Work includes painting and finishing of interior and exterior exposed items and surfaces such as structural steel, miscellaneous metals, ceilings, walls, floors, doors, frames, transoms, fans, construction signs, guardrails, trenches, posts, pipes, fittings, valves, tanks, equipment, and all other work obviously required to be painted unless otherwise specified herein or on the Contract Drawings. The omission of minor items in the schedule of work shall not relieve the Contractor of his obligation to include such items where they come within the general intent of the specifications as stated herein. The following major items of the Project shall be coated:

1. ***Concrete floor surfaces, equipment pad surfaces, trenches and the chemical containment areas (floor, vertical walls and top of walls) using a protective coating system described in Section 09750, Protective Floor Coating.***

2. Exterior and interior of buried concrete surfaces (cast-in-place, precast or block).

3. Interior and exterior of precast concrete surfaces of meter and valve vaults.

4. Exposed ferrous surfaces of any components of equipment, pumps, motors, tanks

and ferrous or galvanized metal fittings and accessories (except stainless steel).

5. Submerged surfaces, surfaces exposed to liquids, and surfaces in vaults of any ferrous metal and aluminum components of equipment, piping, fittings and valves (except stainless steel).

6. Exposed surfaces of PVC components of piping, fittings, valves, electrical conduit, and equipment.

7. Exposed exterior surfaces of all metallic piping, fittings and valves located on the interior and exterior of buildings and structures. This shall include new piping, fittings and valves for the Project.

8. Embedded aluminum or aluminum in contact with dissimilar metals or in contact with corrosive atmospheres.

9. Traffic stripes on paving are specified in Division 2, *Site Work*.

E. ***The following items will not be painted unless otherwise noted:***

1. Any code-requiring labels, such as Underwriters' Laboratories and Factory Mutual, or any equipment identification, performance rating, name or nomenclature plates.

2. Any moving parts of operating units, mechanical and electrical parts, such as valve and damper operators, linkages, sensing devices, motor and fan shafts, unless otherwise indicated.

3. Stainless steel angles, tube, pipe, etc.

4. Aluminum or fiberglass handrails, walkways, kickplates/toeboards, windows, louvers, grating, checker plate, hatches, and stairways unless otherwise indicated.

5. Products with polished chrome, aluminum, nickel, or stainless steel finish.

6. Stainless steel, brass, bronze, chromium plate, anodized aluminum, and aluminum other than exposed utility tubing.

7. Flexible couplings, lubricated bearing surfaces, insulation, and plastic pipe or duct interiors.

8. Plastic switch plates and receptacle plates.

9. Signs, nameplates, code-required labels, equipment identification, performance rating, name or nomenclature plates.

10. Finish hardware.

11. Packing glands and other adjustable parts, unless otherwise indicated.

12. Pre-finished items including architectural woodwork and casework, toilet enclosures, metal lockers, elevator equipment, light fixtures, and distribution cabinets.

13. Portions of metal, other than aluminum, embedded in concrete. This does not apply to the back face of items mounted to concrete or masonry surfaces which shall be painted before erection. Aluminum to be embedded in, or in contact with, concrete shall be coated to prevent electrolysis.

F. The Contractor shall obtain, at his own expense, all permits, licenses and inspections and shall comply with all laws, codes, ordinances, rules, and regulations promulgated by authorities having jurisdiction which may bear on the work. This compliance will include Federal Public Law 91-596 more commonly known as the "Occupational Safety and Health Act of 1970."

G. ***All work shall be done in strict accordance with this specification, the Contract Drawings, painting package and the manufacturer's printed instructions***.

1.02 Related Work Specified Elsewhere

Specification Section	Title
03300	Cast-in-Place Concrete
03400	Precast Concrete Structures
07100	Waterproofing
07900	Joint Sealants
09750	Protective Floor Coating
09820	Cementitious Coating Systems for CMU Wall Surfaces

Specification Section	Title
09905	Piping, Valve and Equipment Identification System
15000	Mechanical - General Requirements
15060	Ductile Iron Pipe and Fittings
15065	Polyvinyl Chloride (PVC) Pressure Pipe
15100	Valves and Appurtenances
Division	**Information**
5	Metals
11	Equipment
16	Electrical
Contract Drawings and General Provisions of the Contract	

1.03 Definitions

A. ***Field Painting*** is the painting of new or rebuilt items at the Project Site. Field painting shall be the responsibility of the Contractor.

B. ***Shop Painting*** is the painting of new or rebuilt items in the shop prior to delivery to the Project Site.

C. ***Dry Film Thickness (DFT)*** is the thickness of a coat of paint in fully cured state measured in mils ($^{1}/_{1000}$ inch).

D. ***Definitions of additional painting terms as defined in ASTM D16, unless otherwise specified***.

E. The abbreviations and definitions listed below, when used in this specification, shall have the following meanings:

1. SSPC: Steel Structures Painting Council
2. Exterior: Outside, exposed to weather
3. Interior Dry: Inside, not subject to immersion service
4. Interior Wet: Inside, subject to immersion service

5. ASTM: American Society of Testing Materials
6. NACE: National Association of Corrosion Engineers
7. NFPA: National Fire Protection Association
8. OSHA: Occupational Safety and Health Administration
9. NSF: National Science Foundation
10. AWWA: American Water Works Association

1.04 Quality Assurance

A. ***Provide the best quality grade of the various types of coatings*** as regularly manufactured by approved paint materials manufacturers. Materials not displaying the manufacturer's identification as a standard, best-grade product will not be acceptable.

B. ***The Contractor shall be responsible for a satisfactory paint application which will adhere without peeling, flaking, delamination, blistering or discoloration***. ***Before application of any painting materials, the Contractor shall submit a Project specific Letter of Certification from the manufacturer of the materials to be used. The letter shall state that the manufacturer recommends the materials selected for the application proposed.***

C. Painting shall be accomplished by experienced painters specializing in industrial painting familiar with all aspects of surface preparations and applications required for this Project. Work shall be done in a safe and workmanlike manner. Prior to application of coating materials, the approved paint manufacturer shall submit shall submit a Project specific letter certifying that the Contractor or his painting subcontractor are qualified to apply their respective products.

D. Provide undercoat paint produced by the same manufacturer as the finish coats. ***Undercoat and finish coat paints shall be compatible***. ***Use only thinners approved by the paint manufacturer, and use only within recommended limits***.

E. ***A five (5) year warranty for the installed painting/coating systems shall be provided***, guaranteeing against premature chipping, flaking, fading, cracking, blistering, peeling, delaminating, or any other defects.

F. Reference Standards

1. All work shall conform to applicable provisions of the following standards, except as modified herein:

a. American National Standards Institute (ANSI)

ANSI Standard	Standard Title
ANSI/EIA RS-359-1969	Colors for Identification and Coding (ANSI C83.1)
ANSI Z53.1-1979	Safety Color Code and Marking Physical Hazards
ANSI A13.1-1975	Scheme for the Identification of Piping Systems

b. American Society for Testing and Materials (ASTM)

ASTM Standard	Standard Title
ASTM D 2200-67(1980)	Pictorial Surface Preparation Standards for Painting Steel Structures
ASTM D 3276-80	Recommended Guide for Paint Inspectors

c. Steel Structures Painting Council (SSPC)

SSPC Spec.	Specification Title
SSPC SP-1	Chemical and/or Solvent Cleaning Removal of loose rust, loose mill scale, and loose paint to a clean sound substrate by hand chipping, scraping, sanding, and wire brushing.
SSPC SP-2	Hand Tool Cleaning Removal of loose rust, loose mill scale, and loose paint to a clean sound substrate by hand chipping, scraping, sanding, and wire brushing.
SSPC SP-3	Power Tool Cleaning Removal of loose rust, loose mill scale, and loose paint to a clean sound substrate by power tool chipping, descaling, sanding, wire brushing, and grinding.
SSPC SP-4	Flame Cleaning Dehydrating and removal of rust, loose mill scale, and some light mill scale by use of flame, followed by wire brushing.
SSPC SP-5 (NACE-1)	White Metal Blast Cleaning Complete removal of all mill scale, rust, rust scale, previous coating, etc., leaving the surface a uniform gray-white color.
SSPC SP-6 (NACE-3)	Commercial Blast Cleaning Complete removal of all dirt, rust scale, mill scale, foreign matter, and previous coatings, etc., leaving only shadows and/or streaks caused by rust stain and mill scale oxides. At least 66% of each square inch of surface area is to be free of all visible residues, except slight discoloration.

SSPC Spec.	Specification Title
SSPC SP-7 (NACE-4)	Brush-off Blast Cleaning Removal of rust scale, loose mill scale, loose rust, and loose coatings, leaving tightly-bonded mill scale, rust and previous coatings. On concrete surfaces, brush-off blast cleaning shall remove all laitance, form oils, and solid contaminants. Blasting should be performed sufficiently close to the surface so as to open up surface voids, bug holes, air pockets, and other subsurface irregularities, but so as not to expose underlying aggregate.
SSPC SP-8	Pickling Complete removal of rust and mill scale by acid pickling, duplex pickling or electrolytic pickling (may reduce the resistance of the surface to corrosion, if not to be primed immediately).
SSPC SP-10 (NACE-2)	Near-White Blast Cleaning Removal of all rust scale, mill scale, previous coating, etc., leaving only light stains from rust, mill scale, and small specks of previous coating. At least 95% of each square inch of surface area is to be free of all visible residues and the remainder shall be limited to slight discoloration.
SSPC SP-11-87	Power Tool Cleaning to Bare Metal Complete removal of rust, rust scale, mill scale, foreign matter, and previous coatings, etc., to a standard as specified on a Commercial Grade Blast Cleaning (SSPC-SP6, NACE-3) by means of power tools that will provide the proper degree of cleaning and surface profile.
SSPC PA-1-64	Paint Application Spec's, No. 1: Shop, Field and Maintenance Painting
SSPC PA-2-73T	Paint Application Specifications, No. 2: Measurement of Dry Paint Thickness with Magnetic Gauges

d. National Association of Corrosion Engineers (NACE)

e. Occupational Safety and Health Administration (OSHA)

f. National Science Foundation (NSF)

g. National Fire Protection Association (NFPA)

h. American Water Works Association (AWWA)

G. Acceptable Manufacturers

1. It is the intent of this specification section that the Contractor ***use one paint manufacturer throughout***, unless otherwise approved by the Engineer. Products shall be manufactured by one of the following:

   a. Tnemec Company, Inc.

b. Carboline Company

c. Induron Coatings, Inc.

d. Devoe, Inc.

e. Or approved equal.

2. ***No request for substitution will be considered that decreases the dry film thickness and/or number of coats to be applied, or that offers a change from the generic type of coating specified***.

1.05 Resolution of Conflicts

A. It shall be the responsibility of the Contractor to arrange a meeting prior to the start of painting, or flooring installation between the Contractor's, the paint manufacturer (whose products are to be used), and the Engineer.

B. All aspects of surface preparation, application and coating systems as covered by this specification will be reviewed at this meeting.

C. Clarification shall be requested promptly from the Engineer when instructions are lacking, conflicts occur in the specification, or the procedure seems improper or inappropriate for any reason.

D. Copies of all manufacturer's instructions and recommendations shall be furnished to the Engineer by the Painting Contractor a minimum of seven (7) days prior to the meeting.

E. ***It shall be the responsibility of the Coating Manufacturer to have their factory representative meet in person with the Contractor and Engineer during the job as a consultant on surface preparation, mil thickness of coating and proper application of coating unless meeting is determined to be unnecessary by the Engineer***.

1.06 Submittals

A. Materials and Shop Drawings

1. Submit to the Engineer as provided in the General Conditions, Supplementary Conditions and Section 01300, *Shop Drawings, Submittals and Samples*, shop drawings, manufacturer's specifications and data on the proposed paint systems, including, but not limited to, the following:

a. Percent solids by volume.

b. Minimum and maximum recommended dry-film thickness (DFT) per coat for prime, intermediate and finish coats for each application.

c. Recommended and detailed surface preparation procedures and techniques.

d. A certificate identifying the type and gradation of abrasives used for surface preparation.

e. Recommended thinners for each of the proposed painting/coating systems.

f. A statement verifying that the specified prime coat is recommended by the manufacturer for use with the specified intermediate and finish coats.

g. Application procedures and instructions including recommended equipment and temperature limitations.

h. Curing requirements and instructions.

i. Safety Data Sheets (SDS) for each painting/coating material.

j. A certificate identifying the type and gradation of abrasives used for surface preparation.

2. ***Submit a project specific Letter of Certification from the manufacturer of the materials to be used stating that the manufacturer recommends the materials selected for the application proposed***.

3. ***Submit a project specific letter certifying that the Contractor or his painting subcontractor are qualified to apply their respective products***.

4. The Contractor shall submit to the Engineer, immediately upon completion of the job, ***certification from the manufacturer indicating that the quantity of each coating purchased was sufficient to coat all surfaces, in accordance with the requirements of this Section***. Such certification shall make reference to square footage figures provided to the manufacturer by the Contractor.

B. Schedule

1. ***The Contractor shall submit for approval a complete Schedule of Painting Operations, in an electronic format, within thirty (30) days after the Notice to Proceed.*** This Schedule is imperative so that the various fabricators or suppliers may be notified of the proper ship prime coat to apply. It shall be the Contractor's

responsibility to properly notify and coordinate the fabricators' or suppliers' surface preparation and painting operations with these specifications. This Schedule shall include for each surface to be painted, the brand name, generic type, solids by volume, application method, the coverage and the number of coats in order to achieve the specified dry film thickness, and color charts. When the Schedule has been approved, the Contractor shall apply all material in strict accordance with the approved Schedule and the manufacturer's instructions. Wet and dry paint film gauges may be utilized by the Owner or Engineer to verify the proper application while work is in progress.

2. It is the intent of this Section that as much as possible all structures, equipment, and piping utilize coating systems specified herein supplied by a single manufacturer. All exceptions must be noted on the Schedule. For each coating system, only one (1) manufacturers' product shall be used.

3. ***Requests for substitutions shall be made within ten (10) calendar days of the Bid and shall include all of the information required in the Schedule plus a signed and notarized statement from the Chief (Manufacturing) Chemist*** that the products listed are equal to the specified products, test results, and a list of ten (10) municipal treatment facility projects where each product has been used and has provided satisfactory service for at least ten (10) years. No request for substitution shall be considered that would change the generic type of coating, decrease DFT, or decrease the number of coats.

4. Test result submittals shall be certified by a qualified testing laboratory. A quality of paint that is measured by analytical written ASTM/Federal test procedures will provide assurances that quality products are utilized.

5. The results from the following testing procedures shall be submitted for determining quality:

   a. Abrasion: Federal Test Method Std. No. 141, Method 6192, CS-17 Wheel, 1,000 gram load.

   b. Adhesion: Elcometer Adhesion Tester (0 to 1,000 psi).

   c. Exterior Exposure: Exposed at 45□F facing ocean (South Florida Marine Exposures).

   d. Hardness: ASTM D3363, latest revision.

   e. Humidity: ASTM D2247, latest revision.

   f. Salt Spray (Fog): ASTM B117, latest revision.

C. Color Samples

1. The manufacturer's standard color charts for color selection by the Engineer and Owner.

D. Painting Samples

1. ***Paint colors will be selected by the Engineer and Owner***. Compliance with all other requirements is the exclusive responsibility of the Contractor.

2. Samples of each finish and color shall be submitted to the Engineer and Owner for approval before any work is started.

3. Samples shall be prepared so that an area of each sample indicates the appearance of the various coats. For example, where three (3) coat work is specified, the sample shall be divided into three (3) areas:

   a. One (1) showing the application of one (1) coat only.

   b. One (1) showing the application of two (2) coats.

   c. One (1) showing the application of all three (3) coats.

4. Such samples when approved in writing shall constitute a standard, as to color and finish only, for acceptance or rejection of the finish work.

5. For piping, valves, equipment and miscellaneous metal work, provide sample chips or color charts of all paint selected showing color, finish, and general characteristics.

6. Rejected samples shall be resubmitted until approved.

1.07 Product Delivery, Handling and Storage

A. Deliver all materials to the job site in "*new*", "*original*", "unopened packages and containers bearing the manufacturers' name, trade name and label analysis, in accordance with Section 01600, *Materials and Equipment*.

B. Provide labels on each container with the following information:

1. Name or title of material.

2. Federal Specification numbers, if applicable.

3. The manufacturer's stock no., date of manufacture and expiration date (shelf life).
4. The manufacturer's formula or specification number.
5. The manufacturer's batch number.
6. The manufacturers' name.
7. Generic type.
8. Contents by volume, for major pigment and vehicle constituents.
9. Application instructions (including ambient conditions, etc.).
10. Thinning instructions.
11. Color name and number.

C. Packages shall not be opened until they are inspected by the Engineer and required for use.

D. Containers shall be clearly marked to indicate any hazards connected with the use of the paint and steps which should be taken to prevent injury to those handling the product.

E. All containers shall be handled and stored in such a manner as to prevent damage or loss of labels or containers. All containers shall be handled and stored in a steel cabinet raised four (4) inches above the floor to prevent damage from spillage or loss of labels on containers.

F. The Engineer or Owner shall designate areas for storage and mixing of all painting materials. Store only acceptable product materials on the Project site. Restrict storage to paint materials and related equipment.

G. All painting materials shall be stored in a clean, dry, well-ventilated place, protected from sparks, flame, direct rays of the sun or from excessive heat. Paint susceptible to damage from low temperatures shall be kept in a heated storage space when necessary. The Contractor shall be solely responsible for the protection of the materials stored by himself at the job site. Empty coating cans shall be required to be neatly stacked in an areas designated by the Engineer and removed from the job site on a schedule determined by the Engineer. Engineer may request a notarized statement from Contractor detailing all materials used on the project.

H. Storage of paint materials and related equipment shall comply with the requirements or pertinent codes and fire regulations. The Contractor shall take all safety precautions in accordance with Section 7 of AWWA D102, NFPA Bulleting No. 101 and all federal, state and local regulations. In addition, all safety precautions noted on the manufacturer's Material Safety Data Sheets (MSDS) and other literature shall be strictly followed. Proper containers outside of buildings shall be provided by the Contractor and used for painting wastes. No plumbing fixtures shall be used for this purpose.

I. Used rags shall be removed from the buildings every night and every precaution taken against "*spontaneous combustion*".

1.08 Job Conditions

A. ***Apply water-base paints only when the temperature of surfaces to be painted and the surrounding air temperatures are between 50□F and 90□F*** unless otherwise permitted by the paint manufacturer's printed instructions.

B. ***Apply solvent-thinned paints only when the temperature of surfaces to be painted and the surrounding air temperatures are between 45□F and 95□F*** unless otherwise permitted by the paint manufacturer's printed instructions.

C. ***Do not apply paint in rain, fog, or mist; or when the relative humidity exceeds 85%***; or to damp or wet surfaces; unless otherwise permitted by the paint manufacturer's printed instructions.

D. Painting may be continued during inclement weather only if the areas and surfaces to be painted are enclosed and maintained within the temperature and humidity limits specified by the paint manufacturer during application and drying periods.

1.09 Warranty and Guarantees

A. For more information on warranties and bonds, the Contractor is directed to Section 01740, *Warranties and Bonds*.

B. ***All paint and coatings work performed under these specifications shall be guaranteed by the coating's applicator for one-hundred percent (100%) of the total coated area for both materials and labor against failures for a warranty period of five (5) years from the date of Final Project Acceptance by the Owner***.

C. Failure under this warranty shall include chipping, flaking, fading, cracking, blistering, peeling, delaminating, or any other defects of the coating due to aging, chemical attack,

or poor workmanship; but it shall not include areas which have been damaged by unusual chemical, thermal, or mechanical abuse.

D. ***The Owner will notify the Contractor at least thirty (30) days prior to the one year anniversary of the date of Final Project completion and shall establish a date for coating inspections. Any defects in the coating system shall be repaired by the Contractor at no additional cost to the Owner***. Should a failure occur to more than 20% of the painted surface, either interior or exterior, the entire surface shall be cleaned and painted in accordance with these specifications.

1.10 Identification Systems

A. Paint piping and equipment for identification purposes in accordance with Section 09905, *Piping, Valve and Equipment Identification System*.

1.11 Extra Stock

A. ***At the conclusion of the Project, the Owner shall be furnished, at no additional cost, unopened containers providing a minimum of two (2) gallons of each type and color of finish paint for touching up.***

B. The paint or coating container shall indicate the applicable painting system as indicated in these Contract Documents.

1.12 Cooperation with Other Trades

A. This Work shall be scheduled and coordinated with other Work and/or job conditions as required to achieve satisfactory results.

B. The Contractor shall examine the Contract Documents for the various trades and shall thoroughly familiarize himself with all their provisions regarding painting and coating systems required.

1.13 Painting Conference

A. At the request of the Engineer and/or Owner, the Contractor shall schedule a painting conference. Attendees shall include the Owner, Engineer, Contractor and a technical

representative of the paint supplier to discuss the painting requirements and finalize color selections before painting is started.

B. Prior to painting any surface, the Contractor shall schedule a meeting with the painter and Engineer to inspect the surface preparation and verify that the surface is ready for painting. Failure to inspect a surface prior to coating could result in the rejection of the coating.

2. PRODUCTS

2.01 Materials

A. All paint shall be manufactured by one of the suppliers listed in Article 1.04(G), herein, and shall be their highest grade and quality of paint.

B. The following coating systems list a product by name to establish a standard of quality; other products of the same generic types may be submitted to the Engineer for approval as described in Article 1.06, herein. When other than the specified coating system is proposed, the Contractor shall submit a list, in an electronic format) giving the proposed coatings, brand, trade name, generic type and catalog number of the proposed system for the Engineer's review and approval, prior to the application of the painting/coating system.

C. Paint used in successive field coats shall be produced by the same manufacturer. Paint used in the first field coat over shop painted or previously painted surfaces shall cause no wrinkling, lifting, or other damage to underlying paint. Shop paint shall be of the same type and manufacture as used for field painting by the Contractor.

D. Emulsion and alkyd paints shall contain a “mildewcide” and both the paint and “mildewcide” shall conform to OSHA and Federal requirements, including Federal Specification TT-P-19.

E. ***No paint containing lead or chromate shall be allowed on the Project***. Oil shall be pure boiled linseed oil.

F. Rags shall be clean painter's rags, completely sterilized.

G. All cleaners, thinners, driers and other additives and surface pretreatment materials shall only be those approved for use by the manufacturer of the coatings.

H. ***Do not dilute paints except as recommended by the paint manufacturer***.

I. Work areas will be designated by the Owner/Engineer for storage and mixing of all painting materials. Materials shall be in full compliance with the requirements of pertinent codes and fire regulations.

J. Proper containers outside of the buildings/structures shall be provided and used for painting wastes.

K. All recommendations of the paint manufacturer in regard to the health and safety of the workmen shall be followed.

L. All coatings to be shop applied must meet the requirements for volatile organic compounds (VOC) of not more than 3.5 pounds per gallon after thinning.

M. ***Colors, where not specified, shall be as selected by the Engineer and Owner***.

N. All coatings in contact with potable water need to be NSF certified in accordance with ANSI/NSF Standard 61.

2.02 Coating Schedule

A. ***The painting manufacturer's current coating system (paint/coating system name or number) shall be used, whether identified in the Painting Systems identified below (Systems 1 - 29) or not***.

B. The following coating systems table lists the general features of the standard coating systems, by service and generic type, and is provided as a general guideline for this project:

System No.	Generic Type	Surface Material	Finish	Typical Function
1	Epoxy / Polyurethane	Ferrous Metal, Non-galvanized	Gloss	Exterior Metals not subject to immersion or frequent splashing
2	Polyurethane	Ferrous Metal, galvanized	Gloss	Exterior metals not subject to immersion or frequent splashing
3	Epoxy	Ferrous Metal, Non-galvanized	Semi-gloss	Interior metals not subject to immersion or frequent splashing or condensation
4	Alkyd	Ferrous Metal, Galvanized	Semi-gloss	Interior metals not subject to immersion or frequent splashing or condensation

System No.	Generic Type	Surface Material	Finish	Typical Function
5	Epoxy	Ferrous Metal, Non-galvanized	Semi-gloss	Interior metals subject to condensation
6	Epoxy	Ferrous Metal, Galvanized	Semi-gloss	Interior metals subject to condensation
7	Epoxy	Ferrous Metal, Non-galvanized	Semi-gloss	Metals subject to immersion or frequent splashing
8	Epoxy	Ferrous Metal, Galvanized	Semi-gloss	Metals subject to immersion or frequent splashing
9	Epoxy	Concrete	Semi-gloss	Interior
10	Epoxy	Concrete	Tile-like gloss	Interior walls of washrooms
11	Acrylic	Concrete	Low sheen	Precast concrete ceilings, beams and columns
12	Elastomeric	Concrete	Tile-like gloss	Exterior concrete
13	Epoxy	Masonry	Semi-gloss	Interior masonry
14	Epoxy	Masonry	Tile-like gloss	Interior walls of washrooms
15	Elastomeric	Masonry	Low sheen	Exterior masonry
16	Acrylic	Masonry	Low sheen	Interior masonry
17	Acrylic	Drywall, Plaster	Low sheen	Interior drywall, plaster
18	Acrylic	Plaster, Stucco	Low sheen	Exterior plaster, stucco
19	Alkyd	Wood	Gloss	Exterior wood
20	Alkyd	Wood	Semi-gloss	Exterior wood
21	Alkyd	Wood	Gloss	Interior wood
22	Alkyd	Wood	Semi-gloss	Interior wood
23	Acrylic	Wood	Low sheen	Interior wood
24	Acrylic	Canvas wrapped insulation	Semi-gloss	Canvas wrapped insulation piping
25	Coal Tar Epoxy	Ferrous Metal	Semi-gloss	Metals submerged in non-potable water
26	Coal Tar Epoxy	Concrete	Semi-gloss	Submerged concrete in non-potable water or below grade
27	Epoxy	Ferrous Metal	Semi-gloss	Metals submerged in potable water
28	Epoxy	Concrete	Semi-gloss	Concrete submerged in potable water
29	Sealer, Hardener	Concrete	Semi-gloss	Concrete Floors

2.03 Coating Systems

A. System No. 1

1. System No. 1 shall be used for exterior non-galvanized ferrous metals that are not subject to immersion or frequent splashing of water, reclaimed water or wastewater, including but not limited to the following:

   a. Exposed exterior piping, valves and fittings.

   b. Steel storage tanks.

   c. Exterior cranes and hoists.

   d. Clarifier and sludge thickener bridge, top side and railings.

   e. Gate operators.

   f. Exterior mechanical equipment, control panels, miscellaneous metal, etc. without a factory-applied final finish.

2. Surface Preparation: SP 6

3. Shop Primer

   a. One (1) coat of one of the following, or approved equal:

Manufacturer	Coating System	No. of Coats	DFT per Coat (mils)
Tnemec	Series I Omnithane	1	3.0
Carboline	Carbocoat 115	1	2.0
Induron	P-14 Armorguard Primer	1	3.0 - 5.0
Devoe	Devprime 1405	1	2.0

4. Field Touch-Up: Same material as Shop Primer.

5. Intermediate Coat

   a. Provide intermediate coats of one of the following, or approved equal:

Manufacturer	Coating System	No. of Coats	DFT per Coat (mils)
Tnemec	N 69	1	3.5
Carboline	Carbocoat 45	2	1.5 - 2.0
Induron	Armorguard II	2	2.0 - 3.0
Devoe	Devlac 1431	2	1.5 - 2.0

6. Finish Coat

   a. One (1) full coat of High Gloss aliphatic polyurethane:

Manufacturer	Coating System	No. of Coats	DFT per Coat (mils)
Tnemec	1074	1	3.0
Carboline	Carbocoat 45	1	1.5
Induron	Indurethane 6600 Plus Gloss Enamel	1	1.5 - 2.5
Devoe	Devthane 379	1	1.5

B. System No. 2

1. System No. 2 shall be used for exterior galvanized ferrous metals that are not subject to immersion or frequent splashing of water, reclaimed water or wastewater, including but not limited to the following:

   a. Exposed galvanized piping.

   b. Exposed galvanized conduit, equipment, miscellaneous metal, etc. without a factory-applied final finish.

2. Surface Preparation: SSPC - SP1 followed by mechanical abrasion to scarify.

3. Field Clean-Up: Remove all grease, oil and contaminants with rags soaked in Toluol or Xylol in accordance with SSPC - SP1.

4. Primer

   a. One (1) coat of one of the following, or approved equal:

Manufacturer	Coating System	No. of Coats	DFT per Coat (mils)
Tnemec	N69	1	2.5 - 3.5
Carboline	Galoseal WB	1	0.5 - 1.0
Induron	Vinyl Primer	1	0.5 - 1.0
Devoe	Devprime 1405	1	2.0

5. Finish Coat

   a. Provide finish coats of one of the following or approved equal:

Manufacturer	Coating System	No. of Coats	DFT per Coat (mils)
Tnemec	1074	1	3.0
Carboline	Carbocrylic 3359	2	1.5 - 2.0
Induron	Indurethane 6600 Plus Gloss Enamel	2	1.5 - 2.5
Devoe	Devlac 1431 Alkyd Devcryl 1449 Acrylic	2	1.5 - 2.0

C. System No. 3

1. System No. 3 shall be used for interior, non-galvanized, ferrous metals not subject to immersion, frequent splashing or condensation, including but not limited to, the following:

   a. Interior piping, valves and fittings, except infrastructure subject to condensation.

   b. Exposed structural steel.

   c. Steel doors and frames.

   d. Interior equipment, control panels, miscellaneous metal, etc. without a factory-applied final finish.

2. Surface Preparation: SP 6

3. Shop Primer

   a. One (1) coat of one of the following, or approved equal:

Manufacturer	Coating System	No. of Coats	DFT per Coat (mils)
Tnemec	Series I Omnithane	1	3.0
Carboline	Carbocoat 115	1	2.0
Induron	P-14 Armorguard Primer	1	3.0 - 5.0
Devoe	Devprime 1405	1	2.0

4. Field Touch-Up

   a. The “field touch-up” coating shall be the same material as the shop primer.

5. Finish Coat

   a. Provide finish coats of one of the following, or approved equal:

Manufacturer	Coating System	No. of Coats	DFT per Coat (mils)
Tnemec	Series 1075	2	3.0
Carboline	Carbocoat 45	2	2.0
Induron	Armorguard II	2	3.0 - 5.0
Devoe	Devcryl 1449	2	1.5 - 2.0

D. System No. 4

1. System No. 4 shall be used for interior, galvanized, ferrous metals not subject to immersion, frequent splashing or condensation, including but not limited to, the following:

   a. Interior galvanized piping, except piping subject to condensation.

   b. Interior galvanized conduit, mechanical equipment, control panels, miscellaneous metal, etc. without a factory-applied final finish.

2. Surface Preparation: SP M1

3. Field Clean-Up

   a. Remove all grease, oil and contaminants with rags soaked in Toluol or Xylol in accordance with SSPC - SP1.

4. Primer

   a. One (1) coat of one of the following, or approved equal:

Manufacturer	Coating System	No. of Coats	DFT per Coat (mils)
Tnemec	Series N 69	1	2.5 - 3.5
Carboline	Galoseal WB	1	0.5 - 1.0
Induron	Vinyl Wash Primer	1	0.5 - 1.0
Devoe	DEVPRIME 1405	1	2.0

5. Finish Coat

   a. Two (2) coats of one of the following, or approved equal:

Manufacturer	Coating System	No. of Coats	DFT per Coat (mils)
Tnemec	Series N 69	2	1.5 - 2.0
Carboline	Carbocrylic 3359	2	1.5 - 2.0
Induron	Indurethane 6600 Plus Gloss Enamel	2	1.5 - 2.5
Devoe	DEVCRYL 1449	2	1.5 - 2.0

E. System No. 5

1. System No. 5 shall be used for interior, non-galvanized ferrous metals subject to condensation, including but not limited to the following:

   a. Interior liquid process and water piping.

   b. Chemical piping and air intake piping.

   c. Pumps.

2. Surface Preparation: SP 6

3. Shop Primer

   a. One (1) coat of one of the following, or approved equal:

Manufacturer	Coating System	No. of Coats	DFT per Coat (mils)
Tnemec	Series N 69	1	2.5 - 3.5
Carboline	Carboguard 60	1	4.0
Induron	P-14 Armorguard Primer	1	3.0 - 5.0
Devoe	DevRan 201 Universal Epoxy Primer	1	2.0 - 3.0

4. Field Touch-Up

   a. The “field touch-up” coating shall be the same material as the shop primer.

5. Finish Coat

   a. Two (2) coats of one of the following, or approved equal:

Manufacturer	Coating System	No. of Coats	DFT per Coat (mils)
Tnemec	Series N 69	2	2.5 - 3.5
Carboline	Carboguard 60	2	3.0
Induron	Amorguard Epoxy	2	3.0 - 5.0
Devoe	Devran 224 HS	2	3.0

F. System No. 6

1. System No. 6 shall be used for interior, galvanized, ferrous metals subject to condensation, including but not limited to, the following:

   a. Interior galvanized liquid process and water piping.

2. Surface Preparation: SP M1 or SP 7

3. Field Clean-Up: Remove all grease, oil and contaminants with rags soaked in Toluol or Xylol in accordance with SSPC - SP1.

4. Primer

   a. One (1) coat of one of the following, or approved equal:

Manufacturer	Coating System	No. of Coats	DFT per Coat (mils)
Tnemec	Series N69 Epoxoline	1	2.5
Carboline	Carboguard 60	1	3.0
Induron	Vinyl Wash Primer	1	0.5 - 1.0
Devoe	Bar-Rust 235	1	2.0

5. Finish Coat

   a. Two (2) coats of one of the following, or approved equal:

Manufacturer	Coating System	No. of Coats	DFT per Coat (mils)
Tnemec	Series N69 Epoxoline	2	1.5 - 2.0
Carboline	Carboguard	2	3.0
Induron	Armorguard II	2	3.0 - 5.0
Devoe	BAR-RUST 235	2	3.0

G. System No. 7

1. System No. 7 shall be used for non-galvanized, ferrous metals subject to immersion or frequent splashing, including but not limited to, the following:

   a. Submerged piping and piping subject to splashing

   b. Barscreen systems

   c. Barscreen hoists

   d. Mechanical Aerators

   e. Submersible pumps

   f. Mixers

   g. Flocculation systems

   h. Sludge conveyors

i. Clarifiers, grit collectors, and sludge thickeners

1) Interior mechanisms

2) Steel weirs, troughs, supports

3) Bridge underside

j. Sluice gates, slide gates, and flap gates.

k. Submerged miscellaneous metal, equipment, etc. without a factory-applied final finish.

2. Surface Preparation: SP 10

3. Shop Primer

a. One (1) coat of one of the following, or approved equal:

Manufacturer	Coating System	No. of Coats	DFT per Coat (mils)
Tnemec	Series I Omnithane	1	2.5 - 3.5
Carboline	Carboguard 890	1	4.0
Induron	P-14 Armorguard Primer	1	3.0 - 5.0
Devoe	DevRan No. 201 Universal Epoxy Primer	1	3.0

4. Field Touch-Up

a. The “field touch-up” coating shall be the same material as the shop primer.

5. Finish Coat

a. Two (2) coats of one of the following, or approved equal:

Manufacturer	Coating System	No. of Coats	DFT per Coat (mils)
Tnemec	Series 446 Permashield MCU	2	5.0 - 7.0
Carboline	Carboguard 890	2	5.0
Induron	Armorguard II	2	3.0 - 5.0
Devoe	Devran 224 HS	2	5.0

H. System No. 8

1. System No. 8 shall be used for galvanized, ferrous metals subject to immersion or frequent splashing, including but not limited to, the following:

   a. Submerged galvanized piping and piping subject to splashing.

   b. Submerged galvanized conduit, miscellaneous metal, equipment, etc. without a factory-applied final finish.

2. Surface Preparation: SP M1 and SP 7

3. Field Clean-Up: Remove all grease, oil and contaminants with rags soaked in Toluol or Xylol in accordance with SSPC - SP1.

4. Primer

   a. One (1) coat of one of the following, or approved equal:

Manufacturer	Coating System	No. of Coats	DFT per Coat (mils)
Tnemec	Series N69	1	2.5 - 3.5
Carboline	Carboguard 890	1	4.0
Induron	Vinyl Wash Primer	1	1.0 - 2.0
Devoe	DevRan No. 201 Universal Epoxy Primer	1	3.0

5. Finish Coat

   a. Two (2) coats of one of the following, or approved equal:

Manufacturer	Coating System	No. of Coats	DFT per Coat (mils)
Tnemec	Series N69 Epoxoline	2	2.5 - 3.5
Carboline	Carboguard 890	2	5.0
Induron	Amorguard Epoxy	2	3.0 - 5.0
Devoe	Devran 224 HS	2	5.0

I. System No. 9

1. System No. 9 shall be used for concrete submerged in mild to moderate wastewater service, including but not limited to, the following:

   a. Interior, exterior and submerged concrete.

2. Surface Preparation: Abrasive blast to produce anchor profile equal to ICRI CSP 5.

3. Filler

   a. Filler shall be applied until the surface is "pin-hole" free using the product of one of the manufacturers below (or approved equal), except as indicated above:

Manufacturer	Coating System	Coating Application (ft^2 / gallon)
Tnemec	218 Mortar Clad *	---
Carboline	Sanitile 100	72
Induron	Polyfill Epoxy Block Filler	100
Devoe	Tru-Glaze 4015	75 - 100

* Apply to all surfaces at $^1/_{16}$-inch

   b. Remove excess filler from the concrete surface.

4. Finish Coat

   a. Two (2) coats of one of the following, or approved equal:

Manufacturer	Coating System	No. of Coats	DFT per Coat (mils)
Tnemec	Series 446 Permashield MCU	2	5.0 - 7.0
Carboline	Carboguard 890	2	5.0
Induron	Armorguard SG Epoxy	2	3.0 - 5.0
Devoe	Devran 224 HS	2	5.0

J. System No. 10

1. System No. 10 shall be used for interior concrete requiring a tile-like finish, including but not limited to, interior washroom walls

2. Surface Preparation: SP C2

3. Filler

   a. The need for a filler may be deleted if concrete surface has been "rubbed" finish.

   b. Filler shall be applied until the surface is "pin-hole" free using the product of one of the manufacturers below (or approved equal), except as indicated above:

Manufacturer	Coating System	Coating Application (ft^2 / gallon)
Tnemec	Series 1254	130
Carboline	Sanitile 100	72
Induron	Polyfill Epoxy Block Filler	100
Devoe	Tru-Glaze 4015	75 - 100

   c. Remove excess filler from the concrete surface.

4. Finish Coat

   a. Two (2) coats of one of the following, or approved equal:

Manufacturer	Coating System	No. of Coats	DFT per Coat (mils)
Tnemec	Series 84 Ceramlon	2	4.0
Carboline	Carboguard 890	2	4.0
Induron	Perma-Clean II	2	4.0 - 6.0
Devoe	Devran 224 HS	2	5.0

K. System No. 11

1. System No. 11 shall be used for interior concrete requiring a matte finish, including but not limited to the following:

   a. Precast concrete ceilings, beams and columns.

2. Surface Preparation: SP C2

3. Filler

   a. The need for a filler may be deleted if concrete surface has been “rubbed” finish.

   b. There is no need for filler for concrete that is to be “submerged.

   c. Filler shall be applied until the surface is “pin-hole” free using the product of one of the manufacturers below (or approved equal), except as indicated above:

Manufacturer	Coating System	Coating Application (ft^2 / gallon)
Tnemec	215 Surfacing Epoxy	As needed
Carboline	Sanitile 100	72
Induron	AC 202 Acrylic Block Filler	75
Devoe	Tru-Glaze 4015	75 - 100

   d. Remove excess filler from the concrete surface.

4. Finish Coat

   a. Two (2) coats of one of the following, or approved equal:

Manufacturer	Coating System	No. of Coats	DFT per Coat (mils)
Tnemec	Series 6 Tneme-Cryl	2	2.5
Carboline	Sanitile 155	2	2.0
Induron	Aquanaut II Acrylic Eggshell	2	2.0
Devoe	Intercryl 520	2	1.5

L. System No. 12

1. System No. 12 shall be used for exterior concrete requiring a matte finish.

2. Surface Preparation: SP C2

3. Filler

   a. The need for a filler may be deleted if concrete surface has been "*rubbed*" finish.

   b. Filler shall be applied until the surface is "*pin-hole*" free using the product of one of the manufacturers below (or approved equal), except as indicated above:

Manufacturer	Coating System	Coating Application (ft^2 / gallon)
Tnemec	Series 218	As needed
Carboline	Sanitile 100	72
Induron	Not Needed	---
Devoe	Tru-Glaze 4015	75 - 100

   c. Remove excess filler from the concrete surface.

4. Finish Coat

   a. Two (2) coats of one of the following, or approved equal:

   a. Tnemec Series 6 Tneme-Cryl at 2.5 mils dry thickness per coat.

   b. ICI Dulux Paints Ultra Hide Durus Exterior Acrylic Flat Masonry Finish No. 2220. Apply at 1.5 - 2.0 mils dry thickness per coat.

Manufacturer	Coating System	No. of Coats	DFT per Coat (mils)
Tnemec	Series 6 Tneme-Cryl	2	2.5
Carboline	Sanitile 155	2	2.0
Induron	AC 403 Acrylic Elastomeric	2	6.0
Devoe	Intercryl 520	2	1.5

M. System No. 13

1. System No. 13 shall be used for interior masonry, including but not limited to the following:

   a. Masonry walls, except washroom walls.

2. Surface Preparation: SP C1

3. Filler

   a. Filler shall be applied until the surface is “pin-hole” free using the product of one of the manufacturers below (or approved equal), except as indicated above:

Manufacturer	Coating System	Coating Application (ft^2 / gallon)
Tnemec	Series 1254	130
Carboline	Sanitile 100	72
Induron	Polyfill Epoxy Block Filler	100
Devoe	Tru-Glaze 4015	75 - 100

   b. Remove excess filler from the concrete surface.

4. Finish Coat

   a. Two (2) coats of one of the following, or approved equal:

Manufacturer	Coating System	No. of Coats	DFT per Coat (mils)
Tnemec	Series 66 Epoxoline	2	5.0
Carboline	Carboguard 60	2	5.0
Induron	Armorguard II	2	4.0
Devoe	Devran 224 HS	2	5.0

N. System No. 14

1. System No. 14 shall be used for masonry wall requiring a tile-like epoxy finish, including but not limited to the following:

   a. Interior washroom walls.

2. Surface Preparation: SP C1

3. Filler

   a. Filler shall be applied until the surface is "pin-hole" free using the product of one of the manufacturers below (or approved equal), except as indicated above:

Manufacturer	Coating System	Coating Application (ft^2 / gallon)
Tnemec	Series 1254	130
Carboline	Sanitile 100	72
Induron	Polyfill Epoxy Block Filler	100
Devoe	Tru-Glaze 4015	75 - 100

   b. Remove excess filler from the concrete surface.

4. Finish Coat

   a. Two (2) coats of one of the following, or approved equal:

Manufacturer	Coating System	No. of Coats	DFT per Coat (mils)
Tnemec	Series 84 Ceramlon	2	4.0
Carboline	Carboguard 890	2	4.0
Induron	Perma-Clean II	2	4.0 - 6.0
Devoe	Devran 224 HS	2	5.0

O. System No. 15

1. System No. 15 shall be used for exterior masonry requiring a matte finish.

2. Surface Preparation: SP C2

3. Filler

   a. Filler shall be applied until the surface is "*pin-hole*" free using the product of one of the manufacturers listed below (or approved equal), except as indicated above:

Manufacturer	Coating System	Coating Application (ft^2 / gallon)
Tnemec	Series 1254	130
Carboline	Sanitile 100	72
Induron	Not Needed	---
Devoe	Tru-Glaze 4015	75 - 100

   b. Remove excess filler from the concrete surface.

4. Finish Coat

   a. Two (2) coats of one of the following, or approved equal:

Manufacturer	Coating System	No. of Coats	DFT per Coat (mils)
Tnemec	Series 6 Tneme-Cryl	2	2.5
Carboline	Sanitile 155	2	2.0
Induron	AC 403 Acrylic Elastomeric	2	6.0
Devoe	Intercryl 520	2	1.5 - 2.0

P. System No. 16

1. System No. 16 shall be used for interior masonry requiring a matte finish.

2. Surface Preparation: SP C2

3. Filler

   a. Filler shall be applied until the surface is "pin-hole" free using the product of one of the manufacturers listed below (or approved equal), except as indicated above:

Manufacturer	Coating System	Coating Application (ft^2 / gallon)
Tnemec	Series 54 Modified Epoxy Masonry Filler	80
Carboline	Sanitile 100	72
Induron	AC 202 Acrylic Block Filler	75
Devoe	Tru-Glaze 4015	75 - 100

   b. Remove excess filler from the concrete surface.

4. Finish Coat

   a. Two (2) coats of one of the following, or approved equal:

Manufacturer	Coating System	No. of Coats	DFT per Coat (mils)
Tnemec	Series 6 Tneme-Cryl	2	2.5
Carboline	Sanitile 155	2	2.0
Induron	Aquanaut II Acrylic Eggshell	2	2.0
Devoe	Intercryl 520	2	1.5 - 2.0

Q. System No. 17

1. System No. 17 shall be used for the following interior surfaces:

   a. Drywall.

   b. Stucco.

   c. Plaster.

2. Surface Preparation: SP P1 (Drywall) or SP P2 (Plaster and Stucco).

3. Primer

   a. One (1) coat of one of the following, or approved equal:

Manufacturer	Coating System	No. of Coats	DFT per Coat (mils)
Tnemec	Series 51 PVA Sealer	1	1.5
Carboline	Sanitile 120	1	1.0 - 2.0
Induron	AC 402 Acrylic Masonry Sealer	1	1.0
Devoe	Intercryl 520	1	1.5

4. Finish Coat

   a. Two (2) coats of one of the following, or approved equal:

Manufacturer	Coating System	No. of Coats	DFT per Coat (mils)
Tnemec	Series 6 Tneme-Cryl	2	2.5
Carboline	Sanitile 155	2	2.0
Induron	Aquanaut II Acrylic Eggshell	2	2.0
Devoe	Intercryl 520	2	1.5 - 2.0

R. System No. 18

1. System No. 18 shall be used for the following exterior surfaces:

   a. Concrete columns and beams.

   b. Plaster and stucco.

2. Surface Preparation: SP P2

3. Primer

   a. Filler shall be applied until the surface is “pin-hole” free using the product of one of the manufacturers below (or approved equal), except as indicated above:

Manufacturer	Coating System	Coating Application (ft^2 / gallon)
Tnemec	Series 218	As needed
Carboline	Sanitile 100	72
Induron	Not Needed	---
Devoe	Tru-Glaze 4015	75 - 100

   b. Remove excess filler from the concrete surface.

4. Finish Coat

   a. Two (2) coats of one of the following, or approved equal:

Manufacturer	Coating System	No. of Coats	DFT per Coat (mils)
Tnemec	Series 6 Tneme-Cryl	2	2.5
Carboline	Sanitile 155	2	2.0
Induron	AC 403 Acrylic Elastomeric	2	6.0
Devoe	Professional Velvet Matte Interior Flat Wall and Trim Finish No. 1200	2	1.5 - 2.0

S. System No. 19

1. System No. 19 shall be used for exterior wood surfaces requiring a gloss finish.

2. Surface Preparation: SP W1

3. Primer

   a. One (1) coat of one of the following, or approved equal:

Manufacturer	Coating System	No. of Coats	DFT per Coat (mils)
Tnemec	10-99W	1	2.0 - 3.0
Carboline	Sanitile 120	1	1.0 - 2.0
Devoe	Intercryl 520	1	2.0

4. Finish Coat

   a. Two (2) coats of one of the following, or approved equal:

Manufacturer	Coating System	No. of Coats	DFT per Coat (mils)
Tnemec	Series 1028	2	1.5 - 2.5
Carboline	Carbocoat 45	2	2.0
Devoe	Intercryl 530	2	2.0 - 3.0

T. System No. 20

1. System No. 20 shall be used for exterior wood surfaces requiring a semi-gloss finish.

2. Surface Preparation: SP W1

3. Primer

   a. One (1) coat of one of the following, or approved equal:

Manufacturer	Coating System	No. of Coats	DFT per Coat (mils)
Tnemec	10-99 W	1	2.0 - 3.0
Carboline	Sanitile 120	1	1.0 - 2.0
Induron	AC 301 Wood Primer	1	1.5
Devoe	Intercryl 520	1	1.5 - 2.0

4. Finish Coat

a. Two (2) coats of one of the following, or approved equal:

Manufacturer	Coating System	No. of Coats	DFT per Coat (mils)
Tnemec	Series 1029	2	2.0 - 3.0
Carboline	Carbocoat 45	2	2.0
Induron	Armorlux 2500	2	1.5
Devoe	Intercryl 530	2	1.5 - 2.0

U. System No. 21

1. System No. 21 shall be used for interior wood surfaces requiring a gloss finish.

2. Surface Preparation: SP W1

3. Primer

a. One (1) coat of one of the following, or approved equal:

Manufacturer	Coating System	No. of Coats	DFT per Coat (mils)
Tnemec	10-99 W	1	2.0 - 3.0
Carboline	Sanitile 120	1	1.0 - 2.0
Induron	AC 301 Wood Primer	1	1.5
Devoe	Intercryl 520	1	1.5

4. Finish Coat

a. Two (2) coats of one of the following, or approved equal:

Manufacturer	Coating System	No. of Coats	DFT per Coat (mils)
Tnemec	1028 Enduratone	2	2.0 - 3.0
Carboline	Carbocoat 45	2	2.0
Induron	Armorlux 2500	2	1.5
Devoe	DEVLAC 1431	2	2.0

V. System No. 22

1. System No. 22 shall be used for interior wood surfaces requiring a semi-gloss finish.

2. Surface Preparation: SP W1

3. Primer

a. One (1) coat of one of the following, or approved equal:

Manufacturer	Coating System	No. of Coats	DFT per Coat (mils)
Tnemec	10-99 W	1	2.0 - 3.0
Carboline	Sanitile 120	1	1.0 - 2.0
Induron	AC 301 Wood Primer	1	1.5
Devoe	Intercryl 520	1	1.5

4. Finish Coat

a. Two (2) coats of one of the following, or approved equal:

Manufacturer	Coating System	No. of Coats	DFT per Coat (mils)
Tnemec	Series 1029 Enduratone	2	2.0 - 3.0
Carboline	Carbocoat 45	2	2.0
Induron	AC-240 Acrylic Semi-Gloss	2	2.0
Devoe	Devcryl 1449	2	1.5

W. System No. 23

1. System No. 23 shall be used for interior wood surfaces requiring a low-sheen finish.

2. Surface Preparation: SP W1

3. Primer

   a. One (1) coat of one of the following, or approved equal:

Manufacturer	Coating System	No. of Coats	DFT per Coat (mils)
Tnemec	10-99 W	1	2.0 - 3.0
Carboline	Sanitile 120	1	1.0 - 2.0
Induron	AC 301 Wood Primer	1	1.5
Devoe	Intercryl 520	1	1.5

4. Finish Coat

   a. Two (2) coats of one of the following, or approved equal:

Manufacturer	Coating System	No. of Coats	DFT per Coat (mils)
Tnemec	Series 6 Tneme-Cryl	2	2.5
Carboline	Sanitile 155	2	2.0
Induron	Aquanaut II Acrylic Eggshell	2	2.0
Devoe	Devcryl 1449	2	1.5 - 2.0

X. System No. 24

1. System No. 24 shall be used for insulated and canvas-wrapped piping.

2. Surface Preparation: General Cleaning

3. Primer

   a. One (1) coat of one of the following, or approved equal:

Manufacturer	Coating System	No. of Coats	DFT per Coat (mils)
Tnemec	Series 6	1	2.0 - 3.0
Carboline	Sanitile 120	1	1.0 - 2.0
Induron	AC 210 Acrylic Primer	1	1.5
Devoe	None	---	---

4. Finish Cover

   a. Two (2) coats of one of the following, or approved equal:

Manufacturer	Coating System	No. of Coats	DFT per Coat (mils)
Tnemec	Series 6	2	1.0 - 2.0
Carboline	Carbocoat 45	2	2.0
Induron	Aquanaut II Acrylic Eggshell	2	1.5
Devoe	Devcryl 1449	2	2.0

Y. System No. 25

1. System No. 25 shall be used for metal surfaces, including but not limited to the following:

   a. Submerged piping

2. Surface Preparation: SP 10

3. Shop Primer

   a. One (1) coat of one of the following, or approved equal:

Manufacturer	Coating System	No. of Coats	DFT per Coat (mils)
Tnemec	Series 1	1	2.5 - 3.5
Carboline	Carboguard 60	1	3.0
Induron	PE-70 Primer	1	3.0 - 5.0
Devoe	DevRan No. 201 Universal Epoxy Primer	1	3.0

4. Field Touch-Up

   a. The “field touch-up” coating to be applied, as required, shall be from one of the following manufacturers, or approved equal:

Manufacturer	Coating System
Tnemec	Series I
Carboline	Bitumastic 300M
Induron	Ruff Stuff 2100 Coal Tar Epoxy
Devoe	DevRan No. 201 Universal Epoxy Primer

5. Finish Coat

   a. Two (2) coats of one of the following, or approved equal:

Manufacturer	Coating System	No. of Coats	DFT per Coat (mils)
Tnemec	446 Permashield MCU **	2	6.0 - 8.0
Carboline	Bitumastic 300M	2	8.0
Induron	Ruff Stuff 2100 Coat Tar Epoxy *	2	8.0
Devoe	DevTar 5A, No. 221 Epoxy High Build Coating **	2	8.0

* Apply the second coat within 90 hours of the first coat.
** Apply the second coat within 7 days of the first coat.

Z. System No. 26

1. System No. 26 shall be used for concrete surfaces, including but not limited to the following:

   a. Submerged concrete.

   b. All precast structures or cast-in-place concrete below grade (interior and exterior).

2. Surface Preparation: SSPC -SP 13 - Abrasive blast to provide an anchor profile equal to ICRI CSP 5 or greater.

3. Finish Coat

   a. Two (2) coats of one of the following, or approved equal:

Manufacturer	Coating System	No. of Coats	DFT per Coat (mils)
Tnemec	Tnemec 46-413 Tneme-Tar *	2	9.0
Carboline	Bitumastic 300M	2	8.0
Induron	Ruff Stuff 2100 Coat Tar Epoxy *	2	8.0
Devoe	DevTar 5A, No. 221 Epoxy High Build Coating ***	2	8.0

* Apply the second coat within 90 hours of the first coat.
* Apply the second coat within 24 hours of the first coat.
*** Apply the second coat within 7 days of the first coat.

AA. System No. 27

1. System No. 27 shall be used for steel surfaces in potable water immersion.

2. Surface Preparation: SP 10

3. Shop Primer

   a. One (1) coat of one of the following, or approved equal:

Manufacturer	Coating System	No. of Coats	DFT per Coat (mils)
Tnemec	Series I Omnithane	1	2.5 - 3.5
Carboline	Carboguard 61	1	5.0
Induron	PE-70 Primer	1	3.0 - 5.0
Devoe	BAR-RUST 233 H	1	3.0 - 5.0

4. Field Touch-Up

   a. The "field touch-up" coating to be applied, as required, shall be from one of the following manufacturers, or approved equal:

Manufacturer	Coating System	No. of Coats	DFT per Coat (mils)
Tnemec	Series I Omnithane	1	2.5 - 3.5
Carboline	Carboguard 61	1	3.0 - 5.0
Induron	PE-70 Primer	1	3.0 - 5.0
Devoe	Bar-Rust 233 H	1	3.0 - 5.0

5. Finish Coat

   a. Two (2) coats of one of the following, or approved equal:

Manufacturer	Coating System	No. of Coats	DFT per Coat (mils)
Tnemec	141 Epoxoline	2	6.0 - 8.0
Carboline	Carboguard 61	2	5.0
Induron	PE-70 Int./Finish	2	3.0 - 5.0
Devoe	Bar-Rust 233 H	2	3.0 - 5.0

BB. System No. 28

1. System No. 28 shall be used for concrete surfaces in potable water immersion.

2. Surface Preparation: SSPC - SP13 Abrasive Blast to produce an anchor profile equal to ICRI CSP 5

3. Shop Primer

   a. One (1) coat of one of the following, or approved equal:

Manufacturer	Coating System	No. of Coats	DFT per Coat (mils)
Tnemec	Series 218 *	1	---
Carboline	Carboguard 61	1	5.0
Induron	PE-70 Primer	1	3.0 - 5.0
Devoe	Bar-Rust 233 H	1	3.0 - 5.0

* Apply $^{1}/_{16}$-inch to all surfaces

4. Field Touch-Up

   a. The "field touch-up" coating to be applied, as required, shall be from one of the following manufacturers, or approved equal:

Manufacturer	Coating System	No. of Coats	DFT per Coat (mils)
Tnemec	Series 218 *	1	As needed
Carboline	Carboguard 61	1	3.0 - 5.0
Induron	PE-70 Primer	1	3.0 - 5.0
Devoe	Bar-Rust 233 H	1	3.0 - 5.0

5. Finish Coat

   a. Two (2) coats of one of the following, or approved equal:

Manufacturer	Coating System	No. of Coats	DFT per Coat (mils)
Tnemec	Series 141	2	6.0 - 8.0
Carboline	Carboguard 61	2	5.0
Induron	PE-70 Int./Finish	2	3.0 - 5.0
Devoe	Bar-Rust 233 H	2	3.0 - 5.0

CC. System No. 29

1. System No. 29 shall be used for all non-painted, exposed concrete flooring surfaces.

2. Surface Preparation: SP C1

3. System 29 shall consist of the application of three (3) coats of one of the following:

   a. Tnemec Series 629 CT Densifyer

   b. Sonneborn "Kure-N-Seal"

   c. Euclid Chemical Company "Surfhard"

   d. Lambert Corporation "Solidus"

   e. Approved Equal.

2.04 Wet Striping

A. After primer coat is applied, the same primer in a different color shall be applied to nuts, bolts, corners and sharp edges.

2.05 Extra Paint

A. ***Furnish two (2) unopened gallon cans of each type and each color of paint used***, properly marked for future use by the Owner.

3. EXECUTION

3.01 General

A. Inspection of Surfaces

1. Before application of the prime coat and each succeeding coat, ***inspect all surfaces***, adjoining work and conditions under which coating systems are to be applied and report to the Engineer, in writing, any existing unsatisfactory conditions.

2. ***Any defects or deficiencies shall be corrected by the Contractor before application of any subsequent coating***. Commencement of surface preparation and painting shall constitute the acceptance of existing conditions and any defects appearing in the painting work thereafter shall be by the Contractor at no additional cost to the Owner.

3. When any appreciable time has elapsed between coatings, previously coated areas shall be carefully inspected by the Engineer, and where, in his opinion, surfaces are damaged or contaminated, they shall be cleaned and recoated at the Contractor's expense. Recoating times of the manufacturer's printed instructions shall be adhered to.

4. Coating thickness shall be determined by the use of a properly calibrated inspection gauge for non-ferrous and cementitious surfaces. Coating thickness minimums shall be adhered to. ***If a surface fails the DFT test, the entire surface shall be recoated at no additional cost to the Owner.***

B. Equipment

1. Effective oil and water separators shall be used in all compressed air lines serving spray painting and sandblasting operations to remove oil or moisture from the air before it is used. Separators shall be placed as far as practical from the compressor.

2. All equipment for application of the paint and the completion of the work shall be furnished by the Contractor in “first-class condition” and shall comply with recommendations of the paint manufacturer.

3. ***The Contractor shall provide, free of charge to the Engineer, a "Nordson-Mikrotest" or "Positest" dry film thickness gauge for ferrous metal and an OG232 "Tooke" gauge, or equal, for nonferrous and cementitious surface, to be used to inspect coatings by the Engineer and Contractor***. The gauges may be used by the Contractor and returned each day to the Engineer. The Engineer will return gauges to the Contractor at completion of job.

3.02 Protection of Surfaces Not Scheduled to be Coated

A. ***Protect surrounding areas and surfaces*** not scheduled to be coated from damage during surface preparation and application of coatings.

B. Immediately remove coatings that fall on surrounding areas and surfaces not scheduled to be coated.

C. Provide temporary closures as required to prevent circulation of dust from adjacent areas where other work is in progress. Where it is necessary to remove existing protection of work of others, such protection shall be fully replaced.

D. ***Locate and protect all existing utilities, structures and appurtenances***.

3.03 Shop Painting

A. Surface Preparation

1. All ferrous metal to be primed in the shop shall have all rust, dust and scale, as well as all other foreign substances, removed by sandblasting or pickling in accordance with SSPC-SP5 or SP8, respectively. Cleaned metal shall be primed or pretreated immediately after cleaning to prevent new rusting. Under no circumstances will cleaned metal be allowed to sit overnight before priming, or pretreatment and priming.

2. ***All non-ferrous metals shall be solvent cleaned prior to the application of primer***.

3. In addition, galvanized surfaces which are to be top-coated shall first be degreased then primed.

4. ***All non-ferrous metal surfaces shall also be scarified prior to top-coating***.

B. Materials Preparation

1. Mix and prepare painting materials in strict accordance with the manufacturer's recommendations and directions, stirring materials before and during application to maintain a mixture of uniform density, free of film, dirt and other foreign materials.

2. No thinners shall be used except those specifically mentioned and only in such quantity as directed by the manufacturer in his instructions. If thinning is used, sufficient additional coats shall be applied to assure the required dry film thickness is achieved. The manufacturer's recommended thinner or cleanup solvent shall be used for all clean-up.

3. Application by brush, spray, airless spray or roller shall be as recommended by the manufacturer for optimum performance and appearance.

C. Applications

1. All painting shall be done by skilled and experienced craftsmen and shall be of highest quality workmanship. Coating systems shall be as specified herein.

2. ***Apply paint in accordance with the manufacturer's directions***. Use applicators and techniques best suited for the type of material being applied.

3. All paint and coatings materials shall be stored under cover and at a temperature within 10□F of the anticipated application temperature and ***at least 5□F above the dew point***.

4. Apply additional coats when undercoats, stains, or other conditions show through the final coat of paint, until the paint film is of uniform finish, color, and appearance.

5. Paint shall be applied in a neat manner with finished surfaces free of runs, sags, ridges, laps, and brush marks. Each coat shall be applied in a manner that will produce an even film of uniform and proper thickness.

6. Paint back sides of access panels and removable or hinged covers to match the exposed surfaces.

7. The equipment manufacturer or supplier shall provide touch-up paint for items with shop applied finish coats.

8. Where specified in the individual sections, primer coat(s) shall be applied in the shop by the equipment manufacturer. The shop coats shall be as specified and shall be compatible with the field coat or coats.

D. Certification

1. The Contractor shall obtain from the equipment manufacturer or supplier, prior to shipment of equipment, a ***written certification that surface preparation, coating brand, material, DFT, and application method complied with this Section***.

3.04 Surface Preparation

A. Prepare all surfaces in accordance with the coating manufacturer's instructions and as specified. Surfaces shall be uniform texture, dry, and free from all dust, rust, scale, splinters, loose particles, disintegrated paint, grit, oil, grease, or deleterious substances that will adversely affect adhesion or appearance of the coating. Rough edges of metal, weld seams and sharp edges from scaffold lugs shall be ground to a curve.

B. Exposed nails and other ferrous metals on surfaces to be coated shall be spot- primed with a metal primer compatible with the finish.

C. Surfaces that have been cleaned, pre-treated, and/or otherwise prepared for painting shall be given a coat of the first-coat material as soon as practicable prior to any deterioration of the prepared surface.

D. Hardware, hardware accessories, machined surfaces, plates, lighting fixtures, and similar items and surfaces not to be painted which are in contact with or nearby surfaces to be painted shall be removed, masked, or otherwise protected prior to surface preparation and painting operations.

E. ***Before commencing work, the painter must make certain that surfaces to be covered are in "perfect" condition and must obtain Engineer's approval to proceed***. Should the painter find such surfaces not in "perfect" condition, he shall report such fact(s) to the Engineer prior to covering. The application of paint shall be held as an acceptance of the surfaces and working conditions and the painter will be held responsible for the results reasonably expected from the materials and processes specified.

F. Program the cleaning and painting so contaminants from the cleaning process will not fall onto wet, newly-painted surfaces.

G. ***Do not sandblast or prepare more surface area in one (1) day than can be coated in one (1) day***. Prepare surfaces and apply coatings the same day.

H. Do not sandblast PVC, CPVC or FRP piping or equipment. Do not sandblast epoxy- or enamel-coated pipe that has already been factory coated, except to repair scratched or damaged coatings.

I. ***The surface shall be cleaned as specified for the paint system being used***. All cleaning shall be as outlined in the Steel Structures Painting Council's (SSPC) Surface Preparation Specification unless otherwise noted. If surfaces are subject to contamination, other than mill scale or normal atmospheric rusting, the surfaces shall be pressure washed, and acid or caustic pH residues neutralized, in addition to the specified surface preparation.

J. Visual standards, SSPC-VIS-1 (Swedish SIS OS 5900), "Pictorial Surface Preparation Standards for Painting Steel Surfaces," and the National Association of Corrosion Engineers (NACE), "Blasting Cleaning Visual Standards" TM-01-70 and TM-01-75 shall be considered as standards for proper surface preparation.

K. Standards for Surface Preparation

SSPC Spec.	Specification Title and General Description
SSPC - SP1	Solvent Cleaning Removal of all visible oil, grease, soil drawing and cutting compounds and other soluble contaminants. Solvent cleaning does not remove rust or mill scale. Change rags and cleaning solution frequently so that deposits of oil and grease are not spread over additional areas in the cleaning process.

SSPC Spec.	Specification Title and General Description
SSPC - SP2	Hand Tool Cleaning Hand Tool Cleaning removes all loose mill scale, loose rust and other detrimental foreign matter. It is not intended that adherent mill scale, rust and paint be removed by this process. Mill scale, rust, and paint are considered adherent if they cannot be removed by lifting with a dull putty knife. Before hand tool cleaning, remove visible oil, grease, soluble welding residues and salts by the methods outlined in SSPC-SP1.
SSPC - SP5 (NACE 1)	White Metal Blast Cleaning A White Metal Blast Cleaned surface, when viewed without magnification, shall be free of all visible oil, grease, dirt, dust, mill scale, rust, paint, oxides, corrosion products and other foreign matter. Before blast cleaning, visible deposits of oil or grease shall be removed by any of the methods specified in SSPC-SP1 or other agreed upon methods.
SSPC - SP6 (NACE 3)	Commercial Blast Cleaning A Commercial Blast Cleaned surface, when viewed without magnification, shall be free of all visible oil, grease, dirt, dust, mill scale, rust, paint, oxides, corrosion products and other foreign matter, except for staining. Staining shall be limited to no more than 33% of each square inch of surface area and may consist of light shadows, slight streaks or minor discoloration caused by stains of rust, stains of mill scale or stains of previously applied paint. Before blast cleaning, visible deposits of oil or grease shall be removed by any of the methods specified in SSPC-SP1 or other agreed upon methods.
SSPC - SP7 (NACE 4)	Brush-off Blast Cleaning A Brush-Off Blast Cleaned surface, when viewed without magnification, shall be free of all visible oil, grease, dirt, dust, loose mill scale, loose rust and loose paint. Tightly adherent mill scale, rust and paint may remain on the surface. Mill scale, rust and coating are considered adherent if they cannot be removed by lifting with a dull putty knife after abrasive blast cleaning has been performed. Before blast cleaning, visible deposits of oil or grease shall be removed by any of the methods specified in SSPC-SP1 or other agreed upon methods.
SSPC - SP10 (NACE 2)	Near-White Blast Cleaning A Near-White Blast Cleaned surface, when viewed without magnification, shall be free of all visible oil, grease, dirt, dust, mill scale, rust, paint, oxides, corrosion products and other foreign matter, except for staining. Staining shall be limited to no more than 5% of each square inch of surface area and may consist of light shadows, slight streaks or minor discoloration caused by stains of rust, stains of mill scale or stains of previously applied paint. Before blast cleaning, visible deposits of oil or grease shall be removed by any of the methods specified in SSPC-SP1 or other agreed upon methods. The blasted clean surface shall be primed the same day and before any rusting of the surface occurs.
SSPC - SP11	Power Tool Cleaning to Bare Metal Metallic surfaces that are prepared according to this specification, when viewed without magnification, shall be free of all visible oil, grease, dirt, dust, mill scale, rust, paint, oxide corrosion products and other foreign matter. Slight residues of rust and paint may be left in the lower portions of pits if the original surface is pitted. The profile shall not be less than 1 mil. Prior to power tool surface preparation, remove visible deposits of oil or grease by any of the methods specified in SSPC-SP1, “Solvent Cleaning”, or other agreed upon methods.

SSPC Spec.	Specification Title and General Description
SSPC - SP12 (NACE 5)	High and Ultra-High Pressure Water Jetting for Steel and Other Hard Metals This standard provides requirements for the use of high and ultra-high pressure water jetting to achieve various degrees of surface cleanliness. This standard is limited in scope to the use of water only, without the addition of solid particles in the stream.
SSPC - SP13 (NACE 6)	Concrete This standard gives requirements for surface preparation of concrete by mechanical, chemical or thermal methods prior to the application of bonded protective coating or lining systems. The requirements of this standard are applicable to all types of cementitious surfaces including cast-in-place concrete floors and walls, precast slabs, masonry walls and shotcrete surfaces. An acceptable prepared concrete surface should be free of contaminants, laitance, loosely adhering concrete and dust, and should provide a dry, sound, uniform substrate suitable for the application of protective coating or lining systems (Depending upon the desired finish and system, a block filler may be required).

L. Oil, grease, soil, dust, etc., deposited on the surface preparation that has been completed shall be removed prior to painting according to SSPC - SP1 Solvent Cleaning.

M. Weld flux, weld spatter and excessive rust scale shall be removed by Power Tool Cleaning as per SSPC - SP 11.

N. All weld seams, sharp protrusions, and edges shall be ground smooth prior to surface preparation or application of any coatings.

O. All areas requiring field welding shall be masked off prior to shop coating, unless waived by the Engineer.

P. All areas which require field touch-up after erection, such as welds, burnbacks, and mechanically damaged areas, shall be cleaned by thorough Power Tool as specified in SSPC - SP11.

Q. Touch-up systems will be same as original specification except that approved manufacturer's organic zinc-rich shall be used in lieu of inorganic zinc where this system was originally used. Also strict adherence to manufacturer's complete touch-up recommendations shall be followed. Any questions relative to compatibility of products shall be brought to the Engineer's attention; otherwise, the Contractor assumes full responsibility.

R. Wherever the words “*solvent cleaning*”, “*hand tool cleaning*”, “*wire brushing*”, or “*blast cleaning*” or similar words are used in these specifications or in paint manufacturer’s specifications, they shall be understood to refer to the applicable SSPC (Steel Structures Painting Council, Surface Preparation Specifications, ANSI A159.1) specifications listed above.

S. When specified, the surface shall be pre-treated in accordance with the specified treatment prior to application of the prime coat of paint.

T. Ferrous Metal Surfaces

1. Remove any oil or grease from surfaces to be coated with clean rags soaked in a solvent recommended by the coating manufacturer in accordance with SSPC specifications. Any chemical contamination shall be eliminated by means of neutralization or flushing or both prior to additional surface preparation. Clean rags shall be changed each 100 ft^2.

2. For immersion service, all sharp edges and welds shall be ground smooth to a rounder contour, all weld splatter shall be removed, and all pits and dents shall be filled, and all imperfections shall be corrected prior to sandblasting.

3. For non-immersion service, all sharp edges and welds shall be ground, all weld splatter shall be removed, all pits and dents shall be filled, and all imperfections shall be corrected prior to sandblasting.

4. For immersion service, all surfaces to be coated shall be sandblasted to white metal in accordance with Steel Structures Painting Council Specification SSPC - SP10 of the National Association of Corrosion Engineers Specification NACE 2. A white metal blast is defined as removing all rust, scale, paint, etc., to a clean white metal which has a uniform gray-white appearance. No streaks or stains or rust or any other contaminants are allowed. The proper abrasive to obtain the specified surface profile (anchor pattern) designated in the coating manufacturer's most recent printed application instructions shall be used. After sandblasting, dust and spent sand shall be removed from the surfaces by brushing or vacuum cleaning. The prime coat shall be applied as soon as possible after the blasting preparation is finished and always before the surface starts to rust. No sandblasted surface shall stand overnight before coating.

5. For non-immersion service, or wherever specified in the coating manufacturer's most recent printed application instructions for other services, all surfaces to be coated shall be sandblasted to near white metal in accordance with Steel Structures Painting Council Specification SSPC - SP10 or the National Association of Corrosion Engineers Specification NACE 2. A near white metal blast is defined as removing all rust, scale, paint, etc., except for very light shadows, very slight streaks or slight discolorations caused by rust stain, mill scale oxides, or slight, tight residues of paint or coatings that may remain. The proper abrasive to obtain the specified surface profile (anchor pattern) designated in the coating manufacturer's most recent printed Application Instructions shall be used. After sandblasting, dust and spent sand shall be removed from the surfaces by brushing or vacuum cleaning. The prime coat shall be applied as soon as possible after the blasting preparation is finished and always before the surface starts to rust. No sandblasted

surface shall stand overnight before coating. (This is 95 percent of any given surface area blasted to white metal).

6. For non-immersion service surfaces to be coated shall be sandblasted where specified to a commercial sandblast in accordance with Steel Structures Painting Council Specification SSPC - SP 6 or National Association of Corrosion Engineers Specification NACE 3. A commercial sandblast is defined as removing all rust, scale, paint, etc., except for slight shadows, streaks or discolorations caused by rust stain, mill scale oxides or slight, tight residues of paint or coating that may remain, if the surface is pitted, slight residues or paint or rust, may be found in the bottom of pits. The proper abrasive to obtain the specified surface profile (anchor pattern) designated in the coating manufacturer's most recent printed Application Instructions shall be used. After sandblasting, dust and spent sand shall be removed from the surfaces by brushing or vacuum cleaning. The prime coat shall be applied as soon a possible after the blasting preparation is finished and always before the surface starts to rust. no sandblasted surface shall stand overnight before coating (this is bof any given surface area blasted to white metal).

7. Ferrous metal surfaces previously exposed to sulfides shall be sandblasted, flame cleaned, and sandblasted again in accordance with the recommended surface preparation for the particular service in question.

8. Where blast cleaning is done in the field, only "virgin" sand, grit, or abrasive will be used.

9. Inaccessible areas, such as behind tank rafters or skip-welded lap joints, or in between back-to-back angle iron bracing, shall be coated before assembly to prevent corrosive action from taking place in these inaccessible areas. All surface voids shall be sealed-welded and back-to-back bracing and tank rafters either coated before assembly or eliminated from the design and construction. Sharp corners and edges shall be ground to a smooth contour and welds prepared as described above.

U. Concrete Surfaces

1. All efflorescence, laitance, chalk, dust, dirt, oils, grease, concrete curing agents, form release agents, sealers, old coatings and other chemical contaminants shall be removed either by steam cleaning with detergent, by scrubbing with a hot trisodium phosphate solution consisting of two (2) pounds of trisodium phosphate to each gallon of hot water (160□F), or by high pressure water blasting (3,000 psi or higher). Multiple cleaning operations may be required to remove all contaminants. Repeat the cleaning operation until the contamination is removed and flush the area with clean water to remove residual cleaning solution. Allow to dry thoroughly before coating.

2. ***All concrete surfaces to be coated shall be clean and dry***. "*Dry*" is defined for new concrete as *free of moisture and fully cured which is a minimum of 30 days at 75□F and fifty percent (50%) Relative Humidity or some equivalent cure time at other conditions (7 days minimum for stucco)*. The moisture content of the concrete shall be determined by using both of the following methods.

   a. The presence of moisture shall be checked by taping a one-foot square piece of 20 mil thick minimum plastic film on the surface. Pieces of test plastic film should be placed at various locations that are likely to be slow drying out, such as below grade, low spots in floors, inside corners and lower wall areas. The plastic film should be carefully sealed with tape to prevent the escape of any moisture or vapor that would be trapped behind the film. The film should be left in place over night or longer to allow sufficient time for moisture migration. After a minimum of sixteen (16) hours, remove and examine the backside for moisture condensation and inspect the concrete surface for darkened areas. The source of the moisture, if present, shall be located, and the cause corrected prior to coating.

   b. The presence of moisture shall also be determined with a moisture detection device such as a Delmhorst Model DLM2E, or equal. Moisture determined by this method shall be less than fourteen (14) percent moisture content before coating operations shall be allowed to proceed.

3. Do not use form oils incompatible with the coating, concrete curing agents, or concrete hardeners on concrete surfaces to be coated.

4. Old paint and unremoved tar stains shall be solvent cleaned with naphtha, trichloroethylene, or perchloroethylene. Proper safety precautions shall be observed if this step is necessary. The surface shall be flushed with fresh water and dried.

5. Concrete and/or cinder block walls to receive a coating shall be air-blasted with 100 psi clean, dry, oil-free air to remove dust, etc., and wire brushed to remove all loose and/or weak mortar. See the requirements for sumps, tanks and other water-bearing structures below.

6. Concrete floors shall be thoroughly swept clean and then acid etched. Acid etching consists of first dampening the entire surface with clean water *(avoid and excess of water that will for puddles*). Acid etch the damp floor with a 10 to 15 percent solution of hydrochloric (muriatic) or phosphoric acid. Allow the acid to stand on the floor until the bubbling stops. For best results, while the acid is bubbling scrub the floor with a stiff bristled brush. Do not allow the "*spent*" acid to dry on the floor. Rinse the surface thoroughly with fresh water. If the surface does not appear as rough as medium grit sandpaper, repeat the above steps. Neutralize the surface with a five percent (5%) solution of soda ash, tri-sodium phosphate, or ammonium

hydroxide in clean water. Let the solution stand for ten (10) minutes on the surface. Rinse thoroughly with water. The surface must be slightly alkaline (pH of 9.0) prior to coating.

7. The floors or concrete sumps, tanks or other water-bearing structures should be acid etched as described above or they may be sandblasted. The walls of concrete sumps and tanks must be sandblasted. Roughen the surface to a texture equivalent to that of medium grit sandpaper. Use a compressed air blast nozzle with oil-free air. The abrasive used should be dry silica sand with the maximum particle size that will pass through a sixteen (16) mesh screen and minimum particle size retained on a thirty (30) mesh screen. After the blast cleaning is completed, sand, dust and loose particles should be removed from the surface by vacuuming or blowing off with high pressure oil-free air. Examine the surface for texture and uniformity, as well as the removal of dust, efflorescence and laitance. Patch voids and cracks that will cause discontinuities in the coating or unsightly appearance using a patching compound compatible with the coating system.

V. Wood Surfaces

1. ***Wood should be clean and dry.***

2. Remove surface deposits of sap or pitch by scraping and wiping clean with rags dampened with mineral spirits or VM & P Naphtha.

3. Seal knots and pitch pockets with shellac reduced with equal parts of shellac thinner (denatured alcohol) before sandpaper and finishing with fine grit and remove sanding dust.

4. After the prime coat is dry, fill cracks and holes with putty or spackling compound.

5. When the filler is hard, sand flush the surface using fine grit sandpaper. Sand lightly between coats with fine grit, open-coated sandpaper.

W. Galvanized Steel and Non-Ferrous Metal

1. Galvanized steel and aluminum will only be coated when so specified.

2. Surfaces shall be clean and dry. Remove dust and dirt by blowing off the surface with high pressure air or wiping clean with dry rags. Oil, grease and protective mill coatings should be removed by solvent cleaning in accordance with SSPC-SP1.

3. White mst should be removed from galvanized steel or aluminum by hand or power brushing. Care should be taken not to damage or remove the galvanizing. Rust should be removed from old galvanized steel by Hand or Power Tool Cleaning in accordance with SSPC - SP2 or SSPC - SP11.

4. All surfaces shall be scarified by brush blasting for immersion service or hand sanding for non-immersion service.

5. Other surface preparation, as outlined in the coating manufacturer's latest written Application Instructions, shall be observed for more demanding exposures.

X. Stainless Steel

1. Stainless steel will only be coated when so specified, or when it is adjacent to areas to be coated such as piping supports, anchor bolts or flange bolts.

2. Stainless steel requires only solvent cleaning prior to coating using any one of the methods in SSPC - SP1. Only solvents and cleaning solutions containing less than 200 ppm of halogens should be used to prevent stress corrosion cracking.

3. Stainless steel may be whip-blasted to provide a surface profile to increase the mechanical bond of the coating system. The height of the profile and the texture required should be defined for the operator and as a standard for the acceptance of the work. Pictorial standards for the surface cleanliness of carbon steel are not applicable to stainless steel, since there are no corrosion products or mill scale to remove from the surface.

4. Abrasive blast cleaning procedures outlined by the Steel Structures Painting Council for carbon steel may also be used for stainless steel. Only very hard silica sand or other abrasive media should be used for a fast cutting action and to obtain a sharp angular profile.

Y. Gypsum Drywall

1. Sand joint compound with fine grit, open-coated sandpaper to provide a smooth flat surface. Avoid heavy sanding of the adjacent wall board surfaces, which will raise the nap of the paper covering. Remove dust from the surface by wiping with clean rags or other means. If additional joint finishing is required to provide a smooth surface, the same joint compound of a ready-mixed spackling compound should be used. Putty, patching pencils, caulking, or masking tape should not be applied to dry wall surfaces to be painted.

2. Lightly scuff-sand tape joints after priming to remove raised paper nap. Take care not to sand through the prime coat and remove dust by wiping with clean rags.

Z. PVC or Other Plastic Piping or Ductwork

1. Solvent clean.

2. If recommended by the manufacturer, lightly abrade surface with medium grade sandpaper. Remove dust by wiping with clean rags.

AA. Previously-Painted Surfaces (Except Ferrous Metal, Non-immersion)

1. Careful examination of the old coating is necessary in order to determine the condition of the coating prior to recommending the degree of surface preparation that will be needed. The old coating shall be shaved with a knife to ascertain its present adhesion to the substrate, as well as the flexibility of the film. If the old coating has a tendency to powder or shatter easily under the knife, or disbonds freely from the substrate or underfilms, it would indicate total removal is necessary.

    a. When up to ten percent (10%) of the total area has failed, spot blasting back to at least one (1) inch into sound film, feathering of edges and spot priming is required.

    b. When the coating system has deteriorated to approximately twenty-five percent (25%) of the total area, or if the coating is brittle, eroded or underfilm rusting is present, completely remove the original coating system by sandblasting as specified.

2. Tank linings, immersion-service coatings, and some other types of high performance coatings generally require total removal before recoating. Consult the manufacturer’s recommendations for which of the other types of high performance coatings require total removal.

3. In instances where the film has been eroded due to weathering or worn thin due to abrasion or impingement with no rusting, the surface contaminants may be removed through high pressure water blasting (approximately 2,000 to 3,000 psi, over 4 gallons per minute) with emulsifying agents or cleaners, rinsed and dried. Roughening of the surface shall be used to improve the adhesion of subsequent coats. Recoat with the recommended finish coat(s).

3.05 Materials Preparation

A. Mix and prepare painting materials in strict accordance with the manufacturer's recommendations and directions, stirring materials before and during application to maintain a mixture of uniform density, free of film, dirt, and other foreign materials. Colors shall be thoroughly mixed with no streaks or separation of color.

B. Mechanical mixers, capable of thoroughly mixing the pigment and vehicle together, shall mix the paint prior to use where required by manufacturer's instructions; thorough hand mixing will be allowed for small amounts up to one (1) gallon.

C. Pressure pots shall be equipped with mechanical mixers to keep the pigment in suspension, when required by manufacturer's instructions. Otherwise, intermittent hand mixing shall be done to assure that no separation occurs.

D. All mixing shall be done in accordance with SSPC Vol. 1, Chapter 4, "Practical Aspects, Use and Application of Paints" and/or with manufacturer's recommendations.

E. Except where otherwise specified, thinning shall be done only if necessary for the workability of the coating material and then, only in accordance with the coating manufacturer's most recent printed application instructions. Use only the thinner provided by the coating manufacturer. If thinning is used, sufficient additional coats shall be applied to assure the required dry film thickness is achieved. The manufacturer's recommended thinner or cleanup solvent shall be used for all cleanup. Do not incorporate in the coating any thinners or solvents used for cleaning brushes or equipment.

F. Exercise care to keep fire hazards to a minimum. Provide an approved hand fire extinguisher near each paint storage and mixing area. No oily waste, rags, or painting equipment shall be left scattered throughout the premises.

G. Protect all adjacent areas against damage and leave storage and mixing areas clean at the completion of painting.

H. Application by brush, spray, airless spray or roller shall be as recommended by the manufacturer for optimum performance and appearance.

3.06 Application

A. Paint shall be applied only on thoroughly dry surfaces and during periods of favorable weather, unless otherwise allowed by the paint manufacturer.

1. Except as provided below or where the manufacturer allows, painting shall not be permitted when the atmospheric temperature is below 50°F, or when freshly painted surfaces may be damaged by rain, fog, dust, or condensation, and/or when it can be anticipated that these conditions will prevail during the drying period.

2. No exterior painting shall be done during inclement weather when relative humidity exceeds 85%, or under conditions identified by the manufacturer as unsuitable.

B. No coatings shall be applied unless surface temperature is a minimum of 5°F above the dew point; the temperature must be maintained during curing.

DEW POINT* CALCULATION CHART "Surface Temperature at which Condensation begins"											
RH	Ambient Air Temperature (□F)										
	20	30	40	50	60	70	80	90	100	110	120
90%	18	28	37	47	57	67	77	87	97	107	117
85%	17	26	36	45	55	65	76	84	95	103	113
80%	16	25	34	44	54	63	73	82	93	102	110
75%	15	24	33	42	52	62	71	80	91	100	108
70%	13	22	31	40	50	60	68	78	88	96	105
65%	12	20	29	38	47	57	66	76	85	93	103
60%	11	19	27	36	45	55	64	73	83	92	101
55%	9	17	25	34	43	53	61	70	80	89	98
50%	6	5	23	31	40	50	59	67	77	86	94
45%	4	13	21	29	37	47	56	64	73	82	91
40%	1	11	18	26	35	43	52	61	69	78	87
35%	-2	8	16	23	31	40	48	57	65	74	83
30%	-6	4	13	20	28	36	44	52	61	69	77

** Dew Point: Temperature at which moisture will condense on a surface. No coating shall be applied unless the surface temperature is a minimum of 5□F above this point. The temperature must be maintained during curing.*

Example: If the air temperature is 70□F and the relative humidity is 65%, then the dew point is 57□F. No coating shall be applied unless the surface temperature is 62□F.

C. Paint all exposed surfaces in rooms scheduled for painting whether or not colors are designated in schedules, except where the natural finish of material is obviously intended and specifically noted as a surface not be painted. Where items or surfaces are not specifically mentioned, paint these the same as adjacent similar materials or areas. If the color of the finishes are not designated, the Engineer will select them from the standard colors available for the materials systems as specified.

D. Ventilation

1. ***Provide adequate ventilation for safe application and for proper drying of coatings on interior surfaces***.

2. Ensure solvent vapors are released during and after application of coatings. Remove vapors by exhausting air from the lowest portions of tanks and enclosed spaces and keep tops open and clear.

3. During coating application in enclosed areas, the capacity of ventilating fans shall be at least 300 cfm per gallon of coating applied per hour.

4. Provide continuous forced ventilation at a rate of at least one complete air change per four (4) hours for at least five (5) days after the coating application is completed.

E. The average rate of application shall not exceed the theoretical rate of coverage recommended by the coating manufacturer for the type of surface involved, less an allowance for losses. Average dry film thickness shall not be less than thickness set forth under Painting Systems. Not more than 10-20% of points inspected may be less than 90% of the specified thickness. Deficiencies shall be corrected by application of additional coating.

F. Each coat shall be uniform in coverage and color. Successive coats shall perceptibly vary in color. Each coat shall be carefully examined and faulty material, poor workmanship, holidays, damaged areas and other imperfections shall be touched up prior to applying succeeding coats. Comply with coating manufacturers' recommendations for drying time between coats.

G. Bottoms, sides and edges of doors shall receive same finish as faces of doors. If refitting of wood doors is done prior to final acceptance, refinish at no extra cost.

H. Incidental niches, recesses, passages, closets, etc., shall be finished to match similar or adjacent spaces.

I. Access doors, panels, convectors, grilles and similar items shall be coated the same color as adjacent work, except for non-ferrous metal or where otherwise directed by the Engineer.

J. Primed hardware shall be coated to match adjacent work to which they are attached.

K. In the event that the finished surfaces are not acceptable, completely refinish entire unit areas and sections as necessary to eliminate visible laps or other indications of repairs.

L. Color Selection

1. Colors for Multi-Coat Systems

a. Each coat shall be applied in a different color or shade from the preceding coat to aid in determining the uniformity and coverage of the coating.

b. ***The finish coat color shall be selected by the Engineer and Owner***.

c. When a white finish coat is specified, the last two (2) coats shall be white.

2. Color Coding Piping

a. All exposed piping shall be identified as specified in Section 09905, “Piping and Equipment Identification System”.

b. The pipe identification system shall include color coding or banding, legends, and arrows.

3. Color Coding Conduit

a. All exposed electrical conduit with conductors over 120 volts shall be color banded as specified in Division 16, “Electrical” and Section 09905, “Piping and Equipment Identification System” (color code, if provided, takes precedence).

M. All painting shall be done by skilled and experienced craftsmen and shall be of highest quality workmanship.

N. ***Apply paint in accordance with the manufacturer's directions***. Use applicators and techniques best suited for the type of material being applied. All equipment shall be maintained in good working order and shall be comparable to that described in the coating manufacturer's most recent application instructions. It shall be thoroughly cleaned and inspected daily. Worn spray nozzles, tips, etc., shall be replaced regularly. Effective oil and water separators shall be used and serviced on all air lines.

O. All paints and coating materials shall be stored under cover and at a temperature within 10□F of the anticipated application temperature and at least 5□F above the dew point.

P. Apply additional coats when undercoats, stains, or other conditions show through the final coat of paint, until the paint film is of uniform finish, color, and appearance.

Q. Paint shall be applied in a neat manner with finished surfaces free of runs, sags, ridges, laps, and brush marks. Edges of paint adjoining other colors or materials shall be sharp and true. Each coat shall be applied in a manner that will produce an even film of uniform and proper thickness. Allow each coat to dry thoroughly before applying the next coat, follow manufacturer's recommendations taking into account temperature and relative humidity as indicated in Article 3.06(B) of this specification section.

R. All interior surfaces of structures shall be finish coated prior to installation of equipment, conduit, and other exposed items by mechanical, electrical, or instrumentation.

1. Paint back sides of access panels and removable or hinged covers to match the exposed surfaces.

S. Finish exterior doors on tops, bottoms, and side edges the same as the exterior faces, unless otherwise indicated.

T. Sand lightly between each succeeding enamel or varnish coat.

U. Omit the first coat (primer) on metal surfaces which have been shop-primed and touch-up painted, unless otherwise specified.

V. Retouching Existing Painted Surfaces

1. Existing painted surfaces damaged by the modification work or other operations of the Contractor shall be retouched to conform to the above coating systems and blend in with the new and existing work.

2. Damaged surfaces shall be repainted with not less that two (2) coats, and other existing surfaces that are listed shall be repainted with the coating system specified.

W. The prime and intermediate coats as specified for the various coating systems may be applied in the shop by the manufacturer. The shop coats shall be of the type specified and shall be compatible with the field coat or coats. Such items as pumps, motors, equipment, electrical panels, etc shall be given at least one touch-up coat with the intermediate coat material and one complete finish coat in the field.

X. Field Painting in the immediate vicinity of, or on, energized electrical and rotating equipment, and equipment and/or pipes in service shall not be performed without the approval of the Engineer.

Y. Extreme care shall be exercised in the painting of all operable equipment, such as valves, electric motors, etc., so that the proper functioning of the equipment will not be affected.

Z. The Contractor's scaffolding shall be erected, maintained, and dismantled without damage to structures, machinery, equipment or pipe. Drop cloths shall be used where required to protect buildings and equipment. All surfaces required to be clear for visual observations shall be cleaned immediately after paint application.

AA. Painting shall not be performed on insulated pipe within three (3) feet of insulation operations or, on insulation whose covering and surface coat have not had time to set and dry. Painting shall not be performed on uninsulated pipe within one (1) foot of any type of connection until the connection has been made, except as directed by the Engineer.

BB. The prime coat shall be applied immediately following surface preparation and in no case later than the same working day. All paint shall be applied by brushing, paint mitt and roller, conventional spraying, or airless spraying, using equipment approved by the paint manufacturer.

CC. Each coat of paint shall be recoated as per manufacturer's instructions. Paint shall be considered recoatable when an additional coat can be applied without any detrimental film irregularities such as lifting or loss of adhesion.

DD. Surfaces that will be inaccessible after assembly shall receive either the full specified paint system or three shop coats of the specified primer before assembly.

EE. Finish colors shall be in accordance with the Painting and Color Schedule and shall be factory mixed (i.e., there shall be no tinting by the Contractor, unless authorized by the Engineer).

FF. All edges and weld seams in immersion service shall receive a "stripe coat" (applied by brush) of the first coat prior to application of the full first coat.

GG. All open seams in the roof area of tanks shall be filled after application of the topcoat with a flexible caulking such as Sika Flex 1A, or approved equal.

HH. Unsatisfactory Application

1. If the item has an improper finish, color or insufficient dry film thickness, the surface shall be cleaned and top coated with the specified material to obtain the specified color and coverage. Specific surface preparation information is to be secured from the coatings manufacturer.

2. All visible areas of chipped, peeled or abraded paint shall be hand or power-sanded, feathering the edges. The areas shall then be primed and finish coated in accordance with the specifications.

3. Work shall be free of runs, bridges, shiners, laps or other imperfections. Evidence of these conditions shall be cause for rejection.

4. Any defects in the coating system shall be repaired by the Contractor per written recommendations of the coating manufacturer.

5. Any repairs made on steel surfaces for immersion service shall be holiday detected in accordance with ASTM G62 - Low Voltage Holiday Detection.

    a. Areas found to have holidays shall be marked and repaired in accordance with the paint manufacturer’s instructions.

b. The Engineer shall be notified of the holiday testing time so that he may be present during the testing.

3.07 Application Restrictions

A. Environmental Requirements

1. Comply with the manufacturer's recommendations as to environmental conditions under which coatings and coating systems can be applied.

   a. The conditions below shall be adhered to even if the manufacturer's recommendations are less stringent. If the manufacturer's recommendations are more stringent, they shall apply.

   b. No coatings shall be applied when the air, surface, and material temperature is below 55□F or above 95□F for 24 hours prior to and 24 hours after coating application. Surface temperature shall be at least 5□F above the dew point for 24 hours prior to and 24 hours after coating application. The dewpoint shall be determined by use of a sling psychrometer in conjunction with U.S. Weather Bureau psychometric tables. Do not apply coatings when the relative humidity exceeds 85% percent or to damp or wet surfaces, unless otherwise permitted by the coating manufacturer's printed instructions. The Contractor is referred to Article 3.06(B) of this specification section for additional information.

   c. No painting shall be done when the surfaces may become damaged by rain, fog or condensation or when it is anticipated that these conditions will prevail during the drying period, unless suitable enclosures to protect the surface are used. Provisions shall be made, at the Contractor’s expense, to control atmospheric conditions artificially inside the enclosure, within the limits suitable for painting throughout the painting operations. Where heat is necessary, it shall be supplied by the painting applicator and shall be of such type that it will maintain an air and coated surface temperature of 55□F minimum prior to and after the coating application as described above, and 90□F minimum during the cure stage if hot air forced curing is recommended by the coating manufacturer for special coatings. Further, this heater shall be of such type as not to contaminate the surface area to be or being coated with combustion products. The Contractor shall supply utilities to run electric or gas heaters. Any surface coating damaged by moisture or rain shall be removed and redone as directed by the Engineer or Owner.

2. Do not apply finish in areas where dust is being or will be generated during application through full cure.

3. ***All exterior painting shall be done only in dry weather***.

4. ***Spray application shall occur only when wind velocities, including gusts, are less than ten (10) miles per hour. All materials, equipment, etc. in the vicinity of spray application shall be protected from overspray.***

B. Weather Conditions

1. ***Do not paint in the rain, wind, snow, mist and fog or when the steel or metal surface temperatures are less than 5□F above the dew point***.

2. No coatings shall be applied unless the relative humidity is below 85%.

3. ***Do not paint when the temperature of the metal to be painted is above 120□F***.

4. Do not apply alkyd, chlorinated rubber, inorganic zinc, silicone aluminum, or silicone acrylic paints if the air or surface temperature is below 40□F or expected to be below 40□F within twenty-four (24) hours.

5. Do not apply epoxy, acrylic latex, and polyurethane paints on an exterior or interior surface if the air or surface temperature is below 60□F or is expected to drop below 55□F within twenty-four (24) hours.

C. Application of materials shall be done only on properly prepared surfaces as herein specified. Between any two (2) coats of material, unless specifically cover in the coating manufacturer's most recent printed application instructions, if more than one (1) week passes between subsequent coats, the coating manufacturer will be contacted for his recommended preparation of the surface ***prior*** to application of the next coat. This preparation might include brush-off blasting, steam cleaning, or solvent wiping (with an indicated solvent) and shall be specified in writing by the material supplier and followed by the applicator. Any surface coating damaged by moisture or rain shall be removed and redone as directed by the Engineer or Owner.

D. ***In no case shall paint be applied to surfaces which show a moisture content greater that fourteen percent (14%)***. The presence of moisture shall be determined prior to coating by testing with a moisture detection device such as a Delmhorst Model DLM2E, or equal.

3.08 Minimum Coating Thickness

A. Coating thickness shall meet or exceed the specified minimum dry film thickness (DFT) in all areas. The average coating thickness as determined by multiple representative

DFT measurements shall meet or exceed the mid-point of DFT range. If below this DFT value, the surface shall be recoated with at least the minimum DFT until the total DFT meets or exceeds the mid-point DFT.

B. Coverage rates are theoretical as calculated by the coating manufacturer and are, therefore, the maximum allowable.

C. Apply a prime coat to material which is required to be painted or finished, and which has not been prime coated by others.

D. On masonry, application rates will vary according to surface texture; however, in no case shall the manufacturer's stated coverage rate be exceeded. On porous surfaces, is shall be the painter's responsibility to achieve a protective and decorative finish either by decreasing the coverage rate or by applying additional coats of paint.

E. Recoat primed and sealed walls and ceilings where there is evidence of suction spots or unsealed areas in first coat, to assure a finish coat with no burn-through or other defects due to insufficient sealing.

3.09 Finishes

A. Pigmented (Opaque) Finishes

1. Completely cover to provide an opaque, smooth surface of uniform finish, color, appearance, and coverage.

2. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections will not be acceptable.

B. Complete Work

1. Match approved samples for color, texture, and coverage.

2. Remove, refinish, or repaint work not in compliance with specific requirements.

3.10 Workmanship

A. The Contractor must show proof that all employees associated with this project shall have been employed by the Contractor for a period of not less than six (6) months.

B. All painting shall be done by skilled and experienced craftsmen and shall be of highest quality workmanship.

C. Painting shall be performed by experienced painters in accordance with the recommendations of the paint manufacturer. All paint shall be uniformly applied without sags, runs, spots, or other blemishes. Work which shows carelessness, lack of skill, or is defective in the opinion of the Engineer, shall be corrected at the expense of the Contractor.

3.11 Field Quality Control

A. The Contractor shall request acceptance of each coat by the Owner's representative before applying the next coat; and the Contractor shall provide the necessary properly calibrated gauges.

B. All non-ferrous surfaces shall be checked for the number of coats and thickness by use of a Tooke gauge, or equal.

C. ***All ferrous surfaces shall be checked for film thickness*** by use of an Elcometer or Micro-Test magnetic dry film gauge, or equal, properly calibrated.

D. Submerged tank linings and metals shall be tested for freedom from holidays and pinholes by use of a Tinker-Rasor, K-D Bird Dog Holiday Detector, or equal.

E. ***All defects shall be corrected to the satisfaction of the Engineer and Owner***.

3.12 Protection

A. ***All other surfaces shall be protected while painting***.

B. Protection of furniture and other movable objects, equipment, fittings, and accessories shall be provided throughout the painting operation. Remove all electric plates, surface hardware, etc., before painting; protect and replace when completed.

C. ***Mask all machinery nameplates and all machined parts not to receive paint***. Lay drop cloths in all area where painting is being done to adequately protect flooring and other work from all damage.

3.13 Cleaning

A. The Contractor shall perform the work under this Section while keeping the premises free from accumulation of dust, debris, and rubbish and shall remove all scaffolding, paint cloths, paint, empty paint containers, and brushes from buildings and the project site when completed.

B. All paint brushed, splattered, spilled, or splashed on any surface not specified to be painted shall be removed.

C. ***The Contractor shall insure that all glass throughout that portion of the facility in which he worked is cleaned of dirt and paint before he leaves the job site***. Further, the Contractor shall insure that all glass in this area is thoroughly washed and polished.

D. All cloths and waste that might constitute a fire hazard shall be placed in closed metal containers or destroyed at the end of each day. Upon completion of the work, all staging, scaffolding and containers shall be removed from the Project Site and/or destroyed in an approved and legal manner.

E. Upon completion of the Project, remove from the premises all rubbish and accumulated material and leave the work in a neat and clean condition, acceptable to the Engineer and Owner.

3.14 Extra Stock

A. Upon completion of painting work, the Owner shall be furnished, at no additional cost, unopened containers providing ***a minimum of two (2) gallons of each type and color of finish paint for touching up***.

B. Multi-component coatings shall have each component supplied in separate containers boxed together. Paint container labels shall be complete with manufacturer's name, generic type, number, color, and location where used.

END OF SECTION

SECTION 09901

SURFACE PREPARATION AND SHOP PRIME PAINTING

1. GENERAL

1.01 Description

A. Furnish all labor, materials, equipment and incidentals required for the surface preparation and application of shop primers on ferrous metals, excluding stainless steels, as specified herein.

B. Related Work Specified Elsewhere

Specification Section	Title
09900	Painting
Division	**Information**
5	Metals
11	Equipment
Contract Drawings and General Provisions of the Contract	

1.02 Quality Assurance

A. Provide the ***best quality grade*** of the various types of coatings as regularly manufactured by approved paint materials manufacturers. Materials not displaying the manufacturer's identification as a standard, best-grade product will not be acceptable.

B. The ***equipment manufacturer shall be responsible for a satisfactory paint application*** which will adhere without peeling, flaking, delamination, blistering or discoloration. Before application of any painting materials, the manufacturer shall submit a Project specific Letter of Certification identifying the materials to be used. The letter shall state that the manufacturer recommends the materials selected for the application proposed.

C. Painting shall be accomplished by experienced painters specializing in industrial painting familiar with all aspects of surface preparations and applications required for this Project. Work shall be done in a safe and workmanlike manner.

D. Provide undercoat paint produced by the same manufacturer as the finish coats. ***Undercoat and finish coat paints shall be compatible***. Use only thinners approved by the paint manufacturer, and use only within recommended limits.

E. ***A five (5) year warranty*** for the installed painting/coating systems shall be provided, guaranteeing against premature chipping, flaking, fading, cracking, blistering, peeling, delaminating, or any other defects.

F. Standards

1. ASTM
2. OSHA
3. NFPA
4. SSPC
5. AWWA
6. NSF
7. NACE

G. Acceptable Manufacturers

1. Tnemec Company, Inc.
2. Carboline Company
3. ICI Devoe, Inc.
4. Or approved equal.

1.03 Submittals

A. Submit, in accordance with Section 01300, *Shop Drawings, Submittals and Samples*, manufacturer's specifications and data on the proposed primers and detailed surface preparation, application procedures, number of coats applied and dry mil thicknesses. All submittals shall be in an electronic format (PDF).

B. ***Submit a certification of the compatibility of the finished coat with the factory-applied primer***.

C. The Contractor shall submit a listing of equipment/materials that are to be field painted and the type of primer, intermediate and finish coats to be used and applied.

D. Submittals shall include representative physical samples of the proposed primers, if required by the Engineer.

2. PRODUCTS

2.01 Materials

A. Submerged Surfaces

1. Shop primer for ferrous metals which will be submerged or which are subject to splash action or which are specified to be considered submerged service shall be sprayed with one (1) of Kop-Coat 340 Gold Primer, Tnemec Series 20 Potapox Primer, or equal, at a minimum dry film thickness of 5.0 mils.

2. ***Primers to be used for submergence in potable water shall be NSF certified.*** This certification to be submitted to the Engineer during the shop drawing review process.

B. Non-Submerged Surfaces

1. Non-submerged metals shall be sprayed with one coat of Tnemec 90-91 H_2O Hydro-Zinc 2000 (NSF Standard 61 certified), dry film thickness 2.5 to 3.5 mils by Tnemec Co., or approved equal NSF certified coating.

2. The coating shall be Class B, Slip Critical certified for steel construction. Use for structural steel, steel joists and miscellaneous carbon steel items.

3. For pipe and associated items and not over open tanks, spray apply one (1) coat of Tnemec 66-1211 Epoxoline Primer dry film thickness 3.0 to 4.0 mils by Tnemec Co., equal by Ameron (VyGuard), DuPont or approved equal.

C. Non-Primed Surfaces

1. Non-primed surfaces such as gears, bearings surfaces and other similar surfaces obviously not to be painted shall be given a heavy shop coat of grease or other suitable rust-resistant coating.

2. This coating shall be maintained as necessary to prevent corrosion during all periods of storage and erection and shall be satisfactory to the Engineer up to the time of the final acceptance test.

D. Compatibility of Coating Systems

1. Shop priming shall be done with primers that are guaranteed by the manufacturer to be compatible with their corresponding primers and finish coats specified in Section 09900, *Painting*, for use in the field and which are recommended for use together.

3. EXECUTION

3.01 Application

A. Surface Preparation and Priming

1. Non-submerged components scheduled for priming, as defined above, shall be blast cleaned in accordance with SSPC-SP-6, immediately prior to priming. Submerged components scheduled for priming, as defined above, shall be blast cleaned in accordance with SSPC-SP-10, immediately prior to priming.

2. Surfaces shall be dry and free of dust, oil, grease, dirt, rust, loose mill scale and other foreign material before priming.

3. Shop prime in accordance with approved paint manufacturer's recommendations.

4. Priming shall immediately follow sandblasting before any evidence of corrosion has occurred. If over twenty-four (24) hours have passed, the manufacturer/contractor shall repeat the surface preparation procedures.

B. Non-Primed Surfaces

1. Apply an approved coating per the manufacturer's recommendations.

3.02 Fabricated Items

A. All items to be shop primed shall be blast cleaned as specified for applicable service prior to priming. If, in the opinion of the Engineer, any prime coating that has been

improperly applied or if material contrary to this Section has been used, that coating shall be removed by abrasive blasting to white metal and re-primed in accordance with this Section.

B. All shop prime coats shall be of the correct materials and applied in accordance with this Section. Remove any prime coats not in accordance with this Section by blast cleaning and apply the specified prime coat at no additional cost to the Owner.

C. ***Shop primed surfaces shall be cleaned thoroughly and damaged or bare spots prepared as approved and retouched with the specified primer before the application of successive paint coats in the field***.

D. ***Shop finish coats, if proposed and allowed, shall be equal in appearance and protection quality to a field applied finish coat***. If, in the opinion of the Engineer, a shop finish coat system does not give the appearance and protection quality of other work of similar nature, prepare the surfaces and apply the coat or coats of paint as directed by the Engineer to accomplish the desired appearance and protection quality. Submit to the Engineer substantial evidence that the standard finish is compatible with the specified finish coat.

E. ***Properly protect the shop prime and finish coats against damage from weather or any other cause***.

F. Wherever fabricated equipment is required to be blast cleaned, protect all motors, drives, bearings, gears, etc, from the entry of grit. Any equipment found to contain grit shall be promptly and thoroughly cleaned.

END OF SECTION

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SECTION 09905

PIPING, VALVE AND EQUIPMENT IDENTIFICATION SYSTEM

1. GENERAL

1.01 Description

A. Scope of Work

1. The work included under this Section consists of providing an identification system for piping systems and related equipment.

B. Related Work Specified Elsewhere

Specification Section	Title
09900	Painting
15060	Ductile Iron Pipe and Fittings
15065	Polyvinyl Chloride (PVC) Pressure Pipe and Fittings
15100	Valves and Appurtenances
Contract Drawings and General Provisions of the Contract	

1.02 Quality Assurance

A. Unless otherwise indicated, all materials, workmanship and practices shall conform to the following standard(s):

STANDARD	DESCRIPTION
American National Standard Institute (ANSI)	
ANSI A13.1	Scheme for the Identification of Piping Systems

1.03 Submittals

A. The Contractor shall submit shop drawings, manufacturer's descriptive literature, illustrations, specifications, and other pertinent data in accordance with Section 01300, *Shop Drawings, Submittals and Samples*. All submittals shall be in an electronic format (PDF).

B. Schedules

1. Provide a typewritten list of all tagged valves giving tag color, shape, letter code and number, the valve size, type, use, and general location.

2. Provide a complete list of materials to be furnished and surfaces on which they will be used.

C. Samples

1. Provide a sample of each type of valve tag supplied.

2. Provide a sample of each type of identification tape and marker balls supplied.

3. Provide manufacturer's color charts for color selection by the Engineer.

1.04 Product Delivery, Storage and Handling

A. Delivery of Materials

1. Except for locally mixed custom colors, deliver sealed containers with labels legible and intact.

B. Storage of Materials

1. Store only acceptable project materials on project site.

2. Store in a suitable location.

3. Restrict storage to paint materials and related equipment.

4. Comply with all health and fire regulations.

1.05 Job Conditions

A. Environmental Requirements

1. Comply with manufacturer's recommendations as to the environmental conditions under which coatings and coating systems can be applied.

2. Do not apply finish in areas where dust is being generated.

B. Protection

1. Cover or otherwise protect all finished work of other trades and surfaces not to be painted.

2. PRODUCTS

2.01 Materials

A. Materials for painting shall conform to requirements of Section 09900, *Painting*.

B. Materials selected for coating systems for each type surface shall be the product of a ***single manufacturer***.

C. ***Aboveground piping shall be identified by painting the name of the material flowing through the pipe as well as flow arrows*** (text and arrow type to be provided by the Engineer).

1. Markers shall be of wording and color as shown in Table 09905-1.

2. Lettering shall be as follows:

a. 2¼-inches high for pipes 3 inches in diameter and larger.

b. 1c-inches high for pipes less than 3 inches in diameter.

3. Flow arrows shall be as follows:

a. 2¼-inches by six (6) inches for pipes three (3) inches in diameter and larger.

b. 1c-inches by three (3) inches for pipes less than three (3) inches in diameter.

D. ***Buried piping shall be identified by "identification tape" installed over the centerline of the pipelines***.

1. Identification Tape for Steel or Iron Pipe and Conduit

   a. Identification tape shall be manufactured of inert polyethylene film so as to be highly resistant to alkalies, acids, or other destructive agents found in the soil, and shall have a minimum thickness of four (4) mils.

   b. The tape width shall be six (6) inches and shall have the background color specified below, imprinted with black letters. The imprint shall be as specified below and shall repeat itself a minimum of once every two (2) feet for the entire length of the tape.

   c. The tape shall be Terra Tape Standard 250, or approved equal.

2. Identification Tape for Plastic or Non-Magnetic Pipe and Conduit

   a. Identification tape shall be manufactured of reinforced polyethylene film with a minimum overall thickness of 9.7 mils and shall have a 0.5 mil thick magnetic metallic foil core.

   b. The tape shall be highly resistant to alkalies, acids, and other destructive agents found in the soil.

   c. The tape width shall be three (3) inches and shall have the background color specified below, imprinted with black letters. The imprint shall be as specified below and shall repeat itself a minimum of once every two (2) feet for the entire length of the tape.

   d. The tape shall be Terra Tape Sentry Line 1350, or approved equal.

3. Tape background colors and imprints shall be as follows:

Imprint	Pipe Service	Background Color
"Caution: Wastewater Line Buried Below"	RWW	Green
"Caution: Electrical Line Buried Below"	ELECT	Red
"Caution: Water Line Buried Below"	RW, FW, PW	Blue
"Caution: Telephone Line Buried Below"	TELE	Orange
"Caution: Gas Line Buried Below"	GAS	Yellow
"Caution: Reuse Line Buried Below"	REUSE	Purple

4. Identification tape shall be “Terra Tape” as manufactured by Reef Industries, Inc., Houston, TX; Allen Systems, Inc., Wheaton, IL; or approved equal.

E. Electronic Marker Ball System

1. ***Buried piping on the facility site and on all off-site areas shall be marked with marker balls***.

2. Electronic marker balls shall consist of a passive device capable of reflecting a specifically designated repulse frequency tuned to the utility being installed.

3. ***Electronic marker balls shall be four (4) inches in diameter with a high density polyethylene shell***. Marker balls shall be color coded in accordance with the American Public Works Association’s (APWA) Utility Location and Coordinating Council Standards.

4. Electronic marker balls and marker locator and probe shall be the “ScotchMark™ Electronic Marker System” as manufactured by 3M.

5. Electronic marker balls, for each utility type (water, wastewater, reclaimed water), shall be furnished and installed so that a ***marker ball will be located at fifty (50) foot intervals along the pipeline length. Marker balls shall also be placed at each change in direction, tees, other points of connection, and as directed by the Engineer***.

6. ***Place markers directly above the pipe and hand backfill one (1) foot above the marker to prevent damage or movement during subsequent backfilling. Depth of burial shall be between eighteen (18) and twenty-four (24) inches***.

7. The four-inch (4") diameter marker balls shall be colored as follows, as applicable to this project:

Utility Type	Marker Ball Color	Marker Ball Model No.
Water	Blue	1403 - XR
Wastewater	Green	1404 - XR
Gas	Yellow	1405 - XR
Reclaimed Water	Purple	1408 - XR

8. Electronic Marker Locator and Probe

   a. ***The Contractor shall provide one (1) ScotchMark™ EMS II Electronic Marker Locator and Probe as manufactured by the 3M Corporation, or latest version***.

   b. The Electronic Marker Locator and Probe shall be capable of operating between 0°F and 130°F.

   c. The Electronic Marker Locator and Probe Package shall contain the following:

      1) Electronics Package: *9" x 10" x 3"*

      2) Probe: *8¼-inch diameter and 1¾-inch thick*

      3) Telescoping Handle: *22-inches (collapsed); 32-inches (extended)*

   d. The Contractor shall provide twenty-four (24), Duracell alkaline batteries, of the size required to operate the Electronic Marker Locator and Probe."

F. Aboveground Valve Identification

1. ***A coded and numbered tag attached with a stainless steel chain and/or stainless steel "S" hooks (Type 316) shall be provided on all valves***.

2. Tag Types

   a. ***Tags for valves on pipe shall be stainless steel , or anodized aluminum, 19 gauge thick***.

   b. Colors for aluminum tags shall, where possible, match the color code of the pipe line on which it is installed.

   c. ***Square tags shall be used to indicate "normally closed" valves and round tags shall indicate "normally open" valves.***

3. Coding

   a. In addition to the color coding, each tag shall be stamped or engraved with wording or abbreviations to indicate the information presented in Article 2.01(G)(1)(a-g).

   b. ***All color and letter coding shall be approved by the Engineer***.

c. Above ground valve tags shall be furnished with stainless steel (Type 316) wire for attachment thereof. The tag shall not be attached to the handwheel or crank operators or any part of the valve which would inhibit operation of the valve.

d. Valve service shall either be as listed in Table 09905-1, or by equipment abbreviation if associated with a particular piece of equipment. ***Valve numbering shall be as approved by the Engineer and/or Owner***.

G. Belowground Valve Identification

1. ***Buried valves shall have valve boxes protected by a concrete pad as identified on the Contract Drawings. The concrete pad for the valve box cover shall have a 3-inch diameter, 19 gauge thick, bronze disc embedded in the surface*** as shown on the Contract Drawings. The bronze disc shall have the following information neatly stamped on it:

   a. Size of valve (inches)

   b. Valve Tag ID: To be provided by the Engineer and Owner and shall include:

      1) Type of Valve

         a) GV: Gate Valve
         b) BfV: Butterfly Valve
         c) PV: Plug Valve
         d) Other valve abbreviations shall be provided by the Engineer.

      2) Additional Valve Identifiers

   c. Year of Installation

   d. Direction to open the valve

   e. Number of turns to fully open the valve

2. Submit to the Engineer for approval, within thirty (30) days from the Notice to Proceed, a valve schedule containing all valves required for his/her work.

3. ***The valve schedule, abbreviations, words, identification, etc. shall be approved by the Engineer and Owner prior to submission for casting***.

4. The information contained in the valve schedules shall be coded on the tags in a system provided by the Engineer and Owner.

H. ***Submit to the Engineer for review, two (2) samples of each type of tag proposed and the manufacturer's standard color chart and letter styles***. Tags shall have stamped or engraved on them the information shown on the Contract Drawings and the data described herein. ***Submit to the Engineer for approval, within thirty (30) days from the Notice to Proceed, a valve schedule containing all valves required for his/her work***. The schedule shall contain all of the information required by Articles 2.01(F) and 2.01(G) of this specification section.

I. ***The valve schedule, abbreviations, words, identification, etc. shall be approved by the Engineer and Owner prior to submission for casting***.

J. The information contained in the valve schedules shall be coded on the tags in a system provided by the Owner.

K. Above ground valve tags shall be furnished with stainless steel chain and/or stainless steel “S” hooks (Type 316) for attachment thereof. The tag shall not be attached to the handwheel or crank operators or any part of the valve which would inhibit operation of the valve.

3. EXECUTION

3.01 Color Coding for Pipes and Equipment

A. Piping color codes, and code labels for pipe identification on this project shall conform to Table 09905-1.

B. General Notes and Guidelines

1. Pipelines, equipment, or other items which are not listed here shall be assigned a color by the Owner and Engineer and shall be treated as an integral part of the contract, with no additional cost to the Owner.

2. Color coding shall consist of color code painting and identification of all exposed conduits, through lines and pipelines for the transport of gases, liquids, or semi-liquids including all accessories such as valves, insulated pipe coverings, fittings, junction boxes, bus bars, connectors and any operating accessories which are integral to a whole functional mechanical pipe and electrical conduit systems.

3. All moving parts, drive assemblies, and covers for moving parts which are potential hazards shall be “Safety Orange”.

4. All safety equipment shall be painted in accordance with OSHA standards.

5. All in-line equipment and appurtenances not assigned another color shall be painted the same base color as the piping. The pipe system shall be painted with the pipe color up to, but not including, the flanges attached to pumps and mechanical equipment assigned another color.

6. All pipe hangers and pipe support floor stands shall be painted, unless specified otherwise due to material of construction.

C. All hangers and pipe support floor and accessories stands shall be painted to match their piping. The system shall be painted up to, but not including, the face of flanges or the flexible conduit connected to electrical equipment. Structural members used solely for pipe hangers or supports shall be painted to match their piping. Where the contact of dissimilar metals may cause electrolysis and where aluminum will contact concrete, mortar or plaster, the contact surface of the metals shall be coated in accordance with Section 09900, *Painting*.

D. All systems which are an integral part of the equipment, that is originating from the equipment and returning to the same piece of equipment, shall be painted between and up to, but not including, the face of flanges or connections on the equipment.

E. All insulated surfaces, unless otherwise specified, shall be given one (1) coat of glue sizing, one (1) prime coat and one (1) finish coat.

F. System code lettering and arrows shall conform to the requirements of ANSI A13.1 marked on piping as follows:

1. Legends shall be of the following color for the respective pipe color.

Key to Classification of Predominant Colors for Piping		Color of Letters, if not otherwise specified
(F) Fire Protection	Red	White
(D) Dangerous	Yellow	Black
	Orange	Black
(S) Safe	Green	Black
	White	Black
	Black	White
	Light Grey	Black
	Dark Grey	White
	Aluminum	Black
(P) Protective	Blue	White

2. All piping containing or transporting corrosive or hazardous chemicals shall be identified with labels every ten (10) feet and with at least two (2) labels in each room. Otherwise, markers shall be placed no more than twenty (20) feet apart with at least one (1) marker on every straight run and additional markers at turns and where pipe passes through walls.

3. An arrow indicating direction of flow shall be placed adjacent to each marker.

3.02 Fabricated Equipment

A. Unless otherwise indicated or specifically approved, all fabricated equipment shall be shop primed and finished. See Section 09900, *Painting*.

B. The Contractor shall be responsible for and take whatever steps are necessary to properly protect the shop prime and finish coats against damage from weather or any other cause.

C. Where specified in other Sections of these specifications for mechanical equipment, the Contractor shall apply field coat or coats of paint in accordance with Section 09900, *Painting*. If the shop finish coat is unsatisfactory due to poor adhesion or other problems with primer or finish coats, the coatings shall be removed and replaced by sandblasting, priming and finishing in accordance with Section 09900, *Painting* and this Section.

D. Wherever fabricated equipment is required to be sandblasted, the Contractor shall protect all motors, drives, bearings, gears, etc., from the entry of grit. Any equipment found to contain grit shall be promptly and thoroughly cleaned. Equipment contaminated by grit in critical areas, such as bearings, gears, seals, etc., shall be replaced at no cost to the Owner.

3.03 Installation of Identification Tape

A. Identification tape shall be installed for all buried pipelines, as applicable to the Project, in accordance with the manufacturer's installation instructions and as specified herein.

B. Identification tape for piping shall be installed at two (2) locations:

1. One (1) foot below finished grade along centerline of pipe, and;

2. Directly on top of the pipe.

3.04 Buried Valves

A. ***In paved or concrete areas, the tops of valve box covers shall be set flush with the pavement or top of the concrete. In concrete areas, valve boxes shall be embedded***.

B. Following paving operations, a twenty-four (24) inch square shall be neatly cut in the pavement around the box and the paving removed. The top of the box shall then be adjusted to the proper elevation and a twenty-four (24) inch square by six (6) inch thick concrete pad (with #5 rebar installed) poured around the box cover. Concrete pads in traffic areas shall be reinforced with No. 4 reinforcement bars as shown on the Contract Drawings. Concrete for the pad shall be Class B, with a compressive strength of 3,000 psi.

C. ***In unpaved areas, the tops of valve box covers shall be set 0.10-foot above finished grade***. After the top of the box is set to the proper elevation, ***a twenty-four (24) inch square by six (6) inch thick concrete pad (with #5 rebar installed) shall be poured around the box cover***. Concrete for the pad shall be Class B, with a compressive strength of 3,000 psi.

D. The bronze valve identification disc shall be embedded in the concrete pad.

END OF SECTION

TABLE
09905-1

FLAGER BEACH WWTF SLUDGE MANAGEMENT SYSTEM

IMPROVEMENTS COLOR CODES AND ABBREVIATIONS

Service	Mark	Conduit, Pipe, and Valve Color Code	Letter and Flow Arrow Color
Acetylene	C_2H_2	Orange w/yellow band	White
Acid	Acid Name	Orange w/black 3-inch bands spaced 5 foot, on center	White
Alum Solution	ALUM	Orange	Black
Anti-Scalant Solution	ASC	Green	Black
Argon	AR	Yellow w/black band	White
Argon-Methane Mix	AR / CH_2	Orange w/black band	White
Backwash Water - Clean	BWC	Light Green	Black
Backwash Water - Dirty	BWD	Dark Green	White
Blowers	---	White	---
Caustic Soda	Na_2CO_3	Orange w/white 3-inch bands spaced 5 foot, on center	Black
Chlorine Gas	CG	OSHA Yellow	Green
Chlorine Solution	CS	OSHA Yellow w/brown 3-inch bands spaced 5 foot, on center	Brown
Compressed Air	AIR	Light Grey	Black
Compressors	---	Battleship Grey	---
Dewatered Sludge	DWS	Dark Brown w/dual white 3-inch bands spaced 5 foot, on center	White
Diesel Fuel	DF	OSHA Red	White
Digested Sludge	DS	Medium Brown w/white 3-inch bands spaced 5 foot, on center	White
Electrical Conduit with Conductors over 120 V	---	Black w/yellow 3-inch bands spaced 5 foot, on center	---
Electrical Conduit with Conductors under 120 V	---	Interior - Match adjacent wall or equipment color Exterior - Grey	---

TABLE 09905-1

SANFORD NORTH WRF: TERTIARY FILTRATION SYSTEM IMPROVEMENTS

COLOR CODES AND ABBREVIATIONS

Service	Mark	Conduit, Pipe, and Valve Color Code	Letter and Flow Arrow Color
Filter Influent	FI	Medium Green	White
Filtered Effluent	FE	Light Green	Black
Fire Hydrant	---	Red	---
Finished Water	FW	Dark Blue	White
Fire Sprinkler Piping	FS	Blue	White
Force Main	FM	Brown	Black
Fuel Oil Return	FOR	Red	White
Fuel Oil Supply	FOS	Red w/white 3-inch bands spaced 5 foot, on center	White
Fuel Oil Vent	FOV	Red w/dual white 3-inch bands spaced 5 foot, on center	White
Gas Line	GAS	Orange w/red band	White
Gravity Drain	DRAIN	Dark Grey	Black
Helium	He	Red w/yellow band	White
Hydrogen	H_2	Red w/black band	White
Hydrogen Peroxide	H_2O_2	Orange w/green 3-inch bands spaced 5 foot, on center	Black
Lime Solution	LS	Light Green	Black
LP Gas	LPG	Red	Black
Mixed Liquor	ML	Brown	Black
Motors	---	White	---
Nitrogen	N_2	Yellow w/red band	White
Nitrous Oxide	N_2O	Yellow w/orange band	White
Non-potable Water	NPW	Green w/black 3-inch bands spaced 5 foot, on center	Black
Polymer Solution	PS	Orange w/silver 3-inch bands spaced 5 foot, on center	Black

TABLE 09905-1

SANFORD NORTH WRF: TERTIARY FILTRATION SYSTEM IMPROVEMENTS

COLOR CODES AND ABBREVIATIONS

Service	Mark	Conduit, Pipe, and Valve Color Code	Letter and Flow Arrow Color
Potable Water	PW	Dark Blue	White
Pumps	---	Battleship Grey	---
Raw Water	RW	Light Blue	Black
Raw Wastewater	RWW	Dark Green	Black
Reclaimed Water Hydrant	---	Purple	---
Return Activated Sludge	RAS	Medium Brown	Black
Reuse Water	REUSE	Purple	Black
Scum	SCUM	Dark Brown	Black
Secondary Effluent	SEFF	Dark Green	Black
Sodium Hydroxide	NaOH	Green	White
Sodium Hypochlorite	NaOCl	OSHA Yellow w/black 3-inch bands spaced 5 foot, on center	Black
Substandard Effluent	SSE	Brown	Black
Sump Pump Discharge	SPD	Grey w/black 3-inch bands spaced 5 foot, on center	
Thickened Sludge	TS	Light Brown	Black
Vacuum Line	VAC	Light Olive Green	White
Vent	V	White	Black
Waste Activated Sludge	WAS	Light Brown	Black

Note: All pipe hangers shall be painted to match the color of the piping.

SECTION 09905

PIPING, VALVE AND EQUIPMENT IDENTIFICATION SYSTEM

1. GENERAL

1.01 Description

A. Scope of Work

1. The work included under this Section consists of providing an identification system for piping systems and related equipment.

B. Related Work Specified Elsewhere

Specification Section	Title
09900	Painting
15060	Ductile Iron Pipe and Fittings
15065	Polyvinyl Chloride (PVC) Pressure Pipe and Fittings
15100	Valves and Appurtenances
Contract Drawings and General Provisions of the Contract	

1.02 Quality Assurance

A. Standards

1. Unless otherwise indicated, all materials, workmanship and practices shall conform to the following standard(s):

STANDARD	DESCRIPTION
American National Standard Institute (ANSI)	
ANSI A13.1	Scheme for the Identification of Piping Systems

1.03 Submittals

A. The Contractor shall submit shop drawings, manufacturer's descriptive literature, illustrations, specifications, and other pertinent data in accordance with Section 01300, *Shop Drawings, Submittals and Samples*.

B. Schedules

1. Provide a typewritten list of all tagged valves giving tag color, shape, letter code and number, the valve size, type, use, and general location.

2. Provide a complete list of materials to be furnished and surfaces on which they will be used.

C. Samples

1. Provide a sample of each type of valve tag supplied.

2. Provide a sample of each type of identification tape and marker balls supplied.

3. Provide manufacturer's color charts for color selection by the Engineer.

1.04 Product Delivery, Storage and Handling

A. Delivery of Materials

1. Except for locally mixed custom colors, deliver sealed containers with labels legible and intact.

B. Storage of Materials

1. Store only acceptable project materials on project site.

2. Store in a suitable location.

3. Restrict storage to paint materials and related equipment.

4. Comply with all health and fire regulations.

1.05 Job Conditions

A. Environmental Requirements

1. Comply with manufacturer's recommendations as to the environmental conditions under which coatings and coating systems can be applied.

2. Do not apply finish in areas where dust is being generated.

B. Protection

1. Cover or otherwise protect all finished work of other trades and surfaces not to be painted.

2. PRODUCTS

2.01 Materials

A. Materials for painting shall conform to requirements of Section 09900, *Painting*.

B. Materials selected for coating systems for each type surface shall be the product of a ***single manufacturer***.

C. ***Aboveground piping shall be identified by "painting" the name of the material flowing through the pipe as well as flow arrows*** (text and arrow type to be provided by the Engineer).

1. Markers shall be of wording and color as shown in Table 09905-1.

2. Lettering shall be as follows:

a. 2¼-inches high for pipes 3 inches in diameter and larger.

b. 1 1/8-inches high for pipes less than 3 inches in diameter.

3. Flow arrows shall be as follows:

a. 2¼-inches by six (6) inches for pipes three (3) inches in diameter and larger.

b. 1 1/8-inches by three (3) inches for pipes less than three (3) inches in diameter.

D. ***Buried piping shall be identified by "identification tape" installed over the centerline of the pipelines***.

1. Identification Tape for Steel or Iron Pipe and Conduit

   a. Identification tape shall be manufactured of inert polyethylene film so as to be highly resistant to alkalies, acids, or other destructive agents found in the soil, and shall have a minimum thickness of four (4) mils.

   b. The tape width shall be six (6) inches and shall have the background color specified below, imprinted with black letters. The imprint shall be as specified below and shall repeat itself a minimum of once every two (2) feet for the entire length of the tape.

   c. The tape shall be Terra Tape Standard 250, or approved equal.

2. Identification Tape for Plastic or Non-Magnetic Pipe and Conduit

   a. Identification tape shall be manufactured of reinforced polyethylene film with a minimum overall thickness of 9.7 mils and shall have a 0.5 mil thick magnetic metallic foil core.

   b. The tape shall be highly resistant to alkalies, acids, and other destructive agents found in the soil.

   c. The tape width shall be three (3) inches and shall have the background color specified below, imprinted with black letters. The imprint shall be as specified below and shall repeat itself a minimum of once every two (2) feet for the entire length of the tape.

   d. The tape shall be Terra Tape Sentry Line 1350, or approved equal.

3. Tape background colors and imprints shall be as follows:

Imprint	Pipe Service	Background Color
"Caution: Wastewater Line Buried Below"	RWW	Green
"Caution: Electrical Line Buried Below"	ELECT	Red
"Caution: Water Line Buried Below"	RW, FW, PW	Blue
"Caution: Telephone Line Buried Below"	TELE	Orange
"Caution: Gas Line Buried Below"	GAS	Yellow
"Caution: Reuse Line Buried Below"	REUSE	Purple

4. Identification tape shall be “Terra Tape” as manufactured by Reef Industries, Inc., Houston, TX; Allen Systems, Inc., Wheaton, IL; or approved equal.

E. Electronic Marker Ball System

1. ***Buried piping on the facility site and on all off-site areas shall be marked with marker balls***.

2. Electronic marker balls shall consist of a passive device capable of reflecting a specifically designated repulse frequency tuned to the utility being installed.

3. ***Electronic marker balls shall be four (4) inches in diameter with a high density polyethylene shell***. Marker balls shall be color coded in accordance with the American Public Works Association’s (APWA) Utility Location and Coordinating Council Standards.

4. Electronic marker balls and marker locator and probe shall be the “ScotchMark™ Electronic Marker System” as manufactured by 3M.

5. Electronic marker balls, for each utility type (water, wastewater, reclaimed water), shall be furnished and installed so that a ***marker ball will be located at fifty (50) foot intervals along the pipeline length. Marker balls shall also be placed at each change in direction, tees, other points of connection, and as directed by the Engineer***.

6. ***Place markers directly above the pipe and hand backfill one (1) foot above the marker to prevent damage or movement during subsequent backfilling. Depth of burial shall be between eighteen (18) and twenty-four (24) inches***.

7. The four-inch (4") diameter marker balls shall be colored as follows, as applicable to this project:

Utility Type	Marker Ball Color	Marker Ball Model No.
Water	Blue	1403 - XR
Wastewater	Green	1404 - XR
Gas	Yellow	1405 - XR
Reclaimed Water	Purple	1408 - XR

8. Electronic Marker Locator and Probe

   a. ***The Contractor shall provide one (1) ScotchMark™ EMS II Electronic Marker Locator and Probe as manufactured by the 3M Corporation***.

   b. The Electronic Marker Locator and Probe shall be capable of operating between 0□F and 130□F.

   c. The Electronic Marker Locator and Probe Package shall contain the following:

      1) Electronics Package: *9" x 10" x 3"*

      2) Probe: *8¼-inch diameter and 1¾-inch thick*

      3) Telescoping Handle: *22-inches (collapsed); 32-inches (extended)*

   d. The Contractor shall provide twenty-four (24), Duracell alkaline batteries, of the size required to operate the Electronic Marker Locator and Probe."

F. Aboveground Valve Identification

1. ***A coded and numbered tag attached with a stainless steel chain and/or stainless steel "S" hooks (Type 316) shall be provided on all valves***.

2. Tag Types

   a. ***Tags for valves on pipe shall be stainless steel , or anodized aluminum, 19 gauge thick***.

   b. Colors for aluminum tags shall, where possible, match the color code of the pipe line on which it is installed.

   c. ***Square tags shall be used to indicate "normally closed" valves and round tags shall indicate "normally open" valves.***

3. Coding

   a. In addition to the color coding, each tag shall be stamped or engraved with wording or abbreviations to indicate the information presented in Article 2.01(G)(1)(a-g).

   b. ***All color and letter coding shall be approved by the Engineer***.

c. Above ground valve tags shall be furnished with stainless steel (Type 316) wire for attachment thereof. The tag shall not be attached to the handwheel or crank operators or any part of the valve which would inhibit operation of the valve.

d. Valve service shall either be as listed in Table 09905-1, or by equipment abbreviation if associated with a particular piece of equipment. ***Valve numbering shall be as approved by the Engineer and/or Owner***.

G. Belowground Valve Identification

1. ***Buried valves shall have valve boxes protected by a concrete pad as identified on the Contract Drawings. The concrete pad for the valve box cover shall have a 3-inch diameter, 19 gauge thick, bronze disc embedded in the surface*** as shown on the Contract Drawings. The bronze disc shall have the following information neatly stamped on it:

   a. Size of valve (inches)

   b. Valve Tag ID: To be provided by the Engineer and Owner and shall include:

      1) Type of Valve

         a) GV: Gate Valve
         b) BfV: Butterfly Valve
         c) PV: Plug Valve
         d) Other valve abbreviations shall be provided by the Engineer.

      2) Additional Valve Identifiers

   c. Year of Installation

   d. Direction to open the valve

   e. Number of turns to fully open the valve

2. Submit to the Engineer for approval, within thirty (30) days from the Notice to Proceed, a valve schedule containing all valves required for his/her work.

3. ***The valve schedule, abbreviations, words, identification, etc. shall be approved by the Engineer and Owner prior to submission for casting***.

4. The information contained in the valve schedules shall be coded on the tags in a system provided by the Engineer and Owner.

H. ***Submit to the Engineer for review, two (2) samples of each type of tag proposed and the manufacturer's standard color chart and letter styles***. Tags shall have stamped or engraved on them the information shown on the Contract Drawings and the data described herein. ***Submit to the Engineer for approval, within thirty (30) days from the Notice to Proceed, a valve schedule containing all valves required for his/her work***. The schedule shall contain all of the information required by Articles 2.01(F) and 2.01(G) of this specification section.

I. ***The valve schedule, abbreviations, words, identification, etc. shall be approved by the Engineer and Owner prior to submission for casting***.

J. The information contained in the valve schedules shall be coded on the tags in a system provided by the Owner.

K. Above ground valve tags shall be furnished with stainless steel chain and/or stainless steel “S” hooks (Type 316) for attachment thereof. The tag shall not be attached to the handwheel or crank operators or any part of the valve which would inhibit operation of the valve.

3. EXECUTION

3.01 Color Coding for Pipes and Equipment

A. Piping color codes, and code labels for pipe identification on this project shall conform to Table 09905-1.

B. General Notes and Guidelines

1. Pipelines, equipment, or other items which are not listed here shall be assigned a color by the Owner and Engineer and shall be treated as an integral part of the contract, with no additional cost to the Owner.

2. Color coding shall consist of color code painting and identification of all exposed conduits, through lines and pipelines for the transport of gases, liquids, or semi-liquids including all accessories such as valves, insulated pipe coverings, fittings, junction boxes, bus bars, connectors and any operating accessories which are integral to a whole functional mechanical pipe and electrical conduit systems.

3. All moving parts, drive assemblies, and covers for moving parts which are potential hazards shall be “Safety Orange”.

4. All safety equipment shall be painted in accordance with OSHA standards.

5. All in-line equipment and appurtenances not assigned another color shall be painted the same base color as the piping. The pipe system shall be painted with the pipe color up to, but not including, the flanges attached to pumps and mechanical equipment assigned another color.

6. All pipe hangers and pipe support floor stands shall be painted, unless specified otherwise due to material of construction.

C. All hangers and pipe support floor and accessories stands shall be painted to match their piping. The system shall be painted up to, but not including, the face of flanges or the flexible conduit connected to electrical equipment. Structural members used solely for pipe hangers or supports shall be painted to match their piping. Where the contact of dissimilar metals may cause electrolysis and where aluminum will contact concrete, mortar or plaster, the contact surface of the metals shall be coated in accordance with Section 09900, *Painting*.

D. All systems which are an integral part of the equipment, that is originating from the equipment and returning to the same piece of equipment, shall be painted between and up to, but not including, the face of flanges or connections on the equipment.

E. All insulated surfaces, unless otherwise specified, shall be given one (1) coat of glue sizing, one (1) prime coat and one (1) finish coat.

F. System code lettering and arrows shall conform to the requirements of ANSI A13.1 marked on piping as follows:

1. Legends shall be of the following color for the respective pipe color.

Key to Classification of Predominant Colors for Piping		Color of Letters, if not otherwise specified
(F) Fire Protection	Red	White
(D) Dangerous	Yellow	Black
	Orange	Black
(S) Safe	Green	Black
	White	Black
	Black	White
	Light Grey	Black
	Dark Grey	White
	Aluminum	Black
(P) Protective	Blue	White

2. All piping containing or transporting corrosive or hazardous chemicals shall be identified with labels every ten (10) feet and with at least two (2) labels in each room. Otherwise, markers shall be placed no more than twenty (20) feet apart with at least one (1) marker on every straight run and additional markers at turns and where pipe passes through walls.

3. An arrow indicating direction of flow shall be placed adjacent to each marker.

3.02 Fabricated Equipment

A. Unless otherwise indicated or specifically approved, all fabricated equipment shall be shop primed and finished. See Section 09900, *Painting*.

B. The Contractor shall be responsible for and take whatever steps are necessary to properly protect the shop prime and finish coats against damage from weather or any other cause.

C. Where specified in other Sections of these specifications for mechanical equipment, the Contractor shall apply field coat or coats of paint in accordance with Section 09900, *Painting*. If the shop finish coat is unsatisfactory due to poor adhesion or other problems with primer or finish coats, the coatings shall be removed and replaced by sandblasting, priming and finishing in accordance with Section 09900, *Painting* and this Section.

D. Wherever fabricated equipment is required to be sandblasted, the Contractor shall protect all motors, drives, bearings, gears, etc., from the entry of grit. Any equipment found to contain grit shall be promptly and thoroughly cleaned. Equipment contaminated by grit in critical areas, such as bearings, gears, seals, etc., shall be replaced at no cost to the Owner.

3.03 Installation of Identification Tape

A. Identification tape shall be installed for all buried pipelines, as applicable to the Project, in accordance with the manufacturer's installation instructions and as specified herein.

B. Identification tape for piping shall be installed at two (2) locations:

1. One (1) foot below finished grade along centerline of pipe, and;

2. Directly on top of the pipe.

3.04 Buried Valves

A. ***In paved or concrete areas, the tops of valve box covers shall be set flush with the pavement or top of the concrete. In concrete areas, valve boxes shall be embedded***.

B. Following paving operations, a twenty-four (24) inch square shall be neatly cut in the pavement around the box and the paving removed. The top of the box shall then be adjusted to the proper elevation and a twenty-four (24) inch square by six (6) inch thick concrete pad (with #5 rebar installed) poured around the box cover. Concrete pads in traffic areas shall be reinforced with No. 4 reinforcement bars as shown on the Contract Drawings. Concrete for the pad shall be Class B, with a compressive strength of 3,000 psi.

C. ***In unpaved areas, the tops of valve box covers shall be set 0.10-foot above finished grade***. After the top of the box is set to the proper elevation, ***a twenty-four (24) inch square by six (6) inch thick concrete pad (with #5 rebar installed) shall be poured around the box cover***. Concrete for the pad shall be Class B, with a compressive strength of 3,000 psi.

D. The bronze valve identification disc shall be embedded in the concrete pad.

END OF SECTION

TABLE 09905-1

FLAGLER BEACH WWTF SLUDGE

MANAGEMENT SYSTEM IMPROVEMENTS

COLOR CODES AND ABBREVIATIONS

Service	Mark	Conduit, Pipe, and Valve Color Code	Letter and Flow Arrow Color
Acetylene	C_2H_2	Orange w/yellow band	White
Acid	Acid Name	Orange w/black 3-inch bands spaced 5 foot, on center	White
Alum Solution	ALUM	Orange	Black
Anti-Scalant Solution	ASC	Green	Black
Argon	AR	Yellow w/black band	White
Argon-Methane Mix	AR / CH_2	Orange w/black band	White
Backwash Water - Clean	BWC	Light Green	Black
Backwash Water - DIrty	BWD	Dark Green	White
Blowers	---	White	---
Caustic Soda	Na_2CO_3	Orange w/white 3-inch bands spaced 5 foot, on center	Black
Chlorine Gas	CG	OSHA Yellow	Green
Chlorine Solution	CS	OSHA Yellow w/brown 3-inch bands spaced 5 foot, on center	Brown
Compressed Air	AIR	Light Grey	Black
Compressors	---	Battleship Grey	---
Dewatered Sludge	DWS	Dark Brown w/dual white 3-inch bands spaced 5 foot, on center	White
Diesel Fuel	DF	OSHA Red	White
Digested Sludge	DS	Medium Brown w/white 3-inch bands spaced 5 foot, on center	White
Electrical Conduit with Conductors over 120 V	---	Black w/yellow 3-inch bands spaced 5 foot, on center	---
Electrical Conduit with Conductors under 120 V	---	Interior - Match adjacent wall or equipment color Exterior - Grey	---

TABLE 09905-1

FLAGER BEACH WWTF SLUDGE

MANAGEMENT SYSTEM IMPROVEMENTS

COLOR CODES AND ABBREVIATIONS

Service	Mark	Conduit, Pipe, and Valve Color Code	Letter and Flow Arrow Color
Filter Influent	FI	Medium Green	White
Filtered Effluent	FE	Light Green	Black
Fire Hydrant	---	Red	---
Finished Water	FW	Dark Blue	White
Fire Sprinkler Piping	FS	Blue	White
Force Main	FM	Brown	Black
Fuel Oil Return	FOR	Red	White
Fuel Oil Supply	FOS	Red w/white 3-inch bands spaced 5 foot, on center	White
Fuel Oil Vent	FOV	Red w/dual white 3-inch bands spaced 5 foot, on center	White
Gas Line	GAS	Orange w/red band	White
Gravity Drain	DRAIN	Dark Grey	Black
Helium	He	Red w/yellow band	White
Hydrogen	H_2	Red w/black band	White
Hydrogen Peroxide	H_2O_2	Orange w/green 3-inch bands spaced 5 foot, on center	Black
Lime Solution	LS	Light Green	Black
LP Gas	LPG	Red	Black
Mixed Liquor	ML	Brown	Black
Motors	---	White	---
Nitrogen	N_2	Yellow w/red band	White
Nitrous Oxide	N_2O	Yellow w/orange band	White
Non-potable Water	NPW	Green w/black 3-inch bands spaced 5 foot, on center	Black
Polymer Solution	PS	Orange w/silver 3-inch bands spaced 5 foot, on center	Black

TABLE 09905-1

FLAGLER BEACH WWTF SLUDGE

MANAGEMENT SYSTEM IMPROVEMENTS

COLOR CODES AND ABBREVIATIONS

Service	Mark	Conduit, Pipe, and Valve Color Code	Letter and Flow Arrow Color
Potable Water	PW	Dark Blue	White
Pumps	---	Battleship Grey	---
Raw Water	RW	Light Blue	Black
Raw Wastewater	RWW	Dark Green	Black
Reclaimed Water Hydrant	---	Purple	---
Return Activated Sludge	RAS	Medium Brown	Black
Reuse Water	REUSE	Purple	Black
Scum	SCUM	Dark Brown	Black
Secondary Effluent	SEFF	Dark Green	Black
Sodium Hydroxide	NaOH	Green	White
Sodium Hypochlorite	NaOCl	OSHA Yellow w/black 3-inch bands spaced 5 foot, on center	Black
Substandard Effluent	SSE	Brown	Black
Sump Pump Discharge	SPD	Grey w/black 3-inch bands spaced 5 foot, on center	
Thickened Sludge	TS	Light Brown	Black
Vacuum Line	VAC	Light Olive Green	White
Vent	V	White	Black
Waste Activated Sludge	WAS	Light Brown	Black

Note: All pipe hangers shall be painted to match the color of the piping.

SECTION 10400

SIGNAGE SYSTEMS

1. GENERAL

1.01 Description

A. The Contractor shall furnish all labor, materials, equipment and incidentals required to install signage, fire and safety and ADA signage, as specified herein. Complete signage for all Contract improvements shall include, but is not limited to, that indicated in Table 10400-1. A complete list of all signage required shall be developed by the Engineer during the course of the Project and shall be installed as specified herein.

B. Related Work Specified Elsewhere

1. Related work specified elsewhere includes:

Specification Section	Title
00700	General Conditions
01500	Temporary Facilities
10450	Cast Bronze Plaque (NOT IN CONTRACT)
10550	Fire Extinguishers, Cabinets and Accessories
Division	**Information**
1	General Requirements
16	Lighting Systems

1.02 Quality Assurance

A. Each type of product specified under this Section shall be ***furnished by a single manufacturer*** who is an experienced specialist in the production of these materials, with a minimum of five (5) years of documented experience.

B. Standards

1. Unless otherwise indicated, all materials, workmanship and practices shall conform to the following standards:

Standard	Description
Federal Specifications	
QQ-A-200/8D	6063 aluminum alloy bar, rod, shapes, tube and wire.
QQ-A-250/2D	3003 aluminum alloy plate and sheet
Code of Federal Regulations (CFR)	
36 CFR 1191	Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Architectural Barriers Act (ABA) Accessibility Guidelines; current edition
Americans with Disabilities Act (ADA)	
	Americans with Disabilities Act (ADA) Standards for Accessible Design
International Code Council (ICC)	
ICC A117.1	Accessible and Usable Buildings and Facilities
Other Standards and Building Codes	
	Florida Building Code

C. Tolerances

1. The dimensional tolerance shall be $\pm 1/16$-inch.

1.03 Submittals

A. Submit manufacturer's descriptive literature, catalog data, illustrations, specifications, and other pertinent data in accordance with Section 01300, *Shop Drawings, Submittals and Samples*.

B. Shop drawings for signage shall be submitted to the Engineer for approval prior to fabrication.

1. Product Data: Manufacturer's printed product literature for each type of sign, indicating sign styles, font, foreground and background colors, locations, and overall dimensions of each sign.

2. Signage Schedule: Provide information sufficient to completely define each sign for fabrication, including room number, room name, other text to be applied, sign and letter sizes, fonts, and colors.

   2.01 When room numbers to appear on signs differ from those on drawings, include the drawing room number on schedule.

   2.02 When content of signs is indicated to be determined later, request such information from the Engineer within two (2) weeks of the preconstruction meeting. After receiving this information, the Contractor shall submit a preliminary building sign schedule.

   2.03 Submit for approval by the Engineer prior to fabrication of building signage.

3. Samples: Submit two (2) samples of each type of sign, of size similar to that required for project, illustrating sign style, font, and method of attachment.

4. Submit scaled sign layouts for each sign required.

5. Selection Samples: Where colors are not specified, submit two sets of color selection charts or chips.

6. Manufacturer's Installation Instructions: Include installation templates and attachment devices.

C. Sample charts and catalog information of materials, colors and a finished corner of interior and exterior sign construction complete with lettering shall also be submitted for approval.

D. Submit cleaning and maintenance instructions for all signage components.

1.04 Product Delivery, Storage and Handling

A. The manufacturer shall package signs, as required, to prevent damage before installation.

B. Do not deliver the materials until required in the general sequence of construction for the Project.

C. Deliver the materials in the manufacturer’s unopened containers or bundles fully identified with name, brand, type, and grade.

D. Store all materials off of the ground, inside a dry ventilated space, and in a manner acceptable to the manufacturer. Prevent metal studs from rust and damage.

E. If any of the materials are damaged, they shall not be used in the construction and shall be ***replaced at no additional cost to the Owner***.

2. PRODUCTS

2.01 General

A. Each door shall have signs that indicates the door number and room name/function.

B. The Engineer and Owner shall develop a room sign numbering and naming system during the construction of the proposed improvements.

2.02 Employee Office Identification Signs (EOIS) - NOT USED

2.03 Raised Image Laminated Signs (RILS) - NOT USED

2.04 Equipment/Miscellaneous Signs (EMS)

A. Fixed plaque signs consisting of $^{1}/_{16}$-inch thick, clear matte acrylic that is sub-surface printed with the sign message prior to being laminated to a $^{1}/_{8}$-inch thick baseplate of red opaque acrylic, or color to be selected by the Engineer and Owner. Plaques shall have one-inch radius rounded corners and shall be suitable for outdoor use.

B. Lettering

1. Minimum two (2) inch high, unless otherwise indicated by the Engineer, upper case Helvetica Medium, die-cut pressure sensitive vinyl letters and symbols.

2. Lettering shall be in all capital letters.

C. Mounting

1. Door or Equipment Mounted Signs: Mechanical fastening with stainless steel countersunk screws 5'-0" above the finished floor, exterior side.

2. Wall Mounted: 0.125-inch aluminum shim plate with pre-drilled counter sunk holes and stainless steel screws. Plaque affixed to shim plate with vinyl foam tape or silastic adhesive, approximately 5'-6" above the finished floor, unless otherwise noted.

D. Signage shall be as manufactured by Nelson-Harkins Industries, Andco Industries Corporation, Vomar Products, Cooper Architectural Signs, or approved equal

2.05 Building/Structure Identification Signs (BSIS) - NOT USED

2.06 Cast Aluminum City Seal/Logo - NOT USED

2.07 Site Entrance Sign (SES) - NOT USED

2.08 Safety and Restrictive Signs (SRS)

A. Fixed plaque signs consisting of $^{1}/_{16}$-inch thick, clear matte acrylic that is sub-surface printed with the sign message prior to being laminated to a 1/8-inch thick baseplate of opaque acrylic (or color selected by the Engineer). Plaques shall have one (1) inch radius rounded corners and shall be suitable for outdoor use.

B. Lettering

1. A minimum of two (2) inches high, upper case Helvetica Medium, die-cut pressure sensitive vinyl letters and symbols. Lettering shall be in all capital letters.

C. Mounting

1. Wall mounted with 0.125-inch aluminum shim plate with pre-drilled, countersunk holes and stainless steel screws.

2. Plaque shall be affixed to shim plate with vinyl foam tape or silastic adhesive at the locations to be identified by the Engineer.

3. Door or equipment mounted signs shall be mounted with mechanical fastenings with stainless steel countersunk screws at the locations identified by the Engineer

D. Signage shall be as manufactured by Nelson-Harkins Industries, Andco Industries Corporation (Series 800), Vomar Products, Cooper Architectural Signs, or approved equal

2.09 Traffic Signage (TS) - NOT USED

3. EXECUTION

3.01 Examination

A. Verify that substrate surfaces are ready to receive the signage work.

3.02 Installation

A. Signage shall be installed at the locations as directed in accordance with the manufacturer's recommendations and approved Shop Drawings.

B. Do not install signs until the final coat of paint on the mounting surface is dry.

C. Signage shall be installed at the locations as directed by the Engineer and Owner and in accordance with the approved Shop Drawings.

1. Room Signs: Locate on the wall at the latch side of the door with the centerline of the sign at sixty (60) inches above finished floor.

2. Door signs: Locate on the door frame as directed by Engineer and Owner.

D. Do not install signs until the final coat of paint on the mounting surface is dry.

E. Signage shall be installed at the locations as directed by the Engineer and Owner and in accordance with the approved Shop Drawings.

1. Room Signs: Locate on the wall at the latch side of the door with the centerline of the sign at sixty (60) inches above finished floor.

2. Door signs: Locate on the door frame as directed by Engineer and Owner.

F. Install neatly, with horizontal edges level.

G. Damaged units or components shall be removed and replaced at no additional cost to the Owner.

H. Signage shall be cleaned to the satisfaction of the Engineer, using the approved methods, upon completion of the installation, and again just prior to acceptance of the project.

I. Protect all signage from damage until Substantial Completion; repair or replace any damaged items.

END OF SECTION

TABLE 10400 - 1

FLAGLER BEACH WWTF SLUDGE MANAGEMENT SYSTEM IMPROVEMENTS - SIGNAGE SYSTEM

Sign Location	Mounting Location	No. of Signs Required	Background / Letter Colors	Inscription
Equipment / Miscellaneous Signs (EMS)				
Biosolids Dewatering Building and Chemical Feed System Area				
Sodium Bisulfite Storage Tank	Mount on east side of tank (centered)	1	Black / White	SODIUM BISULFITE STORAGE TANK (500 Gallons)
Polymer Storage Tank	Mount on east side of tank (centered)	1	Black / White	POLYMER STORAGE TANK (500 Gallons)
Dewatering Polymer Feed Pumps	Location to be determined by the Engineer and Owner	2	Black / White	DEWATERING POLYMER PUMP No. 1 and No. 2
Sodium Bisulfite Feed Pumps	Location to be determined by the Engineer and Owner	2	Black / White	SODIUM BISULFITE PUMP No. 1 and No. 2
Dewatering Screw Press	Location to be determined by the Engineer and Owner	1	Black / White	DEWATERING SCREW PRESS No. 1

TABLE 10400 - 1

FLAGLER BEACH WWTF: SLUDGE MANAGEMENT SYSTEM IMPROVEMENTS - SIGNAGE SYSTEM

Sign Location	Mounting Location	No. of Signs Required	Background / Letter Colors	Inscription
General Location Signage				
As Directed by the Owner	As Directed by Owner (2 locations)	2	Yellow / Black	CAUTION
	As Directed by Owner (2 locations)	2	Red / White	AUTHORIZED PERSONNEL ONLY
At All Wash Stations	Adjacent to **ALL** Hose Bibbs	---	Yellow / Black	NON-POTABLE WATER DO NOT DRINK AGUA NO POTABLE NO APTA PARA BEBER

In addition to the above signs, provide safety and danger signs throughout the facility, type and number as required by the Engineer/Owner.

This Schedule of Signage is by no way complete. It is presented for the Contractors convenience in estimating the signage required for Project.

SECTION 11314

PROGRESSIVE CAVITY SLUDGE PUMPS

1. GENERAL

1.01 Scope of Work

A. The work specified in this Section shall include, but is not limited to, furnishing all labor, materials, equipment, tools, services, and all incidental items and work required for construction, installation, field testing and placing into acceptable operation the following positive displacement, eccentric screw, PC sludge pumps:

1. One (1) VFD controlled sludge cake pump to convey dewatered sludge from the biosolids dewatering screw press(s) to the storage container/dumpster for proper disposal off-site.

2. One (1) VFD controlled thickened sludge feed pumps to convey Class “B” biosolids from the BNR Process Digester(s) to the biosolids dewatering screw press(s).

The pumping systems identified above, complete with electric motors, couplings, bases, direct coupled drives, controls, meters and appurtenant equipment, shall be mounted on a common baseplate and all items shown or inferred on the Contract Drawings or reasonably specified herein. If any items for a complete job are omitted or not shown, the Contractor shall furnish and install the same without additional cost to the Owner. The pumps shall be suitable for outside installation and service, with hydrogen sulfide gas present.

B. These specifications are intended to give a general description of what is required, but do not cover all details, which will vary in accordance with the requirements of the equipment offered. It is, however, intended to cover the furnishing, shop testing, delivery, complete installation, and field testing, start-up, and debugging of all materials, equipment, and appurtenances for the complete installation of the pumping units as herein specified, whether specifically mentioned in these Specifications or not.

C. All components of the sludge pumping system shall be engineered for long, continuous, and uninterrupted service. Provisions shall be made for easy lubrication, adjustment, or replacement of all parts.

D. All equipment shall be constructed of non-corrosive materials of the grade specified herein.

E. For all units there shall be furnished and installed all necessary and desirable accessory equipment and auxiliaries whether specifically mentioned in these Specifications or not.

F. This installation shall incorporate the highest standards for the type of service shown on the Contract Drawings, including field testing of the entire installation and instruction of the regular operating personnel in the care, operation and maintenance of all equipment.

G. The proper operation of the progressive cavity sludge pumping systems, as required by this Project, shall be the responsibility of the manufacturer of the pumping system.

H. Equipment furnished and installed under this Section shall be fabricated, assembled, erected and placed in proper operating condition in full conformance with detail drawings, specifications, engineering data, instructions and recommendations of the equipment manufacturer as approved by the Engineer.

1.2 Related Work Specified Elsewhere

A. Related work specified elsewhere includes:

Specification Section	Title
01300	Shop Drawings, Submittals and Samples
01600	Materials and Equipment
01650	Systems Start-up and Demonstration
01720	Project Record Documents
01730	Operation and Maintenance Data
01740	Warranties and Bonds
Division	**Information**
5	Metals
9	Finishes
13	Process Instrumentation and control System PICS
15	Mechanical
16	Electrical

1.3 Description

A. Pumps shall be positive displacement progressing cavity eccentric screw and shall be of the design and type specified for pumping thickened sludge (2-5% solids) and dewatered sludge (15 – 20% dry solids).

B. The pumps shall be designed to allow the suction port to rotate in 90° increments perpendicular to the pump centerline.

C. Pump castings shall be grey cast iron as specified for the intended service.

D. Pump clean out ports are 180° opposed tapped and plugged. Drain plugs will be located in the suction casting, gland housing and clean out ports.

E. Suction and discharge flanges shall be raised face 150 lb. flanges meeting ANSI B 16.5 standards. Discharge flanges shall be tapped for gages and plugged.

F. The pump bearings shall be designed for a L-10 life of 50,000 hrs.

G. The pump design will allow for complete rotating assembly removal from the pump discharge without dismantling the pump wet end, bearing frame, suction piping or driver.

H. The rotating assembly includes rotor, universal joints, shaft and coupling rod.

I. Dewatered Sludge Conveyance Pumping System

1. The sludge cake pump shall be used to convey dewatered sludge from the discharge of the dewatering screw press via the pump discharge piping into the holding container/dumpster, at a distributed and regulated rate, for legal off-site disposal by a third-party vendor, separately contracted by the owner.

2. The one (1) VFD controlled sludge cake pump shall be controlled by the Cake Pump Conveying Control Panel. The pump supplier shall coordinate with the Cake Pump Conveying Control Panel supplier for proper integration. .

3. Each progressive cavity sludge cake pump shall be equipped with a "*dry run protection device*" with the dry run relay supplied to the Cake Pump Conveying Control Panel manufacturer to be installed within the Cake Pump Control Panel.

J. Digested Sludge Transfer Pump Station

1. The thickened sludge feed pumps shall be used to automatically pump digested, Class “B” biosolids from the digested sludge transfer pump station directly to the dewatering screw presses.

2. The one (1) VFD controlled digested sludge transfer pumps shall be automatically

operated and controlled by Dewatering Screw Press Control Panel..

3. Each progressive cavity pump shall be equipped with a "*dry run protection device*". The associated run dry relay shall be supplied to contractor for installation within the Digested Sludge Transfer Pump VFD control panel furnished by the contractor.

K. Environmental Conditions

1. The pumping systems provided under this Section will be installed outdoors as indicated on the Contract Drawings.

2. The manufacturer shall provide all of the required accessories necessary for complete and fully functional pumping systems that will be exposed to the elements (weatherproof systems).

1.4 Patents and Licenses

A. The pumping equipment manufacturer shall be responsible, in all respects, for all matters related to patents or licenses pertaining to the equipment that may be provided.

B. The manufacturer shall assume all costs of patent fees or licenses for the equipment or process and shall safeguard and save harmless the Owner from all damages, judgments, claims and expenses arising from license fees, or claimed infringement of any letters, patent or patent rights, or fees for the use of any equipment or process structural feature or arrangement of any of the component parts of the installation, and the bid price shall be deemed to, and shall, include payment of all such patent fees, licenses or other costs pertaining thereto.

1.5 Quality Assurance

A. The pumps covered by these specifications are intended to be standard pumping equipment of proven ability as manufactured by a reputable manufacturer having long experience in the production of such pumps. The pumps furnished shall be designed, constructed and installed in accordance with the best practice and methods, and shall operate satisfactorily when installed. Pumps shall be manufactured in accordance with the standards of the Hydraulic Institute.

B. ***The equipment specified under this specification section shall be new and unused*** and provided by manufacturers who are fully experienced, reputable, qualified, and regularly engaged in the manufacture of the components and equipment to be furnished for a minimum of five (5) years. All equipment and manufacturers shall be approved by the Engineer and Owner.

C. The pumps, motors and all related equipment shall be suitably constructed of materials to withstand the operating conditions that will be experienced during the pumping systems performance and outdoor environment.

D. Unit Responsibility

1. In cooperation with the Contractor, the manufacturer/supplier shall assume complete responsibility for the satisfactory installation and operation of the dewatering sludge and digested sludge transfer pump station systems.

E. Standards and References

1. Unless otherwise indicated, all materials, workmanship and practices shall conform to the following standards. They shall be part of this Section as specified and modified. In case of conflict between the requirements of this Section and those of the listed documents, the requirements of this Section shall prevail:

STANDARD	DESCRIPTION
American Gear Manufacturers Association (AGMA)	
AGMA 6010-E-88	Spur, Helical, Herringbone, and Bevel Enclosed Drive
AGMA 6019–E-89	Gear Motors using Spur, Helical, Herringbone, Straight Bevel, or Spiral Bevel Gears
AGMA 6023-A-88	Design Manual for Enclosed Epicyclic Gear Drives
Other Standards	
	ANSI, ASTM, NEC, NEMA

F. Minor Changes and Equipment Drawings

1. The structures shown on the Contract Drawings for the various items of equipment are the result of the best obtainable information from various sources. Due to the variances in equipment details between equipment manufacturers, the Contractor may find it necessary to make minor changes to accommodate the piping and the equipment furnished.

2. The Contractor shall not undertake to construct any structure containing equipment until he has obtained approved, certified dimension prints of the equipment involved. Any structural changes necessary to accommodate the equipment furnished shall be approved by the Engineer and shall be made at no additional cost to the Owner.

3. The equipment suppliers for the various items of equipment shall assume all responsibility in informing the Contractor of any changes that may be required in the structures, mechanical system, electrical or controls systems to accommodate their equipment. Where details of equipment vary considerably from that shown, the

equipment supplier shall prepare complete installation drawings, following the form of the Contract Drawings and such other drawings as may be required by the Engineer to provide complete installation drawings. Where changes require such drawings, the equipment supplier shall furnish to the Engineer AutoCAD drawings (latest version) in addition to approval prints.

G. All pump manufacturers shall have a minimum of five (5) years service and a minimum fifty (50) similar installations for the design and type of pumping system and accessories specified and must be providing proven, reliable service.

H. The City is in the process of standardizing equipment between both of their water reclamation facility's for operations and maintenance purposes. Therefore, the progressive cavity pumping systems for conveying thickened and digested sludge shall be Seepex, Inc., no equal.

1.6 Submittals

A. Shop Drawings and Manufacturer's Literature

1. For all pumps to be furnished under this Section, the Contractor shall submit shop drawings, including at least the following, to the Engineer for approval in accordance with the provisions of Section 01300, "Shop Drawings, Submittals and Samples":

   a. Manufacturer's descriptive literature, illustrations and specification data. Show the pump type and model number.

   b. Certified shop, dimensional and erection drawings showing all important details of construction, dimensions and anchor bolt locations and dimensions. Show details of construction and materials by ASTM reference and grade and indicate all coatings. Show outline dimensions and weights of pumps, bases and motors. Indicate all structural and operating features, space required, clearances, type of finish or shop coat, and other pertinent data.

   c. Manufacturer's certified performance curves developed for the specific application. Performance curves shall plot speed, discharge capacity, head, brake horsepower, NPSH required, and efficiency from 0 - 110% of the design capacity of the pump.

   d. Details of all pump accessories.

   e. Dimensions of major components.

   f. The following data shall be submitted for each motor:

      1) Materials of construction.

      2) Dimensions.

3) Manufacturers designation.
4) Number of phases.
5) Horsepower output.
6) Efficiency.
7) Voltage and Time rating.
8) Full load current and Temperature rise.
9) Code and designation letter.
10) RPM at full load.
11) Design letter.
12) Frequency and Service factor.
13) Manufacturer's recommended lubrication requirements.

g. A copy of the control diagrams and process and instrumentation diagrams.

h. Layout drawings shall show exact installation, piping, and foundation details for the pumping units and air compressor system being submitted, openings, connections, construction details of the equipment, wiring diagrams, and weights of major components.

i. A complete bill of materials of all equipment, including materials of construction.

j. The total weight of the equipment including the weight of the single largest item.

k. A copy of the Contract Document control diagrams and process and instrumentation diagrams that apply to the equipment in this Section marked to show specific changes necessary for the supplied equipment. The submittal shall be accompanied by a detailed, written justification for each deviation/change. If no changes are required, the drawings shall be marked "*no changes required*".

l. ***A copy of this specification section and all referenced sections that apply to the equipment in this Section, with each Article check marked to show specific compliance or marked to show deviations with proper written, detailed justification***.

m. Manufacturer's guarantee/warranty.

n. Provide a notarized statement by the pump supplier which shall certify that the pump supplier shall always maintain in stock at least one (1) set of spare parts for each model of pump furnished, and that if any of the parts are not in stock when ordered by the Owner, the pump supplier shall either provide a pump or reimburse the Owner for rental of a pump to maintain the pumping systems in operation until the ordered part(s) are delivered.

o. Submit a listing of all manufacturer's recommended spare parts and special tools to be provided for each pumping system along with the manufacturer's SKU number and the current price for each item.

B. Operating and Maintenance (O&M) Instructions

1. O&M Manuals shall be furnished for this Project in accordance with Section 01730, "Operation and Maintenance Data" and shall be submitted in accordance with Section 01300, "Shop Drawings, Submittals and Samples".

2. The O&M Manuals shall be prepared specifically for this installation and shall include all detailed operating and maintenance instructions and specifications relative to the assembly, alignment, checking, lubrication, placing in operation, adjustment, and maintenance of equipment and auxiliaries furnished under this Contract; operating instructions (normal startup and shutdown procedures, normal operating conditions and emergency situations); assembly, wiring and controls diagrams; a troubleshooting guide; a complete parts lists with catalog numbers and predicted life of parts subject to wear, and normal delivery times of such parts; performance curves from identical units; coating systems applied; copies of shop drawings, certified dimensions drawings and design calculations; and required cut sheets, drawings, equipment lists, descriptions, etc. that are required to instruct operation and maintenance personnel unfamiliar with such equipment.

3. All such material shall be in addition to any instructions or parts lists packaged with or attached to the equipment when delivered.

4. The "final" O&M Manuals shall contain ***"plastic laminated pull-out lubrication and maintenance cards"*** detailing all lubrication points, lubricant type, and frequency of lubrications and all additional required maintenance and frequency intervals.

5. In addition to standard O&M Manuals, all manufacturers supplying equipment and products specified herein shall also submit their operation and maintenance manuals and data to the System Supplier, as defined in Section 13300, "PICS - System Supplier", for this Project on CD/DVD/BD's in Corel WordPerfect (latest version), Microsoft Word (latest version), or text, "txt", formats. All graphic files shall be in BMP, PCX, CDR, JPEG, DWG or DXF formats (System Integrators preference for the system shall be required). All O&M Manual files shall also be submitted electronically to the Engineer in both PDF and JPEG formats, no exceptions.

6. The System Integrator shall be responsible to configure and compile the O&M Manuals into "hypertext" window help files for use as computer "on-line" help screens for equipment operation and maintenance. The System Integrator shall return all hypertext files to the equipment and product manufacturer's for review and approval prior to introducing them into the PICS at the treatment facility.

1.7 Product Delivery, Storage and Handling

A. The progressive cavity sludge pumps and related equipment and accessories shall be factory assembled and tested, and shall be delivered to the site for installation. Deliver a complete system ready to install as the job progress requires.

B. All parts and equipment shall be properly protected via storage in a weathertight building/structure so that no damage or deterioration will occur during a prolonged delay from the time of shipment until installation is completed and the units and equipment are ready for operation. Protect the equipment from being contaminated by dust, vibration and moisture. Each box, crate or package shall be properly marked to show its net weight in addition to its contents.

C. Factory assembled parts and components shall not be dismantled for shipment unless permission is received in writing from the Engineer.

D. All instrumentation equipment and appurtenances shall be stored in a clean, dry weathertight building or enclosure.

E. Finished surfaces of all exposed pump openings shall be protected by wooded planks, strongly built and securely bolted thereto.

F. Finished iron or steel surfaces not painted shall be properly protected to prevent rust and corrosion.

G. Each box or package shall be properly marked to show its net and tare weight in addition to its contents.

H. After hydrostatic or other tests, all entrapped water and solids shall be drained prior to shipment, and proper care shall be taken to protect parts from the entrance of water during shipment, storage and handling.

I. Deliver equipment to the project job site at the appropriate time for installation. Delivery, storage and handling shall comply with Section 01600, “Materials and Equipment”.

J. Store mechanical and electrical components off of the ground in weathertight enclosures and keep dry at all times.

1.8 Warranty

A. Warranties shall be provided for all equipment in accordance with the Project General Conditions and Section 1740, “Warranties and Bonds”, unless specified otherwise.

B. The pump manufacturer shall guarantee and warrant that the equipment furnished is free from defects in design, material and workmanship.

C. The pumping system, ancillaries and incidentals shall be warranted by the pump manufacturer. ***The warranty period shall be for a period of two (2) years from the date of Final Project Acceptance by the Owner.***

D. The pump manufacturer shall provide the Owner with an ***annual preventive maintenance contract (renewable)*** for the Owner’s consideration sixty (60) calendar days prior to Final Project Acceptance. This cost ***shall not*** be included in the Bid Amount.

E. If any equipment fails to perform as specified herein, the equipment manufacturer shall promptly repair or replace the defective equipment ***at no additional cost to the Owner***. Normal wear and tear shall be excluded.

F. This warranty is in addition to any other warranty required by the Contract Documents.

1.9 Manufacturer’s Services

A. A factory representative of all major component manufacturers, who has complete knowledge of proper operation and maintenance, shall be provided for ***two (2) eight hour days to inspect, certify, calibrate, start-up, and optimize*** the pumping systems and provide operation and maintenance training to representatives of the Owner and the Engineer.

B. The field factory engineer shall be available to inspect the installed equipment and supervise the start-up demonstration and testing as specified in Section 01650, “Systems Start-up and Demonstration”.

C. If there are difficulties in operation of the equipment due to the manufacturer's design or fabrication, additional services shall be provided at no additional cost to the Owner.

D. <u>Certifications</u>

1. The Contractor shall furnish the Engineer with a written certification signed by and from the manufacturer's representative that the equipment:

    a. Has been properly installed per the manufacturer’s requirements.

b. Has been properly lubricated per the manufacturer's instructions.

c. Has been accurately aligned and proper running clearances have been set.

d. Is free from undue stress imposed by piping or mounting bolts.

e. All suction piping has been flushed and all debris removed prior to start-up.

f. Is free from any known defects.

g. Is ready to be operated on a continuous basis.

E. Operation and Maintenance Training

1. A factory field engineer who has complete knowledge of the proper operation and maintenance (O&M) of the pumping system, shall be provided for one (1) eight-hour day of Operation and Maintenance training to the Owner and Engineer prior to the initial start-up of the respective system/equipment. Classroom training (with organized handouts and professional presentations) along with training at the treatment facility site with the process/equipment shall be provided. ***Training materials shall be provided to the Engineer for review and approval at least thirty (30) calendar days prior to the training sessions.*** Training will only be considered valid for approval by the Engineer if it takes place after the successful Start-up and Demonstration Test of the pumping system.

2. At six (6) months after the completion of the first training session, a second training/maintenance session is to be scheduled. In addition to a classroom-style training refresher for the Owner and Engineer, the training instructor ***shall also perform any necessary maintenance or repairs required to the equipment, at no additional cost to the Owner.***

3. Operation and Maintenance Manuals shall be submitted and approved in accordance with Section 01300, "Shop Drawings, Submittals and Samples", and Section 01730, "Operation and Maintenance Data", in accordance with the time schedule contained therein.

F. Field Testing

1. The services of a factory representative shall be furnished to check the installation of the system and supervise any field adjustments necessary to insure proper mechanical operation.

2. If there are difficulties in the operation of the equipment due to the manufacturer's design or fabrication, additional service shall be provided at no additional cost to the Owner.

G. The costs associated with the manufacturer's services stated herein shall be incorporated into the Contractor's Bid Price for this Project.

H. ***The Contractor shall film all training and maintenance sessions with a high-definition video camera (1080p resolution) as part of the Contract***. Three (3) copies of each training/maintenance session shall be provided electronically within three (3) calendar days after the filming.

1.10 Special Tools and Spare Parts

A. Furnish one (1) complete set of all special tools, including lubricating devices, required for normal operation, adjustment and maintenance of the equipment supplied. All such tools shall be furnished with the appropriate number of heavy duty, thermoplastic tool chests complete with padlocks, identification plate for tools and duplicate keys.

B. ***Furnish all lubricants required for operation and maintenance of the progressive cavity pumping system equipment for a period of two (2) years from the date of Final Project Acceptance***, as specified in Section 01600, "Materials and Equipment".

C. ***Replacement parts required for normal operation during the first two (2) years of the progressive cavity pumping system equipment shall be provided*** by the pump manufacturer to assure uninterrupted operation of the pumping systems.

D. The Process Equipment Supplier shall furnish ***a complete set of recommended spare parts necessary for the first two (2) years of operation*** of each of the pumping systems. A list of the spare parts shall be submitted to the Engineer for approval during the shop drawing review process. Spare parts shall be properly bound and labeled for easy identification without opening the packaging and suitably protected for long-term storage.

E. The spare parts and tools shall be carefully packed in moisture proof containers, properly labeled with indelible markings with complete ordering information including the manufacturer's name, local representative's name, address and telephone number, part number, part name, and equipment for which the part is to be used, and shall be properly treated and protected for a long period of storage.

F. At a minimum, the following spare parts shall be provided for ***each*** pumping system:

1. One (1) set of packing tools.

2. One (1) packing set.

3. One (1) set of gaskets, O-rings, seals and joints.

4. One (1) rotor.

5. One (1) stator.

2. PRODUCTS

2.01 Materials and Equipment

A. The pumping systems required under this specification section shall be complete with proper alignment and balancing of the individual units. All parts shall be so designed and proportioned as to have liberal strength, stability and stiffness and to be especially adapted for the intended use. Ample room shall be provided for inspection, repairs and adjustment. The pump design shall allow the suction port to be rotated in 90° increments perpendicular to the pump centerline.

B. The support systems for pump and drives shall be rigidly and accurately anchored into position. Foundation bolts, plates, nuts and washers shall be furnished by the Contractor.

C. Stainless steel nameplates giving the name of the manufacturer, the rated capacity, head, speed and all other pertinent pump and motor data shall be attached to each pump and motor.

2.2 Pumps

A. General

1. The Contractor shall furnish, install, field-test and start-up the positive displacement, eccentric screw, progressing cavity pumps as shown on the Contract Drawings and shall conform to all requirements stipulated herein.

2. The pumps shall be of standard dimensions, built to limit gauges or formed to templates, such that parts will be interchangeable between like units.

3. The pumps shall be of the self-priming, positive displacement, progressing cavity type, designed for pumping thickened wastewater sludge and digested Class “B” biosolids (2 - 8 % dry solids).

4. The pumps shall incorporate the required number of stages to pump the fluid effectively and efficiently.

B. Performance Requirements

1. The sludge handling pump hydraulic performance conditions and design data are as follows:

Parameter	Dewatered Sludge Conveyance Pumping Station	Digested Sludge Transfer Pump Station
No. of Pumps (Drive Type)	1	2
Fluid Pumped	Dewatered Sludge	Thickened, Digested Sludge
Feed Solids (%)	15-20	2-5
Specific Gravity		
Solids Size (mm)		< 2
pH	5 - 9	5 - 9
Temperature °F	32-113	32-113
Minimum No. of Stages		
Seal Lubrication		
Max. Rated Capacity (gpm)	10	80
Maximum Pump Speed at Max. Rated Capacity (rpm)	56	223
Min. Rated Capacity (gpm)	2	20
Suction Head	Flooded	Flooded
Pressure Head (psig)	250	30
Differential Pressure at Maximum Capacity (psi)		
Pump Drive Type	VFD	VFD
Soft Start Provided for Motor	Yes	Yes
Minimum Motor Size (hp)	15	7.5
Motor Speed (rpm)	1800	1800
Suction Piping (in)	4	5
Discharge Piping (in)	4	4
Pump Manufacturer / Model No.	Seepex, Inc., BTVE 17-24	Seepex, Inc. BN 35-6LS

2. The pumps shall be of the compact, close-coupled design. The gear reducer shall be sized for a minimum service factor of 1.5 and designed with a thrust load capability of one hundred fifty percent (150%) of the actual thrust load.

3. The pumps, along with associated appurtenances, shall be mounted on common fabricated steel baseplates.

C. Materials

1. Materials of construction shall be as follows:

Component	Material - Sludge Pumps
Rotor	C45 Alloy Steel Duktil Coated
Stator	Buna N (NBR 73 ± 3 Shore A Hardness) with TSE Run-Dry Protection
Joint Seal	Buna N (NBR 73 ± 3 Shore A Hardness)
Pump Body	Grey cast iron with tapped and plugged clean out ports (ASTM A-48 or ASTM A-126)
Plug-in Shaft	420 Stainless Steel (AISI-420 or 440C hardened to 450 Brinell)
Coupling Rod	420 Stainless Steel (AISI-420 or 440C hardened to 450 Brinell)
Universal Joint	Tool Steel (D-6)
Metal Parts of Mechanical Seals	Type 316 Stainless Steel or Hastelloy C with Viton O-rings (UNS S31600, N10276 or N60455; seal rotating and stationary parts shall be tungsten carbide or silicon carbide)
Shaft Sealing	Single acting mechanical seal, Burgmann, MG1-QIQ1VGG with Viton Bellows, silicar faces, Type 316 SS wetted parts
Base Plate	Steel (ASTM A-36)

D. Rotor and Stator

1. Each pump shall be of the *staged-design type* employing a convoluted rotor operating in a similarly convoluted stator.

2. The convolutions shall be configured to form a cavity between the rotor and stator progressing from the pump's inlet to discharge port with the operation of the rotor. The fit between the rotor and stator at the point of contact shall compress the stator material sufficiently to form a seal and to prevent leakage from the discharge back to the inlet end of the pump chamber (suction).

3. The stator shall be vulcanized in a metal tube and have a Shore A hardness of 73 ± 3. The stator shall be Buna N/Nitrile and shall be bonded to the stator sleeve ends forming a collar to prevent any liquid or sludge from contacting the metal stator sleeve providing a seal between the stator, suction casing and discharge flange. Gaskets or "O" rings may not be used to form this seal.

4. The stator tube shall be drilled for TSE. The TSE controller shall be mounted in the VFD or Cake Pump Conveying control panel.

5. The sludge pump rotors shall be constructed of highly polished, high chrome content (11 - 13%), C45 alloy steel Duktil coated and hardened to 64 hRc and treated to prevent corrosion. An additional surface coating diffusing into the base metal providing a minimum surface hardness of 1250 - 1650 Vickers and a minimum thickness of 0.0108-inches shall be provided. The coating shall be a chromium nitride coating (Duktil coated 316 TiSS). Hard chrome plating or ceramic coatings shall not be acceptable. Tungsten Carbide is an acceptable alternative coating for non- corrosive environments.

E. Rotor and Drive Train

1. ***The rotor drive train shall be warranted to be free from defects in materials and/or workmanship for a period of two (2) years from date of Final Project Acceptance*** by the Owner and shall consist of the following:

   a. Each pump rotor shall be driven through a positively sealed and lubricated pin joint. The pin joint shall have replaceable bushings, constructed of air-hardened tool steel of 57-60 HRc, in the rotor head and coupling rod.

   b. The pin shall be constructed of high speed steel, air hardened to 60-65 HRc.

   c. A Type 316 stainless steel shell shall cover the universal joint assembly to protect the elastomer sleeve from being damaged.

   d. The universal joint and all components shall be totally enclosed and completely isolated from the fluid being pumped. The wearing parts shall be hardened using hardened bolts and replaceable bushings, 62 and 65 HRc, respectively. These components shall be manufactured of L-5.

   e. The universal joint shall be so designed that only bolt and bushing replacement is required for repair. The “U” joint shall be covered by an elastomeric (Buna N or Hypalon) sleeve similar to the stator and secured by Type 316 stainless steel bands packed with high quality, high temperature (450° F), PTFE base synthetic grease.

f. The positive banded U-joint shall be rated for 150 psig to prevent ingress of liquid. The universal joint shall be further equipped with a Type 316 stainless steel two-piece cover which shall encompass the sealed joint. This cover shall be secured by Type 316 stainless steel hex machine bolts, covered by elastomer bands two times the diameter of the connection. A second set of Type 316 stainless steel mechanical bands will secure the elastomer.

g. All sludge pumps shall have an "*unconditional*" 10,000-hour universal joint performance guarantee at 100% replacement, with regard to damage or wear. The "U" joint service factor shall exceed the maximum torque at the maximum speed and maximum pressure rating of the pump by 1.50.

F. Casing

1. Pump castings shall be grey cast iron with tapped clean out ports 180° opposed. The castings shall be free of sand holes and other defects. At least three (3) drain plugs shall be located in the suction castings.

2. The suction and discharge casings shall each be provided with a ½-inch (or larger) tap to permit installation of pressure instruments.

G. Flanges

1. Suction and discharge flanges shall be raised 150-pound flanged connections meeting ANSI B16.5 standards.

2. Flanged connections shall be provided at both the inlet and discharge ports.

3. Discharge flanges shall be tapped and plugged to accept gauges.

H. Shaft, Seals and Bearings

1. The pump shaft shall be manufactured of solid Type 420 stainless steel bar stock and shall be of the split design for easy disassembly of the entire rotating assembly from the pump discharge. The shaft coating will diffuse into the base metal providing a minimum surface hardness of 1250 - 1650 Vickers when packing is provided.

2. The stuffing box shall be removable should modification be required and of sufficient size to incorporate packing or mechanical seals. The pump shall be supplied with single mechanical seals having sil car vs sil car faces, Type 316 stainless steel wetted parts and Viton elastomers. The seals do not require an external flush.

3. Pump anti-friction bearings shall have a minimum AFBMA L-10 rating of 100,000 hours. Bearings shall be oil lubricated and housings shall be designed for all loads imposed and so removal can be made without dismantling the pump wet end or the suction piping.

I. Anti-Reversal Holdback Device - NOT USED

J. Fiber Deflector - NOT USED

K. Noise and Vibration

1. All equipment containing moving parts shall be installed level and plumb, unless otherwise indicated, and shall be anchored securely in order that noise be suppressed to a minimum and that vibrations do not cause damage while in operation.

L. Inspection Ports

1. Provide two (2) inspection ports, at least four (4) inches square on each side of the universal joints.

2. Provide cover plates, screwed or bolted to the pump body.

M. Hardware

1. All anchor bolts, nuts and washers shall be Type 316 stainless steel. All brackets and the hardware items shall be Type 316 stainless steel.

N. Accessories

1. Run-Dry Protection

a. To prevent the pump from "*running dry*", each pumping system shall be equipped with "*run-dry*" protection integral to the stator.

b. The stator shall be fitted with a sensor sleeve and thermistor sensor. The thermal sensor shall measure the temperature between the rotor and stator and automatically "*shut-down*" the driver when loss of liquid occurs and activate an "*alarm*" sequence.

c. Extra contacts shall be provided in the TSE controller and shall be provided and installed by the Contractor in the VFD Control Panel, and to the Cake Pump Conveying Control Panel supplier

d. The controller shall include a manual local and remote reset function. Input to the controller shall be 1 x 115 VAC, 60 Hz.

e. The manufacturer shall provide documentation that verifies at least fifteen (15) installations in service for five (5) years each, in order to verify reliability.

2. Over-Pressure Protection

a. To prevent inadmissible overpressure, each pumping system shall be fitted with a diaphragm contact pressure transmitter in connection with the pump drive. The pump/pumping system will be switched off and protected against damage when the maximum preset pressure (90% of the pump maximum) is reached.

b. The unit shall be of the Onyx/Ashcroft valve annular type, six (6) inch diameter minimum with glycol filled 4-inch gauge, NBR sleeve, steel body and acetyl end plates.

3. TSE

a. Temperature sensors shall be 110 VAC and shall be installed per the recommendation of the Engineer (wired to the VFD control panel and Cake Pump Conveying control panel as shown on the Contract Drawings).

4. Panel Enclosure

a. The TSE “run-dry” protection controller is to be wired to the VFD control panel and Cake Pump Conveying control panel for each pumping system, that meet the requirements of Section 13315, “Process Instrumentation and Control System - Control Panels”.

b. The VFD’s are to be mounted in the VFD control panel and Cake Pump Conveying control panel for each pumping system

c. The AS panel shall interface with the PICS.

d. These items are in addition to the requirements of Section 13315, “Process Instrumentation and Control System - Control Panels”.

5. Hopper Extension with Laser Mounting Brackets

a. Each cake pump shall be supplied with a Type 316 stainless steel hopper extension that is flange mounted to the pump inlet. The hopper extension shall include, at a minimum, the following:

1. An open hopper flange (Type 316 stainless steel) for the integration of

the cake pump with a Type 316 stainless steel transition extension that will extend from the dewatering equipment discharge chutes to the extension flange.

2. The integral flanged hopper extension (Type 316 SS) shall integrate a window on the drive end of the hopper extension. This window will be used for level measurement and presence/absence detection of cake.

3. The integral hopper extension shall include a metal fabricated sloped canopy internal to the hopper extension and covering the window. This canopy will eliminate any cake from falling out of the hopper and obstructing the level measurement and presence/absence detectors.

4. The hopper extension shall incorporate a flexible polycarbonate shield that will divert falling cake away from the level measurement equipment signal. This shield will be clear polycarbonate and will be ⅛ - ¼" thick . It will be flexible in order to prevent cake build up and eliminate possibility of bridging.

5. The hopper extension shall include all adjustable brackets to mount all of the presence/absence and level control transmitters and receivers.

6. Laser Level Transmitters - Dewatered Cake System

a. Each cake pump will be supplied/installed with three (3) pre-programmed laser measurement devices that incorporate the following characteristics:

1. Each laser shall be self-contained and have an IP67 rating for being capable of being fully submersed.

2. Must be able to measure distances ranging from 8 - 390 inches with an overall accuracy of not more ¾-inch where extraneous light is less than 40klx.

3. The laser level transmitter shall project a dot no larger than ⅝-inch diameter at the maximum measuring length.

4. The laser measurement system shall be able to operate in environmental temperatures ranging from 15-140° F.

5. Each laser transmitter shall utilize sealed M12 connections to prevent any contamination, but easy period maintenance or removal and replacement.

6. Each laser transmitter shall incorporate a discrete output to represent the laser line being broke by falling cake. Additionally, the laser transmitter shall include an analog process signal indicating the proximity of cake from the sensor.

7. Each of the three laser transmitters shall be programmed identically in order to permit them to measure level or indicate presence of sludge

cake. The operator shall be able to switch the function of each transmitter only by swapping the M12 quick connector.

8. In addition to the cake level monitoring provided at the Cake Pump Conveying System Control Panel, monitoring of the hopper sludge level, for each dewatered sludge pump, shall be integrated into the Master Dewatering Control Panel and facility SCADA by the System Integrator.

7. Level Control

a. The Cake Pump Conveying System Control Panel shall receive and analyze all of the level signals to determine proper operation and speed of the pump to keep the process operating in a continuous manner.

2.3 Motors

A. General

1. All motors shall be built in accordance with latest NEMA, IEEE, ANSI and AFBMA standards, where applicable.

2. Motors shall also meet the requirements of Section 16150, “Motors”.

3. The motors for the VFD controlled pumps shall be of the TEFC design, premium efficiency, inverter duty rated, with thermostats in the motor windings, Class F insulation, a service factor of 1.15 and suitable for corrosive duty. The VFD’s shall conform to the requirements of Section 16370, “Variable Frequency Drives”.

4. Gear motors or gear reducers shall be designed in accordance with AGMA 6019-E, Class II, with a minimum safety factor of 1.50, shall be splash lubricated, and suitable for twenty-four (24) hour/day operation.

5. Motors shall be as manufactured by U.S. Motors, SEW, NORD or approved equal product meeting the requirements of these Specifications.

6. Refer to specification section 16150 for additional requirements.

B. Performance Requirements

1. Motors shall be rated for operation on 230/460 V, three phase, 60 Hz power supply, 1760 rpm maximum. Each motor shall have a 1.15 service factor and insulation class F.

2. Motors shall have the horsepower and full load output speed ratings as listed.

3. Motors shall have a minimum full load efficiency as indicated in Section 16150, “Motors”.

4. Motors shall be free of objectionable noise and vibration. Motor sound pressure level shall not exceed sound pressure levels of 75 to 80 dBA at five (5) feet under free field, no load conditions in accordance with IEEE Standard 85. Vibration level measured on the bearing housing shall be in accordance with values shown in NEMA and Hydraulic Institute standards.

5. Maximum temperature rise of the motor windings shall not exceed 80°C as measured by resistance, when motor is operated continuously at 115% of rated horsepower, rated voltage and frequency in ambient air temperature of 40°C.

2.4 Shop Painting

A. Before exposure to weather and prior to shop painting, all surfaces shall be thoroughly cleaned, dry and free from all mill/scale, rust, grease, dirt and other foreign matter.

B. All pumps, motors and bases shall be shop primed, with a primer compatible with field painting as specified herein. Shop prime coat shall be in accordance with the specifications.

C. Gears, bearing surfaces and other similar surfaces obviously not to be painted, shall be given a heavy shop coat of grease or other suitable rust-resistant coating. This coating shall be maintained as necessary to prevent corrosion during periods of storage and erection and shall be satisfactory to the Owner up to the time of the Final Project Acceptance Test.

3. EXECUTION

3.01 Installation

A. Install the pumps where indicated, in strict accordance with the manufacturer's published installation instructions, with recommended clearances provided for service and maintenance. The installation and initial operation of all components shall be certified in writing by the manufacturer.

B. Install base-mounted pumps and steel foundation plates on a concrete base. Anchor bolts used to secure the pumps and plates to the concrete base shall be poured in place as indicated on the Contract Drawings. Set and level the pumps and grout under the pump base with non-shrink grout.

C. Provide piping, accessories, hangers, supports and anchors, valves, meters and gauges, vibration isolation and equipment supports as indicated and/or required for a complete and fully functional installation.

D. Check the alignment, and where necessary, realign shafts of motors and pumps within

the recommended tolerances of the manufacturer, and in presence of the manufacturer's service representative.

E. Provide the manufacturer's recommended lubricants in the pumps, bearings and other mechanical equipment. Lubricate the pumps before start-up. Start-up shall be in strict accordance with the manufacturer's instructions and these Technical Specifications.

F. Have the manufacturer's representative on-site to inspect the installation and provide the Engineer with a written report as to any installation or start-up problems. Should any problems be noted the manufacturer's representative will describe procedures to resolve them and, upon approval by the Engineer, the Contractor/manufacturer shall resolve all problems to the satisfaction of the Engineer and Owner.

G. Ensure that pumping units are properly wired, with rotation in the correct direction, and that pump and motor grounding have been provided.

3.2 Miscellaneous

A. Nameplates and other data plates shall be Type 316 stainless steel, suitably secured to the pump.

B. All machine bolts, Type 316 stainless steel stud nuts, and capscrews shall be of the hex head type.

C. Parts

1. Parts shall be completely identified with a numerical system (no alphabet letters) to facilitate parts inventory control.

2. Each part shall be properly identified by a separate number, and those parts which are identical shall have the same number to effect minimum spare parts inventory.

3.3 Cleaning

A. Clean grease, oil, or any other debris from the exterior surfaces of the equipment and adjacent surfaces.

3.4 Field Painting

A. ***Coat the pump, motor, drive system and base shall be painted with the highest/best grade paint suitable for the particular application*** and in accordance with Section 09900, "Painting".

B. Field painting shall be provided by the Contractor. The field paint shall be products of the same manufacturer as the primer paint used in the shop to assure compatibility. Acceptable paint manufacturer's include Tnemec, Koppers Company or approved equal. The finish coat color shall match the color of the adjacent piping.

C. Colors shall be selected by the Engineer and Owner from a color chart submitted during the shop drawing review process.

D. All nameplates shall be properly protected during painting.

3.5 Inspection and Testing

A. Factory Hydrostatic Testing - NOT USED

B. General

1. The Engineer and Owner shall have the right to inspect and test all materials or equipment to be furnished under these Specifications prior to their shipment from the point of manufacture.

2. The Engineer and Owner shall be notified, in writing, five (5) calendar days prior to initial shipment to make arrangements for inspection.

3. Operation and Maintenance Manuals shall be provided in accordance with Section 01730, "Operation and Maintenance Data".

4. A factory representative of all major component manufacturers, who has complete knowledge of proper operation and maintenance, shall be provided for two (2) eight hour days to inspect, certify, calibrate, start-up, and optimize the pumping systems and provide operation and maintenance training to representatives of the Owner and the Engineer in accordance with the requirements of Article 1.09, "Manufacturer's Services". The factory representative shall provide, in addition to the previously described services, complete instructions to the operating and maintenance personnel. The instructions given shall be based upon the operating and maintenance manual. The Contractor shall make a high-definition recording of the training session and provide two (2) copies to the Engineer for distribution.

5. The Contractor shall advise the Engineer not less than one (1) week in advance of each trip.

6. A written report covering the technician's findings and installation approval shall be submitted to the Engineer prior to placing the system in operation. The installation and testing inspection report shall cover inspections performed, outline in detail any deficiencies noted, and outline in detail corrective measures taken. The technician shall remain on the Project Site until all deficiencies are corrected, or shall make as many additional trips as required to ensure that the installation is proper, in accordance with the Contract Documents, and acceptable to the Owner and

Engineer.

7. A written report covering the pumping system start-up shall be submitted to the Engineer *not more than two (2) weeks after start-up procedures*, outlining in detail any discrepancies, deficiencies, or failures occurring during start-up, and outlining in detail corrective measures taken or to be taken. The technician shall remain on the Project Site until the pumping systems equipment are operating properly, in accordance with the Contract Documents, or shall make as many additional trips as required until the system is operating properly.

8. Field tests shall not be conducted until the entire installation is complete and ready for testing.

C. Pumps and Motors

1. After all pumps and pumping systems have been completely installed and are properly working under the direction of the manufacturer, conduct in the presence of the Engineer and Owner, all tests necessary to indicate that pumping operations conform to these Specifications.

2. Field tests shall include all pumping systems described under this Section. The Owner shall supply all water, wastewater, sludge and biosolids required to complete the field tests.

3. The supplier shall check all motors for correct clearances and alignment and for correct lubrication in accordance with the manufacturer's instructions. The supplier shall check the direction of rotation of all motors and reverse connections, if necessary.

4. Bump the motor(s) to ensure that the motor has been connected for proper rotation.

5. With the Owner and Engineer present, the Contractor shall megger each motor winding before energizing the motor and, if insulation resistance is found to be low, shall notify the Supplier and shall not energize the motor. Thereafter, the motor shall be replaced with a new motor that meets these Specifications.

6. Operate each pump one at a time. Manually adjust the speed of each pump (one at a time) via the respective speed control unit such that each pump output is 10%, 20%, 30%, 40%, 50%, 60%, 80%, 90% and 100% of the maximum capacity specified. The duration of each flow rate shall be at least one (1) hour.

7. Assure that in the automatic mode each pump responds to its control signal(s). Assure that each pump operates at a steady rate (±5% of the set point) at each given level/rate for 10%, 20%, 30%, 40%, 50%, 60%, 80%, 90% and 100% of the maximum capacity specified.

8. Demonstrate that the pumping systems, units, motors and control system meet the requirements of the specifications and the following:

a. That the pumping systems can deliver the specified pressure and discharge rate at the rated efficiency.

b. The pumping systems and units operate as specified without excessive noise, cavitation, vibration and without overheating of the bearings.

c. All automatic and manual controls function in accordance with the specified requirements.

d. All drive equipment operates without being overloaded.

9. Measure the motor amperage. Assure that each pump operates without exceeding the motor nameplate rating.

10. Verify that the pump speeds can be altered over the specified range by use of the VFD on the pumping systems.

11. Operate each pumping system for thirty (30) consecutive days, during which time no repairs or adjustments shall be required. Repair or replace defective equipment as required; however, the test shall start anew. Demonstrate that the pumps turn "*on*" and "*off*" in response to their automatic sequencing and control system and these specifications.

D. If the pumping systems performance do not meet the specifications, corrective measures shall be taken by the Contractor, or the pumping system shall be removed and replaced with a pumping system that satisfies the conditions specified, at no additional cost to the Owner.

END OF SECTION

SECTION 11340

CHEMICAL METERING PUMPS AND ACCESSORIES

1. GENERAL

1.01 Scope of Work

A. This Section covers the furnishing of a skid-mounted chemical metering/pumping system for the following application(s) at the Flagler Beach WWTF as specified under this Section and as shown on the Contract Drawings:

Skid No.	No. Of Pumps	Description
1	2	De-chlorination of the effluent intended for surface water discharge using bulk sodium bisulfite.

B. The skid fabricator's Work includes furnishing all equipment and related services and systems, and providing labor, materials, and appurtenances to properly place all equipment, chemical metering pumps, drive motors, all piping, valves, etc. into service, including interface, coordination, installation, instrumentation and controls, start-up, testing, calibration, operating, training, troubleshooting and warranty repair. The skid manufacturing, mounting of the pumps, mounting of the accessories and service shall be supplied by Guardian Equipment, Inc., no equal.

C. These specifications provide a general description of the requirements of each chemical feed system, but do not cover all details which will vary according to the details of each individual application. Each Chemical Feed System shall be provided as a complete system and shall include all the necessary components and accessories required to form a system which is practical and functional in its operation, appropriate from the point of view of generally accepted safety standards, correctly designed for the type of chemical used, well ordered and complete in every way.

D. Related Work Specified Elsewhere

1. General and Supplementary Conditions: County Contract Documents
2. General and Project Requirements: Division 1
3. Double Wall Chemical Storage Tanks (HDLPE): Section 06702
4. Polyvinyl Chloride (PVC) Pipe and Fittings: Section 15065

5. Valves and Appurtenances: Section 15100
6. Pipe Hangers and Supports: Section 15125
7. Instrumentation and Control Systems: Division 13
8. Mechanical: Division 15
9. Electrical: Division 16

1.2 Description of Work

A. The Project Work includes furnishing, installing, and testing sodium bisulfite chemical metering systems consisting of chemical metering pumps, drive motors, pumping system skids, chemical piping, valves, appurtenances, digital control interfaces, flow control components, pump controls and instrumentation, chemicals, and all associated work to make complete and fully operational the chemical feed systems as follows:

1. Skid No. 1 (Duplex): De-chlorination of the surface discharged effluent

   a. For the application of bulk sodium bisulfite to the effluent De-chlorination Basin for effluent intended for surface water discharge.

   b. A duplex sodium bisulfite skid-mounted chemical pumping system shall be provided and shall include two (2) chemical feed pumps (1 duty, 1 standby), motors, controls, piping, valving, appurtenances for the addition of sodium bisulfite furnished on a non-corrosive skid system with a drip lip.

   c. Skid No. 1 shall be an "***automatically***" controlled pumping system, flow paced with the effluent discharge meter and include a manual override.

   d. The chemical feed pumping skid shall be located along the south wall of the adjacent dewatering facility. The chemical feed pumping skid shall pull sodium bisulfite from the bulk storage tank co-located within the dewatering facility.

B. All chemical metering pumping systems are to be supplied by a single manufacturer with the responsibility for:

1. Designing and providing the appropriate piping, valving, pressure relief valves, anti-siphoning systems, wiring, controls, instrumentation and all appurtenances necessary to ensure an efficient and fully operational and functional pumping system.

2. Providing construction oversight and final certification.

C. The manufacturer shall review the chemical feed systems, chemical(s) being applied, hydraulic and head conditions, suction and discharge conditions, chemical storage tank

elevations, control systems and controls, application points and ***ensure and certify that the appropriate chemical feed system*** (pump size, discharge pressure, materials, piping, valving, pressure relief valves, anti-siphoning systems, etc.) ***is supplied and will function as required***.

1.3 Quality Assurance

A. ***All work under this specification shall be the responsibility of the Contractor***.

B. The products of this section shall be provided by a single supplier who shall demonstrate previous experience in the manufacturer of skid-mounted chemical metering systems. The manufacturer must have a service center with trained technicians authorized to make repairs to all components of the chemical feed system. This supplier shall be responsible for providing all equipment, accessories, spare parts, documentation and installation supervision required for a complete and operational chemical feed system. ***All equipment shall be "new" and "unused".***

C. The manufacturer shall ***supply five (5) separate references***, with contact names and phone numbers, where substantially similar installations for the chemical and equipment as specified have been in ***satisfactory operation for a minimum of two (2) years.***

D. The pump skids shall be a regularly marketed product of the manufacturer who must have a physical plant, technical and design staff, and production personnel to complete the work as specified. Systems assembled by second party fabricators, integrators or contractors shall not be acceptable. The chemical metering skids shall be assembled and tested by the manufacturer prior to delivery.

E. The products of this section shall be manufactured by Guardian Equipment, Inc. or approved equal.

1.4 Chemicals to be Delivered

A. The following chemicals and volumes shall be delivered and installed in each of the chemical storage tanks to be provided as part of this Project:

Chemical	Volume (gallons)	Storage Tank Location
Sodium Bisulfite (NaHSO3)	500	Dewatering Facility Sodium Bisulfite Chemical Storage Tank

B. The Contractor shall be responsible for receipt, protection and storage in accordance with manufacturer's recommendations of all items shipped to the site from the time of delivery until installation is completed and the units and equipment are ready for operation.

C. All materials and parts shall be properly protected so that no damage or deterioration will occur during a prolonged delay from the time of shipment until installation is completed and the units and equipment are ready for operation.

D. Each box, crate or package shall be properly marked to show its net weight in addition to its contents.

E. All instrumentation equipment and appurtenances shall be stored in a clean, dry weathertight building or enclosure.

F. ***Deliver equipment to the job site at the appropriate time for installation***. Exercise care to prevent damage from handling. Delivery, storage and handling shall comply with Section 01600, “Materials and Equipment”.

G. Store mechanical and electrical components off of the ground in weathertight enclosures and keep dry at all times.

1.5 Submittals

A. The Contractor shall submit all shop drawings for the equipment and appurtenances, identified herein in accordance with Section 01300, “Shop Drawings, Submittals and Samples”, for approval by the Engineer prior to ordering any material or commencing any work operations.

B. Submit operation and maintenance data as specified in Section 01730, “Operation and Maintenance Data”. Submit the equipment supplier's certificate that the installation is in accordance with suppliers recommendations.

C. Submit data on the characteristics and performance of the pumps which show that they meet the specified requirements. Data shall include the following items at a minimum:

1. Manufacturer’s literature and illustrations.

2. Specifications and engineering data including dimensions, materials, size, weight, performance data, required net inlet pressure, flow rate, motor hp and speed.

3. ***Certified performance curves*** based on actual shop tests of similar units showing pump characteristics of capacity, head, power, and metering accuracy. ***Curves shall be plotted of the full permissible operating range of the pumps***.

4. Submit ***performance affidavits*** from the manufacturer certifying to the Contractor and Owner jointly that the equipment meets in every way the required performance.

D. ***Submit information on the high pressure injection quill system for application of each chemical at the delivery point(s)***.

E. ***A list of the manufacturer's recommended spare parts*** to be supplied, with the manufacturer's part number (SKU #) and current price for each item. See Article 1.10 of this specification section.

F. ***Detailed layout and dimensional drawings of each proposed chemical metering skid showing plan and profile views***. Exact dimensions of construction shall be identified. Equipment and part specifications shall also be included.

G. ***Detailed information, drawings, cut-sheets, etc.*** on all components, including, but not limited to the following:

1. Motor specifications.
2. Calibration columns.
3. Valves and strainers.
4. Pressure gauges and guards.
5. High pressure injection quills/diffusers and accessories.
6. Cables and wiring.
7. Flow through assemblies.
8. Piping.
9. Coatings.

1.6 Operation and Maintenance Data

A. O&M Manuals shall be furnished for this Project in accordance with Section 01730, "Operation and Maintenance Data" and shall be submitted in accordance with Section 01300, "Shop Drawings, Submittals and Samples".

B. ***The O&M Manuals shall be prepared specifically for this installation*** and shall include all detailed operating and maintenance instructions and specifications relative to the assembly, alignment, checking, lubrication, placing in operation, adjustment, and maintenance of equipment and auxiliaries furnished under this Contract, together with its complete parts lists therefore, and copies of shop drawings, certified dimensions drawings and design calculations, required cut sheets, drawings, equipment lists, descriptions, etc. that are required to instruct operation and maintenance personnel unfamiliar with such equipment.

C. All such material shall be in addition to any instructions or parts lists packaged with or attached to the equipment when delivered.

D. The "final" O&M Manuals shall contain ***plastic laminated pull-out lubrication and maintenance cards*** detailing all lubrication points, lubricant type, and frequency of lubrications and all additional required maintenance and frequency intervals.

E. SCADA System O&M Manuals

1. ***In addition to standard O&M Manuals, all manufacturers supplying equipment and products specified herein shall also submit their operation and maintenance manuals and data to the Process Contractor for this Project on CD/DVD/BD's in Corel WordPerfect (latest version), Microsoft Word (latest version), or text, "txt", formats. All graphic files shall be in BMP, PCX, CDR, JPEG, DWG or DXF formats (integrators preference for the system shall be required). All O&M Manual files shall also be submitted electronically on CD/DVD/BD's to the Engineer in both PDF and JPEG formats, no exceptions.***

2. ***The System Integrator shall be responsible to configure and compile the O&M Manuals into "hypertext" window help files for use as computer "on-line" help screens for equipment operation and maintenance. The System Integrator shall return all hypertext files to the equipment and product manufacturer's for review and approval prior to introducing them into the SCADA System at the Flagler Beach WWTF.***

1.7 Documentation and Training

A. The Chemical Feed System Supplier shall provide full documentation for all hardware, components, and equipment, including complete manuals for installation, operation, calibration, troubleshooting. ***All documentation shall be neatly organized, readable and complete***.

B. ***Complete hardware installation, operation, maintenance and troubleshooting manuals shall be provided*** in accordance with Section 01730, "Operation and Maintenance Data".

C. ***Operation and maintenance manuals shall be prepared specifically for this Project***, and shall include all required cut sheets, drawings, equipment lists, descriptions, safety requirements, special handling practices, etc., which are required to instruct operators and maintenance personnel on the proper operation and maintenance of these systems.

D. A factory representative of the chemical feed system manufacturer, who has complete knowledge of the proper operation and maintenance requirements for that specific chemical feed system, shall be provided for four (4) hours to instruct representatives of the Owner and the Engineer on proper operation and maintenance of each system. Training shall be organized, well structured and executed, so that the treatment facility staff is well qualified and confident to operate these systems. This four (4) hour training allowance is in addition to the four (4) hours required for system start-up.

E. If there are difficulties in the operation of the equipment, due to the inadequate level of training or the manufacturer's design or fabrication, additional training and/or services shall be provided to resolve the difficulties, ***at no additional cost to the Owner***.

F. Training sessions shall be scheduled at the convenience of the Owner, so that the appropriate personnel can be available. ***All training shall be video-taped, in HD***

(1080p), by the Contractor and BD/DVD's shall be turned over to the Engineer for future use.

1.8 Tools and Spare Parts

A. ***All special tools required*** for normal operation, adjustment, or maintenance of the equipment shall be ***furnished with the equipment by the manufacturer***.

B. Spare Parts

1. As a minimum the following spare parts shall be furnished for each chemical feed system:

   a. Sufficient inventory of lubricants to provide two (2) complete changes of oil or other required lubrication, as indicated in the manufacturer's recommendations.

   b. One (1) maintenance kit for each chemical metering pump, to include, but is not limited to a diaphragm, check valve seats, gaskets and O-rings.

   c. One (1) spare valve, of each type, that is installed on each chemical feed skid.

   d. One (1) spare gauge, of each type, that is installed on each chemical feed skid.

   e. Parts list for all serviceable parts including SKU number and cost of each item.

C. The chemical feed system manufacturer shall ***provide one (1) spare feed pump and motor of each size (complete) for the each pumping application***.

D. ***The manufacturer shall provide a recommendation and supply all parts and accessories expected to be required for normal operation for the first two (2) years of operation, in addition to the spare parts outlined in Article 1.10(B)***.

E. All tools and spare parts shall be furnished in containers clearly marked with indelible markings as to their contents. This inventory shall be provided in a manner that is well ordered and complete.

1.9 Start-up Services

A. The Contractor shall furnish the services of a factory-trained service engineer for start-up of each system.

B. The minimum required time to be provided as part of this Contract is eight (8) hours.

C. A factory representative of the chemical feed system manufacturer, who has complete knowledge of the proper operation and maintenance requirements for the chemical feed systems, shall be provided as required in Section 1.09(D) of this Section.

D. Start-up shall include confirmation that the equipment has been installed in accordance with the requirements recommended by the manufacturer, testing, coordination with the System Integrator, installation certification, and start-up report.

E. The Contractor is referred to Section 01600, “Materials and Equipment” and Section 01650, “Systems Start-Up and Demonstration”.

1.10 Warranty

A. The Contractor shall obtain a ***manufacturer's two (2) year warranty*** from the chemical feed systems manufacturer and furnish it to the Owner in accordance with Section 01740, “Warranties and Bonds”. ***The guarantee period shall commence from the date of Final Project Acceptance by the Owner***.

B. The guarantee shall cover all necessary labor, equipment and replacement parts resulting from faulty or inadequate equipment, improper assembly or erection, defective workmanship and materials, leakage, breakage or other failure of all equipment and components furnished by the manufacturer. ***The Owner shall incur no labor or equipment cost associated with work under warranty during the guarantee period***.

2. PRODUCTS

2.1 General

A. Manufacture, install, test and certify sodium bisulfite chemical feed systems, including metering pumps, drive motors, controls and instrumentation, piping, valves, cabling, chemical feed skid and appurtenances as indicated on the Contract Drawings and specified herein at the Flagler Beach Wastewater Treatment Facility Sludge Management System Improvements.

2.2 Chemical Feed Metering Systems

A. Basis for Design: Sodium Bisulfite ($NaHSO_3$) Addition to Effluent for De-Chlorination

1. Skid No. 1 (Duplex)

Parameter	Value	
No. of Pumps	2 (One duty, one stand-by)	
No. of Skids	1	
Chemical Service	40% Sodium Bisulfite Solution	
Minimum Capacity (US gallons per hour)	2	50:1 turndown capability
Maximum Capacity (US gallons per hour)	100	
Rated maximum discharge pressure (psig)	100 psi	

Standard Motor Capacity	< 1 hp
Motor Speed (rpm)	< 1,800
Controls	Manual Control
Pump Head, Diaphragm and Valve Ball Material	Manufacturer selection based on chemical

B. As indicated in Section 1.10(C), the ***chemical feed system manufacturer shall provide one (1) spare feed pump and motor of each size (complete) for each pumping application***.

2.3 Chemical Metering Pumps

A. The pumps shall be Simplex positive displacement mechanical actuated diaphragm spring return metering pumps. Pumps are controlled-volume reciprocating pumps that utilize a crank gear driven by an electric motor and an integral, oil-splash-lubricated, endless screw/wormwheel reduction gear to control the strokes per minute of the diaphragm to displace a measured quantity of chemical through the metering head. Materials of construction shall be suitable for the intended chemical use. Pump shall be ± 2% accuracy within 10 - 100% of the nominal flow rate."

B. The gearbox shall be cast aluminum black anodized completely with external powder coating. Gearbox shall have an easy to service oil lubrication system including a fill port with removable cap on top of the pump, oil level site glass on the side of the pump and oil drain with removable cap on the bottom of the pump.

C. ***The metering pump shall not create gas in the chemical pumped nor require a degasifying system in order to operate reliably***.

D. The diaphragm shall be completely flat without any protrusions into the process chemical and shall be removed and replaced in the pump for service by hand on a threaded connection to the actuation slide piston. The diaphragm shall be a multi-layered, Teflon coated, nylon reinforced rubber diaphragm bonded to a metallic disc surrounded by a PVC support ring."

E. ***Single ball check valves shall be provided on pump suction and discharge ports and shall be removable by hand without disconnecting any process piping***.

F. The stroke shall be manually adjustable from 0 to 100 percent flow capacity while the pump is operating. The stroke adjuster mechanism shall be repeatable within ± 1% accuracy over a 10:1 range for stroke length and over a 5:1 range for stroke speed. Pump linearity shall be within two percent (2%). Stroke adjuster shall incorporate integral self-locking ratchet mechanism.

G. Motor frame size on pump shall accommodate 56C frame motors. Motor horsepower shall be as recommended by the pump manufacturer for the intended chemical use.

H. Maximum speed of the chemical metering pumps shall be 103 strokes per minute. A VFD shall be supplied for each pump and shall be mounted on the skid and prewired to the motor. The drive shall be housed in a NEMA 4 enclosure and accept a 120 VAC single phase input to power the drive. The drive shall have a digital display of the speed and accept a 4-20 mA DC input.

I. The chemical metering pumps shall be manufactured by TKM, as provided by Guardian Equipment, Inc.

2.4 Miscellaneous Items

A. A relay shall be installed for fault indication.

B. Other accessories required to ensure a complete, operational and fully functional system that meet the requirements and conditions for disinfection (sodium hypochlorite), chemical precipitation (alum) and denitrification (supplemental carbon). All appurtenances shall be protected or compatible with the process chemicals to be used.

C. SCADA Interface

1. The chemical feed, storage and pumping systems shall be integrated into the proposed Flagler Beach WWTF SCADA system.

2. The following conditions shall be monitored on each “automatically controlled” pumping system outputs:

   a. Pump Run Status. 120VAC rated dry contact.

   b. Pump Fail. 120VAC rated dry contact.

   c. In Remote Status. 120VAC rated dry contact.

   d. A 4 - 20 mA signal for pump speed reference.

3. Pump (inputs) shall accept 120VAC rated dry contact input for start/stop from the SCADA system and an analog 4 - 20 mA signal for remote speed/stroke adjustment.

D. Appurtenances

1. Any appurtenances shown on the Contract Drawing or which are otherwise necessary to establish a properly functioning chemical feed system shall be furnished and installed by the Contractor. All appurtenances shall be protected or compatible with the process chemicals.

2. Strainers, as required, shall be PVC Thermoplastic sediment strainers, approved for use with the chemical to be conveyed, by Hayward, or equal.

E. A UL listed NEMA 4X fiberglass reinforced local control panel shall be furnished and cantilevered mounted on the side of the chemical skid for all power and control interface wiring. Pumps or chemical piping will not be permitted above or below the local control panel. The local control panel shall be side mounted as shown on the electrical drawings for the required NEC clearances. All skid mounted devices shall be prewired to the local control panel. Shop drawings shall be submitted identifying all wiring furnished by the chemical skid supplier and all wiring to be provided by the Contractor.

2.5 Skid Mounted System

A. The "skid mounted" chemical metering system shall be complete with the skid assembly containing chemical metering pumps, all necessary piping, valves, fittings, supports, electrical, controls, instrumentation, accessories, as specified herein.

B. The skid system shall be as designed and manufactured by chemical feed pump manufacturer. ***All vendors that require pre-approval are also required to supply a spare pump, motor and variable speed drive (VSD). Additionally, they shall also extend a five (5) year warranty for the equipment in lieu of the two (2) year warranty specified herein.***

C. The chemical metering skids shall be constructed from solid white rigid polypropylene sheet with a minimum thickness of ½-inch. The skid shall be self-supporting and all components of the chemical metering system shall be contained within the skid. Pump shelf, the entire width of the skid, shall be provided with supports under each pump and shall be 14" above grade. ***The skid shall have containment built into the base equal to twenty-five (25) gallons per pump and a drain valve to empty any spills***. The containment basin should be sloped to one corner to allow for complete evacuation of liquid. A true union vented ball shall be provided on the outside of the skid to drain any liquid. ***The skids shall be manufactured using thermal welding technology, bolted construction is not acceptable***.

D. For each chemical metering pump the piping system shall include (1) pressure relief valve; (1) pulsation dampener; (1) diaphragm protected pressure gauge; (1) back pressure valve; (1) re-prime valve; (1) flushing inlet; (1) flushing outlet; and all required piping, valves, and supports to provide efficient and functional chemical delivery. Piping shall include isolation valves and unions for all serviceable components. The chemical supply piping shall allow for chemical inlets with a bulkhead fitting through the containment. Y-strainers shall be in the suction line outside of the skid. One calibration column shall be provided and designed for use with any of the metering pumps. The piping shall allow for the any of the pumps to remain in operation while any one pump or piping component on the pumping skid is isolated for maintenance or repair. The discharge piping shall allow for each pump to serve individual loads.

E. All piping shall be Schedule 80 PVC bearing the NSF potable water logo with assembly performed in a controlled shop environment by the skid manufacturer. ***All pipe shall be "squarely" cut on precision equipment with the ends chamfered***

and deburred. All socket-welded connections shall follow the guidelines set by the pipe/fitting manufacturer for proper cleaning, priming and gluing procedures. A heavy bodied solvent suitable for use with sodium bisulfite shall be used. All threaded connections will utilize Teflon tape, a suitable thread sealant or a combination of both. Threaded connections shall utilize Type 316 stainless steel reinforcement rings where applicable to reduce the risk of cracking.

F. The piping shall be attached to the chemical metering skid with a non-metallic corrosion resistant support system. The straps shall be removable and reusable to allow for servicing of the system. All inlet/outlet connections, valves and pump accessories shall be clearly labeled on the skid.

G. A power receptacle with weatherproof cover shall be provided for the metering pump power cords and shall be pre-wired to the terminal junction box.

H. ***The chemical metering skids shall be completely assembled and tested by the manufacturer prior to delivery to the job site***. Each skid shall be supplied with Type 316 Stainless Steel mounting tabs.

I. All piping, valves, gaskets, supports, hardware, wiring, junction boxes, and accessories necessary for fully functioning skids.

J. Piping shall be terminated within two (2) inches from the edge of the skid. Electrical cables shall terminate in the control panel.

K. The skid shall be specially designed, constructed, and installed for the service intended and shall comply with the conditions identified within the Contract Documents. ***The chemical pump manufacturer/supplier shall submit compatibility data to confirm the materials used to construct the skid and compatibility with the chemical being fed***.

L. ***The chemical feed systems shall be completely assembled, mounted, calibrated, tested, and each delivered to the site on a single skid***. Components to be mounted on the skid are as indicated herein and shall include the metering pumps, calibration column, piping valves, piping accessories (pulsation dampeners, strainers, etc.), and wiring integral to the skid. ***The chemical feed system supplier shall be responsible for providing all equipment, valves, and piping within the skid boundary***.

M. Accessories

1. Lifting Lugs shall be supplied for all equipment weighing over one hundred (100) pounds.

2. An Equipment Identification Plate manufactured of sixteen (16) gauge Type 316 stainless steel with ¼-inch die-stamped equipment tag number securely shall be mounted in a readily visible location.

3. Anchor bolts shall be Type 316 stainless steel, ½-inch minimum diameter.

4. Calibration Columns

a. A clear PVC calibration column shall be provided in the chemical supply piping.

b. The piping shall be designed for the calibration column to be used with any of the metering pumps.

c. The top of the calibration column shall be vented back to the chemical storage tank by the Contractor.

5. Pressure Relief Valves

a. Pressure relief valves shall be provided to eliminate excess pressure in the system. The pressure relief valves shall be fully adjustable with PVC bodies, Teflon diaphragm and shall have no metal parts in contact with the chemical.

6. Pulsation Dampeners

a. Gas charged pulsation dampeners shall be provided and sized for a minimum of 90% dampening. Pulsation dampeners shall be CPVC with a Sanaprene bladder and include gas charge fitting and pressure gauge. The dampeners shall be installed as close to the chemical metering pump discharge as possible. Pulsation dampeners shall be provided with an isolation valve.

7. Diaphragm Protected Pressure Gauges

a. Pressure gauges of the diaphragm-protected type shall be provided for indication of system pressure. Industrial quality liquid filled, Type 316 Stainless Steel gauges shall be utilized and the isolators shall have CPVC housings with a Teflon diaphragm and suitable liquid fill.

b. Pressure gauges shall be provided with isolation valves.

8. Back Pressure Valves

a. Back pressure valves shall be provided to provide a constant back pressure at the chemical metering pump discharge.

b. The back pressure valves shall be fully adjustable with PVC bodies, Teflon diaphragm and shall have no metal parts in contact with the chemical.

9. Piping and Valves

a. All piping shall be solvent welded schedule 80 PVC and shall bear the NSF potable water logo.

b. All valves and unions shall be Schedule 80 PVC with Viton O-rings. Valves shall be true union type and include built-in handle locking mechanisms. Ball valves for use with chemical prone to gassing shall be vented. Valves shall be Asahi vented true union, Type 21.

c. Suction header piping shall be two (2) pipe sizes larger than the discharge piping and shall have a vent pipe inside the skid which will be piped back to the bulk chemical storage tank.

N. ***The chemical feed skids shall each have a blowoff that is vented into a pipe and conveyed to the appropriate bulk chemical storage tank.***

3. EXECUTION

3.1 Installation of Chemical Feed Systems

A. The Contractor shall provide all labor, materials, equipment, and expertise required to carry out the installation, calibration, testing, operator training, and start-up of all equipment in a manner in keeping with the best standard practices available and in accordance with the manufacturer's recommendations for each piece of equipment supplied.

3.2 Equipment Calibration

A. Every analog instrument, control or related device shall be properly calibrated, tuned, adjusted and commissioned so that the accuracy and operation of the device equals the highest level of performance which that device can achieve.

B. Accurate and appropriate test equipment and industry standard test procedures shall be used to demonstrate that the equipment operates within it's expected tolerance of accuracy at various points throughout it's operating range.

C. Whenever calibration adjustments are being made, the technician shall notify the members of the treatment facility staff, so that they may witness the procedure as an educational process. The technicians shall assist the Operator in any way possible in becoming well-versed in the start-up, operation, calibration, maintenance and calibration of the equipment provided. The technician shall be fully familiar, trained and qualified to service and support the items which are being serviced.

3.3 Calibration and Service Reports

A. ***A written, dated report shall be prepared by the chemical metering system supplier technician, for each chemical feed skid, for the start-up, calibration, troubleshooting or maintenance event*** which identifies the equipment serviced, defines procedures, describes the results of the testing, identifies witnesses, and

provides conclusions. This shall include every instrument or system provided in this Project, and shall also apply to every visit by equipment suppliers and system subcontractors. The report(s) shall also document every wiring modification, warranty repair and problem analysis.

B. ***All reports shall be distributed to the Engineer and Contractor in both a paper and PDF format***. A copy of each report shall be kept in a permanent file "on-site" for future reference.

3.4 Coordination with the System Supplier

A. Work closely with the division 13 System Supplier to ensure the chemical feed systems are fully compatible with and monitored and controlled, as required, by the facility-wide SCADA system.

END OF SECTION

SECTION 11553

BIOSOLIDS DEWATERING SCREW PRESS

1. GENERAL

1.01 Description

A. Furnish all labor, materials, equipment and incidentals required to install, place into operation, and field test one (1) triple drum biosolids volute dewatering (screw) press together with associated sludge conditioning tank, control panel, polymer system, flow meter, integration with the digested sludge transfer pump station pumps, and all appurtenances as specified in the Contract Documents and as required to meet the specified performance requirements and to provide a full and properly functioning sludge dewatering system.

B. These specifications are intended to give a general description of what is required, but do not cover all details, which will vary in accordance with the requirements of the equipment offered. It is, however, intended to cover the furnishing, shop testing, delivery, complete installation, and field testing of all materials, equipment, and appurtenances for the complete installation of the biosolids volute dewatering (screw) press and all associated equipment and appurtenances.

C. All components of the biosolids dewater screw press equipment shall be engineered for long, continuous, and uninterrupted service. Provisions shall be made for easy lubrication, adjustment, or replacement of all parts.

D. All equipment furnished under this section shall be the responsibility of a single manufacturer, the Process Control Supplier (PCS), to fabricate or procure, integrate, factory test, and deliver to the project site. It shall be the responsibility of the PCS to coordinate all details and components required for a properly functioning system. All equipment shall be constructed of non-corrosive materials of the grade specified herein. The PCS shall coordinate the operation of the screw presses with the operation of the Sludge Transfer Pumping System.

E. The PCS shall meet Division 13 specifications for Process Instrumentation and Controls System (PICS) requirements.

F. The PCS shall coordinate with the System Supplier and Control System Engineer (CSE) throughout all development and implementation phases of the project.

G. PLC/HMI Software and Hardware development shall be coordinated with the System

Supplier, CSE , Engineer and Owner for proper integration.

H. The PCS shall provide a five (5) year parts and labor guarantee as specified herein.

I. Related Work Specified Elsewhere

1. Related work specified elsewhere includes

Title	Title
01300	Shop Drawings, Submittals and Samples
01430	Manufacturer's Services
01650	Systems Start-up and Demonstration
01720	Project Record Documents
01730	Operation and Maintenance Data
01740	Warranties and Bonds
11314	Progressive Cavity Sludge Pumps
13	Process Instrumentation and Control System - PICS
15	Mechanical
16	Electrical

1.2 System Description

A. The biosolids dewatering system shall consist of one (1) triple drum screw volute dewatering (screw) press, and all associated equipment, and shall be designed to adequately condition and dewater the biosolids generated from the BNR Process so that the dewatered sludge cake that is produced easily discharges from the screw press dewatering unit, without blinding or plugging, into the dewatered cake conveyance pumping system for discharging into the collection container/dumpster.

B. The biosolids screw press system shall be designed to operate in the environment for which it is intended, continuously or intermittently on demand, and shall perform the required dewatering operations without spillage of water or sludge beyond the nominal machine envelope. The dewatering screw press unit shall operate with no requirement for operator attention other than periodic inspection and chemical replenishment.

C. The polymer system shall be capable of providing a continuous polymer solution for efficient polymer utilization.

D. The volute dewatering screw press system shall be a *complete*, *prefabricated* system consisting, at a minimum, of the following components:

1. One (1) triple drum volute dewatering screw press system.

2. A biosolids conditioning system consisting of two-stage flocculation tanks with a mixing tank with gear motor and mixing impeller to allow efficient mixing of polymer in the biosolids and a flocculation tank including gear motor and large cross-sectional area agitator.

3. Three (3) x 300 series "dewatering drums" including spray wash down system and gear drives per unit.

4. The support structure for the dewatering drums including filtrate collection pan and outlet plumbing. All required mounting holes and brackets will be in place, drilled and tapped.

5. A self-contained electrical and control panel including control for ancillary equipment such as feed pumps and solids conveying.

E. Appurtenances

1. Polymer dilution and dosing equipment and all ancillary items and appurtenances shall be provided as part of this Project.
2. Sludge influent magnetic flow meter.

F. The one (1) triple drum volute dewatering screw press unit Model ES-303 shall be as manufactured by Process Water Technologies (PWTech), LLC, Rosedale, MD, or approved equal.

G. The triple drum volute dewatering screw press shall be designed with a maximum capacity of 100 GPM (<1% solids) or 1050 dry pound per hour for thicker sludge (>3% solids). The dewatering screw press shall be designed for dewatering the sludge as generated by the BNR process.

H. The minimum clearance requirements specified herein shall not relieve the Contractor from allowing additional clearances for the proper installation, operation, and maintenance of the units.

1.3 Quality Assurance

A. Consideration will be given only to products of manufacturers who can demonstrate that their equipment fully complies with all requirements of the Contract Documents. Any changes to the specified equipment and Contract Drawings shall be brought to the attention of the Engineer no later than ten (10) calendar days prior to the Bid Date. The review, as well as any site changes shall be paid for by the Contractor.

B. The latest version of all applicable standards for the fabrication, assembly, and installation of the systems shall apply.

C. ***Each component and ancillary equipment item furnished under this specification shall be "new" and "unused"***, of the type, size, design, and efficiency installed on previous projects and the product of a single manufacturer.

D. The Contractor and Volute Dewatering Screw Press manufacturer shall assume responsibility for the satisfactory installation and operation of the "*entire*" biosolids dewatering system, polymer feed system, controls, instrumentation and all associated equipment.

E. The equipment shall be products of manufacturers who are fully experienced, reputable and qualified in the manufacture of the equipment to be furnished. The system components shall be designed, constructed, delivered and installed in accordance with the best practices and methods.

F. All components of the biosolids volute dewatering equipment shall be engineered for long, continuous, and uninterrupted service with minimal operator intervention. Provisions shall be made for easy maintenance, adjustment, or replacement of all parts.

G. To ensure unity of responsibility, the biosolids dewatering screw press, supporting frames, polymer mixing and feeding blend unit, and control systems shall be furnished and coordinated by a single supplier. The Contractor shall assume full responsibility for the satisfactory installation and operation of the entire biosolids dewatering screw press system package.

H. Prior to shipment, the volute dewatering screw press and control panel shall be factory tested at the place of assembly. Factory test each pre-assembled, pre-wired, volute dewatering press and its associated control panel to be supplied to the job site. Prior to shipment, verify through a one (1) hour continuous operating test that the volute dewatering screw press and associated equipment operate smoothly, noiselessly, vibration free, and without overheating of any bearing or motor.

I. The Owner/Engineer shall, at their option, be permitted to witness the factory quality control test at the manufacturer's facility. The manufacturer shall give the Owner/Engineer a minimum of one (1) weeks' notice prior to testing.

J. The equipment shall be supplied by a firm which has been regularly engaged in the design, fabrication, assembly, testing, start-up and service of full-scale volute dewatering screw press systems and shall have at least ten (10) full-scale systems utilizing the exact technology proposed for this Project operating successfully for at least five (5) years in North America at municipal wastewater treatment plants that were furnished under the manufacturer's own name.

1.4 Patents

A. The manufacturer shall warrant the use of his system and its equipment, in the process for which the system has been expressly designed, and that it will not infringe upon any U.S. or foreign patents or patents pending.

B. In the event of any claim of infringement the manufacturer shall defend and indemnify the Owner and Engineer free from any liabilities associated with the use of the patented equipment or process.

C. The manufacturer shall grant to the Owner, in perpetuity, a paid-up license to use any inventions covered by patent or patents pending, owned, or controlled by the manufacturer in the operation of the facility being constructed in conjunction with the equipment supplied under this contract, but without the right to grant sub-licenses.

1.5 Submittals

A. Copies of all materials required to establish compliance with the Contract Documents shall be submitted in accordance with the provisions of Section 00700, “General Conditions, Section 00800, “Supplementary Conditions”, Section 00805, “FDEP Supplementary Conditions”, and Section 01300, "Shop Drawings, Submittals and Samples”.

B. Submittals shall include, at a minimum, the following:

1. Certified shop and erection drawings, showing all important details of construction dimensions, physical characteristics, dimensions, water and power connections, and anchor bolt locations. Show materials of construction by ASTM reference and grade. Identify all coatings to be applied and show the thicknesses of all plates, channels and panels.

2. The manufacturer’s installation instructions.

3. Descriptive literature, bulletins, and/or catalog cut sheets of each item of equipment.

4. The total weight of the equipment including the weight of the single largest item or component.

5. A complete total bill of materials of all equipment.

6. Structural calculations demonstrating compliance with the structural frame design specifications. All calculations shall be verified by a stamp of a Professional Engineer in the State of equipment manufacture.

7. Details of the polymer feed/flocculation system.

8. Elevation of the local control panel and operator control station showing panel mounted devices. Provide details of power distribution and full load current draw of the panel. Provide a list of all terminations required to receive inputs or transmit inputs from the local control panel.

9. A list of manufacturer's recommended spare parts to be supplied in addition to those specified in Article 1.08 with the manufacturer's SKU number and current price for each item.

10. Manufacturer's warranties and guarantees for all equipment.

11. Separate AWS certificates (certification required within the last year) for all fabrication shop and field welders performing welds on the equipment.

12. Complete motor and gear reducer data to be provided with the volute dewatering screw press system package.

13. List of ten (10) reference installations with location, size, contact person, and phone number for each reference.

14. Manufacturer's recommended procedures for jobsite storage and handling of equipment.

15. Material certification sheets.

16. The required summer and winter grades of lubricants shall be specified together with alternative references to equal products of other manufacturers.

17. Statement verifying that the structural design by the Engineer, for support of the volute dewatering screw press unit, is satisfactory and will support the unit over its design period.

18. Performance data and operating experience for the volute dewatering screw press system indicating the equipment proposed for this Project will comply with the specified dewatering requirements.

19. Operation and maintenance data as specified in Section 01730, "Operation and Maintenance Data".

20. Complete control schematic diagrams and schematics of all power and control systems showing wiring requirements between the system and connection to work of other sections.

21. Complete electrical drawings showing wiring, controls, interlocks, terminals and disconnects. Label each terminal, showing which control or electrical power wire connects to each terminal.

22. Complete details of electrical components including enclosures and machine-mounted components.

23. Complete details of control strategy and programming approach, including P&ID and process control testing procedure.

24. A manufacturer's certification that the volute dewatering screw press system and all associated equipment, components and ancillaries conform to the requirements specified herein for this Project, and are capable of operating within the parameters stated in this specification section and ensures a complete and functional system.

C. Submittals for Supervisory Control and Data Acquisition (SCADA) System

1. Instrumentation and Controls submittals shall include, at a minimum, the following, each of which is further defined in Division 13

Information	Specification Section
System Integration Plan - SIP	13300
Other System submittals	13300
Field Instrumentation	13310
Control Panels	13315
PLC Hardware	13325
Application Programming Description	13326
Fiber Optic	13360

D. In the event that it is impossible to conform to certain details of the specifications, due to different manufacturing techniques, describe all non-conforming aspects.

1.6 Conditions of Service and Performance Requirements

A. Conditions of Service

1. The volute dewatering screw press equipment shall be designed to adequately condition and dewater the biosolids so that a dewatered Class "B" cake is produced that easily discharges from the unit without blinding or plugging, into the dewatered cake screw conveyance system for discharge into a container/dumpster.

2. The biosolids volute dewatering screw press unit(s) shall be designed to operate in the environment for which it is intended, continuously or intermittently on demand,

and shall perform the required dewatering operations without spillage of water or biosolids beyond the nominal machine envelope.

3. The description of the sludge to be fed to the volute dewatering screw press system is as follows:

Parameter	Value
Type of Biosolids to be Dewatered	Class "B"
Digestion System	Extended Aeration
Feed Solids (% dry solids)	0.6 – 2.0%
pH	6.0 – 8.0
Volatile Suspended Solids Content	25 – 30%

B. Project Performance Requirements

1. The volute dewatering screw press unit shall be capable of meeting the following minimum performance criteria provided the above conditions of service are furnished:

Performance Parameters	Value
Biosolids Throughput - feed solids of 1.6% or greater (lb dry solids/hr/unit)	540
Hydraulic Capacity/unit - feed solids of 1% or less (gpm)	80
Power Use (hp)	3.9
Washwater Use	16 gpm (intermittent) 48 gph (total)
Neat Polymer Metering Pump Capacity (gph)	5
Dilution Water (gph) Minimum	60 - 600
Performance Requirements	**Value**
Dewatered Sludge Concentration (% dry solids), minimum	**16**
Minimum Solids Capture (%)	**90**

C. Performance Testing

1. Perform preliminary testing in order to select a liquid polymer that provides the best performance. Test a minimum of five (5) liquid polymers prior to selection. *Dry polymer systems will not be acceptable.*

2. Perform a complete start-up and shut-down of the volute dewatering screw press system using both local and SCADA control systems. Verify every component start and stop selector functions properly.

3. Verify the input and output signals to and from the control panel are transmitted and received.

4. The Performance Tests shall consist of two (2) tests, of each dewatering unit, that shall last eight (8) hours each, during which no repairs or adjustments shall be allowed. Assure that all interconnects function properly. Test each function specified herein ("*Controls*") and verify that each function is performed. Test interlocks and verify that each interlock functions.

5. Feed sludge to the unit shall contain 0.6 - 2% dry solids, by weight. Demonstrate that the volute dewatering screw press units can produce a biosolids cake with at least 16% dry solids, by weight.

6. During the Performance Tests, the Manufacturer and Owner shall measure the solids concentration in the dewatered biosolids and filtrate. One biosolids sample and one filtrate sample shall be collected each hour of the test and split for the following testing:

   a. One of the split biosolids samples shall be tested for dry solids content.

   b. One of the split filtrate samples shall be tested for dry solids content.

   c. Dewatered biosolids collected shall be composited for each eight (8) hour shift.

   d. Filtrate samples shall be collected composited for each eight (8) hour shift.

   The average of the composited biosolids samples shall ensure that the dewatered solids concentration exceeds the Performance Test requirement. The average of the composited filtrate samples shall ensure that the solids capture rate exceeds the Performance Test requirement.

7. Sampling and analysis shall be performed by an independent laboratory, approved by the Engineer and Owner. This cost shall be included in the Contractor's Bid.

8. If the volute dewatering screw press unit fails to meet the specified Project Performance Requirements (Article 1.06(B)(1)), the Contractor and manufacturer

shall make adjustments or replace the unit as necessary. Two additional eight (8) hour Project Performance Tests shall then be carried out after adjustments have been made. If the volute dewatering screw press units fail these additional tests, the Contractor shall replace the volute dewatering screw press unit(s) with equipment that meets the Project Performance Requirements. ***All modifications or replacement shall be at no cost to the Owner***.

9. The equipment manufacturer shall guarantee the above performance criteria, backed by a performance bond in the full amount of the equipment price, presented with the submission of engineering submittals. The manufacturer shall be allowed two (2) opportunities to demonstrate compliance with the performance criteria. Should the equipment fail to meet the performance criteria after the second test, the manufacturer shall forfeit the bond or irrevocable letter of credit and remove the equipment.

1.7 Manufacturer's Services

A. Mechanical Start-Up Services

1. Provide two (2) eight-hour days of mechanical start-up services and system optimization to the Owner and Engineer on the day of system/equipment start-up and online operation.

B. Polymer Selection and Optimization Services

1. A factory representative who has complete knowledge of proper operation and polymer selection/optimization shall be provided for one (1) eight-hour day of polymer selection/optimization associated with the new volute dewatering screw press units.

2. The selected polymer shall maximize the dry solids content of the biosolids cake and minimize the dry solids content of the filtrate.

C. Operation and Maintenance Training

1. A factory representative who has complete knowledge of proper operation and maintenance shall be provided for one (1) eight-hour day of O&M training to the Owner and Engineer prior to the initial start-up of the respective system/equipment

2. O&M Manuals shall be submitted and approved at least thirty (30) days prior to the training session in accordance with Section 01300, “Shop Drawings, Submittals and Samples” and Section 01730, “Operation and Maintenance Data”.

D. Project Performance Testing

1) A factory representative who has complete knowledge of proper operation and maintenance and system optimization shall be provided for a minimum of two (2) eight-hour days to perform the Project Performance Tests identified in Article 1.06© of this specification section.

2) If there are difficulties in the operation and optimization of the equipment due to the manufacturer's design or fabrication, ***additional manufacturer services and modifications to the volute dewatering screw press unit(s) shall be provided at no additional cost to the Owner***.

1.8 Special Tools and Spare Parts

A. Furnish one (1) complete set of all special tools, including lubricating devices, required for normal operation, adjustment and maintenance of the equipment supplied. All such tools shall be furnished with a heavy duty, thermoplastic tool chest complete with a padlock and duplicate keys.

B. Furnish all required lubricants required for operation and maintenance of the volute dewatering screw press units for a period of one (1) year as specified in Section 01600, “Materials and Equipment”.

C. The manufacturer shall recommend and supply all spare parts for the volute dewatering screw press units to assure normal running and maintenance for a period of one (1) year, from the date of Final Project Acceptance by the Owner. At a minimum, the following spare parts shall be provided: (1) two (2) wash water solenoid valves; and (2) one (1) full set of spray nozzles for each dewatering unit.

D. Spare parts shall be furnished in containers properly labeled and identified with indelible markings as to their contents. Each container shall be suitably protected for long-term indoor storage.

E. Replacement parts required for normal operation, other than routine maintenance items, shall be provided by the manufacturer to assure uninterrupted operation of the volute dewatering screw press units.

1.9 Operation and Maintenance Manuals and Instructions

A. O&M Manuals shall be furnished for this Project in accordance with Section 01730, “Operation and Maintenance Data” and shall be submitted in accordance with Section 01300, “Shop Drawings, Submittals and Samples”.

B. The O&M Manuals shall be ***prepared specifically for this installation*** and shall include all detailed operating and maintenance instructions and specifications relative to the assembly, alignment, checking, lubrication, placing in operation, adjustment, and maintenance of equipment and auxiliaries furnished under this Contract, together with its complete parts lists therefore, and copies of shop drawings, certified dimensions drawings and design calculations, required cut sheets, drawings, equipment lists, descriptions, etc. that are required to instruct operation and maintenance personnel unfamiliar with such equipment.

C. All such material shall be in addition to any instructions or parts lists packaged with or attached to the equipment when delivered.

D. The "final" O&M Manuals shall contain ***"plastic laminated pull-out lubrication and maintenance cards"*** detailing all lubrication points, lubricant type, and frequency of lubrications and all additional required maintenance and frequency intervals.

E. In addition to standard O&M Manuals, all manufacturers supplying equipment and products specified herein shall also submit their operation and maintenance manuals and data to the System Supplier for this Project on CD/DVD/BD's in Corel WordPerfect (latest version), Microsoft Word (latest version), or text, "txt", formats. All graphic files shall be in BMP, PCX, CDR, JPEG, DWG or DXF formats (System Integrators preference for the system shall be required). All O&M Manual files shall also be submitted electronically on CD/DVD/BD's to the Engineer in both PDF and JPEG formats, no exceptions.

F. The System Integrator shall be responsible to configure and compile the O&M Manuals into "hypertext" window help files for use as computer "on-line" help screens for equipment operation and maintenance. The System Integrator shall return all hypertext files to the equipment and product manufacturer's for review and approval prior to introducing them into the SCADA/PICS System at the treatment facility.

1.10 Product Delivery, Storage and Handling

A. The volute dewatering screw press and all ancillary equipment shall be factory assembled and tested, and shall be delivered to the site for installation.

B. All equipment and parts shall be properly protected so that no damage or deterioration will occur during a prolonged delay form the time of shipment until installation is completed and the units and equipment are ready for operation.

C. The Contractor shall store and temporarily support the equipment prior to installation in strict accordance with the manufacturer's recommendations and instructions. Protect

all exposed surfaces. Keep records of the storage parameters and the dates that storage procedures were performed. The Contractor shall be responsible for work, equipment, and materials until inspected, tested and finally accepted.

D. Protect the equipment from being contaminated by dust, vibration and moisture. The equipment storage area shall be well ventilated to prevent excessive heat buildup.

G. Exposed openings for connection to piping shall be properly plugged or protected by wooded planks, etc., strongly built and securely bolted to the flanged surfaces.

H. The Contractor shall handle the equipment during delivery, storage and installation in a manner to prevent damage of any nature in accordance with the manufacturer's approved written instructions and in accordance with instructions given on-site by the manufacturer's representative. Each box, crate or package shall be properly marked to show its net and tare weight in addition to its contents.

I. Store mechanical, electrical and instrumentation equipment, components and appurtenances off of the ground in weathertight enclosures and keep dry at all times.

J. Factory assembled parts and components shall not be dismantled for shipment unless permission is received in writing from the Engineer.

K. Deliver equipment to the job site at the appropriate time for installation. Exercise care to prevent damage from handling. Delivery, storage and handling shall comply with Section 01600, "Materials and Equipment".

1.11 Warranty

A. ***The equipment shall be warranted, in writing, to be free from defects in workmanship, design and materials for a period of two (2) years from the date of Final Project Acceptance by the Owner***.

B. The process equipment supplier shall guarantee that the equipment furnished is suitable for the purpose intended and free from defects of design, material and workmanship.

C. If any part of the equipment should fail during the warranty period, ***it shall be replaced at no additional cost to the Owner***. The manufacturer's warranty period shall run concurrently with the Contractor's warranty period. No exception to this provision shall be allowed.

D. The equipment manufacturers shall each provide the Owner with an annual preventive maintenance contract (renewable) for his consideration prior to Final Project Acceptance. *This cost **shall not** be included in the Bid Amount*.

E. Refer to the General Conditions and Section 01740, “Warranties and Bonds” for additional guarantee and warranty requirements.

F. This warranty is in addition to any other warranty required by the Contract Documents.

1.12 Polymer Selection and Optimization Services

A. The volute dewatering screw press system manufacturer shall provide the services of an independent polymer consultant once the equipment has been tested and placed into operation. The polymer consultant and screw press manufacturer shall be responsible for selecting and optimizing the appropriate liquid polymer specific to the Owner’s Class “B” biosolids product. The polymer consultant and screw press manufacturer shall coordinate all testing activities with the Contractor and shall work directly with the Owner’s personnel during the performance testing period. The polymer consultant and screw press manufacturer shall test a minimum of five (5) liquid polymers prior to selection.

B. Once a polymer has been selected, the Contractor shall be responsible for providing the first six (6) months supply of liquid polymer. ***All polymer costs associated during Performance Testing and for a period of six (6) months thereafter shall be borne by the General Contractor***.

C. Following liquid polymer screening and selection, the independent polymer consultant and screw press system manufacturer shall submit three (3) copies of submit a complete report to the Engineer offering a complete assessment and cost-effectiveness analysis as to the liquid polymer selected.

2.0 PRODUCTS

2.1 Materials and Coatings

A. All materials used in the construction of the biosolids volute dewatering screw press system shall be of the best quality and entirely suitable in every respect for the service required. All stainless steel shall conform to the appropriate ASTM Standard Specifications. Other materials shall conform to the ASTM Specifications where such specifications exist and the use of such materials shall be based on continuous and successful use under similar conditions of service.

B. No carbon steel will be used for any part of the screw press unit

C. All electrical components shall be U.L. listed where such listing exists and all electrical control panels shall be assembled in U.L. approved facilities.

D. All materials utilized in the construction of the biosolids volute dewatering screw press equipment shall be entirely suitable in every respect for the service required. All metals in contact with polyelectrolyte or biosolids, and all other metal components other than those specified in the table below shall be Type 304 or 316 stainless steel.

The following table indicates the materials and coatings that shall be provided for the volute dewatering screw press and related components unless specified otherwise herein:

ITEM	MATERIAL / COATING
Tanks	Type 304 Stainless Steel
Plumbing	Type 304 Stainless Steel
Dewatering Drums	Type 304 Stainless Steel
Dewatering Drum Screw	Type 304 Stainless Steel with Flame Coating 10Co-4Cr
Gear Motors	Die-Cast Aluminum and Type 304 Stainless Steel
Gear Motor Coating	Acrylic Paint
Spray Bars and Water	Type 304 Stainless Steel
Spray Nozzles	Polypropylene
Electrical Enclosure	NEMA 4X Type 304 Stainless Steel
Electrical Wiring Housing	Non-metallic flexible liquid-tight conduit and fittings
Frame/Skid Mounting	Type 304 Stainless Steel
Valves - Wetted Sections	Stainless Steel, EPDM seating

2.2 Structural Components

A. The structural support frame shall be fabricated of Type 304 stainless steel members conforming to the latest ASTM Standard Specifications for Structural Steel, Designation A36. It shall be a rigid structure, adequately braced to withstand intended loads without excessive vibration or deflection.

B. The framework shall be of welded and/or bolted construction. All welding shall conform with the American Welding Society (AWS) Structural Welding Code.

C. The structure shall be designed for installation on a prepared concrete foundation, suitable flat concrete slab, or fabricated platform and secured with anchor bolts.

D. The construction shall allow easy access and visual inspection of all internal components.

2.3 Mixing and Flocculation Tanks

A. Each biosolids volute dewatering screw press unit shall have an integrated two-stage mixing system comprising of a flash/rapid mix tank and flocculation tank, each with mixers and drive motors. Tank sizing and design shall ensure adequate residence times and mixing conditions to ensure complete flocculation and satisfactory dewatering performance. The tank design shall minimize the possibility of any short circuiting of flow.

B. The design and manufacture of tanks and spill trays shall ensure that no leakage or spillage of fluids under normal working conditions.

C. Mixing and flocculation tanks shall be manufactured from Type 304 stainless steel and shall be a minimum of 11 gauge (0.12-inch). Tanks and spill containment trays shall be fully welded internally and externally.

D. Mixing and Tank Drive Motors

1. The mixer and flocculation tank drive motors shall be a one piece gear motor. Gear motors shall be of the *hollow-shaft design* and be designed to drive the mixing impeller shafts with no additional couplings or joints.

2. Motors shall be filled with grease on assembly and sealed for life. Mixer rotational speed shall be obtained through a hypoid reduction gear.

3. The input power to the dewatering drum drive shall be supplied through an AC VFD unit allowing variable mixing energy to be input to the system.

4. Flash Mixing Drive Motor Data

Parameter	Value
Maximum Horsepower (hp)	0.5
Power Requirements	480 VAC, 3-phase, 60 Hz
No Load Motor Speed (rpm)	1720

Parameter	Value
Gear Reduction	10 :1
Output Shaft Speed	180 rpm at 60 Hz
Insulation Class	IP65
Enclosure	TEFC
Enclosure Material	Die Cast Aluminum
Service Factor	1.15

5. Flocculation Tank Drive Motor Data

Parameter	Value
Maximum Horsepower (hp)	2
Power Requirements	480 VAC, 3-phase, 60 Hz
No Load Motor Speed (rpm)	1760
Gear Reduction	60:1
Output Shaft Speed	30 rpm at 60 Hz
Insulation Class	IP65
Enclosure	TEFC
Enclosure Material	Die Cast Aluminum
Service Factor	1.15

E. The polymer mixing system shall be designed specifically for its intended use with the Class “B” biosolids to be generated at the treatment facility from the BNR Process.

2.4 Dewatering Drums

A. The dewatering drums will be constructed of ASTM Type 304 Stainless Steel except for the rings in the thickening section of the drum that will be manufactured in a polycarbonate resin. All circular components will be laser cut to ensure maximum evenness of wear and therefore operating life.

B. Assembly shall be undertaken in such a way that all fixed rings are concentric and parallel. All fixed rings shall be equally spaced apart for each section of the dewatering

drum. When mounted on the retaining rods and installed, all moving rings shall move freely between the fixed rings.

C. Each dewatering drum shall be equipped with individual spray bars. Each spray bar shall consist of a spray pipe fitted with spray nozzles, located above the dewatering drum. The spray pipe and spray nozzle assembly shall be readily removable. Nozzle spacing and spray pattern shall be such that the sprays from adjacent nozzles overlap one another on the dewatering drum surface. The sprays shall operate periodically and shall remove solids built up externally on the drum such that over time no significant buildup of solids occurs on the drum.

D. Dewatering Drum Drive Motor

1. The mixer and flocculation tank drive motors shall be a one-piece gearmotor. Gearmotors shall be of the *hollow-shaft design* and be designed to drive the mixing impeller shafts with no additional couplings or joints. Motors shall be filled with grease on assembly and sealed for life. Mixer rotational speed shall be obtained through a hypoid reduction gear. The input power to the dewatering drum drive shall be supplied through an AC VFD unit allowing variable mixing energy to be input to the system.

2. Dewatering Drum Drive Motor Data

Parameter	Value
Maximum Horsepower (hp)	1
Power Requirements	480 VAC, 3-phase, 60 Hz
No Load Motor Speed (rpm)	1750
Gear Reduction	450:1
Output Shaft Speed	4 rpm at 60 Hz
Insulation Class	IP65
Enclosure	TEFC
Enclosure Material	Die Cast Aluminum
Service Factor	1.15

2.5 Liquid Polymer Blending System

A. Furnish one (1) Polymer Blending Unit (PBU) with progressive cavity pump, motors and controls, including all integral piping, valves, fitting, pipe supports, special equipment and appurtenances in accordance with these specifications, including all incidental work

necessary to make it complete, satisfactory and ready for operation.

B. The polymer dilution and feed system shall be capable of effectively activating and fully blending with water a homogenous polymer solution ranging from 0.1% to 1.0% concentration of emulsion polymers with active contents up to 75%.

C. Design Criteria

Parameter	Value
Polymer	Emulsion
Polymer Activity (percent active)	30 - 75
Polymer Concentration Range	0.1 - 1.0%
Neat Polymer Flow Range (gph)	0.25 - 5.0
Dilution Water Range (gph)	60 - 600

D. Quality Assurance

1. Prior to shipment the system shall be inspected for quality of construction verifying all fasteners and fittings are tight, all wires are secure and connections whisker-free.

2. The system shall be tested under pressure for a minimum of one (1) hour at 100 psi. If leaks are found they shall be fixed and a new test shall be conducted for one a. hour at 100 psi until the plumbing system is verified to be leak free.

3. The liquid polymer blending system equipment shall be shipped in a new, high quality completely enclosed weather proof wooden crate constructed of 2" x 4" studs and $^{3}/_{8}$-inch thick ply wood. Access to the crate shall be by a front panel removable by lag bolts. A skid shall be constructed of 4" x 4" or two 2" x 4" each, allowing fork-lifting. The crate shall include a shock sensor to warn of equipment mishandling during shipment.

4. ***The equipment shall be warranted, in writing, to be free from defects in workmanship, design and materials for a period of two (2) years from the date of Final Project Acceptance by the Owner***. The mixing chamber shall be warranted for the life of the system against failure for plugging for any reason.

E. Provide a name plate securely affixed to the liquid polymer blending system unit providing the manufacturer's phone number, model number, serial number (minimum).

F. The following material requirements shall be strictly adhered to:

Parameter	Value
System Skid	Type 304 Stainless Steel
Hardware	Type 18-8 Stainless Steel
Piping and Pipe Fittings	Schedule 80 PVC
Tubing and Tube Fittings	Polyethylene, polypropylene, stainless steel and viton
Water Solenoid Valve	Brass
Pressure Gauges	Stainless Steel, liquid-filled
Pressure Switches	NEMA 4, brass connection
Flow Meter	Acrylic or stainless steel
Water Control Valve	Stainless Steel with Stainless Steel seat
Mixing Chamber Body/Flanges	Stainless Steel
Mixing Chamber Cover/Chamber	Clear polycarbonate
Impeller	Type 304 Stainless Steel
Impeller Shaft Seal	Viton, stainless steel, ceramic
Mixing Chamber Pressure Relief Valve	Stainless Steel
Metering Pump Wetted Parts	Stainless Steel and Viton
Seals	Ceramic or Teflon
Control Enclosure	FRP

G. Polymer Activation and Blending Chamber

1. To provide control and versatility to optimize the performance of the wide range of polymers available and to optimize system reliability, the system shall be a multi-stage, multi-zone, hydro-mechanical polymer activation and blending technology. The system shall be provided with both a non-mechanical and mechanical mixing stage:

   a. Non-Mechanical Stage

      1) To optimize reliability, the device shall be capable of activating and blending polymer based on plant water pressure alone at 30 psi or greater.

      2) Polymer shall be injected directly into a water jet by means of an injection quill positioned such that the non-mechanical mixing energy is no way diminished prior to polymer and water contact.

      3) The non-mechanical zone shall be designed such that the velocity of the

mixing energy-producing water jet is maintained or increases as flow decreases.

b. Hydro-Mechanical Mixing Stage

1) To provide optimal polymer performance under all operating conditions and to provide total control over mixing energy, in addition to the non-mechanical mixing stage the device shall be capable of producing its mixing energy independent of plant water pressure through a variable intensity, controllable stainless steel hydro-mechanical mixer.

2) The mixing impeller shall be fully controllable and capable of inducing ultra high, non-damaging mixing energy at all flow rates. This shall be accomplished by controlling mixing intensity and preventing over exposure to, or damaging recirculation through the impeller.

3) The polymer mixing impeller shall be designed to produce both axial and radial flow to optimize mixing effectiveness and to effectively inducing high, non-damaging mixing energy over the systems full flow range.

c. Mixers that rely solely on plant water pressure and or flow for mixing energy will not be acceptable. Mixers where performance is affected by flow rate and therefore retention time resulting in under or over exposure to mixing energy, or which rely on constant speed impellers or that rely on close tolerances for blending shall not be acceptable.

2. To prevent polymer build-up, the mixing chamber shall maintain high velocity in the entire chamber. At no time shall there be low velocity within any portion of the mixing chamber.

3. The mixing impeller shall be controlled by an VFD motor controller and driven by a wash-down duty motor. The motor shall be mounted horizontally or above the mixing chamber. Motors mounted under the mixing chamber where seal failure or leaks can damage the motor shall not be acceptable.

4. The mixer drive shaft shall be sealed by a mechanical seal which shall have an integrally mounted and factory plumbed seal flush. A drain port behind the seal shall be provided in the mixing chamber to drain the polymer solution in case of a seal failure. The seal shall be easily accessible for replacement. Systems without a seal flushing system shall not be considered. All bearings shall be external from the mixing chamber. Internal bearings shall not be acceptable.

5. Both mechanical and non-mechanical mixing zones shall be clear polycarbonate to view the mixing action and blending effectiveness. Acrylic chambers prone to becoming brittle over time and cracking, or opaque pipe shall not be acceptable to meet this requirement.

6. The mixing chamber shall have a maximum rated pressure of 100 psi. Provide a pressure relief on the mixing chamber factory set at 75 psi.

7. Provide a neat polymer check valve specifically designed to isolate neat polymer from dilution water. The valve shall be designed with an open, unobstructed path to the valve seat. To minimize check valve plugging due to normally occurring polymer agglomerations, the minimum open area up to and including the valve seat shall be $^{3}/_{16}$-inch without exception. The valve body shall be constructed of Teflon with Viton seals. The valve poppet and spring shall be stainless steel. The spring shall be outside of the polymer flow path to prevent build-up and plugging. The locking pin used to hold the valve in place shall be attached to the mixing chamber with a lanyard. The valve shall be readily accessible for cleaning and shall not require tools for removal, cleaning or replacement. Conventional check valves, valves that rely on ball seals, and or check valves that are installed inside the mixing chamber, or which require mixing chamber disassembly for servicing will not be accepted.

H. Dilution Water Assembly

1. The dilution water flow rate shall be monitored by a Rotameter flow meter having the range as specified under section 2.5C herein. Unions or flanges shall be provided on the flow meter to allow easy removal for cleaning.

2. The unit shall have an electric solenoid valve for on/off control of total dilution water flow.

3. A differential pressure type low water differential pressure alarm shall be provided. The switch shall be adjustable between 9 and 60 psi. Static working pressure, 500 psi. Proof pressure shall be 2000 psi minimum. The pressure switch shall be as manufactured by Ashcroft.

4. Provide a 2½-inch stainless steel, liquid-filled, pressure gauge to monitor the dilution water inlet pressure.

I. Progressive Cavity Neat Polymer Metering Pump

1. The unit shall have one (1) neat polymer metering pump integrally mounted on the systems skid. The metering pump(s) shall have a range as specified under section 2.5C herein. The pump shall be a positive displacement, progressive cavity type constructed of stainless steel and Viton. The shaft seal shall be packing type, mechanical seals shall not be used. A 230/480 VDC wash-down duty motor shall drive the pump. A gear reducer shall be provided to produce a maximum pump shaft speed of not more than 1750 RPM. The motor shall be controlled by an VFD motor controller located in the system control panel.

2. Provide a calibration column with two (2) full-port PVC ball valves having Viton O-rings. The column shall be calibrated for a one (1) minute draw-down at maximum pump rate and read in GPH and milliliters. The calibration column shall be rigidly

mounted to the systems frame with a minimum of two heavy duty brackets.

3. A brass pressure relief on the discharge of the metering pump adjustable between 25 and 100 psi shall be provided.

4. A loss of polymer flow sensor shall be provided with the system.

B. Solution Discharge Assembly

1. Provide a 2½-inch stainless steel, liquid-filled, pressure gauge to monitor system discharge pressure.

C. Controls

1. A junction box integral to the systems frame shall be provided.

2. The enclosure shall be rated NEMA 4X and constructed of FRP.

D. System Skid

1. The system's frame shall be constructed of rugged Type 304 stainless steel.

2. All piping shall be rigidly supported.

3. Under no circumstance shall the pump suction exceed 5-inches from the bottom of the skid for progressive cavity pumps and 12-inches from the bottom of the skid for diaphragm pumps.

4. The overall system dimensions shall not exceed 34" (W) x 24" (D) X 42" (H).

2.6 Control Panels

A. Each biosolids volute dewatering screw press shall have an integrated electrical and control system that will allow for safe, simple and automated operation of the unit. All electrical work, motors and drives will comply with any relevant NEMA standards.

B. The volute dewatering screw press supplier hereunder shall furnish the following control panels:

1. A volute dewatering screw press mounted NEMA 4X 316 Stainless Steel control panel with AC unit on each screw press unit.

C. The Control Panels shall be furnished in full compliance with the requirements of Division 13, “Process Instrumentation and Control System (PICS)” and shall be

powered by a 3-phase 480 VAC source.

D. External Enclosure Features

1. The external door of the panel will have the following switches and indicators:

   a. Main Isolating Switch (Circuit Breaker).

   b. An emergency stop button which shall be a mushroom head style pushbutton that when depressed shall immediately de energize all moving equipment in the system.

2. Within a windowed enclosure mounted on the panel door:

   a. HMI Touch Screen.

   b. An H-O-A system switch to switch the system from *AUTO* to *OFF* to *MANUAL* modes.

   c. Power on Light (white).

   d. An Operating Light to illuminate when the unit is actually in operation (green).

3. In addition to items located on the main enclosure door, provide the following:

   a. An Alarm Light - a flashing light located on the top of the panel (red).

2.7 Programmable Logic Controller (PLC)

A. Each of the Control Panels shall be provided with an Allen Bradley CompactLogix 5380 Series PLC, VTSCADA (VGT) Operator Interface Terminal (OIT), fiber optic interface as defined in Division 13, installed, wired and programmed to perform the following functions:

1. Operational Control

   a. Control of all components of the biosolids volute dewatering screw press and the dewatered sludge conveyance system including the ability to set times and operating speeds for any of the digested sludge transfer pump station feed pumps, solids conveyance system, dewatering drums, mixers, polymer dosing system and wash-down sprays.

2. System Tuning

   a. The PLC shall allow the Operator to adjust operating parameters such as delay

timers for fault alarms and system calibration constants.

3. Monitoring Operation

   a. The PLC shall allow the Operator to inspect the operation of all the components including indicators such as output frequency, current draw, thermal condition, elapsed operating times, and any faults present.

   b. The Operator shall be able to view approximated readouts of all operational speeds and flow rates relevant to the operation of the system.

4. Manual Operation of Components

   a. The Operator shall be able to manually operate each item of equipment from the PLC interface for inspection and maintenance reasons.

5. Time Clocks

   a. The Operator shall be able to set the unit to operate at a specific time or on specific days with no Operators present.

2.8 Electrical Hardware

A. Electrical hardware shall be as follows:
B.

Electrical Hardware	Description
Power Wiring	All power and wiring shall be 600 volt, Type SIS insulation stranded copper and shall be sized for the required load, 14 AWG minimum.
Control Wiring	Control wiring shall be 250 volt, Type SIS insulation stranded copper and shall be sized for the required load, 18 AWG minimum.
Circuit Breakers	Circuit breakers for the main disconnect shall be thermal magnetic molded case units. Circuit breakers shall be Square D, Class 650, Type FAL or approved equal.
Motor Starters	Motor starters shall be full voltage, non-reversing, IEC style across the line units. Coils shall be 120 VAC. Siemens Type Sirius 3RT10 or approved equal.
Selector Switches	All selector switches shall be heavy duty, corrosion resistant units rated for NEMA 4X service. Contact blocks shall be rated for 10 ampere continuous service. Selector switches shall be Idec Series TWTD.
Pilot Lights	Pilot lights shall be heavy duty, corrosion resistant units rated for NEMA 4X service. Units shall be 120 VAC full voltage incandescent type. Pilot lights shall be Idec Series TWTD or approved equal.

Terminal Blocks	Terminal blocks shall be high density, solderless box lug style, with 600-volt rating. Terminal blocks shall be Allen Bradley Type 1492 or approved equal.
Control Relays	Control relays shall be general purpose type with a 10 amp contact rating, miniature square base and internal on status pilot light. Relays shall be Allen Bradley Type 700-HF Series or approved equal.
Variable Frequency Drives (VFDs)	The VFDs shall be UL listed and shall be manufactured by Square D (Altivar Series) or approved equal. See VFD requirements in Specification Section 16370, "Variable Frequency Drives"..

2.9 Functional Specification

A. The control panel shall undertake the functional operations described below.

B. Auto-Manual Operation

1. The biosolids volute dewatering screw press system may be set to either *Auto/Manual/Off* on the Control Panel via a 3-position switch. This shall be the "*main switch*" for the facility.

2. When set to "*Manual*", all items may be switched *"On"* and "*Off*" at the Control Panel by the switches on the HMI unit.

3. When set to "*Off*", no items will work whether switched *"On"* or "*Off*" either at the control panel or anywhere else.

4. When set to *"Auto"*, all items of equipment will work, as further described below.

C. Clock Operation

1. The clock function will be controlled by the PLC in the Control Panel. Two clock functions will be allowed for in the program. The clock may be set to either "*On*" or "*Auto/Timer*" via the PLC. If the clock is set to "*On*" the facility will run for as long as the main switch is set to "*Auto*". When the clock is set to "*Auto/Timer*" the facility shall will operate in accordance with the clock settings.

2. Clock function settings shall allow the Operator to set the volute dewatering screw press and all associated equipment to switch "*On*" and "*Off*", at pre-designated times on pre-designated days with no Operators being present. A minimum of two (2) different "*clock programs*" shall be allowed for in the PLC program.

D. Polymer Feed

1. Polymer feed to the plant is achieved by the integral polymer preparation system connected to the plant. This system is controlled and powered by the control panel.

Outputs from the control panel to the polymer preparation system will include power, start and stop signals, and variable speed control for the polymer feed pump.

2. Manual adjustment of the speed control for the polymer dilution mixing chamber will be make from the Control Panel. The Control Panel shall also monitor the polymer preparation system for faults due to low water pressure, or no polymer flow and shut the system down with an alarm should this occur.

E. Flocculation Tank Agitation

1. Whenever the plant is operating, two (2) motorized agitators will operate continuously, stirring the contents of the flocculation tank. These are geared motors and will be controlled by a VFD in the Control Panel. The VFD shall be adjustable from 5 - 72 Hz.

2. A high level sensor will detect any high fluid level in the flocculation tank and will shut the plant down and cause an alarm should this occur.

F. Dewatering Drums

1. The dewatering drums shall operate whenever the plant is operating. The motor is controlled by a single VFD. The "*range of adjustment*" for this will be 15 - 72 Hz. When the plant shuts down the dewatering drum shall continue to operate for a pre-set time before they shut down.

2. Sprays will periodically switch on while the dewatering drum is operating. The frequency and duration of the spray are adjustable in the PLC.

G. Dewatered Sludge Conveyance pumping System (Discharging into the Container/Dumpster)

1. The dewatered biosolids conveyance pumping system shall operate whenever the dewatering drums are operating and will shut down following a pre-set delay following the shut down of the dewatering drums. The sludge cake pump motor is controlled by a VFD in the Dewatering Screw Press Control Panel. The "*range of adjustment*" for this will be 15 - 72 Hz.

2. The Sludge cake pump speed shall be set to user adjustable speed values (Four).

3. E-stop and Dry-Run protection relay for the conveyance pumping system and located in the Dewatering Screw Press Control Panel, shall shut down the system and cause an alarm in the event they are activated.

H. Sludge Feed pumping System (Discharging from Digester to Dewatering Press)

1. The sludge feed pumping system shall operate whenever the dewatering drums are

operating and will shut down following a shut down of the dewatering press. The sludge feed pump motor is controlled by a VFD in the Electrical Building. The "*range of adjustment*" for this will be 15 - 72 Hz.

2. Assign the sludge feed pumps to a DUTY/STANDBY sequence that can be manually overridden by the operator. If any pump is not controllable (i.e H/O/A is OFF, pump is failed), omit it from the sequence. Automatically switch assignments every time sludge pumping stops.

3. In Manual control mode, The Sludge feed pump speed shall be set to a user adjustable speed value.

4. In Automatic flow control mode:

   a. Provide the following operator adjustable values:

      1) FS – Target discharge flow

      2) FD – Percent allowable differential from target discharge flow.

   b. Provide a PID control loop to adjust the pump speed to maintain a discharge flow of FS. Freeze the PID when the flow reaches FS.

   c. If the flow falls to FS-FD for an operator adjustable time, restart the PID until the flow starts to increase then freeze the PID again.

   d. If the flow rises to FS+FD for an operator adjustable time, restart the PID until the flow starts to decrease then freeze the PID again.

   e. When the DSPCP calls for pumping, run the DUTY pump.

   f. If a pump fails to start or fails while running, automatically call for the STANDBY pump.

5. E-stop and Dry-Run protection relay for the Sludge feed pump shall shut down the pump and cause an alarm in the event they are activated.

3.0 EXECUTION

3.1 Installation

A. The biosolids volute dewatering screw press system shall be shop assembled prior to shipment and test run to assure proper operation of components, and then delivered to the site for installation.

B. Installation of the biosolids volute dewatering screw press system shall be in strict accordance with the manufacturer's instructions and recommendations in the location shown on the Contract Drawings. Installation shall include furnishing the

manufacturer's recommended grades of oil and grease furnished for operation.

C. Anchor bolts of Type 316 stainless steel shall be furnished and installed by the Contractor in accordance with the manufacturer's recommendations and approved shop drawings. The manufacturer shall review the structure layout and verify in writing that the equipment will operate and fit in the structure as designed or as modified per the manufacturer's recommendations.

D. The biosolids volute dewatering screw press system manufacturer shall have responsibility for the screw presses, polymer feed system, operation/control of the biosolids feed pumps and operation/control of the dewatered sludge conveyance system as part of this Project to ensure a complete and functional system. The Contractor and biosolids volute dewatering screw press system manufacturer shall coordinate with the digested biosolids transfer pump station pump manufacturer, BNR Process System supplier and dewatered biosolids conveyance system manufacturer to ensure that all components are integrated properly, function properly and in the proper operational sequence (start, stop, emergency shutdown, interconnects, interlocks, etc.).

E. The Contractor shall provide all necessary anchor bolts, temporary lifting equipment, power, water, labor and all other material and requirements for a complete and satisfactory installation.

3.2 Start-up, Training and Manufacturer's Services

A. The services of a manufacturer's factory trained representative, who is specifically knowledgeable in the type of equipment specified herein, shall be provided during the equipment installation period. Upon complete installation of the biosolids volute dewatering screw press system and all associated equipment and ancillaries by the Contractor, including placing of the equipment, setting and leveling the equipment, piping and electrical connections to all of the equipment, the manufacturer's representative shall approve the installation and begin start-up and training.

B. The manufacturer shall provide a letter to the Engineer approving the:

1. Installation of all components of the biosolids dewatering system and that the system is ready to operate and that the performance testing is to proceed.

2. Integration of the controls for the biosolids volute dewatering screw press system, dewatering biosolids conveyance system, the BNR Process and the digested biosolids transfer pump station pumps and that the controls and overall system is ready to operate as intended (functionally and sequentially).

C. Upon approval of the installation, the manufacturer's factory trained representative shall be provide equipment start-up and calibration services (the Contractor and manufacturer are referred to Article 1.07, "Manufacturer Services"). During the start-up and calibration phase, the manufacturer's representative shall inspect all system

components for proper connection and alignment and assist the Contractor in placing the equipment in a proper operating condition.

D. Upon satisfactory completion of the start-up and calibration of the systems, a representative of the manufacturer shall be provided to instruct the Owner's personnel in the proper operation and maintenance of the "*new*" equipment. The manufacturer's representative who will be providing the instruction shall have prior operation, maintenance and instructing experience acceptable to the Engineer. The Contractor shall submit the individual's name and qualifications to the Engineer for approval at least ten (10) calendar days prior to the scheduled operating and maintenance instruction sessions. The number of days listed in Article 1.07, "Manufacturer Services", for services of the manufacturer's factory trained representative shall be provided when requested by the Owner and Engineer during the Project.

E. The manufacturer's representative shall complete all of the above sessions in a total of two (2) trips to the jobsite. The equipment manufacturer will request, in writing, that all installation of the biosolids volute dewatering screw press system, all associated equipment and ancillaries and electrical and control systems are complete and ready, prior to arriving at the jobsite. If the equipment manufacturer arrives at the jobsite and the equipment installation is not complete, ***the Owner will not be responsible for any additional costs associated with the time delays***. The equipment manufacturer shall bill the Contractor, at the manufacturer's standard service rates, or as agreed, at the time of the service request.

F. The Contractor is referred to Section 1.07, "Manufacturer Services" of this specification section for additional Manufacturers Services requirements.

3.3 Polymer Selection and Optimization Services

A. Polymer Selection and Optimization Services shall be performed as described in Articles 1.06(C)(1), 1.07(B) and 1.12 of this specification section.

3.4 Project Performance Testing

A. Project Performance testing is covered under Section 1.06, "Conditions of Service and Performance Requirements" of this specification section.

END OF SECTION

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SECTION 13300

PROCESS INSTRUMENTATION AND CONTROL SYSTEM GENERAL REQUIREMENTS

1. GENERAL

1.01 Scope of Work

A. The overall system general requirements are given in this section. These requirements apply to each additional section of these specifications as noted herein and as specified in the associated sections.

B. Work includes engineering, furnishing, installing, testing, documenting and placing in operation the complete Process Instrumentation and Control System (PICS) for City of Flagler (Owner) Flagler Wastewater Treatment Facility (WWTF) Biosolids Improvements. Training of the Owner's personnel is also included. The work is specified in this Section and as further specified in the following sections:

1. Specification Section 13310: Field Instruments.
2. Specification Section 13315: Control Panels.
3. Specification Section 13325: Programmable Logic Controller (PLC) System.
4. Specification Section 13326: Programmable Logic Controller (PLC) System Programming.
5. Specification Section 13330: Supervisory Control and Data Acquisition (SCADA) System.
6. Specification Section 13360: Fiber Optic System.
7. Specification Section 16370: Variable Frequency Drives

C. Three entities are defined in this specification.

1. Biosolids Process Control Supplier (PCS):
   a. PWTECH Inc.

b. Approved Equal.

2. SYSTEM SUPPLIER:

   a. Controls Instruments Inc.

   b. Rocha Controls

   c. Southern Flow

3. The CONTROL SYSTEM ENGINEER (CSE):

   a. Smart Energy Solutions LLC.

   b. Approved Equal

D. The SYSTEM SUPPLIER scope of work shall include the following:

1. Include the services of the CONTROL SYSTEMS ENGINEER (CSE) in the SYSTEM SUPPLIER scope of work.

2. Coordinate with the Contractor, PCS and CSE during hardware and software development and implementation for proper integration of the PICS.

3. Provide Process Control Panel (PCP-1) in the Biosolids treatment area. PCP-1 shall be NEMA 4X stainless steel panel with AC unit and contain CompactLogix Programmable Logic Controller (PLC-1), mixed media ethernet switch and input output modules, UPS and network interface (copper and fiber optic).

4. PLC-1 shall monitor and Control equipment associated with Biosolids treatment system, sludge feed pumping, and Dechlorination process.

5. Provide programming and configuration for PLC, OIT and Network to reflect all process and equipment monitoring and control.

6. Provide copper and fiber optic network cabling and terminations, as shown on contract drawings and further detailed in Section 13360.

7. Provide all field instruments except those specifically identified in Contract Drawings as being furnished under other Divisions.

E. The CONTROL SYSTEM ENGINEER (CSE) shall work with the SYSTEM SUPPLIER through all phases of the design development, PLC and SCADA programming, network configuration, construction, Installation, testing, and certification. The following outlines the CSE scope of work:

1. The CSE shall work with the SYSTEM SUPPLIER and Process Control Supplier during shop drawing development to ensure that the components of the PICS submitted for use are coordinated, compatible and that all requirements of the project are being implemented.

2. The CSE is responsible for review and approval of PLC and OIT development prior to submittal to the EOR for review.

3. The CSE is responsible for reviewing and approval of the PICS Hardware and Software Startup training materials prior to submittal to the EOR for review.

4. The CSE is responsible for review and approval of the Network and communication protocol coordination prior to submittal to the EOR for review.

5. The CSE is responsible for observing the factory testing of the PICs.

6. The CSE is responsible for observing the field testing and commissioning of the PICS performed by the SYSTEM SUPPLIER.

7. The CSE shall have the following qualifications:

   a. Licensed PE in the state of Florida for “Control Systems”.

   b. Florida based office located within 100 miles of the project site.

   c. 10 years controls engineering experience with minimum 5 years in the Water and Wastewater industry.

8. At the conclusion of the project the CSE shall certify to the Engineer of Record (EOR) that the PICS has been implemented in accordance with project specifications requirements. This includes the PLC, MCC, VFD and Network Hardware and Software systems. As applicable to this project.

F. Instrumentation and control systems for this project are intended to be supplied completely under this section. All control panels shall be supplied through the System Supplier; however, some special control panels and devices specifically called out in Division 11 specifications are to be part of those sections, furnished with that equipment. The instruments and controls shall, however, be furnished in conformance to and in coordination with Division 13.

G. The CONTRACTOR shall furnish all labor, materials, equipment, programming, services and incidentals required to install and place into operation a digital computer-based PICS configured as shown on the Contract Drawings, and as specified herein.

H. The CONTRACTOR shall furnish all labor, materials, equipment, programming, services and incidentals required to install and place into operation a digital computer-based PICS configured as shown on the Contract Drawings, and as specified herein.

I. The CONTRACTOR shall provide all equipment, materials, programming, software, modifications to existing equipment, calibrations and services that are required to successfully interface and interconnect the PICS and any other control systems and associated equipment that are specified or designated in any drawings or provisions of these specifications for the purpose of providing a fully integrated and functional control system.

J. It is the intent of these Contract Documents that the CONTRACTOR shall have overall responsibility for the PICS.

K. Division of Work. It is the ultimate responsibility of the CONTRACTOR to furnish a complete and fully operable PICS that reliably performs the specified functions. The CONTRACTOR is to assume full responsibility for additional costs which may result from unauthorized deviations from the specifications. The CONTRACTOR is to establish the actual division of work with the minimum requirements as specified herein.

L. The CONTRACTOR shall be responsible for:

1. Furnishing and terminating the fiber optic cables.

2. All hardware and software submittals.

3. The final system operation and reliability.

4. Obtaining the required information on all field elements, equipment starters, valve actuators, chemical feed equipment, local control panels, and other control equipment or devices that are required to be interfaced with, but that are not provided with the PICS in order to provide full system coordination regarding interface, function, testing, and adjustment requirements.

5. Providing accessory devices including furnishing and installation of networking interface cards, interposing relays, control switches and signal converters necessary to perform the intent as described by the control strategies and services necessary to achieve a fully integrated and operational system as shown on the Contract Drawings and defined in the Specifications.

6. Coordinating all interface requirements with mechanical and electrical system suppliers and furnishing any signal isolation devices that might be required in order to insure compatibility between all equipment.

7. Providing any special manufacturer's cables required.

8. Defining the final installation and connection requirements of the PICS at the jobsite through development of interconnection diagrams.

9. Final connection of fiber patch cables between Fiber Patch Panels furnished by others and PICS panels.

10. Verifying correctness of all final power and signal connections to the PICS. The

SYSTEM SUPPLIER shall make final adjustments to and calibrate all field elements provided with the PICS.

11. Verifying that:

    a. All components provided under this section are properly installed.

    b. The proper type, size and number of control wires with their conduits and junction boxes are provided and installed.

    c. Proper electric power circuits are provided for all components and systems.

    d. Provision, installation and termination of field and power wiring to PICS supplied control panels and field elements. Termination shall be made in accordance with final accepted interconnection diagrams developed by the SYSTEM SUPPLIER. The electrical subcontractor shall mark on the interconnect diagram the field wire numbers used for each termination point. The SYSTEM SUPPLIER shall finalize the interconnect diagrams by including these field wire numbers in the final as built version.

    e. Installation and termination of all specialty cables, including fiber optic cables, furnished by the SYSTEM SUPPLIER.

    f. Requiring the SYSTEM SUPPLIER to observe and advise on the installation of equipment furnished by SYSTEM SUPPLIER and installed by CONTRACTOR to the extent required to certify, with the operational check-out tests, that the equipment will perform as required.

    g. Ensuring that information on equipment provided under other Divisions and needed by the SYSTEM SUPPLIER to coordinate the PICS is provided in a timely manner.

M. Equipment found to be defective prior to system acceptance shall be replaced and installed at no additional cost to the OWNER.

N. In the bid price, the CONTRACTOR shall provide for obtaining the services of authorized field personnel from the manufacturers of specialty instruments and from the suppliers of application software packages as necessary. Should these personnel be required during installation, start-up and checkout of the respective portions of the PICS, such services shall be provided at no additional cost to the OWNER.

1.02 Related Work

A. Division 15 – Mechanical. Installation of all mechanical piping and fittings, as well as in-line instruments supplied with and/or supplied for the PICS.

B. Division 16 - Electrical. All conduits are provided and installed under Division 16, Electrical. With the exception of certain specified special manufacturer's cables, all wiring and cables are provided and installed under Division 16, Electrical.

C. Field devices such as motorized valves, pump motors, solenoid valves, etc. and local control panels for specialized subsystems such as chemical feed systems, etc. are supplied and installed under other Divisions of these Specifications.

1.03 System Integration Plan

A. Prior to any other shop drawing submittals the System Supplier shall submit a System Integration Plan (SIP). Other submittals received before this submittal will be returned without review.

B. The SIP shall identify, and provide details of, all new and modified PICS functions. This shall include the following elements:

1. Field.
2. PLC.
3. System Inputs and Outputs.
4. Network/communications.

C. Field. Provide an Excel spreadsheet that covers all field instruments. For each instrument define the following:

1. Tag Number.
2. Instrument Type.
3. Specification Section supplied under.
4. Signal Type.
5. Range or On/Off states as applicable.

D. PLC. Provide an Excel spreadsheet that covers all new or modified PLC. For each, define the following:

1. PLC Designation Number.
2. Location.
3. New or modified.
4. A list of I/O modules (existing and new individually identified) that will exist at project completion.

E. System Inputs and Outputs (I/O). Provide an Excel spreadsheet that lists all system I/O for the complete PICS. For each point, the list shall include the following:

1. PICS database tag number.

2. Signal Description.

3. I/O Type.

4. Range or On/Off state as applicable.

F. Network/communications. This shall provide a tabular listing identifying the following:

1. Ethernet switches listed by port and including spares.

2. Connected equipment to each port.

3. Spreadsheet listing all network connected components, including any existing PICS equipment. For each, identify the network connection point and proposed or existing IP address.

G. Following PLC programming, revise the system I/O spreadsheet to include all pseudo points (differentiated from physical I/O) that are used by the OIT/HMI.

H. Provide a fully updated SIP as part of the final system documentation.

1.04 Submittals

A. Furnish, as prescribed under the General Requirements, all required submittals covering the items included under this section and its associated sections of the work.

B. Submit complete, neat, orderly, and indexed submittal packages. Handwritten diagrams are not acceptable and all documentation submittals shall be made using CADD generated utilities.

C. Partial submittals or submittals that do not contain sufficient information for complete review or are unclear will not be reviewed and will be returned by the Engineer as not approved.

D. All submitted component data sheets shall be marked to specifically identify the model/part numbers to be furnished.

E. Provide all shop drawing submittals on thumb drive in PDF format.

F. In addition to the shop drawing submittals required in the related specification sections, submit the submittals defined below covering the complete system.

1. System Performance. This submittal shall be a written description of how the operator will control the system and the system's subsequent response. Every

piece of controllable equipment shall be separately described and the following information included:

a. Use of local manual controls.

b. Use of OIT/HMI software controls.

c. Use of automatic controls.

2. Each functional description shall specifically identify any interlocks (hardware and software) and OIT/HMI alarms generated.

3. Operator Screens. This submittal shall include color copies of all proposed OIT/HMI operator screens.

4. Field Acceptance Test Plan. This submittal shall define the steps to be conducted during the required witnessed acceptance testing. The test shall be conducted in accordance with the general requirements set forth in Part 3 hereof. The submitted plan shall meet the following requirements:

a. Each of the equipment covered in the system performance submittal shall be tested.

b. For each equipment test, the required operator control actions and system response shall be demonstrated on the complete system, including each operator action, the response and appropriate OIT/HMI display/alarm updates.

G. The Contractor and System Supplier are hereby specifically advised that the above submittals shall be Approved or Approved As Noted prior to any witnessed performance testing.

H. Loop Diagram Submittal. This submittal may be made in conjunction with the submittals required under related specification sections. Loop diagrams, consisting of complete wiring and/or plumbing diagrams for each control loop showing all terminal numbers, the location of the dc power supply, the location of any booster relays or common dropping resistors, surge arrestors, etc. The loop diagrams shall be divided into four areas for identification of element locations: PICS I/O point(s), panel face, back-of-panel, and field, respectively.

I. Test Procedures: Submit the procedures proposed to be followed during all required testing. Procedures shall include test descriptions, forms, and check lists to be used to control and document the required tests.

J. Test Reports: Upon completion of each required test, document the test by submitting a copy of the signed off test procedures to the Engineer.

1.05 Final Documentation

A. After the demonstration tests have been completed and as a part of the final acceptance requirements, submit the PICS record drawings. Record drawings shall include, corrected for any changes that may have been made up through Substantial Completion:

1. System block diagram.
2. Network architecture diagram.
3. Instrument loop wiring diagrams.
4. Panel wiring diagrams.
5. Panel elevations.
6. Interconnection diagrams showing terminal numbers at each wiring termination.

B. Record drawings shall be developed or converted to latest version of AutoCAD. Provide electronic copies of all AutoCAD files.

C. Operating and Maintenance (O&M) Manuals: Provide the specified number of complete sets of three-ring bound O&M manuals in accordance with Division 1. Provide separate manuals for each Specification Section, clearly marked. Include descriptive material, drawings, and figures bound in appropriate places. Include:

1. Cross references to 3rd party O&M manuals.
2. Additional operating and maintenance instructions in sufficient detail to facilitate the operation, removal, installation, adjustment, calibration and maintenance of each component provided with the PICS.
3. Internal wiring diagrams (not already shown on the panel wiring diagram record drawings) for all components provided in the PICS that clearly show all terminal block number designations and wire numbers.
4. Bill of Materials identifying the manufacturer and complete part number of all components.
5. All the submittal data for each component from the approved shop drawing submittals with corrections made on approved as noted items.
6. A USB containing the shop drawing data in PDF format in the binder sleeve.

D. Provide a final System Integration Plan.

E. Refer to the individual specification sections of the PICS for final documentation requirements that are in addition to the above.

1.06 Quality Control

A. Base bids for the System Supplier shall be as listed in the Contract Proposal. System Suppliers seeking Engineer approval shall have extensive experience in systems of similar size and complexity. Panel fabrication shop shall be a UL listed panel shop. Acceptance of alternates shall be made based on price, location of the fabrication shop, accessibility of personnel, PLC programming knowledge, and Owner confidence. The System Supplier shall be subcontracted by and paid by the Contractor.

B. The System Supplier shall meet all of the requirements of these specifications, and, unless specifically stated otherwise, no prior acceptance of any subsystem, equipment, or materials has been made.

C. All equipment furnished by the System Supplier shall be of the latest and most recent design and shall have overall accuracy as guaranteed by the manufacturer.

D. Materials and equipment used shall be U.L. approved wherever such approved equipment and materials are available.

E. Component equipment shall be as supplied by one of the manufacturers named in the individual specification sections or approved equal. The design of the PICS is based on the first-named manufacturer's equipment if there is a difference.

F. To facilitate the Owner's operation and maintenance, products shall be of the same major manufacturer, with panel mounted devices of the same type and model as far as possible.

G. In order to insure the interchangeability of parts, the maintenance of quality, the ease of interfacing between the various subsystems, and the establishment of minimums with regard to ranges and accuracy, strict compliance with the above requirements shall be maintained.

H. The System Supplier shall designate a single point of contact for interface with the Engineer on this project. The Engineer reserves the sole right to approve or reject this point of contact.

I. The System Supplier's selected project personnel shall meet the following requirements:

   1. Project engineer shall have at least 10 years' experience in installing similar systems and shall have a minimum of secondary education in the field of electronics or similar technical discipline.

   2. Project technician assisting the project engineer for field element calibration and check out shall have at least five years experience in installing similar systems.

   3. Key staff resumes shall be submitted for Engineer’s approval with the Project Plan as further detailed under submittals.

J. Service Facility: The System Supplier shall have an established service facility from which qualified technical service personnel and parts may be dispatched upon call. Such a service facility shall be no more than six (6) hours travel time from the jobsite.

K. The System Supplier shall provide experienced personnel on-site to coordinate and/or perform installation, termination, and adjustment; on-site testing; Owner training; and startup assistance for the PICS.

L. The System Supplier shall provide, on-site, an experienced project engineer to supervise and coordinate all of the on-site PICS activities. An experienced technician may be provided to assist the project engineer in field element installation, field calibration, and checkout tests. The System Supplier's project engineer shall be on-site during the period required to effect all of the critical on-site activities related to the PICS, particularly the software debugging, PICS training, and witnessed testing activities.

1.07 Standards

A. The design, testing, assembly, and methods of installation of the wiring materials, electrical equipment and accessories proposed under this Contract shall conform to the National Electrical Code and to applicable state and local requirements. UL listing and labeling shall be adhered to under this Contract.

B. Any equipment that does not have a UL, FM CSA, or other approved testing laboratory label shall be furnished with a notarized letter signed by the supplier stating that the equipment famished has been manufactured in accordance with the National Electric Code and OSHA requirements.

C. Any additional work needed resulting from any deviation from codes or local requirements shall be at no additional cost to the Owner.

D. International Society of Automation (ISA) and National Electrical Manufacturers Association (NEMA) standards shall be used where applicable in the design of the PICS.

E. All equipment used on this project to test and calibrate the installed equipment shall be in calibration at the time of use. Calibration shall be traceable to National Institute of Standards (NIS - formally NBS) calibration standards.

F. For the purposes of uniformity and conformance to industry standard, provide analog signal transmission modes of electronic 4-20 ma DC. No other signal characteristics are acceptable.

G. Discrete signals are two-state logic signals. Use 120V ac sources on all discrete signals unless otherwise noted or shown.

H. Provide appropriately sized electrical transient protection devices for all electrical elements of the system as further defined in the individual specification sections. For field mounted devices, provide protector enclosures to the electrical Subcontractor for mounting and installation.

1.08 Warranty and Guarantees

A. In accordance with Division 1, the System Supplier shall furnish to the Owner a written two year guarantee commencing with final acceptance, that all equipment and parts thereof, material and/or workmanship for the field elements, instruments, and control panels are of top quality and free from defects.

B. The System Supplier shall guarantee all equipment whether or not of his own manufacture.

1.09 Spares and Expendables

A. Obtain from the manufacturer(s) and provide the recommended critical spare parts as part of the work. Refer to the individual requirements listed in the associated specification sections for the PICS for specific parts to be provided as a minimum. The spare parts are the property of the Owner.

B. Obtain from the manufacturer(s) and furnish any special tools, calibration equipment and testing apparatus required for the proper adjustment and maintenance of the material provided.

2. PRODUCTS (NOT USED)

3. EXECUTION

3.01 Sequence of Work

A. Coordination Meetings: In order to ensure timely performance of the Contract and the system's conformance with these specifications, coordination meetings shall be held. The first meeting will be held 30 days after award of the Contract to the Contractor. The Contractor and System Supplier shall provide for their attendance at this meeting in their quotation. A schedule for additional coordination meetings (approximately one each month) will be derived at this initial meeting for periodic update, coordination, and conflict resolution during the project duration.

B. Prerequisite Activities and Lead Times: Do not start the following key project activities until the listed prerequisite activities have been completed and lead times have been satisfied:

1. Hardware Purchasing, Fabrication, and Assembly: Associated design related submittals completed (no exceptions, or approved as noted).

2. Shipment: Completion and approval of all design related submittals.

3. Startup: Operational Checkout Tests.

4. Owner Training: Owner training completed and O&M manuals delivered.

5. Demonstration Tests: Operational Check-out Tests, Startup, Owner Training, and Demonstration Test Procedures must be complete. Give 4 weeks' notice prior to the planned test start date.

C. Consoles, Panels, and Panel Mounted Equipment: Consoles, panels, and panel mounted equipment shall be assembled as far as possible at the System Supplier's shop. No work, other than correction of minor defects or minor transit damage, shall be done on the panels at the jobsite.

3.02 Payments

A. General: All work provided under this Section and its associated Sections for the PICS shall be paid for in accordance with the approved payment Schedule of Values submitted by the Contractor. The approved Schedule of Values will be the basis for partial payment for work provided for the PICS.

B. Partial Payment for Work Completed: The breakdown in the Schedule of Values allows for the partial payment of work completed for the PICS. Before partial payment is considered for approval, each specific activity must be completed.

C. Substantial Completion: Substantial Completion for the project is as defined in the General Conditions. However, the following requirements must be fulfilled before consideration will be given for Substantial Completion of the PICS:

1. All PICS submittals have been completed.

2. The PICS has successfully completed the Demonstration Tests.

3. The required Owner training has been implemented.

4. All spares, expendables, and test equipment have been received by Owner.

D. Final Acceptance: PICS final acceptance is defined as the date when the Engineer issues a written notice of final acceptance. For this Section, the following must have been completed before consideration will be given to the issuance of notice of final acceptance:

1. All punch-list items have been checked off.

2. Revisions to the PICS O&M Manuals have been made (that may have resulted from the Demonstration Tests).

E. Partial Payment Limits: The partial payments for work provided for the PICS shall satisfy the following limiting maximum criteria (percentages of the lump sum pay item for the PICS):

1. Submittals (not including O&M Manuals) 15%

2. Training..... 5%

3. O&M Manuals 5%

4. Demonstration Tests 10%

3.03 Product Handling

A. Store and protect equipment until installation following the storage and handling instructions recommended by the equipment manufacturers. Place special emphasis on proper anti-static protection of sensitive equipment.

B. Protection During Construction: Throughout this Contract, provide protection for materials and equipment against loss or damage and from the effects of weather. Prior to installation, store items in indoor, dry locations. Provide heating in storage areas for items subject to corrosion under damp conditions. Provide covers for panels and other elements that may be exposed to dusty construction environments. Specific storage requirements shall be in accordance with the System Supplier's recommendations.

C. Corrosion Protection: Protect all consoles, panels, enclosures, and other equipment containing electrical or instrumentation and control devices, including spare parts, from corrosion through the use of corrosion-inhibiting vapor capsules. Prior to shipment, include capsules in the shipping containers, and equipment as recommended by the capsule manufacturer. During the construction period, periodically replace the capsules in accordance with the capsule manufacturer's recommendations. Replace all capsules just prior to Final Acceptance.

D. ESD Protection: Provide for the proper handling, storage, and environmental conditions required for the PICS components deemed static sensitive by the equipment manufacturer. Utilize anti-stat wrist straps and matting during installation of these items to prevent component degradation. Flooring used in control areas shall be reviewed and approved by the System Supplier.

E. Adequately pack manufactured material to prevent damage during shipping, handling, storage and erection. Pack all material shipped to the project site in a container properly marked for identification. Use blocks and padding to prevent movement.

F. Ship materials that must be handled with the aid of mechanical tools in wood-framed crates.

G. Ship all materials to the project site with at least one layer of plastic wrapping or other approved means to make it weatherproof. Anti-stat protection shall be provided for all sensitive equipment.

H. Inspect the material prior to removing it from the carrier. Do not unwrap equipment until it is ready to be installed. If any damage is observed, immediately notify the carrier so that a claim can be made. If no such notice is given, the material shall be assumed to be in undamaged condition, and any subsequent damage that is discovered shall be repaired and replaced at no additional expense to the Owner.

I. The Contractor shall be responsible for any damage charges resulting from the handling of the materials.

3.04 Installation

A. Material and Equipment Installation: Install the PICS in locations indicated on the Drawings and follow manufacturers' installation instructions explicitly, unless otherwise indicated. Wherever any conflict arises between manufacturers' instruction and these Contract Documents, follow Engineer's decision, at no additional cost. Keep copy of manufacturers' instructions on the jobsite available for review at all times.

B. Install materials and equipment in a workmanlike manner utilizing craftsmen skilled in the particular trade. Provide work which has a neat and finished appearance. Coordinate I&C work with the Owner and work of other trades to avoid conflicts, errors, delays, and unnecessary interference with operation of the existing plant during construction.

C. Provide finish on instruments and accessories that protects against corrosion by the elements in the environment in which they are to be installed. Finish both the interior and exterior of enclosures. Provide extra paint of each color used in the material from the manufacturer for touch-up purposes.

D. Equipment Finish: Provide materials and equipment with manufacturer's standard finish system. Provide manufacturer's standard finish color, except where specific color is indicated. If manufacturer has no standard color, finish equipment with light gray color.

E. Cleaning and Touch-up Painting: Keep the premises free from accumulation of waste material or rubbish. Upon completion of work, remove materials, scraps, and debris from premises and from interior and exterior of all devices and equipment. Touch-up scratches, scrapes, or chips in interior and exterior surfaces of devices and equipment with finishes matching as nearly as possible the type, color, consistency, and type of surface of the original finish. Clean and polish the exterior of all panels and enclosures upon the completion of the demonstration tests.

F. Control Valves: Verify correctness of installation. Verify calibration and adjustment of all positioners and I/P transducers and verify correct control action. Verify position switch settings. Verify opening and closing speeds and travel stops.

3.05 System Operating Criteria

A. Stability: After controls have taken corrective action, as result of a change in the controlled variable or a change in setpoint, oscillation of final control element shall not exceed two (2) cycles per minute or a magnitude of movement of 0.5 percent full travel.

B. Response: Any change in setpoint or change in controlled variable shall produce a corresponding corrective change in position of final control element and become stabilized within 30 seconds.

C. Agreement: Setpoint indication of controlled variable and measured indication of controlled variable shall agree within 2 percent of full scale over a 6:1 operating range.

D. Repeatability: For any repeated magnitude of control signal, from either an increasing or decreasing direction, the final control element shall take a repeated position within 0.5 percent of full travel regardless of force required to position final element.

E. Sensitivity: Controls shall respond to setpoint deviations and measured variable deviations within 1.0 percent of full scale.

F. Performance: All instruments and control devices shall perform in accordance with manufacturer's specifications.

3.06 Training

A. The cost of training programs to be conducted with Owner's personnel shall be included in the Contract price. The training and instruction, insofar as practicable, shall be directly related to the System being supplied.

B. The System Supplier shall provide detailed manuals to supplement the training courses. The manuals shall include specific details of equipment supplied and operations specific to the project.

C. The System Supplier shall make use of teaching aids, manuals, slide/video presentations, etc. After the training services, such materials shall be delivered to Owner.

D. The training program shall represent a comprehensive program covering all aspects of the operation and maintenance of the system.

E. All training schedules shall be coordinated with, and at the convenience of the Owner. Shift training may be required to correspond to the Owner's working schedule.

F. Specific details of the nature and duration of training to be provided are defined in the individual specification sections.

3.07 Testing – General

A. All elements of the PICS, both hardware and software, shall be tested to demonstrate that the total system satisfies all of the requirements of the Contract Documents

B. As a minimum, the testing shall include shop tests, operational check-out tests, and Demonstration Tests.

C. Each test shall be in the cause and effect format. The person conducting the test shall initiate an input (cause) and, upon the system producing the correct result (effect), the specific test requirements will have been satisfied.

D. All tests shall be conducted in accordance with, and documented on, prior approved procedures, forms, and checklists. Each specific test to be performed shall be described and a space provided after it for signoff by the appropriate party after its satisfactory completion. Copies of these signoff test procedures, forms, and checklists will constitute the required test documentation.

E. Provide all special testing materials and equipment. Wherever possible, perform tests using actual process variables, equipment, and data. Where it is not practical to test with real process variables, equipment, and data, provide suitable means of simulation. Define these simulation techniques in the test procedures.

F. The System Supplier shall coordinate all of their testing with the Contractor, the Engineer, all affected suppliers, and the Owner.

G. The Engineer reserves the right to test or retest any and all specified functions whether or not explicitly stated in the approved test procedures. The Engineer's decision shall be final regarding the acceptability and completeness of all testing.

3.08 Factory Test

A. Prior to shipment, perform a factory demonstration test on the fully assembled and functioning system as further defined below.

B. Successfully perform a full dry run of the test prior to certifying to the Engineer that the system is ready for discretionary Owner and/or Engineer witness of a formal test.

C. The intent of this test is to demonstrate to the Engineer’s satisfaction that the system is fully operational and debugged prior to shipment and installation. It is recognized that loop tuning, final drive parameter settings, etc. can only be performed in the field. However, subsequent to shipment it should only be necessary to confirm correct wiring and installation and proper control loop operation. The factory demonstration test shall therefore be structured to confirm the functional operation of the complete system.

D. The test system shall, as a minimum, include the following equipment:

1. All stand-alone VFD and SSS cabinets networked to the appropriate Process Control Panel.

2. Test motors connected to its representative VFD.

3. Simulated I/O for each PCP including each type of signal.

E. Before starting the test, prepare a system inspection log. In the log, record the serial numbers of all major components and document that all portions of the system have been inspected by quality assurance personnel. Include the log in the required test report.

F. Start-up the system from a fully powered down condition demonstrating that the various system elements can be brought on line without adverse consequences. Throughout subsequent testing, use system diagnostics to demonstrate system status under the various fault scenarios.

G. Demonstrate normal operations including the following:

1. Functioning of all control strategies using the operator process graphics.

2. The ability to modify the system including:

a. Add points to the system database

b. Develop a new process graphic using the newly added points

c. Modify a test report to include the new points

d. Build a trend using one of the new points

3. Message logging and alarm handling

4. Historical data collection and access from the administrative network

5. Correct operation of protective interlock relay logic within the Process Control Panels and MCCs.

H. Demonstrate the ability, from an Operator Workstation, to review, modify, and adjust the following:

1. PLC programs.

2. VFD drive parameters.

3. SSS parameters.

4. Radio subsystem parameters

I. Demonstrate the system can automatically fully recover (i.e. no loss of data) from failure of an application server.

J. Demonstrate the required UPS back-up duration. This may be performed concurrently with other portions of the test.

K. Demonstrate the system can detect the following failures and that other system functions remain unaffected:

1. Failure of a PLC.

2. Failure of an Operator Work Station

3. Failure of a drive

4. Loss of communications with a VFD.

L. Provide for up to two hours per day of Owner/Engineer additional tests.

3.09 Operational Readiness Test (ORT)

A. Prior to startup and demonstration testing, certify that the entire installed PICS (inspected, tested and documented) is ready for operation. These inspections and tests shall include Loop/Component inspections and tests. Toward the end of these checkout tests, down load the OIT/HMI software and test the system loop by loop to complete the PICS checkout tests. The System Supplier shall fully debug problems in the system as a whole. Final approval of control software will not be based on written descriptions of software functions alone, but on actual performance in the field.

B. Check the entire PICS for proper installation, calibration and adjustment on a loop-by-loop and component-by-component basis to ensure that it is in conformance with related submittals and the PICS Specifications.

C. The Loop/Component Inspections and Tests shall be implemented using approved forms and checklists. Example sheets are provided at the end of this Specification Section. These shall be developed by the System Supplier and submitted for approval.

D. Maintain the Loop Status Reports and Component Calibration Sheets at the jobsite and make them available to the Engineer at any time.

E. Witnessing: These inspections and tests do not require witnessing. However, the Engineer will review the Loop Status Sheets and Component Calibration Sheets and spot-check their entries periodically and upon completion of the Operational Check-out Tests. Correct any deficiencies found.

F. Final Documentation: The completed reports and sheets shall be assembled in one document and submitted together with a completed Manufacturer's Check-Out Certification.

3.10 Field Acceptance Test (FAT)

A. Once the PICS has passed the ORT, the System Supplier shall perform a witnessed Field Acceptance Test (FAT) on the complete PICS. The FAT shall demonstrate that the PICS is operating and in compliance with the Contract requirements. Each specified function shall be demonstrated on a paragraph-by-paragraph, and site-by-site basis.

B. Prior to the FAT, the entire installed PICS shall be certified in writing by the Contractor that it is ready for operation.

C. The system shall operate for a continuous 100 hours without failure before this test will be considered successful.

D. The FAT shall cover the entire PICS, including control functions, alarms, and status monitoring. Test procedures used for factory tests may be adopted for these tests if modified as required.

3.11 30-Day System Acceptance Test (SAT)

A. After completion of the Field Acceptance Tests, the entire system shall operate for a period of 30 consecutive days, under conditions of full plant process operation, without a single non-field repairable malfunction.

B. Provide complete O&M Manuals for the PICS at the jobsite at least two weeks prior to the SAT.

C. During this test, plant operating and System Supplier personnel shall be present as required. The System Supplier is expected to provide personnel for this test who have an intimate knowledge of the hardware and software of the system.

D. While this test is proceeding, the Owner shall have full use of the system. Only plant operating personnel shall be allowed to operate equipment associated with live plant processes.

E. Any malfunction during the tests shall be analyzed and corrections made by the System Supplier. The Engineer and/or Owner will determine whether any such malfunctions are sufficiently serious to warrant a repeat of this test.

F. Any malfunction, during this 30 consecutive day test period, which cannot be corrected within 24 hours of occurrence by the System Supplier's personnel, or more than two similar failures of any duration, will be considered as a non-field-repairable malfunction.

G. Upon completion of repairs, by the System Supplier, the test shall be repeated as specified herein.

H. In the event of rejection of any part or function, the System Supplier shall perform repairs or replacement within 90 days.

I. All data base errors must be corrected prior to the start of each test period. The 30-day test will not be considered successful until all databases are correct.

J. The total availability of the system shall be greater than 99.5 percent during this test period.

   1. Availability is given by “(Total Time-Down Time)□ / Total Time".

   2. Down times due to power outages or other factors outside the normal protection devices or back-up power supplies provided, shall not contribute to the availability test times above.

K. Upon successful completion of the 30-day Site Acceptance Test and subsequent review and approval of complete system final documentation, the system shall be considered substantially complete and the warranty period shall commence.

Project	Owner's Project No. (if applicable):	Page of
Project	Regulatory Agency Project No. (if	
HDR Project	Date:	

DESCRIPTION	**FIELD**					**CONTROL CAB**	
	LEAK CHECK(1)			TERM/CONT CHECK(2)		TERM/CONT CHECK(2)	
	Device Tag No.	Process Conn.	Signal Tube	Device Tag No.	Termination Ident.	Device Tag No.	Termination Ident.

Leak check for pneumatic signal tubing to be per ISA-PR7.1.

2. Termination/continuity check includes check at terminated equipment for: (a) correct polarity, (b) appropriate signal generation, transmission and reception, and (c) correct shield & ground terminations.

OPERATOR INTERFACE CHECK-OUT

MONITORING POINTS OBSERVED

PARAMETER TYPE	TAG NO.	TAG NO.	TAG NO.	TAG NO.	TAG NO.	TAG NO.
PROCESS VAR						
EQUIP STATUS						
ALARM POINT						

OPERATOR CONTROL FUNCTIONS CHECKED

FUNCTION TYPE	TAG NO.	LOCATION	TAG NO.	LOCATION	TAG NO.	LOCATION

AS LEFT SETTINGS

TAG NO.	SWITCH & ALARM SP	CONTROLLERS			
		Gain	Reset, rpm	Deriv. (rate), min	PV Set Point

I certify that the control loop referenced on this page has been completely checked and functions in accordance with applicable drawings and specifications.

Certified by:_____ Date:_____

Project Name:	Owner's Project No. (if
Project Owner:	Regulatory Agency Project No. (if
HDR Project	Date:
Control Loop	

Instrument Tag	Transmitter/gauge
Manufacturer:	Switch set-point:
Model No.	Switch dead band:
Serial No.	Switch range:

TRANSMITTERS AND INDICATORS

	INCREASING INPUT			**DECREASING INPUT**		
% OF SPAN	**INPUT**	**OUTPUT**	**ERROR (% of span)**	**INPUT**	**OUTPUT**	**ERROR (% of span)**
0%						
25%						
50%						
75%						
100%						
Other (if applicable)						
Other (if applicable)						

SWITCHES

	INCREASING INPUT			**DECREASING INPUT**		
ACTUATION POINT	**INPUT**	**OUTPUT**	**ERROR (% of range)**	**INPUT**	**OUTPUT**	**ERROR (% of range)**

High (Increasing input)						
Low (Decreasing input)						

Maximum allowable error (per Contract Documents): _____

Remarks: _____

CALIBRATION EQUIPMENT UTILIZED

DEVICE TYPE	MFR/MODEL NO.	ACCURACY	NIST TRACEABILITY?

Certified by:_____ Date Certified:

END OF SECTION

SECTION 13310

PROCESS INSTRUMENTATION AND CONTROL SYSTEM FIELD INSTRUMENTS

1. GENERAL

1.01 Scope of Work

A. This Specification Section covers work related to the various field instruments to be supplied with the Process Instrumentation and Control System (PICS).

B. Field instrumentation, as specified herein, shall be furnished by the same SYSTEM SUPPLIER furnishing services and equipment as outlined in 13300.

1.02 Related Work

A. Specification Section 13300 defines work associated with the overall PICS.

B. Specification Section 13315 defines work associated with control panels and enclosures housing the various elements of the PICS.

C. Specification Section 13325 defines work associated with the Programmable Logic Controllers (PLCs) that will interface the system with the field instruments defined hereunder.

D. Physical Installation of field instruments is performed under Division 15, Mechanical.

E. Provision of all field and power wiring except manufacturer-supplied cables and installation of all such wiring is performed under Division 16, Electrical.

1.03 Submittals

A. Submit the following Field Instrumentation Shop Drawings in a single package:

1. Catalog information, descriptive literature, wiring diagrams, and shop drawings on all components of the field instruments, including all miscellaneous electrical and mechanical devices furnished under this section.

2. Individual data sheets for all components of the field instruments to supplement the above information by citing all specific features for each specific component (e.g. scale range, materials of construction, special options included, etc.). Each component data sheet shall bear the component name and instrument tag number designation shown in the Drawings and Specifications.

3. Installation details for all field mounted devices to show conformance with the Contract Documents.

4. Configuration documentation for all programmable devices to indicate actual settings used to set the device scale, range, trip points, and other control parameters.

5. Proposed tag numbers for each specific instrument.

2. PRODUCTS

2.01 General Requirements

A. Equipment to be installed in a hazardous area shall meet Class, Group, and Division classification as shown on the Contract Electrical Drawings, or comply with the local or National Electrical Code, whichever is the most stringent requirement.

B. All instruments requiring plumbing shall utilize stainless steel components as follows:

1. Test Tap: Shall consist of Crawford Fitting Co. Swagelock quick connects Series QC4-DE, or equal.

2. Tubing, Stainless Steel: Shall be ASTM A 312, TP 316, seamless, soft annealed with 0.065 inch wall. Fittings shall be ASTM A 276, TP 316 compression or socket weld type.

3. Valve, Ball: Shall be stainless steel ball valves, Whitey Series 40, Hoke Flamite Series 7100, or equal.

C. All instruments shall be provided with mounting hardware and floor stands, wall brackets, or instrument racks.

D. Instruments with remote transmitters shall be provided with power and signal surge protection and sunshields (NEMA 3R Aluminum with rubber front face cover).

E. Instrument cable lengths shall be determined by the SYSTEM SUPPLIER based on actual field installation requirements.

F. All transmitters shall be provided with either integral indicators or conduit mounted indicators in process units, accurate to two percent. Indicator readouts shall be linear in process units.

G. Electronic equipment shall utilize printed circuitry suitably coated to prevent contamination by dust, moisture and fungus. Solid-state components shall be conservatively rated for their purpose, to assure optimum long-term performance and dependability over ambient atmosphere fluctuations and 0 to 100 percent relative humidity. The field mounted equipment and system components shall be designed for installation in dusty, humid, and slightly corrosive service conditions.

2.02 Lightning/Surge Protection

A. Surge suppressors and arrestors meeting the requirements of IEEE/ANSI Standard C-62.41 (latest revision) shall be provided on all electronic field instruments.

B. AC Powered Instruments. Lightning and surge protection shall be provided on both the AC power supply and signal lines. The protectors and the associated instrument/transmitter and power disconnect shall be mounted in a NEMA 3R Stainless Steel, vented enclosure powder-coat painted white with three point latch. The protectors shall meet the following criteria:

1. NEMA 4X small case, conduit mounted enclosure.

2. Response time of less than five nanoseconds.

3. AC Power protection: IEEE/ANSI Std. C-62.41 rated C3 at 330 Volts clamping level.

4. Signal line protection: 10,000 Amp 8 x 20 microsecond surge, clamped at 36 Volts clamping level.

5. Test jacks for low level signal monitoring.

6. Manufacturer/model: ASCO Model 265.

C. Loop Powered Instruments. Lightning and surge protection shall be provided on the 4-20 mA DC signal line. The protectors shall meet the following criteria:

1. Encapsulated in Stainless Steel Pipe nipples for in-line conduit mounting.

2. Response time of less than one nanosecond.

3. Capable of withstanding up to 400 occurrences of 500 Amps at 10 x 1 millisecond.

4. Series resistance of 5 ohms per line.

5. Protection of both lines plus shield.

6. Manufacturer/model: ASCO model 157.

2.03 Field Instruments

A. Electro-magnetic Flow Metering System. The magnetic flow metering system shall comprise a flow through spool piece with sensing electrodes (Flow Element, FE) and an electronics unit (Flow Indicating Transmitter, FIT). The spool piece shall contain a coil energized by d.c. pulses from the electronics unit. The voltage induced in the process fluid shall be sensed by the electrodes and converted, by the electronics unit, into a derived flow signal.

1. System Performance:

   a. Systems shall be wet calibrated at the factory using NIST traceable equipment.

   b. Overall system accuracy shall be plus or minus 0.5 percent of rate between 1 and 30 feet per second.

   c. It shall be possible to verify system calibration in the field. Methods which require removal of the spool piece or a second flow measurement (i.e. another meter or known volume) will not be acceptable.

2. Materials:

   a. Tube – Carbon Steel

   b. Liner – Neoprene rubber for clean water applications. All other applications shall be Teflon.

   c. Flange –316 Stainless Steel ANSI 150#

   d. Electrodes – 316 Stainless Steel.

3. Ratings:

   a. Rated for continual submergence to 10 feet. This shall include potting of the able between the spool piece and electronics unit.

   b. Electronics Unit – Remote mount NEMA 4X.

4. Electrical:

   a. Power Requirement - 120 VAC plus or minimum 10 percent, 60 Hertz.

   b. Maximum Power Consumption – 20 Watts.

5. Functional:

   a. Programmable low flow cut-out

b. Empty pipe detection

c. Electronic unit display: minimum of 2 x 16 character, backlit LCD.

6. Options

a. Provide grounding rings as required to establish potential matching.

b. Provide ultrasonic cleaning where necessary for coating sensitive systems

c. Provide special tools and software necessary to effect field calibration

d. Provide certificate of factory calibration

7. Manufacturer, Model series:

a. Endress and Hauser, ProMag 400

b. Approved equal

B. Flow Element – Ultrasonic Doppler

1. Type:

a. Strap-on single head sensor

b. Stainless steel mounting clamp

2. Operation:

a. Purpose - To produce a 4-20 mA signal proportional to flow rate.

b. Operating Principle – Transmitted ultrasonic signal is reflected back by suspended solids. The received frequency differs from the transmitted frequency because of the Doppler effect. The difference is proportional to flow rate in the pipe.

3. Functional:

a. Power Requirement - 120 VAC plus or minus 10 percent, 60 Hertz.

b. Maximum Power Consumption – 12 VA

c. Transmitter – Back lit LCD display

4. Physical:

a. Transmitter - NEMA 4X fiberglass enclosure with stainless steel hardware

b. Transducer – Epoxy encapsulated.

5. Performance

    a. Accuracy - Plus or minus 2 percent of full scale between 0.2 and 30 feet per second

    b. Capable of operation down to 100 ppm of minimum 100 micron suspended solids.

6. Manufacturers:

    a. Dynasonics DDFXD series

    b. Approved equal

C. Ultrasonic Level Element and Transmitter. The system shall consist of a sensor (Level Element, LE) that uses a non-contact ultrasonic measurement technique to measure the liquid level in a vessel, tank or basin, interconnecting cable, and electronics unit that produces an analog signal proportional to level (Level Indicating Transmitter, LIT) or, in the case of weir applications, flow (Flow Indicating Transmitter, FIT).

1. System Performance:

    a. Overall system accuracy shall be plus or minus 0.25 percent of span or 0.1 inches, whichever is greater, automatically compensated for temperature.

    b. The electronics unit shall contain preset algorithms containing the necessary factors to convert a weir level into a flow value.

    c. The system shall be field calibratable without the use of external calibrators.

2. Sensor Materials:

    a. Chemical tank locations – All Teflon.

    b. Other locations – PVC and Teflon.

3. Ratings:

    a. Electronics Unit – NEMA 4X.

4. Electrical:

    a. Power Requirement - 120 VAC plus or minimum 10 percent, 60 Hertz.

    b. Maximum Power Consumption – 10 Watts.

5. Functional:

    a. Span, output, linearization and digital output scaling shall be adjustable at the transmitter.

    b. Echo status and loss indication shall be provided at the transmitter.

    c. Electronic unit display: 16 character, backlit LCD.

6. Manufacturer, Model series:

    a. Endress and Hauser, Prosonic.

    b. Approved equal.

D. Chlorine Analyzer. The analyzer shall comprise of a panel equipped with two amperometric sensors (Analysis Element, AE), flow switch, and flow cells and a separate analysis indicating transmitter (AIT). The AE shall measure Total Chlorine Residual and pH. The AIT shall then indicate and transmit analog signals proportional to each parameter.

1. Transmitter Performance:

    a. Provide signal conditioning and conversion for up to two analysis sensors.

    b. Dual, isolated analog outputs configurable for linear or logarithmic proportionality.

    c. Built-in self-diagnostics.

    d. Three individually programmable alarm contacts (two process level, one system fault).

    e. Operating temperature range: -20 to 60 degrees C.

2. Chlorine Sensor Performance:

    a. Measurement Range: 0-20 ppm.

    b. Response time: 100 seconds for 90% step change.

3. pH Sensor Performance:

    a. Equipped with Pt 1000 ohm RTD for temperature compensation.

    b. Measurement Range: 0-14.

    c. Accuracy: +/- 0.1% of span.

4. Ratings:

    a. NEMA 4X transmitter enclosure

5. Electrical:

    a. 120 V AC, 60 Hz supply

    b. Alarm contacts: SPDT dry contacts rated for 5A resistive at 24 V DC and 120 V AC.

    c. Graphic dot matrix LCD display with LED backlighting and with a 240 x 160 pixel resolution

    d. Analog outputs: 4-20 mA DC

6. Sample Line. Provide a pressure reducing valve and flow control valve on the sample influent line.

7. Hach no equal

E. Multi-Function Analyzer/Transmitter. The analysis indicating transmitter (AIT) shall be capable of interfacing with multiple types of sensors (Analysis Element, AE) and then indicating and transmitting signals proportional to each particular parameter.

1. Application:

    a. The AIT shall be used to monitor analysis sensors where shown on the Contract Drawings.

2. Transmitter Performance:

    a. Provide signal conditioning and conversion for up to two analysis sensors.

    b. Built-in self-diagnostics.

    c. Pipe or panel mount.

    d. Operating temperature range: -20 to 55 degrees C.

3. Ratings:

    a. IP65 transmitter enclosure.

4. Electrical:

    a. 120 V AC, 60 Hz supply.

    b. Display: 4.5” x 3.4” TFT touch screen with backlighting and 320 x 240 pixel resolution.

c. Dual 4-20 mA outputs.

5. Manufacturer/Model:

   a. Hach model sc4500.

   b. Approved equal.

2.04 Discrete Instruments

A. Level Switch, Float. The level switch shall be a direct acting, weighted float suspended on its own cable. As the liquid level rises the float tilts and actuates a hermetically sealed switch inside the float. The cable shall be terminated within a junction box located outside the tank or basin. For multiple float applications, all cables shall terminate in a single junction box.

1. Materials:

   a. Float wetted part – Polypropylene

   b. Cable – PVC jacketed

   c. Junction box – 316 SS

2. Ratings:

   a. Junction box – NEMA 4X

   b. NSF approved for potable water.

3. Electrical:

   a. Dry contact rated to 4.5 Amps at 120 VAC

   b. Normally open or normally closed as required for the application

4. Options

   a. Provide stainless steel hanging bar. Attach the float cables to the bar using Kellum grips.

   b. Provide other supports/mounting accessories as required.

5. Manufacturer, model:

   a. Anchor Scientific, Eco-float type G

   b. Approved equal.

B. Flow Switch. The flow switch shall use thermal dispersion and be capable of monitoring low flow rates in viscous fluids. The sensor head employs two temperature sensors with a constant low power heating source attached to one. The other temperature sensor compensates for process temperature changes. The difference in temperature between the two sensors varies with flow. Alternate flow switches to those specified that employ physical deflection to detect flow will not be acceptable except for clean water applications.

1. Performance:

    a. Operating Temperature – 0 to 65 degrees C

    b. Operating pressure – Up to 500 psig

    c. Response time – less than 5 seconds

    d. Adjustable setpoint down to 0.01 feet/second in liquid and 0.1 feet/second in air.

2. Physical:

    a. Spherical tip suitable for wastewater applications.

    b. Insertion length suitable for monitored pipe's diameter. Specifically identify proposed insertion lengths in shop drawing submittal.

3. Materials:

    a. Sensor Head – 316L stainless steel.

4. Ratings:

    a. Electrical Class – UL approved explosion proof

    b. Electronic enclosure – NEMA 4X.

5. Electrical:

    a. Power Requirement - 120 VAC plus or minimum 10 percent, 60 Hertz.

    b. Maximum Power Consumption – 5 Watts

    c. Output – DPDT relay contact rated 10 Amps resistive at 120 VAC.

6. Manufacturer, model:

    a. Magnetrol, model TD2

    b. Approved equal

2.05 Test Equipment And Special Tools

A. Provide a hand held programmer suitable for calibrating the pressure transmitters.

2.06 Spares And Expendables

A. Provide the following spare parts:

1. One spare analysis sensor of each type used.

2. Ten percent spare fuses (minimum of 10) of each type and rating supplied.

3. Five percent (minimum of 2) spare surge protection devices of each type used.

B. Provide the following expendables:

1. One year's (or shelf life worth if less than one year) supply of buffer and reagents used for analyzers

3. EXECUTION

3.01 INSTALLATION

A. Install the PICS field instruments in strict accordance with the respective manufacturer's instructions and recommendations, in locations as shown on the Drawings, and as indicated on the installation details of the Drawings.

B. Fully calibrate each instrument.

C. Provide surge protection enclosures to the electrical sub-contractor for mounting and installation. The enclosures shall be fully wired internally. Coordinate grounding requirements with Division 16, Electrical.

3.02 TRAINING

A. On-site (field) training shall be conducted at the OWNER's plant site and shall provide detailed hands-on instruction to OWNER's personnel covering all supplied field instruments.

B. Training shall include:

1. calibration procedures.

2. preventive maintenance methods and timing.

3. fault-finding techniques.

C. The training shall run at times chosen by the OWNER over a period of two (2) months as follows:

END OF SECTION

SECTION 13315

PROCESS INSTRUMENTATION AND CONTROL SYSTEM CONTROL PANELS

1. GENERAL

1.01 Scope Of Work

A. This Specification Section covers work related to the control panels and enclosures to be supplied with the Process Instrumentation and Control System (PICS).

B. The control panels, as specified herein, shall be furnished by the same SYSTEM SUPPLIER furnishing services and equipment as defined under Specification Section 13300.

C. The SYSTEM SUPPLIER shall design, furnish and install all interior wiring within the control panels and furnish complete wiring diagrams showing the electrical circuits inside the panel and interconnections between the panel and the external instruments and components.

D. Size control panel(s) to adequately dissipate heat generated by equipment mounted inside or on the panel front face.

1.02 Related Work

A. Specification Section 13300 defines work associated with the overall PICS,

B. Programmable Logic Controllers (PLC) are to be mounted in control panels hereunder. PLC are defined in Specification Section 13325.

C. The panels defined hereunder are installed under Division 15, Mechanical.

1.03 Submittals

A. Submit the following control panel shop drawings in a single package:

1. Layout diagrams for all control panels and enclosures. Include panel elevations

(front, side, interior), and sizing. Panel front elevations shall be of sufficient scale to allow all engraved nameplates and inscriptions to be legible without the use of schedules.

2. A complete Bill of Materials for each panel cross-referenced to the panel layout drawings and identifying the manufacturer and complete part number of all components.

3. Wiring diagrams for all control panels. Diagrams shall be complete electrical wiring diagrams showing all components and all auxiliary devices such as relays, alarms, fuses, lights, fans, heaters, etc. All wires and terminals shall be numbered on the diagrams, and line cross-references shall be labeled. Include wiring interface to the PLCs where applicable. Include on these drawings a tag number to identify each component and referenced to a component identification list.

4. Data sheets for all components. The data sheets shall be marked to indicate those portions applicable to the components to be furnished.

5. Power requirements and heat dissipation summary for all control panels. Power requirements shall state required voltages, currents, and phase(s). Heat dissipations shall be maximums and shall be given in Btu/hr. The summary shall be supplemented with calculations.

2. PRODUCTS

2.01 General Requirements

A. Equipment to be installed in a hazardous area shall meet Class, Group, and Division classification as shown on the Contract Electrical Drawings, or comply with the local or National Electrical Code, whichever is the most stringent requirement.

B. Electronic equipment shall utilize printed circuitry suitably coated to prevent contamination by dust, moisture and fungus. Solid-state components shall be conservatively rated for their purpose, to assure optimum long-term performance and dependability over ambient atmosphere fluctuations and 0 to 100 percent relative humidity. The field mounted equipment and system components shall be designed for installation in dusty, humid, and slightly corrosive service conditions.

C. All equipment shall be designed to operate on a 60-Hertz alternating current power source at a normal 120 volts, plus or minus 10 percent, except where specifically noted. All regulators and power supplies required for compliance with the above shall be provided between power supply and interconnected instrument loop. Where equipment requires voltage regulation, constant voltage transformers shall be supplied.

D. All equipment, cabinets and devices furnished hereunder shall be heavy-duty type, designed for continuous industrial service. The system shall contain products of a single MANUFACTURER, insofar as possible, and shall consist of equipment models which are currently in production.

E. The equipment furnished shall be designed to operate satisfactorily between 0 degrees C and 40 degrees C for indoor panels and 50 degrees C for outdoor panels at up to 95 percent Relative Humidity (non condensing).

F. Except where specifically noted otherwise, all outdoor panels and enclosures containing electronic or electrical components shall be equipped with sunshields on both sides, the front, the back and the top with a minimum separation of one inch and a maximum separation of one and one-half inches. Sun shields shall be 14 gauge Stainless Steel or 12 gauge Anodized Aluminum or thicker. Finish with reflective white, two part epoxy coating or reflective, white, polyester powder deposited coating.

G. All outdoor control panels and enclosures shall be equipped with 3 ½" stainless steel mounting uni-struts across the width of the back. For free-standing panels the struts shall be located half-way up the panel and six inches from the top. For other panels they shall be located 3" from the top and 3" from the bottom.

H. All switches shall have double-pole, double-throw contacts rated at a minimum of 600 volts-amperes (VA), unless specifically noted otherwise.

I. All equipment shall be designed and constructed so that in the event of a power interruption, the equipment specified hereunder shall resume normal operation without manual resetting when power is restored.

J. All discrete inputs entering the panel shall be wetted by 120 VAC. Provide isolation relays if necessary to accommodate this requirement.

K. All discrete output signals shall be equipped with interposing relays to electrically isolate them from the control system I/O.

L. Provide signal isolators for analog signals leaving the building.

2.02 Lightning/Surge Suppression

A. Surge suppressors and arrestors meeting the requirements of ANSI Standard C-62.41 (latest revision) shall be provided as further detailed below.

B. DC Signals. Lightning and surge protection shall be provided on all DC signal wires entering or leaving the panel. The protectors shall meet the following criteria:

1. 35 mm DIN rail mounted with spring terminals.

2. Response time of less than one nanosecond.

3. Operating signal current: up to 0.5 A

4. Capable of withstanding 5,000 Amps at IEEE/ANSI C-62.41 8 x 20 microseconds combination wave.

5. Nominal series resistance of less than 2 ohms each leg

6. Manufacturer/model:

    a. Dehn DCO RK ME

    b. Approved equal.

C. AC Signals. Lightning and surge protectors for all incoming 120 VAC discrete signals lines shall meet the following criteria:

1. Serial protection.

2. Nominal operating voltage: 120 VAC 47/63 Hz.

3. Response time of less than 0.25 nanoseconds.

4. Capable of withstanding up to 40,000 Amps at IEEE/ANSI C-62.41 8 x 20 microseconds combination wave.

5. Manufacturer/model:

    a. Phoenix Contact 2906840

    b. Approved equal.

D. Single phase AC Power. Lightning and surge protectors for AC power supply lines up to 15 Amps service shall meet the following criteria:

1. Serial protection with replaceable fuse.

2. Failure indicator.

3. Response time of less than five nanoseconds.

4. Capable of withstanding up to 10,000 Amps at IEEE/ANSI C-62.41 8 by 20 microseconds combination wave.

5. Manufacturer/model:

    a. EDCO HSP121BT

    b. Approved equal.

E. Single phase AC Power (over 15Amps). Lightning and surge protectors for AC power supply lines over 15 Amps service shall meet the following criteria:

1. Parallel protection using MOVs and thermal fusing technology.

2. Failure indicator

3. Response time of less than five nanoseconds.

4. Capable of withstanding up to 6,500 Amps at IEEE/ANSI C-62.41 8 x 20 microseconds combination wave.

5. Manufacturer/model:

   a. EDCO FAS-120AC

   b. Approved equal.

F. Three phase AC Power. Lightning and surge protectors for 480 VAC power supply lines shall meet the following criteria:

1. Designed specifically for three phase 480/277 VAC wye connected power supply lines.

2. Wall mountable IP66/NEMA 4x stainless steel enclosure.

3. Failure indicators.

4. Response time of less than twenty-five nanoseconds.

5. Capable of withstanding up to 50,000 amp surge current per phase.

6. Manufacturer/model:

   a. Phoenix Contact SYSTEMTRAB 2800718.

   b. Approved equal.

2.03 Control Panels

A. Dewatering Screw Press Control Panel (DSPCP) by the PCS:

1. Enclosure shall be NEMA 4X Stainless Steel with AC unit, containing PLC equipment defined in Specification Section 13325.

2. DSPCP shall include an integral UPS and battery with 30 minutes minimum full load capacity.

3. DSPCP shall be 3 phase 480 VAC with circuit breakers, VFDs, Starters, power and signal surge protection.

4. DSPCP shall include fiber optic network interface.

B. Dewatered Sludge Cake Pump Conveying Control Panel (CCCP) by Division 11 supplier:

1. Enclosure shall be NEMA 4X Stainless Steel with AC unit, containing PLC equipment defined in Specification Section 13325.

2. CCCP shall include an integral UPS and battery with 30 minutes minimum full load capacity.

3. CCCCP shall be 3 phase 480 VAC with circuit breakers, VFDs, Starters, power and signal surge protection.

4. CCCP shall include fiber optic network interface.

C. Control Panels by SYSTEM SUPPLIER:

1. Process Control Panel PCP-1. The following components are required:

a. Enclosure shall be NEMA 4X Stainless Steel with AC unit, containing PLC equipment defined in Specification Section 13325.

b. PCP-1 shall include an integral UPS and battery with 30 minutes minimum full load capacity.

c. PCP-1 shall be single phase 120VAC with circuit breakers, power and signal isolators and surge protection.

d. PCP-1 shall include fiber optic network interface.

2.04 Control Panels and Enclosures

A. Finish:

1. All front panel openings for panel-mounted equipment shall be cut with counter-boring and provided with trim strips as required to give a neat finished appearance.

2. With the exception of stainless steel panels, all steel panel surfaces shall be treated with phosphatized treatment inside and out, and then finished on the exterior with two coats of baked enamel of the approved color. Interiors of panels shall be white, ANSI No. 51.

3. Stainless steel panels shall be No. 7 polished, 316 stainless steel.

B. Doors:

1. All control panels shall have a continuous piano hinge door for ease of access. A minimum of 80% of the panel interior shall be exposed by doors.

2. NEMA 4X rated panel door openings shall be sealed and fully gasketed.

3. The inside of each door shall be equipped with a print pocket. Provide individually laminated 11x17 sheets for all wiring diagrams.

4. Two-door enclosures shall have a removable center post.

5. Sealed panel doors shall be equipped with quick-release latches.

6. NEMA 1 rated panel doors shall be equipped with a three-point latching mechanism.

7. Where noted or shown on the drawings, doors shall be equipped with a fully gasketed glass window to allow viewing of internally mounted devices without opening the door.

C. All components and terminals shall be accessible without removing other components except for covers.

D. All conduit entry shall be from the bottom only.

E. No components shall be mounted on the interior sides of any panel.

F. All panels shall be provided with an isolated copper grounding bus to ground all signal shield connections.

G. Control Panels containing PICS control system equipment shall each be equipped with an internal, hand-switch controlled, LED light and 120V, 15 amp, duplex utility receptacle.

H. All panels shall be provided with laminated as built electrical wiring diagrams in each panel.

I. Nameplates:

1. All front-face panel mounted controls and indicators shall be equipped with 10-year outdoor-rated adhesive laminated plastic nameplates to completely define their use. Provide Brady Type BBP31 or BBP33 as applicable or approved equal.

2. All internal components shall be equipped with identification tags

3. Each wire shall be uniquely identified and shall be labeled.

J. Power Supplies.

1. Uninterruptible power supplies (UPS) shall be provided in all control panels as follows:

a. Size the supplies for all internal equipment plus an additional 20% spare capacity.

b. Provide 15 minutes battery back-up capability at full load.

c. Provide relay option card for indication of “On UPS Power” and “Low Battery Level”.

d. For outdoor panels provide an UPS and battery rated for operation at up to 50 degrees C.

2. Provide two diode-auctioneered DC power supplies for analog signal use.

3. Provide individually fused DC power for field transmitters.

K. Electrical:

1. Main circuit breaker and branch circuit breaker for each branch circuit as required to distribute power from the main power feed.

2. All breakers accessible when the panel door is open.

3. No more than 20 devices on any single circuit.

4. No more than 12 amps for any branch circuit.

5. Panel (or site) lighting, receptacles, heaters, controls, telemetry and fans on separate branch circuits.

L. Wiring:

1. Power wiring shall be 300 volt, type MTW stranded copper, No. 14 AWG size, for 120V service.

2. Discrete wiring shall be 300-volt type MTW stranded copper, sized for the current carried, but not smaller than No. 16 AWG.

3. Analog signal wiring shall be 300 volt, stranded copper in twisted shield pairs, no smaller than No. 16 AWG.

4. Panel wiring shall be routed within wire troughs or panduits.

5. Hinge wiring shall be secured at each end with the bend portion protected by a plastic sleeve.

6. Analog or dc wiring shall be separated from any ac power or control wiring by at least six inches.

7. Terminal blocks shall be provided for all field wiring entering the panel. The greater of 4 or 15% spare terminal blocks shall be provided.

8. No more than one wire per screw and yoke termination.

M. Construction:

1. Minimum metal thickness: 14-gauge.

2. Stiffeners as required to prevent deflection under instrument loading and permit

lifting without racking or distortion.

3. When required, removable lifting rings and fill plugs to replace rings after installation.

N. Miscellaneous Equipment:

1. All panels shall be protected from internal corrosion by the use of corrosion – inhibiting vapor capsules, Northern Instruments Model Zerust VC, Hoffman, model A-HCI, or equal.

2. All sealed panels shall be equipped with combination drain/breathers, Crouse-Hinds model ECD18; or equal.

3. When noted on drawings, panels shall be equipped with thermostatically controlled space heaters to maintain internal temperatures above dew point.

O. All panels shall be manufactured items, Hoffman Engineering, or equal.

2.05 Front Panel Devices

A. Potentiometer. Units shall meet the following:

1. Three-terminal potentiometers with a total resistance of 1000 ohms and a power dissipation rating of 2 watts

2. Oil-tight construction, rated NEMA 13

3. Resolution of 1 percent, and linearity of plus or minus 5 percent.

4. Panel mounting accommodating panel thickness between 1/16 to ¼ inch.

5. Legend plates with marking as noted.

6. Allen-Bradley, type 800T, or equal.

B. Selector Switch. Units shall meet the following:

1. Heavy-duty, oil-tight, industrial type selector switches rated for NEMA 4 service.

2. Contacts rated for 120-volt ac service at 10 amperes continuous.

3. Number of positions and contact arrangements as required.

4. Factory-engraved legend plate indicating position definition.

5. Panel mounting accommodating panel thickness between 1/16 to ¼ inch.

6. Black knob type operator.

7. Square D Class 9001, Type K; Allen-Bradley type 800T, or equal.

C. Pushbutton. Units shall meet the following:

1. Heavy-duty, oil-tight, industrial type push buttons rated for NEMA 4 service.
2. Contacts rated for 120-volt ac service at 10 amperes continuous.
3. Number of positions and contact arrangements as required.
4. Factory-engraved legend plate indicating function.
5. Panel mounting accommodating panel thickness between 1/16 to ¼ inch.
6. Operator: Red extended head for STOP, green flush head for START, black flush head for other functions.
7. Square D Class 9001, Type K; Allen-Bradley type 800T, or equal.

D. Indicating Light. Units shall meet the following:

1. Heavy-duty, oil-tight, push-to-test industrial type with integral transformer for 120V AC application.
2. Rated for NEMA 4 service.
3. Screwed on flat-faced lenses in colors shown on the drawings.
4. Factory-engraved legend plates.
5. Square D type K, Allen-Bradley Type 800T, or approved equal.

2.06 Internal Panel Components

A. Control/Interposing Relays: All relays shall meet the following:

1. Compact, general-purpose, plug-in type.
2. Socket mounted.
3. Contacts rated for not less than 10 amperes at 120V.
4. Equipped with neon status lights and test buttons.
5. Permanent, legible identification
6. Potter & Brumfield series KRPA or approved equal.

B. Time Delay Relay. Time delay relays shall meet the following:

1. Available functions: On delay, Off delay, or one shot.
2. Socket mounted.
3. Knob adjustment.
4. Contacts rated for not less than 10 amperes at 120V.
5. Timing range as appropriate for the application.
6. Magnecraft series W211 or approved equal.

C. Terminal Blocks. Terminal blocks shall meet the following requirements:

1. Terminals capable of accepting 10-26 AWG wire.
2. DIN-rail mounting.
3. Connectors shall be either copper or steel. Use of aluminum connectors shall not be permitted without prior approval of the Engineer
4. Phoenix Contact or approved equal.

2.07 Spares and Expendables

A. Provide the following spare parts:

1. One spare d.c. power supply of each type provided.
2. Five spare relays of each type provided.
3. Two spare surge protection devices of each type provided

B. Provide the following expendables:

1. Two year supply of corrosion inhibitor capsules
2. Ten spare fuses of each type and rating supplied.
3. Ten spare indicator light bulbs of each type and color supplied.

3. EXECUTION

3.01 Installation

A. Control Panels shall be installed at the locations indicated on the Contract Drawings.

B. Control panels shall be provided to the mechanical subcontractor for installation.

C. Verify the correct installation of all panels supplied under this Specification Section.

END OF SECTION

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SECTION 13325

PROCESS INSTRUMENTATION AND CONTROL SYSTEM PLC SUBSYSTEM HARDWARE

1. GENERAL

1.01 Scope of Work

A. This Specification Section covers work related to the PLC subsystem hardware for the Process and Instrument and Control System (PICS).

B. The work specified herein shall be furnished by the same SYSTEM SUPPLIER furnishing services and equipment as defined in 13300.

1.02 Related Work

A. Related work specified elsewhere includes:

1. Specification Section 13300 defines work associated with the overall PICS.

2. The PLCs will be mounted in control panels under Specification Section 13315.

3. Specification Section 13326 defines programming requirements for the equipment specified herein.

1.03 Submittals

A. Provide the following submittals specific to the work defined herein:

B. A PLC hardware shop drawing package that includes the following:

1. Block Diagram: A detailed system block diagram showing all major components. Identify components by model number. Show interconnecting cables diagrammatically (by type and size).

2. Bill of Materials: A list of all components, including all software. Group components by type and include component model number and part number,

component description, quantity supplied, and reference to component catalog information.

3. Descriptive Information: Catalog information, descriptive literature, performance specifications, internal wiring diagrams, power and grounding requirements, power consumption, and heat dissipation of all elements. Clearly mark all options and features proposed for this project.

4. Installation Details. Equipment installation drawings showing external dimensions, enclosure material and spacing, mounting connections, and installation requirements.

2. PRODUCTS

2.01 General Requirements

A. All equipment, cabinets and devices furnished hereunder shall be heavy-duty type, designed for continuous industrial service. The system shall contain products of a single MANUFACTURER, insofar as possible, and shall consist of equipment models which are currently in production. All equipment provided shall be of modular construction and shall be capable of field expansion through the installation of plug-in circuit cards or additional cabinets.

B. The equipment furnished shall be designed to operate satisfactorily between 0 degrees C and 40 degrees C at up to 95 percent Relative Humidity (non-condensing).

C. All equipment furnished shall be designed and constructed so that in the event of power interruption, or temperatures outside the operational range, the equipment specified hereunder shall go through an orderly shutdown with no loss of memory, and resume normal operation without manual resetting when power is restored.

2.02 Programmable Logic Controller (PLC)

A. PLC shall be implemented using Allen Bradley CompactLogix modules. No other PLC series will be considered. Modules shall be selected from the following list:

1. Central Processor Unit (CPU). Each CPU shall be Allen-Bradley CompactLogix 5069-L320ER or approved equal. A minimum of 2 Mbytes of RAM memory shall be installed. However, the actual amount of memory supplied shall be sufficient to provide 20% unused capacity when the entire PLC program, as provided, is loaded and running. Provide battery back-up sufficient to maintain memory integrity for a minimum of 24 hours to eliminate the need for down-loading system programs from the host computer following temporary (short-term) power failures.

2. Each PLC (CPU) shall include bus power supply for CPU and IO modules (MOD) and another bus power supply for field devices (SA). AC and DC devices should be on isolated SA power buses. Provide 5069-FPD Compact I/O Field Potential Distributor Module and terminal kits.

3. End Cap. Each PLC (CPU) bank shall expanded within the PCP, when required by manufacturer's design, to additional local (I/O) banks by use of CompactLogix additional power supplies. 5069-FPD Compact I/O Field Potential Distributor Module shall be use as required for IO module power supply. Terminate last I/O bank with appropriate 5069 end cap: 5069-ECR(right side).

4. Process interface modules. All I/O modules shall be provided with screw-type terminal blocks with barriers between adjacent terminals for connection of field inputs. Terminals shall be suitable for accepting up to and including No. 14 AWG wire. All terminals shall be provided with unique identification in accordance with approved loop interconnection diagrams. Furnish input/output modules sufficient to accommodate the inputs/outputs shown on the Process and Instrumentation Diagrams contained in the Contract Drawings plus an additional 15% spares of each type. The spares shall be supplied fully wired such that it is only necessary to add field wiring and update the PLC database in order to activate them. The requirements for each type of module are:

5. 120VAC Discrete input modules. The module inputs shall be isolated from the PLC and designed to withstand transients and surges without damage. Light emitting diodes, (LED's), one for each input, shall be provided to indicate a closed contact condition. Provide Allen Bradley model 5069-IA16 or approved equal

6. Analog input modules. Analog input modules shall include isolated analog inputs and accept differential and/or single ended 4-20 mA dc inputs from field mounted transmitters. Common mode input protection of 30 V. DC minimum shall be provided. Input signal A/D conversion shall be a minimum of 16-bits, with an accuracy of one bit. Provide Allen Bradley model 5069-IF8 series B or approved equal.

7. Discrete output modules. Isolation resistance shall be 1,000 ohms minimum at 300 V. DC between any set of field terminals and any other set or earth ground. Isolation voltage shall be 500 V. AC rms minimum between any set of field terminals and any other set or earth ground. Light-emitting diode status indication shall be provided adjacent to each contact output to indicate a closed contact condition. Provide Allen Bradley Relay output modules 5069-OW16 or approved equal.

8. Analog output Modules. Analog output modules shall provide isolated 4-20 mA dc signals to adjust set points of local process control stations, pump speed, valve positions, etc. Output load drive capability shall be 750 ohms minimum for each output. There shall be separate D/A conversion circuits for each output which shall convert 16-bit data words into output signals with an accuracy of +/- 1 bit over the full scale output span. Response to station or communication system failure shall be selectable such that upon failure the output would either remain at the last

value, or go to zero (4mA), as required by the process. Provide Allen Bradley model 5069-OF8 or approved equal.

9. All I/O modules shall be provided with manufactured terminal blocks and cables to interconnect with field termination points.

10. All analog IO signals leaving the building shall be provided with analog signal isolators.

B. Communication Module :

1. Protocol Converter. Converts Ethernet/IP to Modbus TCP/IP protocols. Prosoft Technology, Anybus, Red Lion or approved equal.

2. Media Converter. Converts copper Ethernet media to fiber optic media. Moxa or approved equal.

C. Ethernet Switch. The switch shall be an industrialized, hardened metal DIN-rail mountable enclosure meeting the following requirements:

1. Sufficient fiber and copper ports to support all necessary connections (including future) together with at least two spare ports of each type. Additional Ethernet Switches if needed.

2. Operating Temperature: Up to 80 degrees C.

3. Power Supply – Dual redundant 10-49 Volts DC.

4. Appropriate SFP transceivers installed.

5. Surge protection on power inputs and ports leaving the building.

6. Manufacturer:

a. Allen Bradley (Stratix 5400)

D. Operator Interface Terminal. (OIT). The OIT shall be a front panel mounted PC. It shall be connected to its associated PLC and combatable with its hardware, software and communication protocol. It shall provide operator interface for monitoring and controlling all equipment connected to the associated PLC. It shall meet the following requirements:

1. 15 inch, full color resistive touch screen graphical display.

2. Ethernet/IP communication.

3. VTSCADA Graphic Terminal (VGT)

E. Software: Provide Rockwell Studio 5000 Designer programming software.

2.03 Spares and Expendables

A. Provide the following spare parts:

1. One of each PLC module including CPU.
2. One of each I/O module
3. One of each communication module
4. One of each power supply type

3. EXECUTION

3.01 Training

A. Hardware Maintenance: Provide a minimum of one day of hardware training for up to three of the OWNER's personnel in the maintenance of the PICS hardware which shall include:

1. Training in standard hardware maintenance for the equipment provided.
2. Specific training for the actual hardware configuration to provide a detailed understanding of how the equipment and components are arranged, connected, and set up.
3. Test, adjustment, and calibration procedures.
4. Troubleshooting and diagnosis.
5. Component removal and replacement.
6. Periodic maintenance.

B. Software Maintenance: Provide a minimum of one day of software training for up to four of the OWNER's personnel in the maintenance and use of the PICS software.

C. Operator Training. Provide a minimum of one day of training for up to six of the OWNER's personnel in the operation and use of the operator screens.

END OF SECTION

SECTION 13326

PROCESS INSTRUMENTATION AND CONTROL SYSTEM PROGRAMMING

1. GENERAL

1.01 Scope of Work

A. This Specification Section covers work related to programming the PLC and OIT equipment furnished under other sections of these specifications.

B. The Work specified herein associated with PCP-1 shall be performed by the SYSTEM SUPPLIER defined in Specification Section 13300.

1.02 Related Work

A. Specification Section 13300: General Requirements.

B. Specification Section 13325 defines requirements applicable to the equipment to be programmed hereunder.

1.03 Submittals

A. Provide an application programming design package that illustrates each individual control strategy using a program flow chart or written description. The descriptions shall also include details of all formulae to be used (e.g. chemical feed, flow paced, etc.). This submittal shall be Approved or Approved As Noted prior to any PLC programming Work. Simply repeating the descriptions provided herein shall not be acceptable.

B. Provide an OIT programming submittal with copies of all proposed operator graphic screens accompanied by descriptions of the method of operator interaction.

C. Provide a final documentation package that includes:

1. Licenses in the Owner’s name for PLC and, where applicable, OIT programming software.

2. Final copies of all programming files on Compact Disk

3. A complete printout of all “Annotated” PLC program logic.

2. PRODUCTS (NOT USED)

3. EXECUTION

3.01 PLC Programming – General Monitoring

A. Provide the following general monitoring functions for analog inputs:

1. For all analog inputs (pseudo and real):

   a. Provide out of range alarms if the input signal goes outside the instrument’s range

   b. Provide individually operator adjustable emergency high and low alarms when the value goes outside the allowable process range.

   c. Provide individually operator adjustable high and low alarms when the value goes outside the normal process operating range.

   d. Provide a dead-band on all alarm settings.

   e. Issue Return-to Normal alarms whenever the signal returns to within limits.

2. For all flow related analog inputs:

   a. Monitor for and record minimum and maximum daily 5-minute average values. Record the date and time of occurrence for each.

   b. Accumulate a running daily total flow. At midnight, transfer the total to yesterday’s total and restart from zero.

   c. Calculate a running daily average flow. At midnight, transfer the value to yesterday’s average and restart the averaging.

3. For all level and pressure related analog inputs:

   a. Monitor for and record minimum and maximum daily values. Record the date and time of occurrence for each.

4. For all analysis analog inputs:

   a. Monitor for and record minimum and maximum daily values. Record the date and time of occurrence for each.

b. Calculate a running daily average reading. At midnight, transfer the value to yesterday's average and restart the averaging.

B. Provide the following general monitoring functions for discrete inputs:

1. For all discrete inputs:

2. Indicate but do not alarm when a discrete signal changes, as expected, as a result of a control command.

3. Alarm whenever an un-commanded change of state occurs

4. For all local control switch position feedback discrete inputs:

5. Issue an advisory alarm to the operator whenever a position change is detected

6. Exclude from any control strategy any equipment whose local switch position precludes control. If an operator attempts to control the device through the system, issue a message indicating that the control cannot be accomplished together with the reason.

7. For all motorized equipment:

8. Accumulate equipment run times based on the running status feedback discrete input.

9. Reset the run time value to zero only on operator command via the OIT.

10. For all device failure discrete inputs:

11. Issue an alarm when the input indicates a device fault

12. Set a software fault for the controlled device that can only be reset by operator action after the fail signal has been removed.

C. Special Level Monitoring. Based on the level and tank dimensions, continuously calculate the volume of liquid in each storage tank and display on the associated graphic screen.

3.02 OIT Programming

A. Graphic Standards

1. Owner graphic standards shall supersede others. Refer to 1.01 C for owner standards.

2. All operator graphic screens shall include an alarm list at the bottom indicating the most recent alarms colored as defined below under color standards and, at the top, tabs to allow the user to switch to key graphics including the process overview and the alarm list.

3. All graphic screens shall, as closely as possible, depict the actual process equipment in three dimensional symbols with fill color depicting current status in accordance with the graphic standards defined below.

4. For detailed process graphics where the process is continued on or continued from another graphic, software pushbuttons shall be provided to lead to the appropriate other graphic.

5. The owner standard colors shall be used.

6. Operator Actions. Operator control of equipment (e.g. start, stop, change of OIT H/O/A switch, set point adjustment, etc.) shall be accomplished by right-clicking on the appropriate graphic symbol which shall cause a pop-up window to appear providing the operator with the available options.

7. All adjustable values shall be changeable by the operator via the graphic screens.

8. Provide the following general monitoring functions for analog inputs:

    a. For all analog inputs:

        1) Indicate in black text the current value adjacent to the symbol on the graphic.

        2) Provide individually adjustable emergency high and low alarms when the value goes outside the allowable process range.

        3) Provide individually adjustable high and low alarms when the value goes outside the normal process operating range.

        4) Provide a dead-band on all alarm settings.

    b. For all level signals:

        1) Color fill the symbol for the tank or vessel proportionally to indicate the amount contained.

        2) Indicate in text the volume contained.

9. Equipment Status. Color the symbol for each piece of equipment to reflect its current status (e.g. running, stopped, failed, etc.) in accordance with the graphic standards.

10. Equipment Control Status. Adjacent to each piece of equipment indicate its control status, where such is available, as follows:

a. Local Hardware Hand/Off/Auto switch position in context sensitive text: Hand red, Off – black, Auto – green.

b. HMI software Hand/Off/Auto switch position in context sensitive text labeled "HMI": Hand red, Off – black, Auto – green.

11. Set points. Indicate the current value of all set points adjacent to the associated process value. All set points shall be operator adjustable via the process graphics.

B. Graphics

1. Provide the following graphic screens, as further detailed below:

a. Dechlorination Chamber and Mixers

b. Sodium Bisulfate Feed Pumps

c. Chemical Tanks (Polymer and Sodium Bisulfate)

d. Sludge feed Pumps

e. Biosolids Process

2. Plant Overview. No control shall be provided directly from this screen (though pop-up windows are acceptable).

3. Control System. Provide a single system block diagram for the system. Indicate the status of each communication link and, via a separate screen or pop-up window, the status of each PLC module.

C. Other OIT Programming

1. Alarm Log. Provide a log of all alarms issued by the system. The log shall include the date and time of detection. Provide the operator with the ability to sort the displayed log by any combination of the following:

a. Specific equipment.

b. Alarm description

c. Date and time.

2. Trends. Provide trending of all process parameters. Provide the following additional trends:

a. Up to eight comparative trends, each with up to four parameters. The parameters in each shall be as OWNER selected.

3.03 PLC Programming – General Control

A. General Requirements applicable to the control strategies are:

1. All software fault conditions that are set can only be cleared by operator acknowledgement.

2. Wherever in the descriptions the control strategy refers to the operator, it is intended to mean via the Operator Interface Terminal (OIT).

3. All control strategies shall run within the PLC. Data manipulation (calculated analog values, elapsed time functions, event determination) shall be performed by the PLC for the associated equipment it is monitoring. Any resulting values from these manipulations shall be reported as individual registers. The intent is to avoid utilizing the OIT software for this purpose.

4. The control functions described herein are not intended to be complete comprehensive programming logic descriptions. They describe only the general intended control operation required. Provide complete program logic to completely fulfill the functional requirements indicated.

5. Provide all programming necessary to support the functional requirements of the operator graphic screens.

6. Provide complete debugging services to address issues identified by the OWNER or ENGINEER during and after startup until final acceptance.

B. Common Constant Speed Motor Operator Control. For all constant speed equipment, provide an operator controllable software HAND/OFF/AUTO switch and proceed as follows:

1. While the switch is in HAND run the equipment.

2. While the switch is in OFF, stop the equipment and prevent any start commands.

3. While the switch is in AUTO, take start and stop signals from the appropriate automatic control strategy defined herein.

C. Common Variable Speed Motor Operator Control. For all variable speed equipment, provide an operator controllable software HAND/OFF/AUTO switch and SPEED potentiometer and proceed as follows:

1. While the switch is in HAND run the equipment at the speed set by the potentiometer.

2. While the switch is in OFF, stop the equipment and prevent any start commands.

3. While the switch is in AUTO, take start, stop, and speed signals from the appropriate automatic control strategy defined herein.

D. Common Motorized Valve Operator Control. For all valves, provide an operator controllable software OPEN/CLOSE/AUTO switch and POSITION potentiometer where applicable. Proceed as follows:

1. While the switch is in OPEN, open the valve to the position set by the potentiometer.

2. While the switch is in CLOSE, close the valve and prevent any other commands.

3. While the switch is in AUTO, take open, close and position signals from the appropriate automatic control strategy defined herein.

E. Common PLC Fault Logic for VFD/RVSS/OLR Driven Motors:

1. Low Flow:

   a. Flow Switch/Limit Switch – In the event the flow switch fails to open when the pump is called to run, the alarm signal to the VFD/RVSS/OLR shall stop the VFD/RVSS/OLR from running.

   b. Flow Meter – If the flow rate remains below a minimum setpoint entered by the operator on the OIT or HMI, stop VFD/RVSS/OLR from running.

2. High Temp – In the event the motor temperature switch is triggered, the alarm signal to the VFD/RVSS/OLR shall stop the VFD/RVSS/OLR from running.

3. High Discharge Pressure:

   a. Pressure Switch – In the event the high discharge pressure switch is triggered, the alarm signal to the VFD/RVSS/OLR shall stop the VFD/RVSS/OLR from running.

   b. Pressure Indicating Transmitter - If the discharge pressure remains below a minimum setpoint entered by the operator on the OIT or HMI, stop VFD/RVSS/OLR from running.

4. Seal Fail – In the event the motor seal fail switch is triggered, the alarm signal to the VFD shall stop the VFD from running.

5. Fault Lockout – In the event the lockout relay is triggered due to any failure above, the alarm signal to the VFD/RVSS/OLR shall stop the VFD/RVSS/OLR from running.

6. Fault Reset – In failure mode, the pump shall remain in latched alarm state until the failure is no longer active, and lockout relay is reset. If PLC fails to reset the lockout relay after three (3) attempts via OIT, operator shall inspect drives locally to fix fault signals and reset the fault lockout. Operator shall manually restore to normal condition after alarms have been cleared at the VFD/RVSS/OLR.

7. Time Relay – Relay should be set to an operator adjustable time 0-60 sec before system returns online in the event of a failure.

F. Common Motorized Equipment Flow Monitoring. For all motorized equipment provided with a dedicated discharge flow meter, issue an alarm and stop the equipment if the flow fails to reach an operator controllable minimum value within an operator adjustable time of being called to start.

3.04 Specific PLC Automatic Control Strategies

A. Solids and Dewatering Process. Automatic control will be provided by the Process Control Supplier.

B. Sludge Feed Pumps and Valves Control. Automatic control will be provided by the Process Control Supplier.

C. Sludge Feed pumping System (Discharging from Digester to Dewatering Press)

1. The sludge feed pumping system shall operate whenever the dewatering drums are operating and will shut down following a shut down of the dewatering press. The sludge feed pumps motor are controlled by VFDs in the Electrical Building supplied by the contractor. The “range of adjustment” for this will be 15 - 72 Hz.

2. Assign the two sludge feed pumps, one existing and one new, to a DUTY/STANDBY sequence that can be manually overridden by the operator. If any pump is not controllable (i.e H/O/A is OFF, pump is failed), omit it from the sequence. Automatically switch assignments every time sludge pumping stops.

3. In Manual control mode, The Sludge feed pump speed shall be set to a user adjustable speed value.

4. In Automatic flow control mode:

a. Provide the following operator adjustable values:

1) FS – Target discharge flow

2) FD – Percent allowable differential from target discharge flow.

b. Provide a PID control loop to adjust the pump speed to maintain a discharge flow of FS. Disable the PID when the flow reaches FS.

c. If the flow falls to FS-FD for an operator adjustable time, enable the PID until the flow starts to increase (slope positive) then disable the PID again.

d. If the flow rises to FS+FD for an operator adjustable time, enable the PID until the flow starts to decrease (slope negative) then disable the PID again.

e. When the dewatering system calls for pumping, run the DUTY pump after a user adjustable time delay.

f. If a pump fails to start or fails while running, automatically call for the STANDBY pump.

2. E-stop and Dry-Run protection relay for the Sludge feed pumps shall shut down the pump and cause an alarm in the event they are activated.

D. Sludge Feed Transfer valves:

1. The Sludge Feed Transfer valves shall open whenever the sludge feed pump is called to run and close following a stop or shutdown of the sludge feed pump plus a user adjustable time delay.

E. Pump Out Connection Valve. OIT manual control only.

F. Digester Sludge Transfer PS Valve. OIT manual control only.

G. Dechlorination Chamber Mixers. OIT manual control only.

H. Sodium Bisulfate Feed (Dechlorination). This control strategy shall run to eliminate chlorine residual at the Dechlorination Chamber. Establish a DUTY/STANDBY sequence for the pumps that can be manually modified by the operator. Switch the DUTY/STANDBY pump assignment every 24 hours at midnight. Provide an operator controllable software TOTAL TRIM OFF/AUTO switch. Proceed as follows:

1. Provide the following operator adjustable parameters:

a. D – post CCC residual chlorine.

b. T – Trim value.

c. K – scaling factor.

d. P – percentage of effective chemical in the feed solution.

e. AS – Target free chlorine residual level (set to zero).

f. ASH – maximum Dechlorination chamber effluent chlorine residual.

g. ASL – minimum Dechlorination chamber effluent chlorine residual.

2. Run the LEAD pump at a speed given by the following formula:

$$\text{Speed\%} = (D \times T \times K \times F \times 100) / (24 \times P \times Q)$$

Where Q = maximum feed capacity of the pump in g.p.h.
and F = plant discharge flow in m.g.d.

3. Periodically based on an operator adjustable time, check the Dechlorination chamber effluent free chlorine level (AIT-5540). If it is outside an operator adjustable dead band of AS, issue an advisory alarm and increase (chlorine residual too low) or decrease (chlorine residual too high), as appropriate, the dosage, D, by an operator adjustable percentage.

4. When the TOTAL TRIM OFF/AUTO is set to AUTO, check the Dechlorination chamber effluent chlorine residual value every operator adjustable duration (Range: 10-90 minutes, Initial Setting: 15 minutes). If it above ASH or below ASL, issue an advisory alarm and increase (chlorine residual too low) or decrease (chlorine residual too high), as appropriate, T , by an operator adjustable percentage.

5. If the DUTY pump fails to start or fails while running automatically call for the STANDBY pump.

3.05 Programming Acceptance

A. Regardless of any submittal approvals, final acceptance of the system programming will occur during the final Demonstration Test.

B. The ENGINEER/OWNER reserves the right to require minor changes in the graphics and programming during the test.

END OF SECTION

SECTION 13360

PROCESS INSTRUMENTATION AND CONTROL SYSTEM FIBER OPTIC SYSTEM

1. GENERAL

1.01 Scope of Work

A. Work includes furnishing, installing, and testing, fiber optic cable links as defined in the Contract Drawings.

B. The System Supplier defined in Specification Section 13300 shall be responsible for coordinating all aspects of the fiber optic system.

C. All duct bank installation work covered by this specification shall be performed by a SUB-Contractor experienced in fiber optic cable installation.

D. It is the ultimate responsibility of the Contractor to furnish a complete and fully operable system that supports the required functions specified elsewhere. The Contractor is to assume full responsibility for additional costs which may result from unauthorized deviations from the specifications.

E. Equipment found to be defective prior to system acceptance shall be replaced and installed at no additional cost to the Owner.

1.02 Submittals

A. Shop Drawings: Submit, in a single package, catalog information, descriptive literature and drawings for all components of the fiber optic system.

B. Test Procedure: Submit the procedure proposed to be followed during duct bank cable pulls. The procedure shall include data sheets to be used to record cable pull lengths and the attenuation readings before and after installation as defined in Part 3 herein.

1.03 Final Documentation

A. Provide a complete wiring diagram of the entire fiber optic system including termination numbers at all fiber patch panels.

B. Distances and installed attenuation of all fiber runs within the duct bank system.

C. Provide a hard copy of all final documentation and also in electronic format on a Compact Disk.

2. PRODUCTS

2.01 Fiber Optic Cable

A. Provide fiber optic cable for implementing the fiber links required within the system.

B. Duct Bank Cable. The fiber optic cable within the duct bank system shall also meet the following requirements:

1. Six pair (12 strand), or as shown on drawings.
2. OS2 single mode fiber.
3. Number of fibers as defined in the Contract Drawings.
4. Indoor/outdoor rated for underground duct bank installation.
5. All dielectric loose tube.
6. Gel-filled.
7. PE outer jacket.
8. Manufacturer: Belden, Corning or approved equal.

C. Fiber optic cable within buildings shall also meet the following requirements:

D. Non-conductive, plenum rated

1. Type OFNP
2. PVDF outer jacket
3. Manufacturer: Belden, Corning or approved equal.

E. Fiber patch cables shall be manufacturer's pre-fabricated two fiber cables with length as required for the application.

2.02 Fiber Patch Panels

A. Fiber patch panels (FPP) shall be provided at all locations where fiber optic cable enters a building.

B. FPP located outside shall be NEMA 4X 316 Stainless Steel lockable enclosures.

C. FPP located indoors shall be NEMA 12 steel lockable enclosures.

D. FPP shall contain one or more housings with sufficient quantities of ST compatible adaptor panels to accommodate all fibers terminating within the FPP. This requirement includes all dark fibers.

E. The housing shall be equipped with strain relief for the cables and shall have a lockable access door.

F. Provide Siecor WCH housing with CCH connector panels or approved equal

3. EXECUTION

3.01 Installation

A. Install materials and equipment in a workmanlike manner utilizing craftsmen skilled in the particular trade. Provide work which has a neat and finished appearance. Coordinate the work with the Owner and work of other trades to avoid conflicts, errors, delays, and unnecessary interference with operation of the existing plant during construction.

B. Install suitably sized innerduct in all duct bank conduits. Exposed innerduct shall be labeled with fiber optic warning labels where they enter the duct bank and every three feet in between.

C. All conduit within buildings shall be labeled every six feet with fiber optic warning labels.

D. All cables within fiber patch panels shall be clearly labeled with destination.

E. Install all duct bank fiber cable runs in accordance with the manufacturers recommendations and including:

1. Use manufacturer approved cable lubricant.

2. Use a pulling winch that continuously monitors and records the pull tension.

3. Note from the distance markers on the cable the exact length of each installed run and record the information.

F. All pulling equipment and hardware that will contact the cable shall be sized to maintain the cable’s minimum bend radius.

G. Do not utilize a figure-of-eight machine for installation without prior written confirmation of compatibility from both the machine and cable manufacturer.

3.02 Testing

A. Measure the attenuation of the fiber optic cable prior to installation and determine the average attenuation per foot.

B. Following installation, measure the attenuation of each run and compare the attenuation per foot readings with those taken prior to installation. Replace any runs whose attenuation per foot reading is more than 10% higher than the pre-installation value.

C. Provide all special testing materials and equipment.

D. Coordinate all testing with the Contractor, the Engineer, all affected suppliers, and the Owner.

E. The Engineer reserves the right to test or retest any and all specified functions whether or not explicitly stated in the approved test procedures. The Engineer's decision shall be final regarding the acceptability and completeness of all testing.

END OF SECTION

SECTION 15000

MECHANICAL - GENERAL REQUIREMENTS

1. GENERAL

1.01 Description

A. Scope of Work

1. Furnish all labor, materials, services, supplies, tools, equipment, transportation and facilities necessary to install complete and operable all mechanical equipment as shown on the Contract Drawings and specified in this Division.

2. The Contractor shall coordinate all details of the equipment with other related parts of the Work, including verification that all structures, piping, wiring, and equipment components are compatible.

3. The Contractor shall be responsible for all structural and other alternations in the Work required to accommodate equipment differing in dimensions or other characteristics from that contemplated in the Contract Drawings or Technical Specifications.

4. The Work includes, but is not necessarily limited to, the following:

   a. All treatment facility process equipment.

   b. Plumbing fixtures, trim, fittings, and equipment.

   c. Air filtration equipment and accessories.

   d. All electrical devices required for proper operations of equipment, including motors, starters, control devices, contactors, etc.

   e. Vibration isolation equipment, devices and accessories.

   f. Start-up and adjusting.

   g. Piping, valve and equipment identification.

   h. Manuals, charts and instructions, guarantees and warranties.

B. Contract Drawings and Specifications

1. The Contract Drawings and Specifications shall be considered as complementary, one to the other, so that materials and work indicated, called for, or implied by the one and not by the other shall be supplied and installed as though specifically called for by both.

2. The Contract Drawings are to be considered diagrammatic, not necessarily showing in detail or to scale, all of the equipment or minor items.

3. In the event of discrepancies between the Contract Drawings and the Specifications, or between either of these and any regulations or ordinances governing work of this Division, the Bidder shall notify the Engineer in ample time to permit clarification and correction before submitting a Bid.

4. It is the intent of the Contract Drawings and Specifications to obtain a complete and satisfactory installation. The mechanical and electrical drawings are diagrammatic (not necessarily showing in detail or to scale, all of the equipment or minor items), but are not to be followed as closely as the actual construction of the building and the work of other trades will permit.

5. The Contractor shall carefully examine the civil, structural and mechanical drawings and specifications in addition to the electrical and other related trades and sections.

6. The structural drawings shall take precedence over the mechanical and electrical drawings with reference structure construction and dimensions. The mechanical and electrical drawings are diagrammatic but are to be followed as closely as the actual construction of the structures and the work of other trades will permit.

7. All changes from the Contract Drawings necessary to make the work conform with the structures constructed and to fit the work of other trades or to the rules of the bodies having jurisdiction shall be made by the Contractor at his own expense. The Contractor shall provide shop, installation and detail drawings where necessary to supplement the Contract Drawings.

8. The Drawings indicate in diagrammatic form, the arrangements desired for the equipment fixtures, principal apparatus, equipment, etc., and shall be followed as closely as possible. However, the Contractor shall include any additional conduit, boxes and wiring due to structural or other obstructions at no additional cost to the Owner.

C. Safety Requirements

1. In addition to the components specified and shown on the Contract Drawings and necessary for the specified performance, the Contractor shall incorporate in the

design and show on the shop drawings all the safety features required by the current codes and regulations, including, but not limiting to, those of the Occupational Safety and Health Act of 1970, and Amendments thereto.

D. Related Work Specified Elsewhere

Specification Section	Title
01300	Shop Drawings, Submittals and Samples
01650	System Start-up and Demonstration
Division	**Description**
2	Site Work
11	Equipment
15	Mechanical
16	Electrical
Contract Drawings and General Provisions of the Contract	

1.02 Quality Assurance

A. ***All equipment and materials used in this installation shall be new, unused, and undamaged when installed or otherwise incorporated in the Work and shall be standard catalog items of the various manufacturers***. No such material or equipment shall be used by the Contractor for any purpose other than that intended or specified, unless such use is specifically authorized in writing by the Owner. No material shall be delivered to the work site workout prior acceptance of shop drawings and data by the Engineer.

B. Equipment and appurtenances shall be designed in conformity with ANSI, ASME, IEEE, NEMA, OSHA, AGMA, and other generally acceptable applicable standards. They shall be of rugged construction and of sufficient strength to withstand all stresses which may occur during fabrication, testing, transportation, installation, and all conditions or operations. All bearings and moving parts shall be adequately protected against wear by bushings or other approved means. Provisions shall be made for adequate lubrication with readily accessible devices.

C. Machinery parts shall conform to the dimensions shown on the working drawings within allowable tolerances. The corresponding parts of identical machines shall be made interchangeable. Protruding members such as joints, corners and gear covers shall be finished in appearance. All exposed welds shall be ground smooth and the corners of structural shapes shall be rounded or chamfered.

D. ***Provide materials and equipment that are standard products of manufacturers*** regularly engaged in the manufacture of such products, which are of a similar material, design and workmanship.

E. Facilities and labor for handling and inspection of all materials and equipment shall be furnished by the Contractor. If the Engineer requires, either prior to the beginning, or during the progress of the Work, the Contractor shall submit samples of materials for such special tests as may be necessary to demonstrate that they conform to the Contract Specifications. Such samples shall be furnished, stored, packed, and shipped as directed at the Contractor's expense.

F. The Contractor shall submit data and samples sufficiently early in the Project to permit consideration and acceptance before materials are necessary for incorporation into the Work.

G. Service Support

1. The equipment items shall be supported by service organizations. ***Submit a certified list of qualified permanent service organizations*** for support of the equipment which includes their addresses and qualifications.

2. These service organizations shall be reasonably convenient to the equipment installation and able to render satisfactory service to the equipment on a regular and emergency basis during the warranty period of the contract.

H. Tolerances

1. Machinery parts shall conform to the dimensions indicated on the Drawings within allowable tolerances. Protruding members such as joints, corners, and gear covers shall be finished in appearance.

2. ***All exposed welds shall be ground smooth and the corners of structural shapes shall be rounded or chamfered***.

I. Clearances and Access

1. ***Ample clearance shall be provided for inspection and adjustment***. All equipment shall fit the allotted space and shall leave reasonable access room for servicing and repairs.

2. Greater space and room required by substituted equipment shall be provided by the Contractor and at his expense.

3. ***Provide access panels*** for access to valves, equipment or any part requiring maintenance or service.

4. Provide minimum sizes of twelve (12) inches by twelve (12) inches for hand access or twenty-four (24) inches by twenty-four (24) inches for personnel access.

J. Safety Requirements

1. In addition to the components shown and specified, all machinery and equipment shall be safeguarded in accordance with the safety features required by the current safety codes and regulations of ANSI, OSHA, and local industrial codes.

2. The Contractor shall provide for each V-belt drive or rotating shaft a protective guard which shall be securely bolted to the floor or apparatus. The guard shall completely enclose drives and pulleys and be constructed to comply with all safety requirements.

3. For fans, the belt guard shall be arranged so as not to restrict the air flow into the fan inlet. Guards shall not interfere with lubrication of equipment.

4. Points of operation, ingoing nip points, and machinery producing flying chips and sparks shall be guarded in accordance with the applicable portions of 29 CFR 1910 Subpart 0. Provide positive means of locking out equipment so that equipment cannot be accidentally started during maintenance procedures.

5. ***High temperature equipment and piping so located as to endanger personnel or create a fire hazard shall be properly guarded or covered with insulation of the type specified***.

6. ***Ensure that access openings leading to equipment are large enough to carry through routine maintenance items such as filters, tools, etc***.

1.03 Project Conditions

A. ***Prior to commencement of the Work, the Contractor shall verify conditions, locations, dimensions, and counts at building the Project site***. Submit discrepancies and differences, within thirty (30) calendar days of the Notice to Proceed, to the Engineer for consideration and decision before proceeding.

B. Obtain full information regarding peculiarities and limitations of space available for installation of all materials under Contract.

C. Butt all openings, chases and trenches required for introduction of work and equipment and do all backfilling of floors and walls damaged by such cutting. All work completed under this heading must conform in every respect to the finished quality of workmanship and materials used in this construction project.

D. ***Provide accurate layout, grades and elevations; set sleeves and openings in ample time and take proper precautions to protect all work and equipment from damage***. ***Provide all necessary supports required for the safe and proper installation of electrical equipment***.

E. Discrepancies

1. All obvious discrepancies in the above mentioned documents shall be called to the attention of the Engineer prior to commencing the Work.

2. No extras to the original drawings and specifications will be authorized.

3. Questions arising from this inspection and/or from the drawings and specifications shall be submitted, in writing, to the Engineer for clarification and revisions.

F. Contingencies

1. In order to obtain a firm price on the cost of the Project, the Contractor shall include in this Bid sufficient contingencies to complete the Work as designed.

2. The Contract Drawings reflect the finished required results and any changes necessary to accomplish these results because of field conditions or codes in effect at the time of the Bidding shall not result in any change in cost.

1.04 Error and Omissions

A. Site conditions, budget considerations and code interpretations may change. Therefore, all errors and/or omissions or required clarifications in the above mentioned documents that are discovered by the Contractor and/or subcontractor shall be called to the attention of the Engineer at least seven (7) calendar days prior to the Bid Date.

1.05 Connection to Work of Others

A. The mechanical subcontractor shall be responsible for the connection of all equipment included in Division 15, *Mechanical*, even when furnished by others. Control wiring shall be under the supervision of the subcontractor furnishing the equipment.

B. Termination of power wiring shall be performed by the electrical contractor under the supervision of the mechanical contractor. Termination of the low voltage and control wiring shall be performed by the mechanical contractor or designated subcontractor.

1.06 Permits and Inspections

A. Provide all special permits required for Work under the various Sections of this Division. ***All permits shall be paid for by the Contractor. Reinspection fees, if any, shall be paid for by the Contractor at no additional cost to the Owner***.

B. The Work will be observed by the Engineer during the course of the construction. Provide for inspection by others having jurisdiction during the proper phases. Furnish a certificate of final approval at the completion of final inspection.

1.07 Codes and Standards

A. The latest edition and revision of the following codes and standards are considered minimum requirements for materials, workmanship and safety where not covered elsewhere in these specifications:

1. Florida Building Code (FBC).

2. National Electric Code (NEC).

3. Where materials and equipment are available under the continuing inspection and laboring service of Underwriter's Laboratories, Inc., furnish materials and equipment bearing such labels.

4. Law 91-596, Occupational Safety and Health Act.

5. Ordinances of the Local Authority having jurisdiction.

6. NFPA, Life Safety Code.

7. ANSI B-31.0 - 1987 (with addenda, power piping).

1.08 Shop Drawings

A. The Contractor shall submit in conformance with Section 00700, *General Conditions* and Section 00800, *Supplementary Conditions*, for review by the Engineer, complete sets of detailed and dimensioned working shop drawings showing the construction of the proposed facility and installation of all equipment complete in every respect.

B. Shop drawings shall be submitted in accordance with the provisions of the Section 01300, *Shop Drawings, Submittals and Samples*. ***All shop drawing submittals shall be in an electronic (PDF) form***.

C. ***Each drawing shall be indexed and/or referenced to the Contract Drawings and Specifications***.

D. No work upon the manufacture or fabrication of any equipment shall be performed until the Engineer's review has been completed.

E. ***The review of Shop Drawings by the Engineer will not relieve the Contractor of his responsibility to furnish all necessary material and equipment, and to perform all work required by the Contract Documents***.

F. ***Certified performance data/curves shall indicate actual test performance of units furnished***. The Contractor shall submit, with the shop drawings, layout drawings showing exact installation, piping and foundation details for the units being submitted.

G. The various Sections in this Division specify additional requirements for shop drawings with which the Contractor shall comply.

H. Submittals shall include the manufacturer's name, trade name, place of manufacture, catalog model or number, nameplate data, size, layout dimensions, capacity, project specification and paragraph reference, applicable industry and technical society reference standards, years of satisfactory service, and other information necessary to establish contract compliance of each item the Contractor proposes to be provided.

I. Drawings

1. Drawings shall include/site plans, sectional views, wiring diagrams, and installation details of equipment; and equipment spaces identifying and indicating proposed location, layout and arrangement of items of equipment, piping, control panels, accessories, and other items that must be shown to ensure a coordinated installation.

2. ***Wiring diagrams shall identify circuit terminals, and indicate the internal wiring for each item of equipment and the interconnection between each item of equipment***.

3. Drawings shall indicate adequate clearance for operation, maintenance, and replacement of operating equipment devices.

J. Manufacturer's Instructions

1. Where installation procedures or part of the installation procedures are required to be in accordance with the manufacturer's instructions, submit printed copies of those instructions prior to installation.

2. Installation of the item shall not proceed until the manufacturer's instructions are received. Failure to submit can be cause for rejection of the equipment or material.

K. Certificate of Compliance

1. ***Submit a certificate of compliance from the manufacturer for approval for products, finishes, and equipment*** as specified in the technical sections whose compliance with organizational standards or specifications is not regulated by an organization using its own listing or label as proof of the products, equipment, or materials and the referenced standard and shall simply state that the manufacturer certifies that the product conforms to the requirements specified.

   a. Reference Standards Compliance

      1) Where equipment or materials are specified to conform to industry and technical society reference standards of organizations such as, but not limited to, the American National Standards Institute (ANSI), American Society for Testing and Materials (ASTM), National Electrical Manufacturers Association (NEMA), American Society of Mechanical Engineers (ASME), American Gas Association (AGA), American Refrigeration Institute (ARI), and Underwriters Laboratories (UL), submit proof of such conformance.

      2) If an organization uses a label or listing to indicate compliance with a particular reference standard, the labor or listing will be acceptable evidence, unless otherwise specified in the individual sections.

   b. Independent Testing Organization Certificate

      1) In lieu of the label or listing, submit a certificate from an independent testing organization, competent to perform testing and approved by the Engineer.

      2) The certificate shall state that the item has been tested in accordance with the specified organization's test methods, and that the item complies with the specified organization's reference standard.

L. Operation and Maintenance Manuals

1. The O&M Manuals shall be compiled and submitted to the Engineer in accordance with Section 01300, *Shop Drawings, Submittals and Samples*, and 01730, *Operation and Maintenance Data*.

2. O&M Manuals shall be provided for each piece of equipment including individual components and subsystems of complete assemblies. The section of the manual on operation shall describe the function of each component and its relationship to the system of which it is a part. Where several models, options, or styles are described, the manual shall identify the items actually provided.

3. All data furnished shall conform to the installation as constructed. Cuts showing other equipment and data not applicable to the installation shall be crossed out and where practical shall be omitted from the manual. The assembly of the manual shall be in a logical manner and each section shall be indexed in the Table of Contents.

4. ***Each manufacturer shall outline a maintenance procedure for his equipment installed and the Contractor shall then compile these procedures in a logical manner to provide a procedure for the operating personnel of the Owner to follow in their day to day operation of the facility***.

5. Operation and maintenance manuals specified herein are in addition to any operation, maintenance, or installation instructions by the Contractor to install, test, and start up equipment.

6. Prepare and include additional data when the need for such data becomes apparent during instruction of the Owner's personnel.

7. Additional requirements for Operation and Maintenance Data

   a. The Contractor shall refer to the respective Sections of the Specifications.

   b. ***In addition to standard O&M Manuals, all manufacturers supplying equipment and products specified herein shall also submit their operation and maintenance manuals and data to the System Integrator for this Project on CD/DVD/BD's in Corel WordPerfect (latest version), Microsoft Word (latest version), or text, "txt", formats. All graphic files shall be in BMP, PCX, CDR, JPEG, DWG or DXF formats (integrators preference for the system shall be required). All O&M Manual files shall also be submitted electronically on CD/DVD/BD's to the Engineer in both PDF and JPEG formats, no exceptions.***

   c. ***The System Integrator shall be responsible to configure and compile the O&M Manuals into "hypertext" window help files for use as computer "on-line" help screens for equipment operation and maintenance. The System Integrator shall return all hypertext files to the equipment and product manufacturer's for review and approval prior to introducing them into the SCADA System at the treatment facility.***

M. Delivery, Storage and Handling

1. Handle, store and protect equipment and materials to prevent damage before and during installation in accordance with the manufacturer's recommendations, and as approved by the Engineer.

2. ***Replace damaged or defective items at no additional cost to the Owner***.

N. Posted Operating Instructions

1. Posted operating instructions shall be provided for each system and principal item of equipment as specified in the technical sections for the use of the operation and maintenance personnel. The operating instructions shall include the following:

   a. System Descriptive Information

      1) Wiring diagrams, control diagrams, piping diagrams, control sequence and operating points for each principal system and item of equipment.

      2) Post instructions where directed.

   b. Equipment Instructions

      1) ***Attach to or post adjacent to each principal item of equipment and include directions for Start-up, proper adjustment, operating, lubrication, and shutdown procedures; safety precautions, procedure in the event of equipment failure; and other areas as recommended by the manufacturer or each system or item of equipment***.

2. ***Print or engrave, and frame under glass or in approved laminated plastic***. Operating instructions exposed to the weather shall be made of weatherproof materials or enclosed to be weather protected. Operating instructions shall not fade when exposed to sunlight and shall be secured to prevent easy removal or peeling.

O. Electrical Requirements

1. Provide electrical components of mechanical equipment and systems such as motors, controllers, contactors and disconnects under Division 11, *Equipment* or Division 15, *Mechanical*, except that controllers indicated as part of motor control centers shall be provided under Division 16, *Electrical*; these components shall meet the minimum requirements as specified in Division 16, *Electrical*, and all additional requirements specified in the section covering the associated mechanical equipment.

2. Extended voltage range motors will not be permitted. Provide interconnecting wiring for components of packaged equipment as an integral part of the equipment. Interconnecting power wiring and conduit for field erected equipment and control wiring rated at 100 V or higher and conduit shall be as specified in Division 16.

3. Control wiring rated at one hundred (100) volts or less and conduit shall be as specified in Division 13, *Special Construction*, Division 15, *Mechanical*, and Division 16, *Electrical*.

P. Instructions to Operating Personnel

1. When specified in other sections, furnish the services of a competent instructor to give full instruction to the Owner's operating personnel in the adjustment, operation, and maintenance, including pertinent safety requirements, of the specified equipment or system.

2. Instructors shall be thoroughly familiar with all parts of the installation and shall be trained in operating theory as well as practical operation and maintenance work.

3. Instruction shall be given during the first regular work week after the equipment or system that has been accepted and turned over to the Owner for regular operation.

4. The number of man-days (8 hours per day) of instruction furnished shall be as specified in the individual section. When more than four (4) man-days of instruction are specified, use approximately half of the time for classroom instruction. Use other time for instruction with the equipment or system.

5. When significant changes or modifications in the equipment or system are made under the terms of the contract, provide additional instruction to acquaint the operating personnel with the changes or modifications.

1.09 Protective Coatings

A. All machined surfaces and shafting shall be cleaned and protected from corrosion by the proper type and amount of coating necessary to assure protection during shipment and prior to installation.

B. Oil lubricated gearing, bearings, etc. are to be shipped with an oil soluble protective coating as recommended by the equipment manufacturer.

C. Motors, reducers and electric controls shall have the standard factory finish prior to delivery.

D. Refer to Section 09905, *Piping, Valve and Equipment Identification System*, for painting of equipment and piping and Section 09900, *Painting*, for general painting.

1.10 Product Delivery, Storage and Handling

A. Packaging

1. All equipment to be provided shall be suitably packaged to facilitate handling and protect against damage during transit and storage. All equipment shall be boxed,

crated, or otherwise completely enclosed and protected during shipment, handling, and storage.

2. All equipment shall be protected from exposure to the elements and shall be kept thoroughly dry at all times.

B. Protection

1. All machined surfaces and shafting shall be cleaned and protected from corrosion by the proper type and amount of coating necessary to assure protection during shipment and prior to installation. Painted surfaces shall be protected against impact, abrasion, discoloration, and other damage as specified in Section 09900, *Painting* and Section 09905, *Piping, Valve and Equipment Identification System*.

2. ***All painted surfaces which are damaged prior to acceptance of equipment shall be repainted*** to the satisfaction of Engineer.

C. Lubrication

1. Grease and lubricating oil shall be applied to all bearings and similar items as necessary to prevent damage during shipment and storage.

D. Marking

1. ***Each item of equipment shall be tagged or marked*** as identified in the delivery schedule or on the Shop Drawings.

2. Complete packing lists and bills of material shall be included with each shipment.

E. Fabricated Assemblies

1. Fabricated sub-assemblies, if any, shall be shipped in convenient sections as permitted by carrier regulations and shall be properly match-marked for ease of field erection.

F. Responsibility

1. ***The Contractor shall be responsible for all material, equipment, and supplies sold and delivered to the site*** under this Contract, or directly purchased by the Owner, until Final Project Acceptance by the Owner. In the event any such material, equipment, and supplies are lost, stolen, damaged, or destroyed prior to Final Project Acceptance, the Contractor shall replace same without additional cost to the Owner.

2. Should the Contractor fail to take proper action on storage and handling of equipment supplied under this Contract, or ODP equipment, within seven (7) days after written notice to do so has been given, the Owner retains the right to correct all deficiencies noted in previously transmitted written notice and deduct the cost associated with these corrections from the Contractor's Contract.

3. These costs may be comprised of expenditures for labor, equipment usage, administrative, clerical, engineering, and any other costs associated with making the necessary corrections.

G. Delivery

1. The Contractor shall arrange deliveries of products in accordance with construction schedules and coordinate to avoid conflict with work and conditions at the site.

   a. ***The Contractor shall deliver products in an undamaged condition***, in the manufacturer's original containers or packaging, with identifying labels intact and legible.

   b. Immediately on delivery, ***the Contractor shall inspect all shipments to assure compliance*** with requirements of Contract Documents and accepted submittals, and that products are properly protected and undamaged.

   c. ***Under no circumstances shall the Contractor deliver equipment to the site more than one (1) month prior to installation without written authorization from the Engineer.*** Operation and maintenance data shall be submitted to the Engineer for review prior to shipment of equipment as described in Section 01730, *Operation and Maintenance Data*.

H. Storage and Protection of Products

1. The Contractor shall furnish a covered, weather-protected storage structure providing a clean, dry non-corrosive environment for all mechanical equipment, valves, electrical and instrumentation equipment, and special equipment to be incorporated into this Project.

2. Storage of equipment shall be in strict accordance with the "Instructions for Storage" of each equipment supplier and manufacturer including connection of space heaters, and placing of storage lubricants in equipment. Corroded, damaged, or deteriorated equipment and parts shall be replaced before acceptance of the Project. Equipment and materials not properly stored will not be included in a payment application.

3. ***The Contractor shall store products subject to damage by the elements in weathertight enclosures***.

4. The Contractor shall maintain temperature and humidity within the ranges required by manufacturer's instructions.

5. ***The Contractor shall store fabricated products above the ground, on blocking or skids, to prevent soiling or staining***. The Contractor shall cover products which are subject to deterioration with impervious sheet coverings and provide adequate ventilation to avoid condensation.

6. The Contractor shall store loose granular materials in a well-drained area on solid surfaces to prevent mixing with foreign matter.

7. All materials and equipment to be incorporated in the Work shall be handled and stored by the Contractor before, during, and after shipment in a manner to prevent warping, twisting, bending, breaking, chipping, rusting, and any injury, theft, or damage of any kind whatsoever to the material or equipment.

8. ***Cement, sand, and lime shall be stored under a roof and off the ground, and shall be kept completely dry at all times***. All structural and miscellaneous steel and reinforcing steel shall be stored off the ground or otherwise to prevent accumulations of dirt or grease, and in a position to prevent accumulations of standing water, staining, chipping, or cracking.

9. All materials which, in the opinion of the Engineer, have become damaged and are unfit for the use intended or specified shall be promptly removed from the site of the Work and the Contractor shall receive no compensation for the damaged material or its removal.

10. The Contractor shall arrange storage in a manner to provide easy access for inspection. The Contractor shall make periodic inspections of stored products to assure products are maintained under specified conditions, and free from damage or deterioration.

11. Protection After Installation

    a. ***The Contractor shall provide substantial coverings as necessary to protect installed products from damage*** from traffic and subsequent construction operations.

    b. The Contractor shall remove covering when no longer needed.

I. Extended Storage Requirements for Equipment

1. Because of the long period allowed for construction, special attention shall be given to extended storage and handling of equipment onsite. As a minimum, the procedure specified herein shall be followed:

a. If equipment will be stored onsite for more than one (1) month prior to incorporation into the Work, the Contractor shall submit a written request to the Engineer outlining any special provision to be made to protect and maintain the equipment while it is being stored. All such provisions shall be acceptable to the Owner. No equipment shall be stored on-site for more than one (1) month without prior written authorization from the Engineer.

b. All equipment having moving parts including gears, electric motors, and/or instruments shall be stored in a temperature and humidity controlled building accepted by the Engineer, until such time as the equipment is to be installed.

c. All equipment shall be stored fully lubricated with oil and grease unless otherwise instructed by the manufacturer.

d. Manufacturer's storage instructions shall be carefully studied by the Contractor and reviewed by him with the Engineer. These instructions shall be carefully followed and a written record of this review kept by the Contractor.

e. ***Moving parts shall be rotated a minimum of once weekly to ensure proper lubrication and to avoid metal-to-metal "welding"***. ***Upon installation of the equipment the Contractor shall start the equipment and operate, loaded when possible, once weekly for an adequate period of time to ensure that the equipment does not deteriorate from lack of use.***

f. ***Lubricants shall be changed upon completion of installation and as frequently as required thereafter during the period between installation and acceptance***. Mechanical equipment to be used in the Work, if stored for longer than ninety (90) days, shall have the bearings cleaned, flushed, and lubricated prior to testing and startup, at no extra cost to the Owner.

g. ***Prior to acceptance of the equipment, the Contractor shall have the manufacturer inspect the equipment and certify that its condition has not been detrimentally affected by the long storage period***. Such certifications by the manufacturer shall be deemed to mean that the equipment is judged by the manufacturer to be in a condition equal to that of equipment that has been shipped, installed, tested, and accepted in a minimum time period. As such, ***the manufacturer will guarantee the equipment, equally in both instances***. If such a certification is not given, the equipment shall be judged to be defective, and it shall be removed and replaced at the Contractor's expense.

h. ***A maintenance log shall be maintained by the Contractor*** outlining the schedule of maintenance required for each piece of equipment as well as the date on which the maintenance was actually performed and the initials of the individual performing the work. The Contractor shall submit a copy of the maintenance log monthly with his application for payment.

1.11 Pipe and Valve Identification

A. Pipe Identification

1. All exposed pipe shall have code letters and flow arrows painted per Section 09905, *Piping, Valve and Equipment Identification System*. The mechanical contractor shall ensure that the pipes are properly marked.

2. All underground pipe shall be located by laying plastic warning tape continuously along the run of pipe per Section 09905, *Piping, Valve and Equipment Identification System*.

B. Valve identification

1. The Contractor shall provide a coded and numbered identification tag on all valves, per Section 09905, *Piping, Valve and Equipment Identification System*.

1.12 Nameplates

A. Provide identification nameplates for all equipment, controls, and apparatus where nameplates and/or data plates are not specified elsewhere.

1. Equipment and apparatus nameplates shall be fabricated from 1½-inch high corrosion resistant metal with one (1) inch high cut-in black letters, permanently secured with stainless steel screws.

2. Controls and switches shall be labeled with one (1) inch high black laminated plastic with ½-inch white letters to designate functions.

3. The Contractor shall submit a nameplate schedule (proper names and designations) and sample to the Engineer for approval prior to fabrication of the nameplates.

B. ***Each piece of equipment shall be provided with a stainless steel data plate securely fastened*** in a conspicuous place and clearly inscribed with the equipment manufacturer's name, year of manufacture, serial number and principal rating data. These data plates shall not be painted.

1.13 Equipment Cleaning

A. All equipment, piping, duct work, insulation and other work provided under this Division and to receive finish painting by the Contractor shall be thoroughly cleaned and ready for finish painting.

B. ***Thoroughly inspect all items of equipment and any items dented, scratched or otherwise damaged in any manner shall be replaced or repaired and painted to match original finish.*** All items so repaired and refinished shall be brought to the attention of the Engineer for inspection and approval.

1.14 System Cleaning

A. ***Each system of piping shall be blown through, washed out and/or flushed after completion*** to remove grit, dirt, sand, etc., from coils and piping for as long a time as required to thoroughly clean the apparatus.

B. All elements within the system that may be damaged by the cleaning operation shall be removed or otherwise protected during the operation.

C. Repair or replace any control valves or other system components which do not function properly due to damage during the cleaning operation or because of imperfect cleaning of any piping system.

D. ***All strainers shall be inspected and cleaned as often as required*** and left in a clean condition at project completion.

1.15 Protection of Piping, Duct Work and Appurtenances

A. ***All duct work, piping, appurtenances, and openings furnished and installed under this Division shall be protected*** from dirt, foreign objects, and damage during the construction period. Damaged piping, duct work or other appurtenances shall be replaced without additional cost to the Owner, should the damage occur prior to final acceptance of the work by the Owner. As soon as installed, all metal plated or polished fixture trimmings shall be thoroughly covered with non-corrosive grease which shall be maintained until all construction work is completed.

B. Suitable precautions against freezing shall be taken during cold weather.

C. All open ends of piping shall be closed by suitable cap or plug fitting to prevent obstruction and damage.

D. The Contractor shall also be responsible for the work of other trades that may be damaged or disturbed in the course of this work and he shall restore it to the condition existing prior to damage without additional cost to the Owner.

1.16 Field Instructions

A. Upon completion and start-up of the work and at a time designated, the Contractor shall provide the services of one or more project engineers to work in conjunction with the service engineers and suppliers' representative in instructing the Owner's personnel in the proper operation and maintenance of the equipment.

B. The project engineer(s) shall also be required to start-up and operate under normal working conditions the entire installation as a unit. These field instructions shall cover all the items contained in the bound instructions.

C. The instruction period shall be given at the time the facility is operating under normal conditions.

D. In addition to these requirements, the Contractor shall provide field instructions as specified under the various Sections of the Specifications.

1.17 Framed Instructions

A. ***Approved wiring and control diagrams showing the complete layout of the entire system, including equipment, piping, valves and control sequence, framed in laminated plastic, shall be posted within the associated control panels or where directed by the Owner***.

B. In addition, condensed operating instructions explaining preventive maintenance procedures, methods of checking the system for normal safety operation and procedures for safely starting and stopping the system shall be prepared in typed form, framed as specified above for the wiring and control diagrams and posted beside the diagrams.

C. ***Proposed diagrams, instructions and other sheets shall be submitted for approval prior to posting***. The framed instructions shall be posted before acceptance testing of the systems.

1.18 Project Record Drawings

A. Project Record Drawings shall be submitted to the Engineer before Final Project Acceptance, in accordance with the requirements of Section 01720, *Project Record Documents*. In addition to the details included in Section 01720, submit the following:

1. Exact vertical and horizontal locations of all buried pipes and conduits, giving dimensions from fixed reference points.

2. A survey shall show any deviations from contract drawings and such changes shall be reviewed prior to approval, for all tanks and structures.

3. Drawings shall show routing of piping indicating valves, cleanouts, and access panels.

1.19 Guarantee and Warranties

A. ***The Contractor shall guarantee all work, materials, equipment, etc. against defects for a period of two (2) years from the date of the Final Project Acceptance by the Owner***, unless specified otherwise in the Contract Documents, that all the equipment has the capacity specified and that it will operate without excess noise or vibration caused by improper installation.

B. In addition to the guarantee, the Contractor shall provide the performance warranties as specified for the equipment in the various sections.

C. The manufacturer's written warranty shall be submitted for all major pieces of equipment, as specified in Section 01740, *Warranties and Bonds*.

1.20 Spare Parts and Special Tools

A. Spare parts and Special Tools for certain equipment provided under Division 11, *Equipment*, Division 13, *Special Construction*, Division 15, *Mechanical*, and Division 16, *Electrical* have been specified in the pertinent sections of the specifications.

B. The Contractor shall collect and store all spare parts in an area to be designated by the Engineer. In addition, the Contractor shall furnish to the Engineer an inventory listing of all spare parts and special tools, the equipment they are associated with, and the name, address, telephone and FAX numbers, e-mail address and website of the supplier.

2. MATERIALS

2.01 General Product Compliance

A. <u>General</u>

1. The compliance requirements, for individual products as indicated in the Contract Documents, are multiple in nature and may include generic, descriptive, proprietary,

performance, prescriptive, compliance with standards, compliance with codes, conformance with graphic details and other similar forms and methods of indicating requirements, all of which must be complied with.

2. Also “allowances” and similar provisions of the Contract Documents will have a bearing on the selection process.

B. Procedures for Selecting Products

1. The Contractor’s options in selecting products are limited by the requirements of the Contract Documents and governing regulations. They are not controlled by industry traditions or procedures experienced by the Contractor on previous construction projects.

2. Required procedures include, but are not limited to, the following for various indicated methods of specifying.

C. Single Product/Manufacturer Name as Basis of Design

1. Provide the product indicated, unless “equivalent” products with listed salient features for equivalency are permitted.

2. Advise the Engineer before proceeding, where known that the named product is not a feasible or acceptable selection.

D. Two or More Product/Manufacturer Names as Basis of Design

1. Provide one of the named products at the Contractor’s option; but excluding products that do not comply with the requirements.

2. Do not provide or offer to provide an unnamed product, except where none of the named products comply with the requirements or are a feasible selection; advise the Engineer before proceeding.

E. “Named”, except as otherwise indicated, is defined to mean the manufacturer’s name for a product, as recorded in published product literature, of the latest issue as of the date of the Contract Documents. Refer requests to use products of a later (or earlier) model to the Engineer for acceptance before proceeding.

F. Where only compliance with an imposed standard, code or regulation is required, selection from among products which comply with the requirements including those standards, codes and regulations, is the Contractor’s option.

G. Performance Requirements

1. Provide products which comply with the specific performances indicated, and that are recommended by the manufacturer for the application indicated.

2. The manufacturer's recommendations may be contained in published product literature, or by the manufacturer's individual certification of performance.

3. General overall performance of a product is implied where the product is specified for specific performances.

H. Descriptive Specification Requirements

1. Provide products that have been produced in accordance with descriptive requirements, using specified ingredients and components, and complying with specified requirements for mixing, fabricating, curing, finishing, testing and similar operations in the manufacturing process.

I. Visual Matching

1. Where matching an established sample is required, the final judgement of whether a product proposed by the Contractor matches the sample satisfactorily will be determined by the Engineer.

2. Where there is no product available within the specified product category that matches the sample satisfactorily and also complies with other specified requirements, comply with the provisions of the Contract Documents concerning "Change Orders" for the selection of a matching product in another product category, or for non-compliance with specified requirements.

J. Visual Selection

1. Except as otherwise noted, where specified product requirement include the phrase "... as selected from the manufacturer's standard colors, patterns, textures ....." or similar phrases, the Contractor has the option of selecting the product and manufacturer, provided the selection complies with other specified requirements.

2. The Engineer is subsequently responsible for selecting the color, pattern and texture from the product line selected by the Contractor.

2.02 Fabrication and Manufacture

A. Workmanship and Materials

1. ***The Contractor shall guarantee all equipment against faulty or inadequate design, improper assembly or erection, defective workmanship or materials, and leakage, breakage or other failure.*** Materials shall be suitable for all service conditions.

2. All equipment shall be designed, fabricated and assembled in accordance with recognized and acceptable engineering and shop practice.

3. Individual parts shall be manufactured to standard sizes and gages so that repair parts, furnished at any time, can be installed in the field. Like parts of duplicate units shall be interchangeable.

4. ***Equipment shall not have been in service at any time prior to delivery***, except as required by tests.

5. Except where otherwise specified, structural and miscellaneous fabricated steel used in equipment shall conform to AISC standards. All structural members shall be designed for shock or vibratory loads. Unless otherwise specified, all steel which will be submerged, all or in part, during normal operation of the equipment shall be at least ¼-inch thick.

B. Lubrication

1. Equipment shall be adequately lubricated by systems which require attention no more frequently than weekly during continuous operation. Lubrication systems shall not require attention during startup or shutdown and shall not waste lubricants.

2. Lubricants of the type recommended by the equipment manufacturer shall be furnished by the Contractor in sufficient quantity to fill all lubricant reservoirs and to replace all consumption during testing, startup, and operation prior to acceptance of equipment by Owner. Unless otherwise specified or permitted, the use of synthetic lubricants will not be acceptable.

3. Lubrication facilities shall be convenient and accessible. Oil drains and fill openings shall be easily accessible from the normal operating area or platform.

4. Drains shall allow for convenient collection of waste oil in containers from the normal operating area or platform without removing the unit from its normal installed position.

C. Drive Units

1. Unless otherwise specified, drive units furnished with equipment shall meet the following requirements. The nominal input horsepower rating of each gear or speed reducer shall be at least equal to the nameplate horsepower of the drive motor. ***Drive units shall be designed for twenty-four (24) hour continuous service***.

2. Gear Reducers

   a. Each gear reducer shall be a totally enclosed unit with oil or grease lubricated anti-friction, rolling element bearings throughout.

   b. Helical, spiral bevel, combination bevel-helical, and worm gear reducers ***shall have a service factor of at least 1.50*** based on the nameplate horsepower of the drive motor. Shaft-mounted and flange-mounted gear reducers shall be rated AGMA Class 11. Helical gear reducers shall have a ***gear strength rating to catalog rating of 1.5.*** Each gear reducer shall bear an AGMA nameplate.

   c. ***The thermal horsepower rating of each unit shall equal or exceed the nameplate horsepower of the drive motor***. During continuous operation, the maximum sump oil temperature shall not rise more than 100°F above the ambient air temperature in the vicinity of the unit and shall not exceed 200°F.

   d. Each grease lubricated bearing shall be installed in a bearing housing designed to facilitate periodic regreasing of the bearing by means of a manually operated grease gun. Each bearing housing shall be designed to evenly distribute new grease, to properly dispose of old grease, and to prevent overgreasing of the bearing. The use of permanently sealed, grease lubricated bearings will not be acceptable. An internal or external oil pump and appurtenances shall be provided if required to properly lubricate oil lubricated bearings. A dipstick or sight glass arranged to permit visual inspection of lubricant level shall be provided on each unit.

   e. Gear reducers which require the removal of parts or periodic disassembly of the unit for cleaning and manual regreasing of bearings will not be acceptable.

   f. Certification shall be furnished by the gear reducer manufacturer indicating that the intended application of each unit has been reviewed in detail by the manufacturer and that the unit provided is fully compatible with the conditions of installation and service.

D. Safety Guards

1. ***All belt or chain drives, fan blades, couplings, and other moving or rotating parts shall be covered on all sides by a "safety guard"***. Safety guards shall be

fabricated form 16 USS gauge or heavier galvanized aluminum-clad sheet steel or ½-inch mesh galvanized expanded metal or Type 316 stainless steel mesh.

2. Each guard shall be designed for easy installation and removal.

3. All necessary supports and accessories shall be provided for each guard. Supports and accessories, including bolts, shall be galvanized. ***All safety guards in outdoor locations shall be designed to prevent the entrance of rain and dripping water***.

2.03 Equipment Foundation and Support

A. All foundations, platforms and hangers required for the proper installation of equipment shall be furnished and installed by the Contractor.

B. All floor mounted equipment shall be mounted on a reinforced concrete pad of four (4) inches in height, as a minimum, or as required by the Contract Drawings.

C. ***Concrete for pads shall be Class B concrete (3,000 psi)*** and shall conform to the requirements of Section 03300, *Cast-in-Place Concrete*.

D. Reinforcement shall be as shown on the Contract Drawings or as specified in Section 03200, *Concrete Reinforcement*, and all edges shall be chamfered.

E. Cast iron or welded steel baseplates shall be provided for pumps, compressors, and other equipment. Each unit and its drive assembly shall be supported on a single baseplate of neat design. Baseplates shall have pads for anchoring all components and adequate grout holes. Baseplates for pumps shall have a means for collecting leakage and a threaded drain connection. Baseplates shall be anchored to the concrete base with suitable anchor bolts and the space beneath filled with grout as specified in Section 03600, *Grout*. All open equipment bases shall be filled with non-shrinking grout sloped to drain to the perimeter of the base.

F. The Contractor shall furnish, install, and protect all necessary guides, bearing plates, anchor and attachment bolts, and all other appurtenances required for the installation of equipment. These shall be of ample size and strength for the purpose intended.

G. ***Equipment suppliers shall furnish suitable anchor bolts for each item of equipment***. Anchor bolts, together with templates or setting drawings, shall be delivered sufficiently early to permit setting the anchor bolts when the structural concrete is placed. Anchor bolts shall, unless otherwise specified, have a minimum diameter of ¾-inch. Unless otherwise indicated or specified, anchor bolts for items of equipment mounted on baseplates shall be long enough to permit 1½-inches of grout beneath the baseplate and to provide adequate anchorage into structural concrete.

H. ***Anchor bolts required or indicated by the Contract Drawings shall be furnished and built into the concrete foundations***.

I. Structural steel supports and miscellaneous steel required for supporting and/or hanging equipment and piping furnished under this Division shall be provided and installed by Contractor.

J. All foundations, anchor pads, piers, inertia blocks, pipe supports, and structural steel supports shall be built to template and reinforced as required for loads imposed on them.

K. ***The Contractor shall assume all responsibility for sizes, locations and design of all foundations, anchor pads, piers, inertia blocks, pipe supports, curbs and structural steel supports***.

2.04 Vibration Isolation

A. ***All rotating or reciprocating equipment unless otherwise directed shall be mounted on vibration isolators and provided with flexible connections*** to isolate the equipment from the structure and/or installation.

B. Isolators shall produce uniform loading and deflections, regardless of equipment weight distribution, and shall be the product of a manufacturer regularly engaged in the production of such items and who publishes engineering and selection data.

2.05 Shop Painting

A. All steel and iron surfaces shall be protected by suitable paint or coatings applied in the shop. Surfaces which will be inaccessible after assembly shall be protected for the life of the equipment. Exposed surfaces shall be finished smooth, thoroughly cleaned and filled as necessary to provide a smooth uniform base for painting.

B. Electric motors, speed reducers, starters, and other self-contained or enclosed components shall be shop primed or finished with a high-grade oil-resistant enamel suitable for coating in the field with an alkyd enamel.

C. ***All coatings shall be suitable for the environment where the equipment is installed***.

D. Surfaces to be painted after installation shall be prepared for painting as recommended by the paint manufacturer for the intended service, and then shop painted with one or

more coats of the specified primer. Unless otherwise specified, the shop primer for steel and iron surfaces shall be Cook "391-167 Barrier Coat", Koppers "No. 10 Inhibitive Primer", or equal.

E. Machined, polished, and nonferrous surfaces which are not to be painted shall be coated with rust-preventive compound, Houghton "Rust Veto 344", Rust-Oleum "R-9", or equal.

2.06 Noise Attenuation and Control

A. Unless otherwise specified, the maximum permissible noise level for a complete installed piece of equipment located within or outside a structure ***shall not exceed seventy-five (75) dB at three (3) feet***. A complete piece of equipment includes the driver and driven equipment, plus any intermediate couplings, gears, and auxiliaries.

B. All equipment provided herein that is specified to be factory and field tested shall be tested as specified herein for noise generation at the equipment manufacturer's expense.

C. Maximum permissible noise (sound pressure) levels shall be in decibels as read on the "A" weighting scale of a standard sound level meter (dB). All measurements shall be made in relation to a reference pressure of 0.0002 microbar.

D. Measurements of emitted noise levels shall be made on a sound level meter meeting at least the Type 2 requirements set forth in ANSI S 1.4 *Specification for Sound Level Meters*. The sound level meter shall be set on the "A" scale and to slow response. Unless otherwise specified for a particular piece of equipment, the point of measurement of sound level shall be made at the specified distance from any major surface along the entire perimeter and at mid-height of the piece of equipment, or at the specified distance from an outer major surface encompassing the sound source including inlets or outlets.

2.07 Fire Hazard Rating

A. All piping, duct work, and equipment insulation, fasteners, and jacketing materials shall have ***a fire hazard rating not to exceed 25 for flame spread, 50 for fuel contributed, and 50 for smoke developed***. Rating shall be determined by ASTM Designation E84, *Surface Burning Characteristics of Building Materials*. Corresponding ratings determined by Underwriters' Laboratories, Inc., UL-723, *Test Method for Fire Hazard Classification of Building Materials,* will also be acceptable.

B. Fire hazard ratings for materials proposed for use shall be substantiated by test results from the National Bureau of Standards, a certified report from an approved testing laboratory, or a UL label or listing.

C. Flame-proofing treatments will not be accepted.

2.08 Accessories

A. Special Tools and Accessories

1. ***Equipment requiring periodic repair and adjustment shall be furnished complete with all special tools, instruments, and accessories required for proper maintenance***. Equipment requiring special devices for lifting or handling shall be furnished complete with those devices.

B. Fasteners

1. ***All nuts, bolts, anchors, washers, and other fastening devices shall be a minimum of Type 304 stainless steel unless otherwise specified***.

C. Hardware

1. All hardware and accessory fittings shall be of a type designed, intended or appropriate for the use, and complement the items with which they are used, and ***shall have corrosion protection suitable for the atmosphere in which they are installed.***

2. ***All such hardware shall be U.S. Standard Size***.

3. EXECUTION

3.01 Field Supervision

A. The Contractor shall be responsible for compliance with all laws and ordinances governing his work.

B. ***The Contractor shall have, at all times, a competent, English speaking superintendent on the Project site***.

3.02 Operation and Maintenance

A. Repairs and Replacement - Performance

1. Repair and replacements required shall be accomplished as promptly as possible.

2. This includes overtime work required to make emergency repairs as promptly as possible.

B. Repairs and Replacement - Expense

1. Any repair or replacement required because of established vandalism, fire, windstorm, or other Acts of God, shall be accomplished by the Contractor at his cost prior to Final Project Acceptance and by the Owner and at the Owner's expense after Final Project Acceptance by the Owner.

C. Owner's Inspection

1. Periodic inspections and year-end inspections to determine if the maintenance services have been properly performed will be made by the Engineer.

2. Evidence of improper performance of service will result in the prompt notification of the Contractor's bonding company.

3.03 Equipment and Materials

A. ***Equipment and materials used in this installation shall be "new", "unused" and of the best quality***, and unless otherwise noted, shall be the standard catalog items of the various manufacturer's and shall be the manufacturer's latest design.

B. Equipment and materials shall be installed to fit the allotted space with reasonable access room for servicing and repairs.

C. Pipe openings shall be kept closed with approved caps or plugs prior to installation. Plumbing fixtures, valves and equipment shall be adequately kept covered and protected against weather, dust, and/or chemical or mechanical injury, and delivered and installed in a condition acceptable to the Engineer. All such items not acceptable shall be replaced at no additional cost to the Owner.

D. Equipment of similar nature shall be identical. For example, all unit ventilators must be of the same manufacture and of the same style.

3.04 Access

A. The Contractor shall inform himself fully regarding the peculiarities and limitations of the space available for the installation of materials under this Contract. All devices such as valves, traps, strainers, cleanouts, controls (manual, electric, pneumatic), and other such apparatus, which are concealed above the ceilings or in furred spaces, shall be readily accessible.

B. Access panels shall be painted to match the adjacent surfaces, unless provided in stainless steel or aluminum.

3.05 Interferences

A. Where interferences occur, and departures from the indicated arrangement are required, the Contractor shall consult with the other trades involved and come to an agreement as to changed locations and elevations of the ductwork and/or piping and shall obtain approval from the Engineer prior to implementing the proposed changes.

3.06 Excavation

A. The Contractor shall do all excavating and backfilling necessary for installation of the Work. The Contractor shall provide the required compacting.

B. Pipe trenches shall be sufficiently straight between designated angle points to permit the pipe to be laid true to line in the approximate center of the trench.

C. All excavations outside the fenced “limit of construction” area shall be backfilled at the end of each work day and adequately marked with barricades, barriers, flashing lights, etc., appropriate to protect public life and safety.

3.07 Installation of Equipment

A. The Contractor's attention is called to the fact that the project area will be open to public viewing. Therefore, it is the intention of these specifications that all finished work be suitable for such purpose.

B. The equipment shall not be installed or operated except by, or with the guidance of, qualified personnel having the knowledge and experience necessary for proper results. When so specified, or when employees of the Contractor or his subcontractors are not qualified, such personnel shall be field representatives of the manufacturer of the equipment or materials being installed.

C. The Contractor shall have on-site sufficient proper construction equipment and machinery of ample capacity to facilitate the work and to handle all emergencies normally encountered in work of this character. To minimize field erection problems, mechanical units shall be factory assembled when practical.

D. Equipment shall be erected in a neat and workmanlike manner on the foundations and supports at the locations and elevations shown on the Contract Drawings, unless otherwise directed by the Engineer during installation.

E. All equipment shall be installed in such a manner as to provide access for routine maintenance including lubrication.

F. ***All rotating equipment shall be statically and dynamically balanced***. Unless otherwise specified, the vibration allowance in the units shall not exceed the upper limits as established by the manufacturer.

G. Equipment of a portable nature which requires no installation shall be delivered to a location designated by the Owner.

H. All valves and operators shall be installed in the position shown on the Contract Drawings or as directed by the Engineer if not shown.

I. Tolerances

1. ***Precision gauges and levels shall be used in setting all equipment***. All piping and equipment shall be perfectly aligned, horizontally and vertically.

2. ***Tolerances for piping and equipment installation shall be 1/8-inch in 50 feet horizontal and vertically***.

J. Alignment and Level

1. The equipment shall be brought to proper level by shims (¼-inch maximum). After the machine has been leveled and aligned, the nuts on the anchor bolts shall be tightened to bind the machine firmly into place against the wedges or shims. Grout shall be as specified in Section 03600, *Grout*.

K. Contact of Dissimilar Metals

1. Where the contact of dissimilar metal may cause electrolysis and where aluminum will contact concrete, mortar, or plaster, the contact surface of the metals shall be separated using not less than one (1) coat of zinc chromate primer and one (1) heavy coat of aluminum pigmented asphalt paint on each surface.

2. The Contractor is referred to Section 09900, *Painting*.

L. Grouting

1. The grout shall be tamped into position with a board, steel bar or other tool. Tamping should not be so hard as to raise or otherwise displace the plate.

M. Cutting and Patching

1. All cutting and patching necessary for the work shall be performed by the Contractor. Where interferences occur, and departures from indicated arrangements are required, the Contractor shall coordinate the mechanical work with the other trades involved and make a determination as to changed locations and elevations of ductwork and/or piping and shall obtain approval from the Engineer for the proposed changes.

2. The Contractor shall furnish and set pipe sleeves and other accessories and frame other necessary openings.

N. Operation

1. All equipment installed under this Contract, including that furnished by Owner or others under separate contract, shall be placed into successful operation according to the written instructions of the manufacturer or the instructions of the manufacturer's field representative.

2. ***All required adjustments, tests, operation checks, and other startup activity shall be provided as part of this Project***.

3.08 Coordination with Other Trades

A. The Contractor shall clean all pipe surfaces and hanger rods free of grease, scale, rust and other foreign matter and prepare those materials that need to be painted. Touch-up all factory finishes marred in construction with factory touch-up kits.

B. Provide motor starters when required for motors specified in the Contract Documents. Provide all control items and wiring diagrams required for this equipment. Electrical items furnished must conform in all respects to the requirements of Division 16, “Electrical”.

C. Where there is a combination of air conditioning ductwork, plumbing, piping, and electrical conduits in the ceilings, walls, piping spaces, and equipment rooms, special care must be exercised to avoid conflict.

1. Where elevations of piping are specified on the Contract Drawings, the installation shall be made with extra care after studying the air conditioning and electrical drawings.

2. Wherever a crossing is indicated, the installation of the plumbing lines shall be coordinated with the electrical and air conditioning subcontractors prior to the installation of any work.

3. Provide the necessary pipe, valves and fittings where required to off-set or re-route piping to clear electrical piping, ducts or conduits.

D. Coordinate the work with other trades to avoid interferences and obtain the proper fit with related work specified in other Divisions of these Contract Documents.

3.09 Lubrication

A. ***The Contractor shall thoroughly lubricate all equipment in accordance with the equipment manufacturer's instructions***. Lubricating oils and greases shall be of type and viscosity as recommended by the equipment manufacturer.

B. All lubricants shall be furnished by the Contractor.

C. All systems requiring oil lubrication for gearing, bearings, etc., are to be flushed with flushing oils as recommended by the equipment manufacturer. This includes all gearings, bearings, etc., regardless of whether they have been shipped with or without oil soluble protective coatings.

D. Following flushing, oil lubricated systems shall be filled with "run-in" oil as recommended by the equipment manufacturer. The equipment will be "run-in" at the no-load condition for a minimum period of two (2) hours. Following "run-in" and inspection, the equipment is to be drained and flushed again with flushing oil as recommended by the equipment manufacturer.

E. The schedule for the above procedures is to be submitted for review by the Engineer at least two (2) weeks prior to the selected procedure starting date. At this time inspection details can be worked out.

F. ***The Contractor shall provide a one (1) year supply of all types of lubricants*** required for the various types of equipment furnished and installed under this Contract. Lubricants shall be in metal containers suitably labeled.

3.10 Cleaning and Adjustment

A. The Contractor shall keep the premises free from accumulation of waste materials or rubbish caused by his employees on the job, and at the completion of the same, he shall leave the site of his work broom clean.

B. Enamelware and plated piping shall be left clean and bright. The Contractor shall take proper precautions to protect his work and equipment from damage and disfigurement.

C. Upon completion of the Work, the Contractor shall clean, oil and grease fans, motors, compressors, pumps, and other running equipment and apparatus and mechanisms as instructed in other sections of this specification.

3.11 Pressure Tests

A. After installation, all piping shall be pressure tested. Piping shall be tested in accordance with Section 15044, *Pressure Testing of Piping*.

B. All tests shall be made in the presence of and to the satisfaction of the Engineer and Owner's representative and also, to the satisfaction of any local or state inspector having jurisdiction.

1. ***Provide not less than seventy-two (72) hours written notice to the Engineer*** and the authority having jurisdiction when it is proposed to make the tests.

2. Any piping or equipment that has been left unprotected and subject to mechanical or other injury in the opinion of the Engineer shall be retested in part or in whole as directed by the Engineer.

3. The piping systems may be tested in sections as the work progresses but no joint or portion of the system shall be left untested.

C. All elements within the system that may be damaged by the testing operation shall be removed or otherwise protected during the operation.

D. All defects and leaks observed during the tests shall be corrected and made tight in an approved manner and the tests repeated until the system is proven tight.

E. Repair all damage done to existing or adjacent work or materials due to or on account of the tests.

F. Provide test pumps, gauges, and other instruments and equipment required for the performance of all tests. Provide all temporary bracing, test plugs, and additional restraint which may be required for test pressures above normal working pressures.

G. ***All tests shall be maintained for as long a time as required to detect all defects and leaks*** but not less than the duration specified for each type of pipe or piping system in this Division.

3.12 Observation of Performance Tests

A. Where the specifications require observation of performance tests by the Engineer or Resident Project Representative, such tests shall comply with Article 1.02, *Quality Assurance* in this specification section.

3.13 Test Operation

A. When equipment is required to be factory tested, ***the results of the tests shall be submitted to the Engineer and approval*** of the test results shall be obtained before shipment of the equipment.

B. When an item of equipment, including controls and instrumentation, has been completely erected, the Contractor shall notify the Engineer, who will designate a time to make such tests as required, and operate the item to the satisfaction of the Engineer. ***All testing shall be done in the presence of the Engineer or Resident Project Representative (RPR)***. "Completely erected" shall mean that the installation is erected, all necessary adjustments have been made, all required utility connections have been made, required lubricants and hydraulic fluid have been added and the unit has been cleaned up and painted (as required).

C. ***The Contractor shall furnish labor, lubricants, and all other materials, equipment and instruments necessary for all tests***.

3.14 Failure of Tests

A. Defects

1. ***Any defects in the equipment, or deviations from the guarantees or requirements of the specifications, shall be promptly corrected by the Contractor by replacements or otherwise***. The decision of the Engineer as to whether or not the Contractor has fulfilled his obligations under the Contract shall be final and conclusive.

2. If the Contractor fails to correct any defects or deviations, or if the replaced equipment, when tested, shall fail again to meet the guarantees or specified

requirements, the Owner, notwithstanding his having made partial payment for such equipment, may reject that equipment and order the Contractor to remove it from the premises at the Contractor's expense.

B. Rejection of Equipment

1. In case the Owner rejects a particular item of equipment, then the Contractor hereby agrees to repay the Owner all sums of money paid to him and the Owner agrees to deliver to the Contractor a bill of sale of all his rights, title, and interest in and to the rejected equipment provided, however, that the equipment shall not be removed from the premises until the Owner obtains from other sources other equipment to take the place of that rejected.

2. The bill of sale shall not abrogate the Owner's right to recover damages for delays, losses or other conditions arising out of the basic Contract.

3. The Owner hereby agrees to obtain the alternate equipment within a reasonable time and the Contractor agrees that the Owner may use the original equipment furnished by him without rental or other charge until the other equipment is obtained.

3.15 Responsibility During Tests

A. ***The Contractor shall be fully responsible for the proper operation of equipment during tests and instruction periods and shall neither have nor make any claim for damage which may occur to equipment*** prior to the time when the Owner formally takes over the operation thereof.

3.16 Equipment Manufacturer's Service Representative

A. ***An experienced, competent, and authorized representative of the manufacturer of each item of equipment shall visit the site of the Work and inspect, check, adjust if necessary, and approve the equipment installation***. In each case, the manufacturer's representative shall be present when the equipment is placed in operation. The manufacturer's representative shall revisit the jobsite as often as necessary until all trouble is corrected and the equipment installation and operation are satisfactory in the opinion of Engineer and Owner.

B. ***All costs relative to services by equipment manufacturer's service representatives shall be borne by the Contractor and be included in the contract amount***.

C. ***A letter of certification and Check-Out Memo, shall be submitted to the Engineer from the manufacturer's representative, upon completion of a facility visit indicating that the equipment has been properly installed and lubricated; is in accurate alignment; is free from any undue stress imposed by connecting piping or anchor bolts; that the facility personnel have been instructed in the proper use of the equipment; and has been operated under full load conditions and that it operated satisfactorily***.

END OF SECTION

SECTION 15041

DISINFECTION OF PIPING AND STRUCTURES

1. GENERAL

1.01 Description

A. Scope of Work

1. Furnish all labor, materials, equipment, incidentals and procedures for disinfection of potable water mains and systems by the continuous feed method and by the slug method. The tablet method to disinfect pipelines is unacceptable.

2. Disinfection of piping in accordance with AWWA C-651 except as modified below.

B. Related Work Specified Elsewhere

Specification Section	Title
15044	Pressure Testing of Piping
15100	Valves and Appurtenances
Division	**Description**
15	Piping

1.02 Quality Assurance

A. Discharge of chlorinated water into watercourses or surface waters is regulated by the National Pollutant Discharge Elimination System (NPDES). Disposal of the chlorinated disinfection water and the flushing water is the Contractor's responsibility.

B. The Contractor shall schedule the rate of flow and locations of discharges in advance to permit review and coordination with the Owner, Engineer and responsible regulatory authorities.

C. Potable water shall be used for chlorination of structures and pipelines.

D. ***The Contractor shall submit a written request for use of water from waterlines of the Owner at least seventy-two (72) hours in advance***.

1.03 Submittals

A. The Contractor shall submit shop drawings of pipe and fittings in accordance with Section 01300, *Shop Drawings, Submittals and Samples*. All submittals shall be in an electronic format (PDF).

B. ***The following items shall be submitted***:

1. Procedures for disinfection of pipelines and/or structures.

2. Materials to be used in the disinfection process.

3. Description and literature on the disinfectant to be used including SDS sheets.

2. PRODUCTS

2.01 Liquid Chlorine

A. Inject with a solution feed chlorination and a water booster pump.

B. Use an experienced operator and follow the instructions of the chlorination manufacturer.

2.02 Sodium Hypochlorite (Solution)

A. Further dilute in water to the desired concentration and pump into the pipeline or structure at a metered rate.

2.03 Calcium Hypochlorite

A. Dissolve in water to a known concentration in a drum and pump into the pipeline or structure at a metered rate.

3. EXECUTION

3.01 Cleaning and Flushing

A. Prior to the disinfection process, all pipelines and structures to be disinfected under this Contract shall be ***cleaned and flushed*** to remove sand, loose dirt, and other debris.

B. Pipelines

1. ***The minimum flushing velocity shall be 2.5 feet per second***. Flushing shall continue until clean water flows from the main. The Contractor shall endeavor to use the minimum amount of flushing water required to complete the work.

2. Temporary blowoffs may be required for the purpose of flushing mains. Temporary blowoffs shall be installed as close as possible to the ends of the main being flushed. Blowoffs installed on the main shall be the same diameter as the main. Temporary blowoffs shall be removed and plugged after the main is flushed. All costs for installing and removing temporary blowoffs shall be at no additional cost to the Owner.

3. Blowoffs and temporary drainage piping used for flushing shall not be discharged into any gravity sewer or pumping station wetwell. The Contractor shall obtain prior approvals from the Engineer and the Owner as to the methods and locations of flushing water discharge.

C. Structures

1. ***All structures to be disinfected shall have the interiors pressure washed and cleaned***.

2. All cleaning water, flushing water and debris shall be removed from the structure.

D. The Owner shall be notified, in writing, at least seventy-two (72) hours prior to flushing water lines.

3.02 Disinfection of Potable Water Lines

A. Before any portion of the potable water piping system is to be placed in service, it shall be disinfected; and its disinfection shall be demonstrated by bacteriological tests conducted in accordance with *Standard Methods for Examination of Water and Wastewater*, latest edition, for the coli-aerogenes group, by an approved laboratory, acceptable to the Engineer, County Health Department and FDEP.

B. ***All pipe, fittings, valves, and all other appurtenances installed for potable water lines shall be disinfected prior to being placed in service***. Disinfection procedures shall be approved by the Engineer and shall be in conformance with ANSI/AWWA C-651, latest revision.

C. Pipe subjected to contaminating materials shall be treated in a manner approved by the Engineer. Should such treatment fail to remove the contaminants from the pipe, the contaminated sections of pipe shall be replaced with new uncontaminated pipe at no additional cost to the Owner.

D. Disinfection of a completed line shall be accomplished using the following procedure:

1. All potable water piping, fittings, valves, and appurtenances shall be disinfected with a chlorine solution with a sufficient concentration such that the ***initial chlorine concentration in the potable water line shall be a minimum of 100 mg/L*** available chlorine, at any point in the line.

2. Chlorine used for the purpose of disinfection shall be sodium hypochlorite (liquid) or high test granular calcium hypochlorite which contains approximately 65 to 70 percent available chlorine by weight. The calcium hypochlorite shall be stored in a cool, dry, and dark environment, prior to its use, to minimize deterioration. The dry calcium hypochlorite will be used to makeup a high concentration chlorine solution which will be used for disinfection. Under no circumstances will undiluted, dry calcium hypochlorite be placed in the pipeline to be disinfected. Upon approval by the Engineer, the Contractor may substitute gaseous chlorine for the above referenced disinfectants. However, the same minimum initial available chlorine residual shall be 100 mg/L.

3. Water from the existing, in-service water line shall be made to flow at a constant, slow rate into the line to be disinfected. Chlorine solution shall be injected or pumped at a regulated rate into the new main, at a point not more than ten (10) feet downstream from the beginning of the new water main. The method of tapping the water main for the chlorine injection point and the location of the tap shall be approved by the Engineer.

4. ***The chlorine solution shall be circulated*** in the water main by opening the water control valve and systematically manipulating hydrants, valves and blowoffs.

5. Water service lines shall be disinfected in a similar manner as that for water mains, including corrective measures, by methods acceptable to the Engineer.

6. The chlorine solution shall remain in the water lines for no less than twenty-four (24) hours, but longer than twenty-four (24) hours if directed by the Engineer.

7. Extreme care shall be exercised at all times to prevent concentrated chlorine solution from entering existing water mains.

E. ***After twenty-four (24) hours, the free residual chlorine concentration in the water line at the pipe extremities shall be at least 20 mg/L***; if not, the water lines shall be re-disinfected as described above.

F. ***Final flushing of lines may proceed after twenty-four (24) hours, provided the free residual chlorine analysis is satisfactory***. Flushing shall be continued until a chlorine residual test shows that lines contain only the normal chlorine residual. Prior to flushing water with high chlorine concentrations, obtain approvals from the Engineer and the Owner as to the methods and locations of discharge.

G. Following disinfection and thorough flushing of the water lines, as specified herein, the Contractor shall furnish all labor and materials required to obtain samples of water from established points of the water line, in accordance with AWWA C-651, in suitable sterilized containers obtained from the County Health Department or approved analytical laboratory. Two (2) series of successive samples shall be obtained at each established sampling point. Each test series will require two (2) samples at each sampling point. The period between each series of samples shall be a minimum of twenty-four (24) hours. Samples shall be delivered by the Contractor to the County Health Department or approved analytical laboratory for bacteriological examination within six (6) hours after sample collection. Samples shall be collected in conformance with the County Health Department standards and lab testing schedule. Prior to collecting samples, the Contractor shall notify the Engineer and the Owner who will have representatives present during sample collection.

H. At a minimum, the following number and location of samples shall be collected:

1. One (1) sample for every 1,000 feet of new potable water line.

2. One (1) sample from the end of the line.

3. One (1) sample from each branch.

4. One (1) sample from each point of connection to an existing potable water main.

5. One (1) sample from each occupied building on the treatment facility site.

I. ***Bacteriological test results will be available approximately forty-eight (48) to seventy-two (72) hours after samples are submitted***. If tests results are unsatisfactory, the Contractor shall immediately re-chlorinate and retest the water lines and proceed with such corrective measures as are necessary to secure disinfected lines. All services shall be re-chlorinated if the lines are re-chlorinated. The water lines shall be re-disinfected and retested, at the Contractor's expense, until approved by the Engineer, Owner, Health Department and Florida Department of Environmental Protection (FDEP).

J. ***At satisfactory completion of the bacteriological test requirements, potable water lines shall be placed in service only after receiving official written approval from FDEP through a "Letter of Clearance"***. Lines shall be placed in service in a manner approved by the Engineer and the Owner. The Contractor shall notify the Engineer and the Owner, in writing, seventy-two (72) hours prior to placing lines in service.

K. ***Following the chlorination period, all treated water shall be flushed from the lines at their extremities and replaced with water from the distribution system***. All treated water flushed from the lines shall be disposed of by discharging to the nearest sanitary sewer or by other approved means. No discharge to any storm sewer or natural water course will be allowed.

3.03 Disinfection of Structures

A. Before any structure identified herein is to be placed in service, it shall be disinfected; and its ***disinfection shall be demonstrated by bacteriological tests conducted*** in accordance with *Standard Methods for Examination of Water and Wastewater*, latest edition, for the coli-aerogenes group, by an approved laboratory, acceptable to the Engineer, County Health Department and FDEP.

B. Disinfection of a completed line shall be accomplished using the following procedure:

1. ***Structures shall be disinfected immediately prior to facility start-up***. The Contractor and Engineer shall develop a disinfection schedule following substantial completion and prior to facility start-up so that the following procedures do not have to be repeated.

2. ***All structures and associated piping, fittings, valves, and appurtenances shall be disinfected with a chlorine solution*** with a sufficient concentration such that the initial chlorine concentration shall be a minimum of 10 mg/L available chlorine, at any point.

3. Chlorine used for the purpose of disinfection shall be sodium hypochlorite (liquid) or high test granular calcium hypochlorite which contains approximately 65 to 70 percent available chlorine by weight. The calcium hypochlorite shall be stored in a cool, dry, and dark environment, prior to its use, to minimize deterioration. The dry calcium hypochlorite will be used to makeup a high concentration chlorine solution which will be used for disinfection. Under no circumstances will undiluted, dry calcium hypochlorite be placed in the pipeline to be disinfected. Upon approval by the Engineer, the Contractor may substitute gaseous chlorine for the above referenced disinfectants. However, the same minimum initial available chlorine residual shall be 100 mg/L.

4. Water from the existing, in-service water line shall be made to flow at a constant, slow rate into the structure to be disinfected. Chlorine solution shall be injected or pumped at a regulated rate into the line feeding the structure. The method of tapping the water main for the chlorine injection point and the location of the tap shall be approved by the Engineer.

5. The chlorine solution shall remain in the structures for no less than twenty-four (24) hours, but longer than twenty-four (24) hours if directed by the Engineer.

C. After twenty-four (24) hours, the free residual chlorine concentration in the water line at the pipe extremities shall be at least 2.0 mg/L; if not, the structure shall be re-disinfected as described above.

D. Following disinfection. as specified herein, the Contractor shall furnish all labor and materials required to obtain samples of water from established points with the structures in suitable sterilized containers obtained from the County Health Department or approved analytical laboratory. Two (2) series of successive samples shall be obtained at each established sampling point. Each test series will require two (2) samples at each sampling point. The period between each series of samples shall be a minimum of twenty-four (24) hours. Samples shall be delivered by the Contractor to the County Health Department or approved analytical laboratory for bacteriological examination within six (6) hours after sample collection. Samples shall be collected in conformance with the County Health Department standards and lab testing schedule. Prior to collecting samples, the Contractor shall notify the Engineer and the Owner who will have representatives present during sample collection.

E. ***Bacteriological test results will be available approximately forty-eight (48) to seventy-two (72) hours after samples are submitted.*** If tests results are unsatisfactory, the Contractor shall immediately re-chlorinate and retest the structures and proceed with such corrective measures as are necessary to secure said structures. The structures failing the bacteriological tests shall be re-disinfected and retested, at the Contractor's expense, until approved by the Engineer, Owner, and Florida Department of Environmental Protection (FDEP).

F. At satisfactory completion of the bacteriological test requirements, structures shall be placed in service only after receiving official written approval from FDEP.

END OF SECTION

SECTION 15044

PRESSURE TESTING OF PIPING

1. GENERAL

1.01 Description

A. Scope of Work

1. This Section specifies the general requirements for testing (pneumatic, hydrostatic, and leakage) the various piping systems shown on the Contract Drawings and specified elsewhere in these Specifications.

B. Test Pressures

1. Test pressures for the various services and types of piping are shown in Table 15044-1, at the end of this specification section.

2. ***Testing of piping shall be at a minimum of 150% of the working pressure***.

C. Related Work Specified Elsewhere

Specification Section	Title
15000	Mechanical - General Requirements
15060	Ductile Iron Pipe and Fittings
15065	Polyvinyl Chloride (PVC) Pressure Pipe and Fittings
15100	Valves and Appurtenances

1.02 Submittals

A. Submittals shall be submitted in accordance with Section 01300, *Shop Drawings, Submittals and Samples*, for the Engineer's review. ***All shop drawings shall be in an electronic (PDF) format***.

B. Testing Plan

1. ***Submit a testing plan (in a PDF format) prior to testing*** and include at least the information that follows:

   a. Testing dates.

   b. Piping systems and section(s) to be tested.

   c. Test type.

   d. Method of isolation.

   e. Calculation of maximum allowable leakage for piping section(s) to be tested.

C. Certifications of Calibration of all testing equipment.

D. Certified Test Report.

E. Testing Records

1. ***Provide a record of each piping installation during the testing (in a PDF format)***. These records shall include, but not be limited to, the following:

   a. Date of the test.

   b. Identification of the pipeline tested or retested.

   c. Identification of the pipeline material.

   d. Identification of the pipe specification.

   e. The test fluid.

   f. The test pressure.

   g. Remarks

      1) Leaks identified (type and location).

      2) Types of repairs.

      3) Corrections made.

h. Certification by the Contractor that the leakage rate measured conformed to the Specifications.

i. Signature of the Engineer's or Owner's representative witnessing the pipe test.

2. Submit the test records in an electronic (PDF) format to the Engineer's representative upon completion of the testing.

1.03 Reference Standards

A. American Waterworks Association (AWWA)

1. AWWA C600

2. AWWA M23

1.04 Quality Assurance

A. Hydrostatic tests consisting of pressure tests and leakage tests shall be conducted on all newly-installed pressure pipes and appurtenances.

B. The tests shall be in accordance with the provisions listed in this specification and with the provisions of AWWA C600 or M23 as applicable.

2. PRODUCTS

2.01 Tests

A. Hydrostatic Tests

1. The testing fluid shall be water for all hydrostatic tests whenever possible.

2. In those systems where water cannot be used the test fluid may be either the one to be used in the system or one agreed upon by the Engineer and the Contractor.

B. Service Pressure Tests

1. The fluid for which the system is designed shall be the test fluid.

C. Pneumatic Test

1. Compressed air shall normally be used. Other gases may be used when specified or directed by the Engineer.

2. ***Test pressures shall be one hundred ten percent (110%) of the anticipated maximum operating pressure, but not exceeding 100 psig, and not less than 5 psig at the highest point in the system***.

2.02 Testing Equipment

A. The Contractor shall provide pressure gauges, pipes, bulkheads, pumps, test plugs, all necessary bracing and restraint, meters and all other ancillary equipment to perform the hydrostatic and/or pneumatic testing.

B. Hydrostatic Testing

1. Water: *Of sufficient capacity to deliver the required test pressure.*

2. Strainer: *On inlet side of the pump to prevent foreign matter from entering the system.*

3. Valves: *Shall be provided on the suction and discharge side of the pump.*

4. Heater: *To allow heating of the test fluid when elevated temperatures are required for test.*

5. Relief Valve: *Set at a pressure to relieve at 20 to 25 percent above the required test pressure.*

6. Pressure Gauge(s): *Capable of reaching 50 percent over the test pressure. These should be located at the pump discharge and any other place deemed convenient by the Contractor. The pressure gauges shall be marked in one (1) psi increments.*

7. ***Pressure gauges and relief valves shall be checked for accuracy before use in all test procedures***.

C. Service Testing

1. A pressure gauge capable of registering 25 psi (minimum) over the design pressure shall be installed down-stream from the supply shut-off valve if one is not included in the system. The pressure gauge shall be marked in one (1) psi increments.

D. Pneumatic Testing

1. Building supply air to deliver the required test pressure if available, or provide a compressor capable of the required test pressure.

2. Valves shall be provided on the discharge side of the pump.

3. ***A relief valve shall be provided to relieve at 10 - 15 percent over the test pressure***.

4. ***Pressure gauge(s) capable of reaching fifty percent (50%) over the test pressure shall be provided***. A gauge shall be located on the pump discharge and other location as required by the Engineer. The pressure gauges shall be marked in one (1) psi increments.

3. EXECUTION

3.01 Preparation

A. Pipes shall be in place and anchored before commencing pressure testing.

B. Conduct the hydrostatic and/or pneumatic tests on exposed and aboveground piping ***after*** the piping has been installed and attached to the pipe supports, hangers, anchors, expansion joints, valves, and meters.

C. Before conducting the hydrostatic tests, flush all pipes with water to remove dirt and debris. For pneumatic tests, blow air through all of the pipes.

D. Test new pipelines which are to be connected to existing pipelines by isolating the new line from the existing line by means of pipe caps, special flanges, or blind flanges. After the new pipeline has been successfully tested, remove all caps or flanges and connect to the existing piping.

E. ***Conduct hydrostatic tests on buried pipe after the trench has been completely backfilled***. The pipe may be partially backfilled and the joints left exposed for inspection for an initial leakage test. Perform the final leakage test, however, after completely backfilling and compacting the trench.

F. ***The Contractor shall provide any temporary piping needed to carry the test fluid to the piping that is to be tested***. After the test has been completed and demonstrated to comply with the specifications, disconnect and remove all temporary piping. Do not remove exposed vent and drain valves at the high and low points in the tested piping; remove any temporary buried valves and cap the associated outlets. Plug taps or connections to the existing piping from which the test fluid is obtained.

G. ***The Contractor shall provide temporary drain lines needed to carry testing fluid away from the pipe being tested***. Remove such temporary drain lines after completing the pressure testing. Drain the pipes after they have been tested.

H. ***The Contractor shall notify the Engineer, in writing, a minimum of seventy-two (72) hours prior to conducting the pressure testing***.

I. Chlorine Piping

1. Chlorine piping shall be tested, dried and cleaned in accordance with the requirements of the Chlorine Institute, Pamphlet 6.

J. New Piping Connected to Existing Piping

1. Isolate new piping with grooved-end pipe caps, spectacle blinds, blind flanges or as acceptable to the Engineer.

K. Items that do not require Testing

1. Piping between wet wells and wetwell isolation valves.
2. Equipment seal drains.
3. Tank overflows to atmospheric vented drains.
4. Tank atmospheric vents.

L. Cleaning

1. ***Before conducting hydrostatic tests, flush all pipes with water to remove dirt and debris***. For pneumatic test, blow air through the pipes.
2. ***Maintain a flushing velocity of at least 2.5 feet per second for water testing and at least 2,000 feet per minute for pneumatic testing***. Flushing shall continue until clean water flows from the pipeline. ***The minimum amount of flushing time shall be as follows***:

$$T = 0.667\ L$$

Where: T = *Flushing Time (seconds)*

L = *Pipe Length (feet)*

M. ***Performed all required disinfection after hydrostatic testing is complete and acceptable, in accordance with these specifications***.

N. Length of Test Section for Buried Piping

1. The maximum length of the test section for buried pipe shall be as follows:

Pipe Diameter (inches)	Maximum Allowable Test Section Length (feet)
≤ 12	3,500
> 12	5,280

2. Provide intermediate test bulkheads where the pipeline length exceeds these limits.

O. Initial Pipeline Filling for Hydrostatic Testing

1. The maximum rate of filling shall not cause the water velocity in the pipeline to exceed one-half (½) foot per second.

P. Gravity Piping

1. Perform testing after service connections, manholes and backfilling have been completed between stations to be tested.

2. Determine the groundwater level at the time of testing by excavating exploratory holes or other methods acceptable to the Engineer.

Q. Pressure Test

1. ***All tests shall be made in the presence of and to the satisfaction of the Engineer and/or Owner*** and also, to the satisfaction of any local or state inspector having jurisdiction.

   a. ***Provide not less than seventy-two (72) hours written notice to the Engineer, Owner***, and the authority having jurisdiction when it is proposed to make the tests.

   b. Any piping or equipment that has been left unprotected and subject to mechanical or other injury, in the opinion of the Engineer, shall be retested in part or in whole as directed by the Engineer.

c. The piping systems may be tested in sections as the work progresses, but no joint or portion of the system shall be left untested.

2. All elements within the system that may be damaged by the testing operation shall be removed or otherwise protected during the operation.

3. ***Repair all damage done to any existing or adjacent work or materials due to or on account of the tests***.

3.02 Inspection and Testing

A. Hydrostatic Testing of Above Ground or Exposed Piping

1. ***The maximum filling velocity shall be 0.50 feet per second***, applied over the full area of the pipe.

2. Open vents at high points of the piping system to purge air while the pipe is being filled.

3. Subject the piping system to the test pressure indicated.

4. ***Maintain the test pressure for a minimum of four (4) hours***.

5. Examine all joints, fittings, valves, and connections for leaks.

6. ***The piping system shall show no leakage or weeping***.

7. ***Correct leaks and retest until no leakage is obtained***.

B. Hydrostatic Testing of Buried Piping

1. ***Testing shall begin after backfilling operations have been completed. Expel air from the piping system during filling***.

2. Where any section of the piping contains concrete encasement, do not make the pressure test until at least ten (10) days after the concrete has been poured. When testing mortar-lined piping, fill the pipe to be tested with water and allow it to soak for at least forty-eight (48) hours to absorb water before conducting the pressure test.

3. Apply and maintain the test pressure by means of a hydraulic force pump. ***Maintain the test pressure for a minimum duration of four (4) hours***. ***After the***

test pressure is reached, use a meter to measure the additional water added to maintain the pressure during the four (4) hours. This amount of water is the loss due to leakage in the piping system. ***The allowable leakage volume is defined by the following formula***:

a. AWWA C-600 Ductile Iron Mains

$$V = \frac{S \times D \times \sqrt{P} \times T}{133{,}200}$$

b. AWWA Manual No. M-23 PVC Mains

$$V = \frac{0.90 \times S \times D \times \sqrt{P} \times T}{133{,}200}$$

c. *Where:*

V = Allowable Leakage (gallons)

S = Length of Pipe Tested (feet)

D = Diameter of the Pipe Tested (inches)

P = Specified Test Pressure (psig)

T = Pressure Test Time (hours)

d. ***Repair and retest any and all pipes showing leakage rates greater than that allowed***.

C. Pneumatic Testing

1. This procedure for a pneumatic test of piping systems shall be used when directed by the Engineer when water, or other liquid, cannot be introduced into the line, or as a supplement to a hydrostatic test. ***It shall not be used to test non-metallic (plastic) pipe, including, but not limited to, PVC, CPVC, E-CTFE, etc***.

2. All pneumatic tests shall be done under the supervision of Contractor and in the presence of the Engineer and/or Owner's representative.

3. ***The Engineer and the Owner must be informed, in writing, at least seventy-two (72) hours prior to the proposed pressure test***.

4. Only those people actively participating in the test shall be allowed in the test area. Protect test personnel and the Owner's/Engineer's operating personnel.

5. Safety glasses and hard-hats must be worn.

6. Perform tests only after the piping has been completely installed including supports, hangers and anchors. Secure piping to be tested to prevent the pipe from moving and to prevent damage to adjacent piping and equipment. Remove or isolate from the pipe any appurtenant instruments or devices that could be damaged by the test, prior to applying the test.

7. Fluid: ***Oil-free, dry air***.

8. Procedure

    a. ***The test pressure shall be 150% of the working pressure***.

    b. Apply an initial pneumatic test pressure of 25 psig maximum to the piping system prior to final leak testing, to locate visible leaks. Apply a soap bubble mixture to joints and connections, and examine the system for leakage.

    c. Correct visible leaks and repeat the preliminary test until all visible leaks are corrected.

    d. ***Gradually increase the pressure in the system to one-half (50%) of the test pressure***. Thereafter, increase the pressure in steps of approximately one-tenth of the specified test pressure until the required test pressure has been reached.

    e. ***Maintain the pneumatic test pressure continuously for a minimum time of four (4) hours and for such additional time as may be necessary to conduct a soap bubble examination for leakage***.

    f. ***The piping system shall show no leakage***. ***Correct any visible leakage and retest. All leaks shall be noted on the Pressure Test Record Form***.

    g. After satisfactory completion of the test, vent the line and allow it to return to atmospheric pressure. Connection can then be made to the supply line as necessary.

D. Hydrostatic Test for Gravity Piping

1. ***The testing equipment accuracy shall be ± 0.5 gallons of water leakage*** under the specified conditions.

2. ***The maximum allowable leakage shall be 0.10 gallons per hour per inch diameter per 100 feet***. Include service connection footage in the test section, subjected to the minimum head specified.

3. Gravity Sanitary and Roof Drain Piping

    a. Test with fifteen (15) feet of water to include the highest horizontal vent in filled piping.

    b. Where vertical drain and vent systems exceed fifteen (15) feet in height, test systems in fifteen (15) foot vertical sections as piping is installed.

4. Exfiltration Test

    a. Hydrostatic Head

        1) At least six (6) feet above the maximum estimated groundwater level in the section being tested.

        2) No less than six (6) feet above the inside top of the highest section of pipe in the test section, including service connections.

5. Infiltration Test

    a. Groundwater Level

        1) At least six (6) feet above the inside top of the highest section of pipe in the test section, including service connections.

6. Piping with a groundwater infiltration rate greater than the allowable leakage rate for exfiltration will be considered defective even if pipe previously passed a pressure test.

7. Defective Piping Sections

    a. Replace or test and seal individual joints, and retest as specified.

E. Pressure Testing of Double-Walled Containment Piping

1. Test the primary pipe as described for buried and aboveground or exposed piping.

2. Test the secondary containment piping by performing a pneumatic test as described above of the annual space between the primary and secondary pipes at a pressure of 5 psi.

F. Repetition of Test

1. If the actual leakage exceeds the allowable leakage, locate and correct the faulty work and repeat the test.

2. Restore the work and all damage resulting from the leak and its repair. Eliminate visual leakage.

G. Test Pressure

1. ***All pipe shall be tested at the pressures shown in Table 15044-1 and at a minimum of 150% of the normal working pressure of the pipe***.

END OF SECTION

TABLE 15044-1

PIPING PRESSURE TEST SCHEDULE

Service	Pipe Designation	Test Pressure (psig)
Chemical Vacuum Pipe	CG	See note 3
Chemical Solution Lines	---	150
Domestic Water Pipe	DW	150
Gravity Flow Pipe	DR	See notes 2 and 3
Irrigation Pipe	IW	150
Non-Potable Water	NPW	150
Potable Water	PW	150
Pressure Process Pipe	RW, PW, FW	150
Reuse Water	RW	150

NOTES

1. **Piping not listed and sections of piping in gross conflict with the listed pressure, with the prior approval of the Engineer, shall be tested at a minimum of 150% of the working pressure.**
2. **Non pressure process piping shall be tested at 150% of the maximum head pressure on the pipe.**
3. **Gravity drain lines within buildings shall be hydrostatically tested by capping or plugging drain lines and system ends and filling the system through the vent lines to the top of the vents. Leaking shall be calculated from this static head pressure and amount of water required to refill the vent pipe after the test duration.**

SECTION 15060

DUCTILE IRON PIPE AND FITTINGS

1. GENERAL

1.01 Scope of Work

A. Furnish all labor, materials, equipment, gaskets, accessories and incidentals required to install, disinfect, and test ductile iron pipe, fittings and appurtenances of the sizes and in the locations shown on the Contract Drawings and as specified herein.

B. The Engineer reserves the right to make such modifications in locations as may be found desirable to avoid interference between pipes, or for other reasons. Pipe fitting notation is for the Contractor's convenience and does not relieve him/her from installing and jointing different or additional items where required to achieve a complete piping system.

C. ***All wastewater ductile iron piping shall have an interior lining of Protecto 401 Ceramic Epoxy. All buried ductile iron pipe and fittings shall have a bituminous exterior coating.***

1.02 Related Work

A. The Contract Documents include, but are not limited to, the following related sections:

Specification Section	Title
01600	Materials and Equipment
02200	Earthwork
02220	Excavation, Backfill and Compaction
09900	Painting
09905	Piping, Valve and Equipment Identification System
15000	Mechanical - General Requirements
15041	Disinfection of Piping and Structures

Specification Section	Title
15044	Pressure Testing of Piping
15100	Valves and Appurtenances
15125	Pipe Hangers and Supports
Contract Drawings and General Provisions of the Contract	

1.03 Reference Standards

A. Unless otherwise indicated, all materials, workmanship and practices shall conform to the following standards:

STANDARD	DESCRIPTION
American Society for Testing and Materials (ASTM)	
ASTM A-307	Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength
ASTM C-150	Standard Specification for Portland Cement
ASTM D-1248	Standard Specification for Fusion-bonded Polyethylene Lining for Water
American National Standards Institute (ANSI) / American Water Works Association (AWWA)	
.ANSI/AWWA C104/A21.4	American National Standard for Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water.
ANSI/AWWA C105/A21.5	American National Standard for Polyethylene Encasement for Ductile-Iron Piping for Water and Other Liquids
ANSI/AWWA C110/A21.10	American National Standard for Ductile-Iron and Gray Iron Fittings, 3-inch through 48-inch (75mm Through 1200mm) for Water and Other Liquids
ANSI/AWWA C111/A21.11	American National Standard for Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings
AWWA C115	Standard for Flanged Ductile-Iron Pipe
ANSI/AWWA C150/A21.50	American National Standard for the Thickness Design of Ductile-Iron Pipe
ANSI/AWWA C151/A21.51	American National Standard for Ductile-Iron Pipe, Centrifugally Cast for Water or Other Liquids
ANSI/AWWA C153/A21.53	American National Standard for Ductile- Iron Compact Fittings, 3-inch through 60-in, for Water and Other Liquids
ANSI B16.1	American National Standard for Cast Iron Pipe Flanges and Fittings

STANDARD	DESCRIPTION
American Water Works Association (AWWA)	
AWWA C600	AWWA Standard for Installation of Ductile-Iron Water Mains and Their Appurtenances
AWWA C651	AWWA Standard for Disinfecting Water Mains
American National Standards Institute (ANSI)	
ANSI B 16.1	Cast Iron Pipe Flanges and Flanged Fittings
National Science Foundation (NSF)	
NSF No. 60	Drinking Water Treatment Chemicals - Health Effects
NSF No. 61	Drinking Water System Components - Health Effects
Miscellaneous	
CIPRA Standard	Standard for Threaded Flanges

B. Where reference is made to one of the above standards, the revision in effect at the time of the Bid Opening shall apply.

1.04 Quality Assurance

A. All ductile iron pipe and fittings shall be from a single manufacturer who is fully experienced, reputable, and qualified in the manufacture of the materials to be furnished. All ductile iron pipe and fittings to be installed under this Project shall be inspected and tested at the foundry as required by the standard specifications to which the material is manufactured. Furnish, in duplicate, to the Engineer, sworn certificates of such tests and their results prior to the shipment of the pipe.

B. The pipe and fittings shall be designed, constructed and installed in accordance with the best practices and methods and shall comply with these specifications as applicable.

C. Inspection of the pipe and fittings will also be made by the Engineer or representative of the Owner after delivery. The pipe shall be subject to rejection at any time on account of failure to meet any of the Specification requirements, even though sample pipes may have been accepted as satisfactory at the place of manufacture. Pipe rejected after delivery shall be marked for identification and shall be removed from the Project site.

D. All ductile iron pipe and fittings shall be permanently marked with the following information:

1. Manufacturer, date.

2. Size, type, class, or wall thickness, length dimension.

3. Standard produced to (ANSI/AWWA, ASTM, etc).

E. Construction Requirements

1. ***All pipelines shall be installed with at least three (3) feet of cover, unless otherwise shown or indicated on the Contract Drawings***.

2. For underground utilities, changes in horizontal alignment of less than 11¼□ may be achieved through the use of allowable pipe deflection in lieu of fittings shown on the Contract Drawings at the Contractor's option, but subject to approval of the Engineer as to layout. Said deflection shall not exceed seventy-five percent (75%) of the maximum allowable deflection as stated in the pipe manufacturer's installation instructions.

3. ***All piping installed underneath structures or concrete slabs shall be ductile iron Pressure Class 250 for 14-inch pipe and larger and Pressure Class 350 for 12-inch pipe and smaller and shall be concrete-encased***.

F. Supplier / Manufacturer

1. All pipe shall be as manufactured by the American Cast Iron Pipe Company, U.S. Pipe and Foundry Company, McWane Cast Iron Pipe Co., or approved equal.

1.05 Submittals

A. All shop drawings shall be submitted to the Engineer for approval in accordance with Section 01300, *Shop Drawings, Submittals and Samples*, prior to construction. ***All shop drawing submittals shall be in an electronic (PDF) format***.

B. ***Submit to the Engineer, within fifteen (15) days of the Effective Date of the Agreement, the name of the pipe and fitting suppliers, their addresses, phone numbers, FAX numbers, e-mail addresses, and a list of materials to be furnished***.

C. The Contractor shall submit shop drawings, including layouts within, and under buildings and structures, to the Engineer for approval.

D. ***Shop drawing submittals shall include, at a minimum***, the following:

1. A laying schedule and marking diagrams which indicate the specific number of each pipe and fitting, the location and direction of lay of each pipe and fitting in the completed line shall be submitted to the Engineer. In addition, the laying schedules shall include, but not limited to, the following:

   a. Order of installation and closures.

   b. Pipe invert elevation and station at each change of grade and alignment.

   c. The station and invert elevation to which the bell end of each pipe will be laid.

   d. Elements of curves and bends, both in horizontal and vertical alignment, including elements of the resultant true angular deflections in cases of combined curvature.

   e. The limits of each reach of pipe thickness class and of restrained joints.

   f. The limits of each reach of concrete encasement or encasement in casing.

   g. Locations of closures for length adjustment and for construction convenience.

   h. Locations of manholes and other points of access for placement of mortar lining, field joints and removal of test bulkheads.

   i. Locations of valves and other mechanical equipment.

   j. Methods and locations of supports.

2. Details of special elbows and fittings.

3. ***Calculations and test data demonstrating that the proposed restrained joint arrangement can transmit the required forces with a minimum safety factor of 1.50.***

4. Copy of the manufacturer's quality control check of pipe material and production. Include hydrostatic test records and acceptance test records. For each acceptance test, submit a stress-strain diagram showing yield strength, yield point, tensile strength, elongations, and reduction in area. Provide specimen test section dimensions and speed and method used to determine speed of testing, method used for rounding of test results, and reasons for replacement specimens, if any. Submit ring bending test of pipe of the same diameter and pressure class as the pipe required for this Project to prove ring bending stress at 48 ksi results in a factor of safety of 2.0.

5. ***Provide an affidavit of compliance with AWWA standards referenced in this specification section***.

6. ***Coatings and linings applied, materials and thicknesses (dft)***.

7. Details of restrained and flexible joints.

8. Couplings.

9. Flexible expansion joints, tie-rods, and flange coupling adapters.

10. Joint lubricant.

11. Temporary plug and anchorage systems for hydrostatic pressure tests.

12. A test report on the physical properties of the rubber compound used in the gaskets.

13. Drawings or manufacturer's data sheet showing flange facing, including design of facing serrations.

E. Submit the anticipated production and delivery schedule for the Project materials.

1.06 Delivery, Storage and Handling

A. All pipe and fittings shall be shipped and stored at the Project Site in accordance with DIPRA's *Guide for the Installation of Ductile Iron Pipe* and the pipe manufacturer's recommendations.

B. The Contractor shall exercise care in loading, transporting, and unloading to prevent injury to the pipe. Under no circumstances shall the pipe be dropped or skidded against each other. Slings, hooks, or pipe tongs shall be used in pipe handling.

C. ***Materials, if stored, shall be kept safe from damage***. The interior of all pipe, fittings and other appurtenances shall be kept free from dirt or foreign matter at all times.

D. ***Pipe shall not be stacked higher than the limits recommended by the manufacturer***. ***The bottom tier shall be kept off the ground on timbers, rails, or concrete***. Wood lagging shall be required between pipes such that pipes do not make contact with one another. Stacking shall conform to manufacturer's recommendations.

E. Gaskets for mechanical and push-on joints to be stored shall be placed in a cool location out of direct sunlight. Gaskets shall not come in contact with petroleum products. Gaskets shall be used on a first-in, first-out basis.

F. ***The Contractor shall exercise extra care when handling epoxy, cement and polyethylene lined pipe and fittings***. Damage to the lining will render it unfit for use and shall require replacement, unless repair to the lining can be made in accordance with AWWA C104.

1.07 Job Conditions

A. Water in Excavation

1. Water shall not be allowed in the trenches while underground pipes, fittings, valves and/or accessories are being laid and/or tested.

2. The Contractor shall not open more trench than the available pumping facilities are able to dewater to the satisfaction of the Engineer. The Contractor shall assume responsibility for disposing of all water so as not to injure or interfere with the normal drainage of the territory in which he is working.

3. In no case shall the pipelines being installed be used as drains for such water, and the ends of the pipe shall be kept properly and adequately plugged during construction by the use of approved stoppers and not by improvised equipment.

4. ***All necessary precautions shall be taken to prevent the entrance of mud, sand, or other obstructing matter into the pipelines***. If on completion of the work any such materials has entered the pipelines, it must be cleaned as directed by the Engineer so that the entire system will be left clean and unobstructed.

1.08 Warranties and Guarantees

A. The manufacturer shall guarantee that the equipment and materials furnished is suitable for the purpose intended and free from defects of design, material and workmanship.

B. ***The ductile iron piping and fittings shall be unconditionally warranted by the manufacturer for a period of five (5) years from the date of Final Project Acceptance by the Owner***.

C. Warranties shall be provided for all equipment in accordance with the Project General Conditions and Section 1740, *Warranties and Bonds*, unless specified otherwise.

D. In the event that any equipment or material fails to perform as specified herein, the equipment manufacturer shall promptly repair or replace the defective equipment at no additional cost to the Owner.

E. This warranty is in addition to any other warranty required by the Contract Documents.

2. PRODUCTS

2.01 Materials

A. General

1. ***Pipe shall have a minimum rated water working pressure of 250 psi*** and shall be furnished in laying lengths of twenty (20) feet or less, unless specifically shown otherwise on the Contract Drawings.

2. All ductile iron pipe shall conform to ANSI A-21.51 and AWWA C-151.

3. If not otherwise specified, provide the following:

   a. Flanged joints for exposed piping.

   b. Standard mechanical joints, restrained joints, or rubber-ring type push-on joints for buried piping.

B. Pipe Markings

1. Plainly mark each length of straight pipe and each fitting at the bell end to identify the design pressure class, the ductile-iron wall thickness, and the date of manufacture, and the proper location of the pipe item by reference to the layout schedule.

2. Mark the spigot end of restrained joint pipe to show clearly the required depth of insertion into the bell.

C. Ductile Iron Pipe (DIP)

1. Exposed (Flanged) Pipe

   a. Fabricated in accordance with requirements of AWWA C 151, Thickness Class 53 (Special Class).

2. Buried (Non-Flanged) Pipe

   a. Non-flanged pipe shall conform to AWWA C150/C151 and ANSI A21.51 for material, pressure, thickness, dimensions, tolerances, tests, markings, and other requirements. The pipe shall be supplied in standard lengths as much as possible.

   b. ***Thickness design shall be a minimum Class 350 for diameters up to twelve (12) inches and minimum Class 250 for piping diameters fourteen (14) inches and larger***.

3. Pipe for use with sleeve type couplings shall have plain ends (without bells or beads) cast or machined at right angles to the axis.

4. Pipe for use with split type couplings shall have ends with cast or machined shoulders or grooves that meet the requirements of the coupling manufacturer.

5. ***Pipe supplied shall be supplied in lengths not in excess of twenty (20) feet*** having rubber-ring push-on joints, standard mechanical joints or restrained joints where required for underground piping and flanged joint piping, for all above grade piping as shown on the Contract Drawings.

D. Coatings and Linings

1. Exterior Coating for Buried Pipe

   a. Ductile iron pipe, fittings, and specials to be installed underground shall be ***coated on the exterior at the factory with two coats, 1 mil DFT per coat, of bituminous coating*** (ANSI A21.4), minimum.

   b. All clamps, bolts, nuts, studs, and other uncoated parts of joints for underground installation shall be coated with a bituminous coating prior to backfilling. The bituminous coating shall meet ANSI A21.4 and shall be 2 mils, DFT, minimum.

2. Exterior Coating for Exposed Pipe

   a. Ductile iron pipe, fittings, and specials to be installed aboveground shall be furnished with a shop applied primer on the exterior. The shop primer shall be as specified in Section 09900, *Painting*.

   b. Exposed piping shall be painted in accordance with Sections 09900, *Painting,* and 09905, *Piping, Valve and Equipment Identification System*.

3. Cement-Mortar Interior Lining

   a. Cement mortar linings are to be used, where indicated on the piping schedule for potable water applications.

   b. All cement mortar linings shall be in accordance with ANSI 21.4 .

4. Ceramic Epoxy Interior Lining - Wastewater, Sludge/Biosolids, Reclaimed Water and Reject Water

   a. ***Ductile iron pipe, fittings, and specials shall be lined with Protecto 401 Ceramic Epoxy***, a high build multi-component amine cured Novalac epoxy lining, containing at least twenty percent (20%) by volume of ceramic quartz pigment, manufactured by Indurall Coatings, Inc., Birmingham, AL, or approved equal.

   b. ***The interiors of the ductile iron pipe, fittings, and specials shall receive forty (40) mils dry film thickness (DFT) of the ceramic epoxy protective lining***. Storage, surface preparation, application, and safety precautions shall strictly follow manufacturer's instructions.

   c. ***Test the lining thickness using a magnetic film thickness gauge***. Conduct testing in accordance with SSPC-PA-2, Film Thickness Rating. Test for pinholes with a non-destructive 2,500 V test. Repair all defects prior to shipment.

5. The pipe manufacturer shall label, in large legible lettering on the exterior of the pipe, the type of pipe interior lining.

6. Air service piping shall be unlined.

E. Fittings

1. Fittings for ductile iron pipe shall be either mechanical joint, restrained joint, flanged joint, or grooved-end coupling as indicated on the Contract Drawings and shall have a ***minimum working pressure of 250 psi***.

2. Fittings shall be ductile iron and shall conform to ANSI/AWWA C110, ANSI/AWWA C111 and ANSI/AWWA C153, latest revisions, for flanged and mechanical joint pipe, and grooved-end fittings shall conform to AWWA C110 and ANSI B16.1 with grooved ends conforming to AWWA C606, radius cut rigid joints.

3. Fitting material shall conform to ASTM A-48, Class 30, or ASTM A-126, Class B.

4. All flanged fittings shall be Class 125 (ANSI B-16.1) unless otherwise specifically noted.

5. ***Fittings shall be coated and lined as specified above in Article 2.01(D)***.

6. The rubber gaskets for flanged, mechanical, and push-on joints shall be as described in herein.

7. Fittings and couplings shall be furnished by the same manufacturer.

F. Joints

1. General

a. Joints in "*runs*" of aboveground (exposed) piping or piping located in vaults and structures shall be flanged or rigid radius grooved end.

b. Joints in "*runs*" of buried piping shall be of the push-on, mechanical, restrained joint type per AWWA C-111, except where flanged joints are required to connect to valves, meters and other equipment.

2. Flanged Joints

a. ***Flanges shall be Class 125 per ANSI B-16.1, unless otherwise specifically noted to be Class 250.***

b. Flanges shall be of the long-hub type screwed tightly on the pipe by a machine at the foundry prior to facing and drilling.

c. Flange faces shall be coated with a rust inhibitor immediately after facing and drilling. Field assembled screwed on flanges are prohibited.

d. Provide specifically drilled flanges when required for connection to existing piping or special equipment.

e. Gaskets

1) Gaskets shall be fullface, c-inch thick, cloth-inserted rubber and shall be suitable for a ***water pressure of 350 psi at a temperature of 180°F***.

2) Air Service

a) ***Gaskets for air service shall be manufactured of materials suitable for high temperature service*** (***> 250°F***).

3) All Other Services

a) Gaskets for all other services shall be manufactured of Buna-N rubber suitable for wastewater, biosolids/sludge, reclaimed water and water service.

f. Bolts and Nuts for Flanges

1) Bolts and nuts for flanges located indoors, in enclosed vaults and structures, buried and submerged and located outdoors above ground or in open vaults or structures shall Type 316 stainless steel conforming to ASTM A-193, Grade B8M for bolts and ASTM A-194, Grade M for nuts.

2) Provide washers for each nut. Washers shall be of the same material as the nuts.

3. Grooved-End Couplings

a. Grooved-end couplings shall be malleable iron, ASTM A-47 (Grade 32510) or ductile iron, ASTM A-536 (Grade 65-45-12).

b. Bolts shall be ASTM A-193, Grade B8, Class 2.

c. Gaskets shall be halogenated butyl rubber or EPDM for water service and Buna-N for wastewater and reclaimed water service, conforming to ASTM D-2000.

d. Couplings

1) AWWA C-606 for rigid radius ductile iron pipe. Couplings shall be Victaulic Style 31, Gustin-Bacon No. 500, or equal.

e. Grooved-end adapter flanges for piping having an operating pressure of 150 psi and less shall be Victaulic Style 341, or equal. Flange dimensions shall conform to ANSI B-16.1, Class 125.

f. Grooved-end transition couplings for connecting ductile iron pipe to steel pipe shall be Victaulic Style 307, or approved equal.

4. Push-on and Mechanical Joints

a. Pipe using push-on and mechanical joints shall be in strict accordance with AWWA C111 and ANSI A21.11, latest revision and shall be as manufactured

by American Cast Iron Pipe Company (Fastite Joint), U.S. Pipe Company (Tyton Joint), or Clow Corporation (Super Bell Tite Joint), or approved equal.

b. Gaskets

1) Gaskets shall be full-face, c-inch thick, EPDM and shall be suitable for a ***water pressure of 350 psi at a temperature of 180°F***.

2) Air Service

a) ***Gaskets for air service shall be manufactured of materials suitable for high temperature service*** (***> 250°F***).

3) All Other Services

a) Gaskets for all other services shall be manufactured of Buna-N rubber suitable for wastewater, biosolids/sludge, reclaimed water and water service.

c. Each joint shall be complete with gasket, cast iron gland and all required bolts and nuts.

d. Jointing materials shall be provided by the pipe manufacturer and installation shall be in strict accordance with the manufacturer's recommended practice.

5. Restrained Joints and Fittings

a. Restrained joints shall be provided for all buried piping systems at the location required to restrain system thrust.

b. Pipe joints and fittings shall be restrained in accordance with the Contract Drawings and the requirements of this specification section.

c. It is intended that all buried joints and all fittings be restrained.

d. In cases where the calculated required length of restrained pipe is not evenly divisible by nominal laying lengths of pipe, the total required length of restrained pipe shall be rounded up to the next closest nominal length that is evenly divisible by the standard laying length.

e. Pipe joints and fittings shall be restrained as follows:

1) Manufactured restrained joints shall be “Flex-Ring”, “Lok-Ring”, or “Lok-Fast” manufactured by the American Cast Iron Pipe Company; “Lok-Tyte” or “Tr-Flex” Type manufactured by the United States Pipe Company; or an equal approved by the Engineer. Joints shall be the manufacturer's standard specifically modified push-on type joints with joint restraint provided by ductile iron retainer rings joined together by corrosion-resistant, high strength steel tee head bolts and nuts or with joint restraint provided by a welded-on retainer ring and a split flexible ring or locking ring assembled behind the retainer ring.

2) Restrained joint pipe and fittings shall be ductile iron only and shall comply with applicable portions of this specification. Manufactured restrained joints shall be capable of deflection during assembly. Deflection shall not exceed seventy-five percent (75%) of the manufacturer's recommendations.

3) Tee head bolts and nuts for restrained joints shall be manufactured of CORTEN, high strength, low alloy, corrosion resistant steel as manufactured by NSS Industries, Plymouth, Michigan, or an equal approved by the Engineer.

4) Restrained joints utilizing tie-rods, or retainer glands and set screws will not be allowed.

5) Field-Lok by U.S. Pipe Company and “Fast-Grip” by American Cast Iron Pipe Company are acceptable for push-on joint pipe.

f. Alternate Restrained Joints

1) When prior approval is obtained from the Engineer, ductile iron pipe and fittings with mechanical joints may be restrained using a follower gland which includes a restraining mechanism. When actuated during installation, the restraining device shall impart a multiple wedging action against the pipe wall which increases resistance as internal pressure in the pipeline increases.

2) The joint shall maintain flexibility after installation.

3) Glands shall be manufactured of ductile iron conforming to ASTM A-536 and restraining devices shall be of heat treated ductile iron with a minimum hardness of 370 BHN. The gland shall have standard dimension and bolting patterns for mechanical joints conforming to ANSI/AWWA C111 and C153, latest revisions.

4) Tee head bolts and nuts shall be manufactured of corrosion-resistant, high strength, low alloy CORTEN steel in accordance with ASTM A-242.

5) The restraining wedges shall have twist-off nuts to insure proper torquing. The mechanical joint restraint device shall have a minimum working pressure rating of 250 psi with a minimum safety factor of 2 to 1 and shall be MEGALUG® as manufactured by EBBA Iron, Inc. No other retainer gland type device will be acceptable.

6) After installation prior to backfilling, all parts of the joint restraint system shall be coated with bituminous epoxy.

6. Compression Sleeve Couplings

a. The Contractor shall furnish and install, where required or where shown on the Drawings, manufactured compression couplings equal to Style 38 or Style 39, as manufactured by the Dresser Manufacturing Division of Dresser Industries or an approved equal.

b. The compression couplings shall consist of two (2) steel follower flanges, one (1) steel middle ring with pipe stops removed, and sufficient rolled thread trackhead bolts to properly compress the gaskets. After fabrication, the middle and follower rings shall be cold expanded to size and dimension. The thickness of the middle rings shall be suitable for the pressures specified, and the application, and in no case be less than 3/8-inch thick for pipes ten (10) inch through thirty-six (36) inch or ¼-inch thick for pipes less than ten (10) inches in diameter.

c. All parts of the compression coupling shall be galvanized or heavily cadmium plated at the point of manufacture and shall be epoxy coated in accordance with AWWA C-210 or AWWA C-203.

d. The entire compression sleeve coupling unit shall be rated for working pressure plus surge pressure as a minimum.

e. The Contractor shall provide field coating for buried couplings in accordance with AWWA C-203.

f. Deflections

1) Small deflections in the pipe alignment may be made at compression type coupling joints, but such deflections shall not exceed 3□ between any two (2) adjacent pipe sections.

2) Where changes in line and/or grade in excess of 3□ are required the deflections shall be made by deflecting multiple joints or by using fittings approved by the Engineer.

3) ***Joint deflection shall be limited to seventy-five percent (75%) of the manufacturer's recommended maximum***.

2.02 Polyethylene Encasement

A. Polyethylene encasement, where shown on the Contract Drawings, shall be cross laminated, high density polyethylene sleeves as specified in and conforming to AWWA C-105. The minimum polyethylene thickness shall be four (4) mils.

B. Polyethylene sleeves shall be white in color, manufactured with ultraviolet (UV) light inhibitors and installed by Method A specified in AWWA C-105. Exposure of the polyethylene sleeves to weather shall be kept to a minimum, and in no case shall it exceed five (5) days.

2.03 Accessories

A. Outlets

1. For outlets larger than two (2) inches, where required or indicated on the Contract Drawings, provide a tee with a flanged outlet.

2. Provide outlets two (2) inches and smaller, where required or indicated on the Contract Drawings, by tapping and attaching a service clamp.

2.04 Quality Control

A. The Contractor shall follow the manufacturer’s and supplier’s recommended product quality control specifications as required for the Project.

3 EXECUTION

3.01 General

A. Inspection and Testing

1. All pipe, fittings and specials shall be inspected and tested at the foundry.

2. The Owner shall have the right to have any or all piping, fittings or special castings inspected and tested by an independent testing agency at the foundry or elsewhere. Such inspection and testing will be at the Owner's expense.

3. The Contractor shall mark as rejected and immediately remove from the Project site, all pipe lengths showing cracks in pipe or damaged lining, which cannot be repaired per AWWA C-104, or received a severe blow that may cause an incipient fracture, even though no such fracture can be seen. Damaged lining shall be defined as lining that appears to be separated from the pipe wall over extensive areas, excessive hair line fractures, or lifted edges or separated segments visible to the naked eye.

4. Any pipe showing a distinct crack, but no incipient fracture beyond the limits of the visible crack, may be cut off and the sound portion installed. Cut the pipe at least twelve (12) inches from the visible limits of the crack. Cutting of pipe shall be done by skilled workmen, and in such a manner as to not damage the pipe. Every cut shall be square and smooth, with no damage to the pipe lining. Cut surfaces shall be recoated as specified for the pipe. Cutting and installing cracked pipe shall only be performed when approved by the Engineer, and shall be at the expense of the Contractor.

B. Care shall be taken in loading, transporting, and unloading to prevent injury to the pipe, coatings and linings. Pipe and fittings shall not be dropped. All pipe and fittings shall be examined before laying, and no piece shall be installed that is found to be defective. Any damage to the pipe coatings shall be repaired in accordance with the manufacturer’s instructions.

C. All connections to existing piping systems shall be made as shown or indicated on the Contract Drawings after consultation and cooperation with authorities of the Owner. Some such connections may have to be made during off-peak hours (late night or early morning).

D. If any defective pipe is discovered after it has been laid, it shall be removed and replaced with a sound pipe in a satisfactory manner, by the Contractor, at his/her own expense.

E. All pipe and fittings shall be thoroughly cleaned before laying, shall be kept clean until they are used in the work and, when installed or laid, shall conform to the lines and grades required.

F. Pipe Joint Deflection

1. Whenever it is desirable to deflect pipe joints to avoid obstructions or to maintain required alignment, ***the amount of the joint deflection shall not exceed seventy-five percent (75%) of the maximum limits allowed by the pipe manufacturer***.

G. Pipe, fittings, valves, and accessories shall be installed as shown or indicated on the Contract Drawings.

3.02 Installation

A. Handling and Cutting Pipe

1. Care shall be taken in handling, cutting, and laying ductile iron pipe and fittings to avoid damaging the pipe and interior lining, scratching or marring machined surfaces, and abrasion of the pipe coating.

2. ***All cracked pipe and fittings shall be removed at once from the Work at no additional cost to the Owner***.

3. Pipe cutting shall be done in a neat workmanlike manner without creating damage to the pipe and interior linings.

4. Ductile iron pipe may be cut using an abrasive pipe saw, rotary wheel cutter, guillotine pipe saw, milling wheel saw or oxyacetylene torch. Cut ends and rough edges of ductile iron pipe shall be ground smooth.

5. For push-on joint connections, the cut end shall be beveled to prevent gasket damage during joint assembly.

6. ***The interior lining shall be repaired at cut ends per the manufacturer's instructions prior to joint assembly***.

B. Installing Buried Pipe and Fittings

1. Inspect each piece of pipe or fitting before lowering it into the trench. Inspect the interior and exterior protective coatings. Clean the ends of the pipe or fitting thoroughly. Remove any foreign matter or dirt from inside the pipe or fitting and keep clean during and after laying.

2. Excavation, backfill and compaction shall conform to the provisions of Section 02220, *Excavation, Backfilling and Compaction*. Upon satisfactory installation of the pipe bedding material as specified in Section 02220, *Excavation, Backfilling and Compaction* a continuous trough for the pipe barrel and recesses for the pipe bells or couplings shall be excavated by hand digging. When the pipe is laid in the prepared trench, true to line and grade, the pipe barrel shall receive continuous, uniform support and no pressure will be exerted on the pipe joints from the trench bottom.

3. In preparation for pipe installation, placement (stringing) of pipe should be as close to the trench as practical on the opposite side of the trench from the excavated material. The bell ends of the pipe should point in the direction of the work progress.

4. ***Pipe and fittings shall be laid accurately to the lines and grades indicated*** on the Contract Drawings or required. Where grades for the pipeline are not indicated on the Contract Drawings, maintain a uniform depth of cover with respect to finish grade. Care shall be taken to insure a good alignment both horizontally and vertically and to give the pipe a firm bearing along its entire length. Any pipe which has its grade or joint disturbed after laying shall be taken up and relayed.

5. ***All pipe and fittings shall be cleared of sand, dirt, and debris before laying***. All precautions shall be taken to prevent sand, dirt, or other foreign material from entering the pipe during installation. If necessary, a heavy, tightly woven canvas bag of suitable size shall be placed over each end of the pipe before lowering into the trench and left there until the connection is made to the adjacent pipe. Any sand, dirt, or other foreign material that enters the pipe shall be removed from the pipe immediately. The interior of all pipe and fittings shall be kept clean, by the Contractor, after installation until Final Project Acceptance by the Owner.

6. The Contractor shall keep the trench in a dewatered condition during pipelaying in accordance with Section 02220, *Excavation, Backfilling and Compaction*.

7. Any time that pipe installation is not in progress, the open ends of pipe shall be closed by a watertight plug or other method approved by the Engineer. Plugs shall remain in pipe ends until all water is removed from the trench. No pipe shall be installed when trench conditions are unsuitable for such work, including standing water, excess mud, or rain.

8. After pipe has been laid, inspected, and found satisfactory, sufficient backfill shall be placed along the pipe barrel to hold the pipe securely in place while conducting the preliminary hydrostatic test. No backfill shall be placed over the joints until the preliminary test is satisfactorily completed, leaving them exposed to view for the detection of visible leaks.

9. Cover for underground piping shall not be less than that indicated on the Contract Drawings. ***The minimum cover for pipe shall be thirty-six (36) inches***. In areas where other piping conflicts preclude the maximum cover desired, the piping shall be laid to provide the maximum cover obtainable.

10. ***Upon satisfactory completion of the hydrostatic test, backfilling of the trench shall be completed***.

11. The Contractor shall provide and install all required piping and accessories in strict accordance with the Contract Documents and manufacturer's recommendations.

C. Installing Interior Pipe and Fittings

1. All piping and fittings shall be installed true to alignment and rigidly supported thrust anchors shall be provided where required. Any damage to linings shall be repaired to the satisfaction of the Owner and Engineer before the pipe is installed. Each length of pipe shall be cleaned out before erection.

2. ***Any sand, dirt, or other foreign material that enters the pipe shall be removed from the pipe immediately***. The interior of all pipe and fittings shall be kept clean, by the Contractor, after installation until Final Project Acceptance by the Owner.

3. ***Sleeves shall be installed of the proper size for all pipes passing through floors and walls as shown on the Contract Drawings***. Where indicated on the Contract Drawings, or required for liquid or gas-tightness, the pipe shall be sealed with a mechanical seal equal to Link-Seal as manufactured by the Thunderline Corporation, Wayne, Michigan.

4. Concrete inserts for hangers and supports shall be furnished and installed in the concrete as it is placed. The inserts shall be, in accordance with the requirements of the piping layout and jointing method and their locations shall be verified from approved layout drawings and the structural drawings.

5. Except as otherwise shown on the Contract Drawings, either flange joints or split type couplings may be used. Prior to approval of jointing, method layouts for hangers and supports shall be submitted to the Engineer for approval.

6. Flanged joints shall be made with bolts, bolt studs with a nut on each end, or studs with nuts where the flange is tapped.

7. All pipe and appurtenances connected to equipment shall be supported in such a manner as to prevent any strain from being imposed on the equipment. When manufacturer's have indicated requirements that piping loads shall not be transferred to their equipment, a certification shall be submitted stating that such requirements have been complied with.

8. The Contractor shall provide and install all required piping and accessories in strict accordance with the Contract Documents and manufacturer's recommendations.

9. ***Upon satisfactory completion of the piping, fitting and appurtenance installation, hydrostatic testing of the system shall be performed***.

D. Ductile Iron Pipe Joints

1. ***The joints of all pipelines shall be made absolutely "water-tight"***.

2. The particular joint used shall be approved by the Engineer prior to installation.

3. Where shown on the Contract Drawings or where, in the opinion of the Engineer, settlement or vibration is likely to occur, all pipe joints shall be of the bolted mechanical type or restrained joint as specified above, or as indicated on the Contract Drawings.

4. Push-on Joints

   a. ***Push-on joints shall be made in strict accordance with the manufacturer's recommendations and AWWA C-600***.

   b. Manufacturer's installation recommendations shall be submitted to the Engineer for review and approval before commencing work.

   c. Insert the gasket into the groove of the ball.

   d. Uniformly apply a thin film of special lubricant over the inner surface of the gasket the will contact the spigot end of the pipe. The lubricant shall be an inert, non-toxic, water soluble compound incapable of harboring, supporting, or culturing bacterial life.

   e. The bell of the pipe shall be cleaned of excess materials or other obstructions and wiped out before the cleaned and prepared spigot of the next pipe is inserted.

   f. Insert the chamfered end of the plain end pipe into the gasket and push until firmly into place until properly seated and held securely.

5. Bolted Joints

   a. Remove rust preventative coatings from machined surfaces prior to assembly.

   b. Thoroughly clean and carefully smooth all burrs and other defects from pipe ends, sockets, sleeves, housings and gaskets.

6. Grooved End Joints

   a. Install grooved end pipe and fittings in accordance with the coupling manufacturer's recommendations and the following:

1) Clean loose scale, rust, oil, grease and dirt from the pipe or fitting groove before installing the coupling. Apply the coupling manufacturer's gasket lubricant to the gasket exterior, including lips, pipe ends and housing interiors.

2) Fasten coupling alternately and evenly until the coupling halves are seated. Use torques as recommended by the coupling manufacturer.

7. Flanged Joints

a. Flanged joints shall be made up by inserting the gasket between the flanges. The threads of the bolts and the faces of the gaskets shall be coated with a suitable lubricant immediately before installation. The lubricant shall be an inert, non-toxic, water soluble compound incapable of harboring, supporting, or culturing bacterial life.

b. Bolt holes of flanges shall straddle the horizontal and vertical centerlines of the pipe. The Contractor shall clean flanges by wire brushing them before installing flanged fittings. The Contractor shall clean flange bolts and nuts by wire brushing them and lubricate bolts with oil and graphite.

c. The Contractor shall insert the nuts and bolts (or studs), finger tighten, and progressively tighten diametrically opposite bolts uniformly around the flange to the proper tension.

d. The Contractor shall execute care when tightening joints to prevent undue strain upon valves, pumps, and other equipment.

e. ***If flanges leak under pressure testing, the Contractor shall loosen or remove the nuts and bolts, reset or replace the gasket, reinstall or retighten the bolts and nuts, and retest the joints. All joints shall be "water-tight"***.

8. Mechanical Joints

a. All types of mechanical joint pipes shall be laid and jointed in full conformance with manufacturer's recommendations and AWWA C-600, which shall be submitted to the Engineer for review and approval before work is begun.

b. Only specially skilled workmen shall be permitted to makeup mechanical joints. Torque wrenches, set as specified in AWWA Standard C-111, shall be used; or spanner type wrenches not longer than specified therein may be used with the permission of the Engineer.

c. ***Thoroughly clean, with a wire brush, surfaces that will be in contact with the gaskets***.

d. ***Lubricate the gasket, bell and spigot by washing with soapy water***.

e. Slip the gland and gasket, in that order, over the spigot and insert the spigot into the bell until properly sealed. Evenly seat the gasket in the bell at all points, center the spigot, and firmly press the gland against the gasket.

f. ***Insert the bolts, install the nuts finger tight, and progressively tighten diametrically opposite nuts uniformly around the joints to the proper tension with a torque wrench***.

9. Bell and Spigot Joints

a. ***Thoroughly clean the bell and spigots and remove excess tar and other obstructions***.

b. Insert the spigot firmly into place and hold securely until the joint has been properly completed.

10. Restrained Joints

a. Restrained joints shall be made in strict, complete compliance with the manufacturer's recommendations.

b. Restrained joints shall be provided where indicated on the Contract Drawings and at all connections to existing piping systems.

c. Joint assembly shall be made in strict accordance with the manufacturer's instructions, which shall be submitted to the Engineer for review and approval before commencing work.

E. Fabrication

1. Tapped Connections

a. The Contractor shall make all tapped connections as shown on the Contract Drawings or as directed by the Engineer.

b. ***The Contractor shall make all connections watertight and of adequate strength to prevent pullout***.

c. The Contractor shall drill and tap normal to the longitudinal axis of the pipe.

d. The maximum size of taps in pipes and fittings without bosses shall not exceed the sizes listed in the Appendix of ANSI A21.51 based on two full threads.

2. Cutting

a. The Contractor shall perform all cutting with machines having rolling wheel cutters or knives designed to cut ductile iron. The use of a hammer and chisel to cut pipe is prohibited.

b. The Contractor shall after cutting, examine all cut ends for possible cracks and advise the Engineer for observation.

c. The Contractor shall adequately chamber all cut ends to be used with push-on joints to prevent damage to gaskets when pipe is installed.

3.03 Polyethylene Encasement

A. The polyethylene encasement, where shown on the Contract Drawings, shall be installed in accordance with either method specified in AWWA C-105.

3.04 Separation of Non-Potable Water Mains and Potable Water Mains

A. Horizontal Separation

1. ***Existing and proposed water and wastewater or non-potable force mains shall be separated at least six (6) feet horizontally***.

2. ***Horizontal separation between water mains and wastewater or non-potable force mains must always be a minimum of six (6) feet*** unless a closer than separation has been specifically detailed on the Contract Drawings that have been approved under the FDEP Permit.

B. Vertical Separation

1. Parallel Lines

a. Whenever potable water and non-potable water lines (reclaimed, sanitary, stormwater, force mains) run parallel and do not meet the horizontal separation

requirements, then the lines shall be vertically separated with the potable water line ***at least eighteen (18) inches above the top of the non-potable lines***.

2. Crossings

   a. ***Force mains crossing water mains shall be installed to provide a minimum vertical distance of eighteen (18) inches*** measured from the outside of the potable water line to the outside of the non-potable line. The potable water line may be either above or below the non-potable line at crossings. The constructed pipeline shall be installed so that the pipeline joints are as far from the crossing as possible.

   b. ***When the eighteen (18) inch maximum vertical separation distance cannot be maintained, the potable water main shall be encased in concrete. Concrete encasement of the potable water main shall be ten (10) feet each way of the crossing***.

3.05 Concrete Pipe Encasement

A. ***Concrete for concrete pipe encasement shall have a minimum strength of 3,000 psi at 28 days*** and encasement shall be constructed in accordance with details shown on the Contract Drawings. ***Encasement shall be constructed where***:

   1. Indicated on the Contract Drawings.

   2. Piping is laid under buildings, structures and structure pads.

   3. Potable water mains do not meet the eighteen (18) inch vertical separation.

   4. The Engineer shall order the pipeline encased.

B. The points of beginning and ending of concrete pipe encasement shall not be more than six (6) inches from a pipe joint to protect the pipe from cracking due to uneven settlement of its foundation or the erects of superimposed live loads.

C. ***Pipe encasement shall provide a minimum coverage of twelve (12) inches all around the pipe including pipe bells***.

3.06 Connection to Existing Water, Wastewater, Biosolids/Sludge and Reuse Systems

A. The Contractor shall coordinate making connection of the new mains to mains which are in service at the time of construction with the Owner.

B. ***The Contractor shall not connect to existing facilities unless the Engineer and a representative of the Owner are present. The Engineer and the Owner shall be notified, in writing, at least seventy-two (72) hours prior to the time connection is desired***.

C. Operation of all system valves shall be the responsibility of the Owner's personnel only. At no time shall the Contractor operate any system valves. System valves shall be defined as any valve which has main pressure against either side of the valve. The Contractor shall notify the Owner to request that a valve be operated, in writing, at least seventy-two (72) hours prior to the time operation is required.

3.07 Cleaning and Flushing of Pipelines

A. Following the hydrostatic and leakage tests, all the mains constructed under this Contract shall be cleaned and flushed to remove sand, loose dirt, and other debris. The ***minimum flushing velocity shall be 2.5 feet per second***. Flushing shall continue until clean water flows from the main. However, the Contractor shall endeavor to use the minimum amount of flushing water required to complete the work.

B. Upon completion of testing for the gravity drain line system, drain lines shall be flushed to remove dirt, sand, stones, and other debris which may have entered the lines during construction and settled out in the lines and/or manholes. Materials and debris flushed from the drain lines shall be removed from a downstream manhole, basin or lift station and disposed of at an approved disposal area.

C. Temporary blowoffs may be required for the purpose of flushing mains. Temporary blowoffs shall be installed as close as possible to the ends of the main being flushed. Blowoffs installed on the main shall be the same diameter as the main. Temporary blowoffs shall be removed and plugged after the main is flushed. All costs for installing and removing temporary blowoffs shall be at no additional cost to the Owner.

D. ***The Owner shall be notified, in writing, at least seventy-two (72) hours prior to flushing mains***.

E. Blowoffs and temporary drainage piping used for flushing shall not be discharged into any gravity sewer or pumping station wetwell. The Contractor shall obtain prior approvals from the Engineer and the Owner as to the methods and locations of flushing water discharge.

3.08 Disinfection of Potable Water Pipelines

A. Before any portion of the potable water piping systems is to be placed in service, it shall be disinfected; and its disinfection shall be demonstrated by bacteriological tests conducted in accordance with *Standard Methods for Examination of Water and Wastewater*, latest edition, for the coli-aerogenes group, by an approved laboratory, acceptable to the Engineer and the County Health Department.

B. Disinfection of potable water pipelines shall be in accordance with Section 15041, *Disinfection of Piping and Structures*.

3.09 Pressure Testing of Pipe

A. After installation, the pipe shall be tested for compliance with the specifications. The Contractor shall furnish all necessary equipment and labor for the pressure test and leakage test on the pipelines.

B. Pressure testing of pipeline shall be in accordance with Section 15044, *Pressure Testing of Piping*.

END OF SECTION

SECTION 15065

POLYVINYL CHLORIDE (PVC) PIPE AND FITTINGS

1. GENERAL

1.01 Scope of Work

A. Furnish all labor, materials, equipment and incidentals required and install, disinfect and test polyvinyl chloride (PVC) pipe, fittings and appurtenances of the sizes and in the locations shown on the Contract Drawings and as specified herein.

B. The Engineer reserves the right to make such modifications in locations as may be found desirable to avoid interference between pipes, or for other reasons. Pipe fitting notation is for the Contractor's convenience and does not relieve him/her from installing and jointing different or additional items where required to achieve a complete piping system.

C. Pipe/piping refers to all pipe, fittings, material and appurtenances required to construct PVC pressure piping systems throughout the Project, as specified, complete and in place.

1.02 Related Work Specified Elsewhere

A. The Contract Documents include, but are not limited to, the following related sections:

Specification Section	Title
01600	Materials and Equipment
02200	Earthwork
02220	Excavation, Backfilling and Compaction
09905	Piping, Valve and Equipment Identification System
15000	Mechanical - General Requirements
15041	Disinfection of Piping and Structures
15044	Pressure Testing of Piping

Specification Section	Title
15100	Valves and Appurtenances
15129	Couplings and Connectors
Division	**Description**
15	Piping
Contract Drawings and General Provisions of the Contract	

1.03 Reference Standards

A. Unless otherwise indicated, all materials, workmanship and practices shall conform to the following standards:

STANDARD	DESCRIPTION
American Society for Testing and Materials (ASTM))	
ASTM A-242	Standard Specification for High-Strength Low-Alloy Structural Steel
ASTM A-320	Std Specification for Alloy-Steel Bolting Materials for Low-Temperature Service
ASTM A-536	Standard Specification for Ductile Iron Castings
ASTM D-1784	Standard Specification for Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds
ASTM D-1785	Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120
ASTM D-2464	Standard Specification for Threaded Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80
ASTM D-2467	Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Sch 80
ASTM D-2564	Standard Specification for Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems
ASTM D-2774	Standard Practice for Underground Installation of Thermoplastic Pressure Piping
ASTM D-2855	Standard Practice for Making Solvent-Cemented Joints with Poly(Vinyl Chloride) (PVC) Pipe and Fittings
ASTM D-3139	Standard Specification for Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals
ASTM F-437	Standard Specification for Threaded Chlorinated Poly(Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 80
ASTM F-477	Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe

STANDARD	DESCRIPTION
American Water Works Association (AWWA)	
AWWA C-110	Standard for Ductile-Iron and Gray-Iron Fittings, 3-inch through 48-inch, for Water and Other Liquids
AWWA C-111	Standard for Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings
AWWA C-651	Disinfecting Water Mains
AWWA C-900	Polyvinyl Chloride (PVC) Pressure Pipe, 4-in Through 12-in for Water Distribution
AWWA C-905	Polyvinyl Chloride (PVC) Water Transmission Pipe, Nominal Diameters 14-in Through 36-in.
AWWA M-23	PVC Pressure Pipe and Fittings
National Sanitation Foundation (NSF)	
Std No. 14	Plastic Piping Components and Related Materials
Std No. 61	Drinking Water System Components - Health Effects

B. Where reference is made to one of the above standards, the revision in effect at the time of Bid Opening shall apply.

1.04 Quality Assurance

A. ***All PVC pipe and fittings shall be from a single manufacturer*** who is fully experienced, reputable, and qualified in the manufacture of the items to be furnished. The equipment shall be designed, constructed, and installed in accordance with the best practices and methods and shall comply with these specifications.

B. ***Pipe for use with domestic potable water shall have an NSF seal of approval***. The Supplier shall be responsible for the provisions of all test requirements specified in NSF Standard No. 14 as applicable.

C. Acceptable Manufacturers of PVC shall include Certain-Teed Products, Corporation; Johns-Manville (J-M), or approved equal.

1.05 Submittals

A. Submit to the Engineer, in accordance with Section 00700, *General Conditions*, and Section 01300, *Shop Drawings, Submittals and Samples*, within thirty (30) days of the

Effective Date of the Agreement, the name of the pipe and fitting manufacturers and a list of materials to be furnished by each manufacturer. The submittal shall include information on the local representative for each manufacturer, if the product is sold through a distributor, descriptive literature, illustrations, specifications, installation instructions and related information.

B. Shop Drawings including piping layouts and schedules shall include dimensioning, fittings, types and locations of valves and appurtenances, joint details, methods and location of supports, anchorage, gasket material, grade of material and all other pertinent technical information for all items to be furnished.

C. Prior to each shipment of pipe, certified test reports that the pipe for this Contract was manufactured and tested in accordance with the ASTM and AWWA Standards specified herein shall be submitted.

D. ***All shop drawings shall be submitted in an electronic (PDF) format***.

1.06 System Description

A. The equipment and materials specified herein are intended to be of standard types for use in transporting water, wastewater and reclaimed water. Note information in the pipe schedule on Contract Drawings, if any, and in this Section, especially concerning pressures, minimum thickness, etc.

B. ***The Contractor is responsible for compatibility between pipe materials, fittings and appurtenances***.

1.07 Product Delivery, Storage and Handling

A. PVC pipe shall be delivered to the Project Site in unbroken bundles packaged in such a manner as to provide protection against damage. When possible pipe should be stored at the Project Site in unit packages ready for use. Package units shall be handled using a forklift or a spreader bar with fabric straps. ***Packaged units shall not be stacked higher than two (2) units high at the Project Site***. ***Any pipe damaged in shipment shall be replaced as directed by the Engineer, at no additional cost to the Owner***.

B. ***When it is necessary to store PVC pipe and fittings for more than thirty (30) days, exposure to direct sunlight shall be prevented by covering the pipe with an opaque material***. Adequate air circulation above and around the pipe shall be provided as required to prevent excessive heat accumulation. PVC pipe shall not be stored close

to heat sources or hot objects such as heaters, fires, boilers or engine exhaust. Pipe gaskets shall be protected from excessive exposure to heat, direct sunlight, ozone, oil and grease. The interior and all sealing surfaces of pipe, fittings and other appurtenances shall be kept clean and free of dirt and foreign matter.

C. ***All pipe and fittings shall be thoroughly cleaned before installation and the interior shall be kept clean until testing***.

D. Care shall be taken in handling and laying pipe and fittings to avoid severe impact blows, crushing, abrasion damage, gouging or cutting. Pipe shall be lowered, not dropped, from trucks or into trenches. All cracked, damaged or defective pipe and fittings, or any length of pipe having a gouge, scratch or other permanent indentation of more than ten percent (10%) of the wall thickness in depth, shall be rejected and removed at once from the work and replaced with new acceptable pipe at no additional cost to the Owner.

1.08 Job Conditions

A. Water in Excavation

1. Water shall not be allowed in the trenches while underground pipes, fittings, valves and/or accessories are being laid and/or tested.

2. The Contractor shall not open more trench than the available pumping facilities are able to dewater to the satisfaction of the Engineer. The Contractor shall assume responsibility for disposing of all water so as not to injure or interfere with the normal drainage of the territory in which he is working.

3. In no case shall the pipelines being installed be used as drains for such water, and the ends of the pipe shall be kept properly and adequately plugged during construction by the use of approved stoppers and not by improvised equipment.

4. All necessary precautions shall be taken to prevent the entrance of mud, sand, or other obstructing matter into the pipelines. If on completion of the work any such materials has entered the pipelines, it must be cleaned as directed by the Engineer so that the entire system will be left clean and unobstructed.

1.09 Warranties and Guarantees

A. Provide an equipment warranty in accordance with Section 01740, *Warranties and Bonds*.

2. PRODUCTS

2.01 General

A. All materials that come into contact with potable water shall be on either the EPA or NSF lists of products approved for use in contact with potable water. Manufacturers shall submit an affidavit with the shop drawings indicating approval by the EPA or NSF for the materials used in products that come into contact with potable water, in accordance with Rule 62-555.320(3), Florida Administrative Code.

2.02 Polyvinyl Chloride (PVC) Pipe and Fittings

A. Small Diameter Gravity Drainage Piping (< 4-inches)

1. PVC pipe smaller than four (4) inches nominal diameter used for gravity drainage piping shall be Schedule 40 pipe in accordance with ASTM D-1785.

2. Schedule 40 PVC pipe shall have solvent welded joints as specified for PVC pressure pipe.

B. Large Diameter Gravity Drainage Piping (≥ 4-inches)

1. Unless otherwise noted, large gravity drainage piping shall conform to the requirements and shall have gasketed integral bell ends:

Pipe Size (inches)	Pipe Requirements
4 - 12	AWWA C900, DR25
> 12	AWWA C905, DR25

2. ***Pipe shall be designed for a maximum working pressure at not less than 100 psi and with not less than a 4 to 1 sustained hydrostatic pressure safety factor***.

3. ***Fitting shall be ductile iron fittings with restrained mechanical joints*** and as specified in Section 15060, *Ductile Iron Pipe and Fittings*.

4. ***Pipe shall be made of ductile iron pipe O.D.'s instead of IPS***.

C. Small PVC Pressure Piping (< 4-inches)

1. Unless otherwise specified, PVC pressure pipe smaller than four (4) inches nominal diameter shall conform to the following requirements, as shown on the Contract Drawings or specified in other Sections.

Pipe Size (inches)	Pipe Requirements
< 4	Schedule 80, ASTM D-1785

2. Schedule 80 pipe shall have solvent welded joints unless otherwise shown on the Contract Drawings or specified in other Divisions.

3. PVC pressure pipe shall bear the approved seal of the National Sanitation Foundation (NSF).

4. ***PVC pipe that is exposed to sunlight shall be manufactured with UV additives to provide resistance to ultraviolet light deterioration***.

5. Fittings

   a. Socket type, solvent welded fittings for Schedule 80 PVC pipe, less than three (3) inches in diameter, shall be in conformance with ASTM D-2467. Socket type, solvent welded fittings for Schedule 80 CPVC pipe, less than three (3) inches in diameter, shall be in conformance with ASTM F-439.

   b. Threaded type fittings for Schedule 80 PVC pipe, less than three (3) inches in diameter, shall be in conformance with ASTM D-2464. Threaded type fittings for Schedule 80 CPVC pipe, less than three (3) inches in diameter, shall be in conformance with ASTM F-437.

   c. ***Solvent weld solvent welded or threaded joints shall be "water-tight"***.

   d. ***All fittings for PVC pipelines greater than or equal to three (3) inches shall be ductile iron***. All adapters, fittings and transition gaskets necessary to connect PVC fittings shall be furnished.

6. Flanges

   a. ***Flanges for Schedule 80 PVC pipe shall be rated for a 150 psi working pressure*** with ANSI B-16.1 dimensions and bolting pattern.

b. Flanges shall be connected to PVC piping with either solvent welded or threaded joints in accordance with ASTM D-2467 or ASTM D-2464, respectively. Gaskets shall be neoprene, full faced type with a minimum thickness of 1/8-inch.

c. Nuts and bolts shall be hexagonal with machine threads, manufactured of Type 316 stainless steel in accordance with ASTM A-320, Class 2.

d. ***Type 316 stainless steel flat washers with lock washers shall be used against PVC flanges***.

e. The nuts shall have a hardness that is lower than that of the bolts and washers by a difference of 50 Brinnell hardness to prevent galling during installation.

7. PVC solvent cement shall be in compliance with ASTM D-2564 and in accordance with the pipe manufacturer's recommendations. The Contractor shall use a cleaner recommended by the manufacturer for cleaning the pipe/fittings prior to solvent welding. Lubricant for Schedule 80 threaded joints shall be Teflon tape only.

8. Provide suitable adapters for connections to equipment and other piping systems.

D. Large PVC Pressure Piping (≥ 4-inches)

1. Unless otherwise noted, PVC pressure pipe for the nominal diameters shown shall conform to the following requirements, have gasketed integral bell ends, and be manufactured to ductile iron O.D.'s instead of IPS.

Pipe Size (inches)	Pipe Requirements	Max. Working Pressure (psi)
4 - 12	AWWA C900, DR-18	150
> 12	AWWA C905, DR-18	235

2. PVC pipe shall bear the NSF marking of approval when used for potable water applications.

3. ***PVC Pipe shall be designed for maximum working pressure as indicated above and with not less than a 4 to 1 sustained hydrostatic pressure safety factor***.

4. ***Fittings shall be ductile iron fittings with restrained mechanical joint ends*** as specified in Section 15060, *Ductile Iron Pipe and Fittings*. All adapters, fittings and transition gaskets necessary shall be furnished.

5. ***PVC pipe that is exposed to sunlight shall be manufactured with UV additives to provide resistance to ultraviolet light deterioration***.

6. Bell and Spigot

   a. Pipe joints shall be made with integral bell and spigot pipe ends meeting ASTM D-3139, *Standard Specification for Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals*. The bell shall consist of an integral thickened wall section designed to be at least as strong as the pipe wall.

   b. The bell shall be supplied with factory glued rubber ring gasket which conforms to the manufacturer's standard dimensions and tolerances.

   c. The gasket shall meet the requirements of ASTM F-477, *Elastomeric Seals (Gaskets) for Joining Plastic Pipe*.

   d. PVC joints shall be "Ring-Tite" as manufactured by Johns-Manville Manufacturing Company, Inc. or an equal approved by the Engineer.

7. Fittings

   a. ***All fittings for use with PVC pipe three (3) inches and larger in size shall be ductile iron with a minimum working pressure of 250 psi*** and shall conform to ANSI/AWWA A21.10/C-110, latest revision except as shown on the Contract Documents.

   b. Fittings shall have mechanical joint bell ends manufactured in accordance with ANSI/AWWA A21.11/C-111, latest revision. Jointing materials for mechanical joints shall be provided by the fitting manufacturer. Materials, assembly and bolting shall be in accordance with ANSI/AWWA A21.11/C-111, latest revision.

   c. Tee head nuts and bolts for mechanical joints shall be manufactured of corrosion resistant high strength, low alloy COR-TEN steel meeting the requirements of ASTM A-242.

   d. ***All cast iron and ductile iron fittings for use with PVC pipe shall be coated and lined***, as specified for ductile iron pipe in Section 15060, *Ductile Iron Pipe and Fittings*, intended for similar service, as noted on the Contract Drawings.

8. Restrained Joints

   a. In accordance with the Contract Drawings, to prevent pipe joints and fittings from separating under pressure, pipe joints and fittings shall be restrained as follows:

1) PVC pipe bell and spigot joints shall be restrained with the EBBA Iron MEGALUG® Series 1500 Restrainer or an equal approved by the Engineer. The restraining device and tee head bolts shall be manufactured of high strength ductile iron meeting ASTM A-536, Grade 65-45-12. Clamping bolts and nuts shall be manufactured of corrosion resistant high strength, low alloy COR-TEN steel meeting the requirements of ASTM A-242.

2) Mechanical joint fittings used with PVC pipe shall be restrained with the EBBA Iron MEGALUG® Series 2000 PV Restrainer or an equal approved by the Engineer. The restraining device and tee head bolts shall be manufactured of high strength ductile iron meeting ASTM A-536, Grade 65-45-12. Clamping bolts and nuts shall be manufactured of corrosion resistant high strength, low alloy COR-TEN steel meeting the requirements of ASTM A-242.

E. Clear PVC Reinforced Tubing

1. Clear PVC tubing, for chemical applications shown on the Contract Drawings, shall be nylon reinforced, PVC clear tubing.

2. The inside diameter shall be as shown on the Contract Drawings or as specified in Sections of this Project Manual.

3. ***Tubing shall be able to withstand a working pressure of 150 psi***.

4. Tubing shall be Amaclear "R" as manufactured by Amazon Hose Rubber Company, or approved equal.

F. ***All ductile iron fittings and accessories for pipelines (above grade - flanged; below grade - mechanical joint) shall be compatible with the pipe***.

G. PVC fittings shall meet the requirements of AWWA C-900/C-905 and be of the same, or higher, pressure rating as the pipeline.

H. ***PVC color shall be in accordance with the Contract Documents and as required by the Engineer and Owner***.

3. EXECUTION

3.01 Storage and Handling of PVC Pipe

A. Delivery, Storage and Handling of PVC pipe shall follow the requirements of Article 1.07 of this Section.

3.02 Installation of PVC Pipe and Fittings

A. ***No single piece of pipe shall be laid unless it is straight***. The centerline of the pipe shall not deviate from a straight line drawn between the centers of the openings at the ends of the pipe by more than $^{1}/_{16}$-inch per foot of length. If a piece of pipe fails to meet this requirement check for straightness, it shall be rejected and removed from the site. Laying instructions of the pipe manufacturer shall be explicitly followed.

B. If any defective pipe is discovered after it has been installed, it shall be removed and replaced with a sound pipe in a satisfactory manner at no additional cost to the Owner.

C. All PVC pipe and fittings and cast or ductile iron fittings shall be laid in accordance with the pipe manufacturer's published installation guide, the AWWA Manual of Practice No. M23, *PVC Pipe - Design and Installation* and the Uni-Bell Plastic Pipe Association installation recommendations.

D. In preparation of pipe installation, placement (stringing) of pipe should be as close to the trench as practical on the opposite side of the trench from the excavated material. The bell ends of the pipe should point in the direction of the work progress.

E. ***Pipe and fittings shall be laid accurately to the lines and grades indicated*** on the Contract Drawings or as indicated by the Engineer. Care shall be taken to insure a good alignment both horizontally and vertically and to give the pipe a firm bearing along its entire length. Any pipe that has its grade or joint disturbed after laying shall be taken up and re-laid.

F. ***All pipe and fittings shall be cleared of sand, dirt and debris before laying***. All precautions shall be taken to prevent sand, dirt or other foreign material from entering the pipe during installation. If necessary, a heavy, tightly woven canvas bag of suitable size shall be placed over each end of the pipe before lowering into the trench and left there until the connection is made to the adjacent pipe. ***Any sand, dirt or other foreign material that enters the pipe shall be removed fro the pipe immediately***. The interior of all pipe and fittings shall be kept clean after installation until accepted in the complete work.

G. ***Any time that pipe installation is not in progress, including lunchtime, the open ends of the pipe shall be closed by a watertight plug or other method*** approved by the Engineer. Plugs shall remain in the pipe ends until all water is removed from the trench. No pipe shall be installed when trench conditions are unsuitable for such work, including standing water, excess mud, rain or snow.

H. Good alignment shall be preserved during installation. ***The deflection at joints shall not exceed that recommended by pipe manufacturer***. Fittings, in addition to those shown on the Contract Drawings, shall be provided, if required, in crossing utilities which may be encountered upon opening the trench.

I. As soon as the excavation is complete to normal grade of the bottom of the trench, bedding shall be placed, compacted and graded to provide firm, uniform and continuous support for the pipe. Bell holes shall be excavated so that only the barrel of the pipe bears upon the bedding. The pipe shall be laid accurately to the lines and grades indicated on the Contract Drawings. Blocking under the pipe will not be permitted. Bedding shall be placed evenly on each side of the pipe to mid-diameter, and hand tools shall be used to force the bedding under the haunches of the pipe and into the bell holes to give firm continuous support for the pipe. Bedding for pipe shall be as specified in Section 02220, *Excavation, Backfilling and Compaction*. Generally the compaction shall be done evenly on each side of the pipe and compaction equipment shall not be operated directly over the pipe until sufficient backfill has been placed to ensure that such compaction equipment will not have a damaging effect on the pipe. Equipment used in compacting the initial three (3) feet of backfill shall be approved by the pipe manufacturer's representative prior to use.

J. Field Cutting of PVC Pipe

1. ***Field cutting of pipe shall be done in a neat workmanlike manner without creating damage to the pipe***. The pipe shall be cut square with a fine-toothed hand or power saw or other cutter or knife designed for use with plastic pipe.

2. Prior to cutting, the pipe shall be marked around its entire circumference or a square-in vise shall be used to ensure the pipe end is cut smooth at right angles to the axis of the pipe.

3. ***Remove burrs by smoothing edges with a knife, file, or sandpaper***.

4. ***Bevel the cut end of the pipe*** with a pipe beveling tool, wood rasp or portable sander to prevent damage to the gasket during joint assembly. A factory finished beveled end should be used as a guide to ensure a proper beveling angle and correct depth of bevel. ***Round off any sharp edges on the leading edge of the bevel with a knife or file***.

K. ***Any pipe having defective joint surfaces shall be rejected***, marked as such and immediately removed from the job site.

L. Each length of the pipe shall have the assembly mark aligned with the pipe previously laid and held securely until enough backfill has been placed to hold the pipe in place.

M. Before any joint is made, the pipe shall be checked to assure that a close joint with the next adjoining pipe has been maintained and that the inverts are matched and conform to the required grade. The pipe shall not be driven down to grade by striking it.

N. Precautions shall be taken to prevent flotation of the pipe in the trench.

O. When moveable trench bracing such as trench boxes, moveable sheeting, shoring or plates are used to support the sides of the trench, care shall be taken in placing and moving the boxes or supporting bracing to prevent movement of the pipe, or disturbance of the pipe bedding and the backfill. Trench boxes, moveable sheeting, shoring or plates shall not be allowed to extend below top of the pipe. As trench boxes, moveable sheeting, shoring or plates are moved, pipe bedding shall be placed to fill any voids created and the backfill shall be recompacted to provide uniform side support for the pipe.

3.03 Jointing PVC Pipe (Push-On Type)

A. ***Pipe shall be laid with bell ends looking ahead***.

B. The PVC bell and spigot joint shall be assembled in accordance with the pipe manufacturer's installation instructions, ASTM D-2774, and AWWA Manual M-23. Clean the interior of the bell, the gasket, and the spigot of the pipe to be jointed with a rag to remove any dirt or foreign material before assembling. Inspect the gasket, pipe spigot bevel, gasket groove, and sealing surfaces for damage or deformation.

C. ***Lubricate the spigot end of the pipe with a lubricant*** supplied or specified by the pipe manufacturer for use with gasketed PVC pipe in the application being installed (potable water, wastewater, effluent, or reclaimed water). The lubricant should be applied as specified by the pipe manufacturer. After the spigot end is lubricated, it must be kept clean and free of dirt and sand. If dirt and sand adhere to the lubricated end, the spigot must be wiped clean and relubricated.

D. ***Insert the spigot into the bell so that it contacts the gasket uniformly***. Align the pipe sections and push the spigot end into the bell until the manufacturer's reference mark on the spigot is flush with the end of the bell. The pipe should be pushed into the bell using a bar and block. The joint shall not be assembled by "stabbing" or swinging the pipe into the bell, nor shall construction machinery be used to push the pipe into the bell.

E. If undue resistance to insertion of the spigot end is encountered or if the reference mark does not reach the flush position, disassemble the joint and check the position of the gasket. If the gasket is twisted or pushed out of its seat, inspect the components, repair or replace damaged items, clean the components, and repeat the assembly steps. Be sure the pipe is in proper alignment during assembly. If the gasket was not out of position, check the distance between the spigot end and the reference mark and relocate the mark if it is out of position.

F. ***The weight of valves and fittings shall not be carried by the PVC pipe. The valve or fitting shall be supported by a concrete cradle*** as shown on the standard details. Concrete for the cradle shall be poured against undisturbed soil.

3.04 Jointing Mechanical Joint Fittings

A. Mechanical joints at valves, fittings and where designated shall be in accordance with the AWWA C-111 and the instructions of the pipe manufacturer. Suitable PVC to cast iron adapters shall be installed prior to installing fittings. PVC beveled spigots shall be cut flush prior to insertion in mechanical joint pipe. To assemble the joints in the field, thoroughly clean the joint surfaces and rubber gasket with soapy water before tightening the bolts.

B. ***Bolts shall be tightened to the specified torques***. Under no condition shall extension wrenches or pipe over handle of ordinary ratchet wrench be used to secure greater leverage.

3.05 PVC Joint Assembly for Threaded and Solvent Welded Pipe

A. All threaded and solvent welded joints shall be made watertight in accordance with ASTM D-2855, ASTM D-2564, and AWWA Manual M-23. All pipe cutting, threading, and jointing procedures for threaded and solvent welded PVC pipe joints shall be in strict accordance with the pipe and fitting manufacturer's printed installation instructions. Thread lubricant for threaded joints shall be teflon tape only.

B. At threaded joints between PVC and metal pipes, the metal side shall contain the socket end and the PVC side the spigot. A metal spigot shall not, under any circumstances, be screwed into a PVC socket.

C. ***The Contractor shall make sure that the proper cement is used with the proper pipe and fittings***. Never use CPVC cement on Type I PVC pipe or, conversely, never use PVC cement on CPVC pipe and fittings.

3.06 Restrained Joints

A. Restrained joints shall be made in strict, complete accordance with the manufacturer’s recommendations.

B. ***All piping shall be restrained*** as indicated on the Contract Drawings.

C. ***All fittings shall be restrained***.

D. In cases where the calculated required length of restrained pipe is not evenly divisible by nominal laying lengths of pipe, the total required length of restrained pipe shall be rounded up to the next closest nominal length that is evenly divisible by the standard laying length.

3.07 Field Painting

A. ***Pipe normally exposed to view shall be painted and marked*** as specified in Section 09900, *Painting* and Section 09905, *Piping, Valve and Equipment Identification System*.

3.08 Separation of Non-Potable Water Mains and Potable Water Mains

A. Horizontal Separation

1. Existing and proposed water and wastewater or non-potable force mains shall be ***separated at least six (6) feet horizontally***.

2. Horizontal separation between water mains and wastewater or non-potable force mains ***must always be a minimum of six (6) feet*** unless a closer than separation has been specifically detailed on the Contract Drawings that have been approved under the FDEP Permit.

B. Vertical Separation

1. Parallel Lines

a. Whenever potable water and non-potable water lines (reclaimed, sanitary, stormwater, force mains) run parallel and do not meet the horizontal separation requirements, then the lines shall be ***vertically separated with the potable water line at least eighteen (18) inches above the top of the non-potable lines***.

2. Crossings

a. Force mains crossing water mains shall be installed to ***provide a minimum vertical distance of eighteen (18) inches measured from the outside of the potable water line to the outside of the non-potable line***. The potable water line may be either above or below the non-potable line at crossings. The constructed pipeline shall be installed so that the pipeline joints are as far from the crossing as possible.

b. ***When the eighteen (18) inch maximum vertical separation distance cannot be maintained, the potable water main shall be encased in concrete. Concrete encasement of the potable water main shall be ten (10) feet each way of the crossing***.

3.09 Concrete Pipe Encasement

A. ***Concrete for concrete pipe encasement shall have a minimum strength of 3,000 psi at twenty-eight (28) days*** *and encasement shall be constructed in accordance with details shown on the Contract Drawings****. Encasement shall be constructed where***:

1. Indicated on the Contract Drawings.
2. Piping is laid under buildings, structures and structure pads.
3. Potable water mains do not meet the eighteen (18) inch vertical separation.
4. The Engineer shall order the pipeline encased.

B. The points of beginning and ending of concrete pipe encasement shall not be more than six (6) inches from a pipe joint to protect the pipe from cracking due to uneven settlement of its foundation or the erects of superimposed live loads.

C. ***Pipe encasement shall provide a minimum coverage of twelve (12) inches all around the pipe including pipe bells***.

3.10 Connection to Existing Water, Biosolids/Sludge, Wastewater and Reuse Systems

A. The Contractor shall coordinate making connection of the new mains to mains which are in service at the time of construction with the Owner.

B. The Contractor shall not connect to existing facilities unless the Engineer and a representative of the Owner are present. ***The Engineer shall be notified, in writing, at least seventy-two (72) hours prior to the time connection is desired***.

C. Operation of all system valves shall be the responsibility of the Owner's personnel only. At no time shall the Contractor operate any system valves. System valves shall be defined as any valve which has main pressure against either side of the valve. The Contractor shall notify the Owner to request that a valve be operated, in writing, ***at least seventy-two (72) hours prior to the time operation is required***.

3.11 Cleaning and Flushing of Pipelines

A. ***Following the hydrostatic and leakage tests, all the mains constructed under this Contract shall be cleaned and flushed to remove sand, loose dirt, and other***

debris. ***The minimum flushing velocity shall be 2.5 feet per second. Flushing shall continue until clean water flows from the main***. However, the Contractor shall endeavor to use the minimum amount of flushing water required to complete the work.

B. ***Upon completion of testing for the gravity drain line system, drain lines shall be flushed*** to remove dirt, sand, stones, and other debris which may have entered the lines during construction and settled out in the lines and/or manholes. Materials and debris flushed from the drain lines shall be removed from a downstream manhole, basin or lift station and disposed of at an approved disposal area.

C. Temporary blowoffs may be required for the purpose of flushing mains. Temporary blowoffs shall be installed as close as possible to the ends of the main being flushed. Blowoffs installed on the main shall be the same diameter as the main. Temporary blowoffs shall be removed and plugged after the main is flushed. All costs for installing and removing temporary blowoffs shall be at no additional cost to the Owner.

D. ***The Owner shall be notified, in writing, at least seventy-two (72) hours prior to flushing mains***.

E. Blowoffs and temporary drainage piping used for flushing shall not be discharged into any gravity sewer or pumping station wetwell. The Contractor shall obtain prior approvals from the Engineer and the Owner as to the methods and locations of flushing water discharge.

3.12 Disinfection of Potable Water Pipelines

A. Before any portion of the potable water piping systems is to be placed in service, it shall be disinfected; and its disinfection shall be demonstrated by bacteriological tests conducted in accordance with *Standard Methods for Examination of Water and Wastewater*, latest edition, for the coli-aerogenes group, by an approved laboratory, acceptable to the Engineer and the County Health Department.

B. Disinfection of potable water pipelines shall be in accordance with Section 15041, *Disinfection of Piping and Structures*.

3.13 Pressure Testing of Pipe

A. ***After installation, the pipe shall be tested for compliance with the specifications***. The Contractor shall furnish all necessary equipment and labor for the pressure test and leakage test on the pipelines.

SECTION 15076

PVC DOUBLE WALL CONTAINMENT PIPING

1. GENERAL

1.01 Scope of Work

A. Furnish all labor, materials, equipment and incidentals required and install, disinfect and test double wall containment piping, fittings and appurtenances of the sizes and in the locations shown on the Contract Drawings and as specified herein.

B. The Engineer reserves the right to make such modifications in locations as may be found desirable to avoid interference between pipes, or for other reasons. Pipe fitting notation is for the Contractor's convenience and does not relieve him/her from installing and jointing different or additional items where required to achieve a complete piping system.

C. All plastic pipe and fittings shall conform to this specification section whether provided as a part of an equipment “package” or purchased separately by the Contractor.

D. ***Double wall containment piping systems are required for all underground pipe, risers and chemical feed lines***. The double wall containment piping shall be used when the piping is in contact with the ground, located in the trenches or any other location indicated on the Contract Drawings.

E. Related Work Specified Elsewhere

1. Painting:	Section 09900
2. Piping, Valve and Equipment Identification System:	Section 09905
3. Mechanical - General Requirements:	Section 15000
4. Disinfection of Piping and Structures:	Section 15041
5. Pressure Testing of Piping:	Section 15044
6. Valves and Appurtenances:	Section 15100

7. Pipe Hangers and Supports: Section 15125

8. Couplings and Connectors: Section 15129

1.02 Quality Assurance

A. All double wall containment piping, fittings and appurtenances shall be furnished by a single manufacturer who is fully experienced, reputable, and qualified in the manufacture of the items to be furnished. The equipment shall be designed, constructed and installed in accordance with the best practices and methods and shall comply with these specifications.

B. The solvent welder shall be qualified in accordance with Chapter VII of the ASME B31.3-93 Code, Part 9, Paragraph A328.

C. Double wall containment pipe shall be as manufactured by Asahi, Guardian, R.G. Sloane, or approved equal. The manufacturer shall have at least ten (10) years experience and proven product reliability.

1.03 Submittals

A. Submit shop drawings to the Engineer, in accordance with Section 00700, *General Conditions*, and Section 01300, *Shop Drawings, Submittals and Samples*.

B. Shop Drawings shall include complete piping layouts and schedules shall include dimensioning, fittings, types and locations of valves and appurtenances, joint details, methods and location of supports, anchorage, gasket material, grade of material, installation instructions and all other pertinent technical information (specifications, detail, literature, etc.) for all items to be furnished.

C. Prior to each shipment of pipe, certified test reports that the pipe for this Contract was manufactured and tested in accordance with the ASTM and AWWA Standards specified herein shall be submitted.

1.04 Product Delivery, Storage and Handling

A. Double wall containment piping, fittings and accessories shall be delivered to the Project site in unbroken bundles packaged in such a manner as to provide protection against damage.

B. Any piping, fittings or accessories damaged in shipment shall be replaced as directed by the Engineer, at no additional cost to the Owner.

C. Pipe and fittings shall be handled and stored in a manner which will ensure installation in a sound, undamaged condition. Handling methods and equipment used shall prevent damage to the pipe. Bare cables, chains, or metal bars shall not be used. Pipe shall be stored off the ground on wide padded skids.

D. PVC items deteriorate in sunlight and are slightly brittle, especially at lower temperatures, so care shall be taken in loading, transporting and unloading items to prevent injury to the items. All items shall be examined before installation and no piece shall be installed which is found to be defective. Handling and installation of pipe and fittings shall be in accordance with the manufacturer's instructions, referenced standards and as specified herein.

E. Any pipe or fitting showing a crack or which has received a blow that may have caused an incident fracture, even though no such fracture can be seen, shall be marked as rejected, removed at once from the work, and replaced at no additional cost.

F. While stored, pipe shall be adequately supported from below at not more than three (3) foot intervals to prevent deformation.

G. When it is necessary to store double wall containment pipe and fittings for more than thirty (30) days, exposure to direct sunlight shall be prevented by covering the pipe with an opaque material. Adequate air circulation above and around the pipe shall be provided as required to prevent excessive heat accumulation. Double wall containment pipe and fittings shall not be stored close to heat sources or hot objects such as heaters, fires, boilers or engine exhaust. Pipe gaskets shall be protected from excessive exposure to heat, direct sunlight, ozone, oil and grease. The interior and all sealing surfaces of pipe, fittings and other appurtenances shall be kept clean and free of dirt and foreign matter.

H. ***If any defective item is discovered after it has been installed, it shall be removed and replaced with an exact replacement item in a satisfactory manner by the Contractor, at the Contractor's own expense***. All pipe and fittings shall be thoroughly cleaned before installation and the interior shall be kept clean until testing.

I. Care shall be taken in handling and laying pipe and fittings to avoid severe impact blows, crushing, abrasion damage, gouging or cutting. Pipe shall be lowered, not dropped, from trucks or into trenches. All cracked, damaged or defective pipe and fittings, or any length of pipe having a gouge, scratch or other permanent indentation of more than ten percent (10%) of the wall thickness in depth, shall be rejected and removed at once from the work and replaced with new acceptable pipe at no additional cost to the Owner.

1.05 Job Conditions

A. Water in Excavation

1. Water shall not be allowed in the trenches while underground pipes, fittings, valves and/or accessories are being laid and/or tested.

2. The Contractor shall not open more trench than the available pumping facilities are able to dewater to the satisfaction of the Engineer. The Contractor shall assume responsibility for disposing of all water so as not to injure or interfere with the normal drainage of the territory in which he is working.

3. In no case shall the pipelines being installed be used as drains for such water, and the ends of the pipe shall be kept properly and adequately plugged during construction by the use of approved stoppers and not by improvised equipment.

4. All necessary precautions shall be taken to prevent the entrance of mud, sand, or other obstructing matter into the pipelines. If on completion of the work any such materials has entered the pipelines, it must be cleaned as directed by the Engineer so that the entire system will be left clean and unobstructed.

1.06 Warranties and Guarantees

A. Provide an equipment warranty in accordance with Section 01740, *Warranties and Bonds*.

2. PRODUCTS

2.01 General

A. All double wall containment piping system components shall be pre-engineered, factory fabricated, tested and assembled such that field assembly is minimized to primarily that of straight joints.

2.02 Materials and Equipment

A. Carrier Pipe

1. Unless specified otherwise, pipe shall be made of polyvinyl chloride (PVC), Schedule 80 pipe, conforming to ASTM D1784-92.

2. Schedule 80 pipe shall have solvent welded socket type joints.

3. Laying lengths of twenty (20) feet or as shown on the Drawings shall be used.

B. Containment Pipe

1. Pipe shall be made of polyvinyl chloride (PVC) or chlorinated polyvinyl chloride (CPVC), Schedule 80 pipe, conforming to ASTM D1784-92 and the material being conveyed; chemical and pipeline capatability is required.

C. Fittings

1. Fittings for Schedule 80 pipe shall be of the socket type, solvent welded in conformance with ASTM D-2467.

2. Solvent welded joints shall be watertight.

D. Solvent Cement

1. PVC solvent cement shall be in compliance with ASTM D-2564.

2.03 Accessories

A. Leak Detection System

1. Install in strict accordance with the system manufacturer's instructions and recommendations. Leak detection shall be installed with a sensor located at the lowest point in the piping, with all piping sloping to the location of the leak detection sensor. ***The leak detection system shall sound a local alarm and an alarm signal shall be sent to the facility SCADA system when a leak occurs.***

2. Signal wires from the low point sensor shall be connected to the local output panel. Contact with any aqueous chemical shall result in an audible alarm and an LED signal. The local output panel shall be housed in a NEMA 4X enclosure. The leak detection output panel shall be located outside the chemical feed facilities where the piping first penetrates the ground or is located within the trench. For any miscellaneous control component data, the Contractor is referred to Division 11, *Equipment*, Division 13, *Special Construction* or Division 16, *Electrical*. The output relays shall be capable of interfacing with the facility SCADA system.

3. The leak detection system shall be manufactured by Asahi or approved equal.

2.04 Spare Parts

A. All special tools, solvents, lubricants, and cements required for normal installation shall be furnished with the pipe.

2.05 Quality Control

A. The Contractor shall follow the manufacturer's and supplier's recommended product quality control specifics as required for this project.

3. EXECUTION

3.01 Installation

A. Install double wall containment pipe where shown on the Contract Drawings and in strict accordance with the manufacturer's technical data and printed instructions.

B. No single piece of pipe shall be laid unless it is straight. The centerline of the pipe shall not deviate from a straight line drawn between the centers of the openings at the ends of the pipe by more than $^{1}/_{16}$-inch per foot of length. If a piece of pipe fails to meet this requirement check for straightness, it shall be rejected and removed from the site. Laying instructions of the pipe manufacturer shall be explicitly followed.

C. If any defective pipe is discovered after it has been installed, it shall be removed and replaced with a sound pipe in a satisfactory manner at no additional cost to the Owner. All pipe and fittings shall be thoroughly cleaned before installation, shall be kept clean until they are used in the work and when laid, shall conform to the lines and grades required. Double wall containment pipe and fittings shall be installed in accordance with requirements of the manufacturer, ASTM and AWWA standards or as otherwise provided herein.

D. All pipe shall be sound and clean before installation. When installation is not in progress, including lunchtime, the open ends of the pipe shall be closed by a watertight plug or other approved means. Good alignment shall be preserved during installation. The deflection at joints shall not exceed that recommended by pipe manufacturer. Fittings, in addition to those shown on the Contract Drawings, shall be provided, if required, in crossing utilities which may be encountered upon opening the trench.

E. All valves and equipment shall be supported independently from the pipe. Anchor valves such that the turning moment resulting from their operation will not be transmitted to the pipe.

F. Joints for double wall containment pipe and fittings shall be solvent welded. ***All joints shall be made watertight.*** All pipe cutting, threading and jointing procedures for solvent welded pipe joints shall be in strict accordance with the pipe and fitting manufacturer's printed installation instructions. In making solvent welded connections, clean dirt and moisture from pipe and fittings, bevel pipe ends slightly with emery cloth, if necessary and apply solvent cement of proper grade.

G. Installation of valves and fittings shall be strictly in accordance with the manufacturer's instructions. Particular care shall be taken not to over-stress threaded connections at sleeves. In making solvent weld connections the solvent shall not be spilled on valves or allowed to run from joints.

H. All piping shall have sufficient number of unions to allow convenient removal and shall be as approved by the Engineer.

I. ***Where plastic passes through wall sleeves, joints shall be scaled with a mechanical seal.*** Mechanical seals shall be Link-seal, or approved equal.

J. Concrete inserts for hangers and supports shall be furnished and installed in the concrete as it is placed. The inserts shall be set in accordance with the requirements of the piping layout and the Contractor shall verify their locations from approved piping layout Drawings and the structural Drawings. Pipe hangers and supports are specified in Section 15125, *Pipe Hangers and Supports*.

K. Field Painting

1. Pipe normally exposed to view shall be painted and marked as specified in Section 09905, *Piping, Valve and Equipment Identification System*.

3.02 Cleaning, Flushing and Testing of Pipelines

A. The Contractor shall clean and flush all double wall containment lines to remove sand, loose dirt, and other debris. The minimum flushing velocity shall be 2.5 feet per second. Flushing shall continue until clean water flows from the main. However, the Contractor shall endeavor to use the minimum amount of flushing water required to complete the work.

B. All double wall containment piping shall be hydrostatically pressure tested in accordance with Section 15044, *Pressure Testing of Piping*.

C. Following installation and testing:

1. Flush clean the carrier and containment piping system.

2. Purge the annular space of moisture with clean, dry air.

3.03 Start-up and Instruction

A. Provide a manufacturer's representative to assist with the unloading of the double wall containment piping system, system tests, containment pipe joint closure, installation and testing of the leak detection system, and training of the Owner's personnel in the operation and maintenance of the leak detection system.

B. The manufacturer's representative shall complete a Certificate of Completed Demonstration Form (Section 00866) for the double wall containment piping system and present a letter to the Engineer that the system has been installed, tested and calibrated and is ready for operation in accordance with the manufacturer's instructions and recommendations. Inspection and examination practices shall be according to ASME B31.3-93 for normal fluid service.

END OF SECTION

SECTION 15100

VALVES AND APPURTENANCES

1. GENERAL

1.01 Description

A. The Work included in this Section consists of furnishing all labor, equipment, materials, and incidentals required to install and test, complete and ready for operation, all valves and appurtenances as shown on the Contract Drawings and as specified herein.

B. The equipment shall include, but is not limited to, the following:

1. Gate Valves
2. Ball Valves
3. Diaphragm Valves
4. Check Valves
5. Pressure Relief Valves
6. Solenoid Valves
7. Valve Operators
8. Air Release Valves
9. Eyewashes and Showers
10. Sediment Strainers
11. Service Saddles and Corporation Stops
11. Hose Bibbs
12. Washdown Hoses
13. Expansion Joints
14. Strainers
15. Unions
16. Pressure Gauges
17. Diaphragm Seals
18. Valve Boxes

C. Related Work Described Elsewhere

Specification Section	Title
09900	Painting
09905	Piping, Valve and Equipment Identification System
15000	Mechanical - General Requirements
15044	Pressure Testing of Piping
15129	Couplings and Connectors

Division	Description
15	Piping
16	Electrical
Contract Drawings and General Provisions of the Contract	

D. General Design

1. All of the equipment and materials specified herein are intended to be standard for use in controlling the flow of water, air, chemicals, etc., depending on the application.

1.02 Quality Assurance

A. All types of valves and appurtenances shall be the products of well established reputable firms who are fully experienced, reputable and qualified in the manufacture of the particular equipment to be furnished. The equipment shall be designed, constructed and installed in accordance with the best practices and methods and shall comply with these specifications as applicable.

B. Compliance with Standards

1. Valves and appurtenances shall meet the requirements of the following applicable standards that shall be made a part of the Contract Documents by reference:

   a. American Water Works Association (AWWA).

   b. American Society for Testing and Methods (ASTM)

   c. American National Standard Institute (ANSI)

   d. American Society of Mechanical Engineers (ASME)

      1) ASME B31.9 for building services piping valves

      2) ASME B16.10 and B16.34 compliance for ferrous valves (dimension and design criteria).

   e. National Sanitation Foundation (NSF)

      1) NSF 61 for valve materials for potable water use.

C. Valving and Appurtenance Inspection

1. ***The Contractor shall obtain from the valve and appurtenance manufacturer's, a certificate of inspection*** to the effect that the equipment supplied for this Contract have been inspected at the plant and that they meet the requirements of these specifications.

2. All valving and appurtenances shall be subject to visual inspection at the time of delivery by rail or truck and also just before they are installed. Equipment that does not conform to these specifications will be rejected and must be removed immediately by the Contractor and shall be replaced at no additional cost to the Owner.

3. The entire product of any plant may be rejected when, in the opinion of the Engineer, the methods of manufacture fail to secure uniform results, or where the materials used are such as to produce valves or appurtenances.

1.03 Submittals

A. All shop drawings shall be submitted to the Engineer for approval in accordance with Section 01300, *Shop Drawings, Submittals and Samples*, prior to construction. ***All shop drawings shall be submitted in an electronic (PDF) format***.

B. ***Submit within fifteen (15) calendar days after the Project Notice to Proceed a list of materials to be furnished***, the names of suppliers and the date of delivery of materials to the Project Site.

C. Complete shop drawings of all valves and appurtenances shall be submitted to the Engineer for approval prior to ordering of materials. The valve manufacturers shall certify, in writing, that the valve design and materials of construction are suitable for the intended service.

D. Shop drawings for valves and appurtenances shall include, at a minimum, the following:

1. ***Certified Dimensional Drawings*** of all piping, fittings, valves and appurtenances.

2. ***A laying schedule and marking diagrams*** which indicate the specific number of each pipe, fitting, valve and appurtenance, the location and direction of lay of each pipe, fitting, valve and appurtenance in the completed line. In addition, the laying schedules shall include, but not limited to, the following:

   a. Invert station and elevation of each valve and appurtenance.

   b. Locations of valves, appurtenances and other mechanical equipment.

1) Methods and locations of supports.

2) Details of special elbows and fittings.

c. Details of restrained and flexible joints.

d. All valves, including gate, plug, ball, check, air release, solenoid, telescoping valves, etc.

e. Valve operators.

f. Valve boxes.

g. Valve and meter vaults.

h. Fire hydrants, backflow preventers and emergency eyewashes/showers.

i. Hose bibbs and washdown hoses

j. Couplings, connectors and unions.

k. Service saddles.

l. Pressure gauges.

m. Flexible expansion joints, tie rods, and flanged coupling adapters.

n. Joint lubricant.

o. Sediment strainers.

p. Diaphragm seals.

q. Service saddles and corporation stops.

3. A separate shop drawing submittal will be required for each major item listed above and for each different type of an item within a major item. For example, separate submittals will be required for butterfly, plug, ball, solenoid, check, and automatic air release valves. All submittals shall be in accordance with the General and Supplementary Conditions and Section 01300, *Shop Drawings, Submittals and Samples*.

E. Quality Control Submittals

1. Certificate of Compliance for:

   a. Electric Operators: *Full compliance with AWWA C-540*

   b. Butterfly Valves: *Full compliance with AWWA C-504*

2. Test and inspection data.

3. Manufacturer's certificate of proper installation and check-out.

4. Operation and Maintenance Manuals.

F. ***Submit manufacturer's catalog data and detail construction sheets showing all valve parts***. Describe each part by material of construction, specification (such as AISI, ASTM, SAE, CDA, etc.), and grade and type. Identify each valve by tag number to which the catalog data and detail sheets pertain.

G. ***Show valve dimensions including layout lengths***. Show port sizes. ***Show dimensions and orientation of valve actuators, as installed on the valve***. Show the location of internal stops for gear actuators. State differential pressure and fluid velocity used to size the actuators. For worm gear actuators, state the radius of the gear sector in contact with the worm and state the handwheel diameter.

H. ***Show valve linings and coatings*** and submit the manufacturer's catalog data and descriptive literature.

I. ***Submit three (3) copies of a report verifying that the valve interior linings and exterior coatings have been tested for holidays and lining thickness***. Describe test results and repair procedures for each valve. Do not ship valves to the Project Site until the reports have been returned by the Engineer and marked either "Approved" or "Approved as Noted".

J. For butterfly and eccentric plug valves, show the clear diameter or size of the port. Show the actual area of the port as a percentage of the area as calculated for the nominal valve size.

K. Acceptance of Material and Certifications

1. The Contractor shall ***furnish a certified Affidavit of Compliance for all valves, appurtenances and other products or materials furnished*** under this Contract complies with all applicable provisions of current AWWA, ASTM, NSF and ANSI standards, and these specifications.

2. ***No valves and/or appurtenances will be accepted for use in the Work on this project until the Affidavit has been submitted*** and approved by the Engineer.

L. ***Submit O&M Manuals for valves, appurtenances and other products and materials*** requiring periodic maintenance and/or explanation of operation.

1.04 Delivery, Storage and Handling

A. All valves and appurtenances shall be handled in such manner as to ensure a sound undamaged condition during shipping, delivering, and installing. The Contractor shall also refer to the requirements of Section 01600, *Materials and Equipment*.

B. Care shall be taken not to injure the valve and/or appurtenance coating and/or lining.

C. The Contractor shall exercise care when handling lined valves and appurtenances. Damage to the lining will render it unfit for use and shall require replacement at no additional cost to the Owner.

D. The insides of valves and appurtenances shall be kept free of dirt and debris.

1.05 Operation and Maintenance Manuals

A. O&M Manuals shall be furnished for this Project in accordance with Section 01730, *Operation and Maintenance Data* and shall be submitted in accordance with Section 01300, *Shop Drawings, Submittals and Samples*.

B. The O&M Manuals shall be prepared specifically for this installation and shall include all detailed operating and maintenance instructions and specifications relative to the assembly, alignment, checking, lubrication, placing in operation, adjustment, and maintenance of equipment and auxiliaries furnished under this Contract, together with its complete parts lists therefore, and copies of shop drawings, certified dimensions drawings and design calculations, required cut sheets, drawings, equipment lists, descriptions, etc. that are required to instruct operation and maintenance personnel unfamiliar with such equipment.

C. All such material shall be in addition to any instructions or parts lists packaged with or attached to the equipment when delivered.

D. The “final” O&M Manuals shall contain ***plastic laminated pull-out lubrication and maintenance cards*** detailing all lubrication points, lubricant type, and frequency of lubrications and all additional required maintenance and frequency intervals.

E. ***In addition to standard O&M Manuals, all manufacturers supplying equipment and products specified herein shall also submit their operation and maintenance manuals and data to the System Integrator for this Project on CD/DVD/BD's in Corel WordPerfect (latest version), Microsoft Word (latest version), or text, "txt", formats. All graphic files shall be in BMP, PCX, CDR, JPEG, DWG or DXF formats (integrators preference for the system shall be required). All O&M Manual files shall also be submitted electronically on CD/DVD/BD's to the Engineer in both PDF and JPEG formats, no exceptions.***

F. ***The System Integrator shall be responsible to configure and compile the O&M Manuals into "hypertext" window help files for use as computer "on-line" help screens for equipment operation and maintenance. The System Integrator shall return all hypertext files to the equipment and product manufacturer's for review and approval prior to introducing them into the SCADA System at the treatment facility.***

1.06 Job Conditions

A. Water in Excavation

1. Water shall not be allowed in the trenches while underground valves and/or appurtenances are being laid and/or tested.

2. The Contractor shall not open more trench than the available pumping facilities are able to dewater to the satisfaction of the Engineer. The Contractor shall assume responsibility for disposing of all water so as not to injure or interfere with the normal drainage of the territory in which he is working.

3. All necessary precautions shall be taken to prevent the entrance of mud, sand, or other obstructing matter into the valves and appurtenances. If on completion of the work any such materials has entered either valves or appurtenances, it must be cleaned as directed by the Engineer so that the entire system will be left clean and unobstructed.

1.07 Warranties and Guarantees

A. Provide equipment warranty in accordance with Section 01740, *Warranties and Bonds*. ***Provide a minimum three (3) year warranty from the date of Final Project Acceptance by the Owner***.

2. PRODUCTS

2.01 General

A. Install valves complete with operating handwheels or actuators, levers, chain wheels, extension stems, floor stands, gear operators, operating nuts, chains, wrenches and accessories required for operation.

B. All valves and appurtenances shall be of the size shown on the Contract Drawings and all equipment of the same type shall be from a single manufacturer.

C. All valves and appurtenances shall have the name of the manufacturer, size of the valve and the working pressure for which they are designed cast in raised letters upon some appropriate part of the body.

D. ***All bolts, washers and nuts shall be Type 304 stainless steel***.

2.02 Finishes

A. Potable Water

1. Epoxy Lining and Coating

a. An epoxy lining and coating shall be applied to all potable water valves and appurtenances in accordance with AWWA C-550, unless otherwise specified and NSF approved.

b. Either two-part liquid material or heat-activated (fusion) material shall be used, except only heat-activated material shall be used if the specifications call for “fusion” or “fusion bonded” epoxy.

c. ***A minimum seven (7) mil dry film thickness shall be provided except where limited by valve operating tolerances***.

2. Exposed Valves

a. Exposed valves shall be coated in accordance with Section 09900, *Painting*.

b. Safety isolation valves and lockout valves with handles, handwheels or chain wheels shall be painted “safety yellow”.

B. Raw Wastewater, Biosolids/Sludge, Secondary Effluent and Reclaimed Water

1. Exterior Coating for Buried Valves and Appurtenances

   a. All exterior surfaces of valves and appurtenances shall be clean, dry and free from rust and grease before coating.

   b. Valves and appurtenances to be installed underground shall be coated on the exterior at the factory with a ***two (2) coat bituminous epoxy system with a minimum total finish dry film thickness of twenty (20) mils***.

   c. Prior to back filling, all uncoated nuts, bolts, glands, rods, and other parts of joints for underground installation shall be coated in the field with bituminous epoxy.

2. Exterior Coating for Exposed Valves and Appurtenances

   a. All exterior surfaces of valves and appurtenances shall be clean, dry and free from rust and grease before coating.

   b. For valves and appurtenances installed above-ground, the exterior ferrous parts of all valves shall be shop primed at the factory with ***one (1) coat, minimum dry film thickness of four (4) mils***, of a lead/chromate free, rust-inhibitive universal epoxy primer. The primer shall be suitable for the finish paint specified.

   c. Following installation, all above-ground valves shall be finish painted in accordance with Section 09900, *Painting*.

   d. Exposed piping shall be painted in accordance with Sections 09900, *Painting*, and 09905, *Piping, Valve and Equipment Identification System*.

3. Interior Valve and Appurtenance Lining

   a. The interior of the valve body and valve disc shall be coated with a ***two-coat fusion bonded or thermosetting epoxy coating*** in accordance with AWWA C-550, latest revision and NSF 61.

   b. ***The coating shall be holiday-free, NSF approved, with a minimum thickness of sixteen (16) mils***.

   c. Surfaces shall be clean, dry, and free from rust and grease before coating.

2.03 Gate Valves (GV)

A. General

1. Gate valves shall have a clear waterway equal to the nominal diameter of the pipe when fully open.

2. The opening nut or wheel shall have an arrow cast in the metal indicating the direction of the opening. Each valve shall have the manufacturer's distinctive markings, pressure rating and year of manufacture cast on the body. Prior to shipment from the factory, each valve shall be tested by applying to it a hydrostatic pressure equal to twice the specified working pressure.

3. Hydrostatic and leakage testing shall be conducted in strict accordance with ANSI/AWWA C-500, latest revision or ANSI/AWWA C-509, latest revision whichever is applicable.

4. All gate valves which are installed on pipe sizes larger than three (3) inches shall have mechanical joint or flanged ends to fit the pipe run in which they are to be used. Flanged valves shall be faced and drilled to the ANSI 125/150 pound standard. Mechanical joint ends shall be to the AWWA Standard C111-72. Gate valves installed on pipes three (3) inches and smaller shall have slip on joints or screwed ends. Screwed ends shall be to the NPT Standard.

5. Gate valves shall open left or counter-clockwise when viewed from the stem.

6. Buried gate valves shall be furnished with two (2) inch square AWWA standard nut operators with a valve box and cover. Gate valves located above ground or inside structures shall be furnished with handwheel operators and shall have a suitable indicator arrow to give the valve position from fully open to fully closed.

B. Gate Valves for Tapping Valves and Sleeves

1. Tapping Valves

a. Tapping valves shall conform to ANSI/AWWA C-500 or C-509, latest revision, and shall be designed for a minimum working pressure of 150 psi.

b. Tapping valves three (3) inches to twelve (12) inches shall be resilient seat type gate valves as specified in Article 2.03. Resilient seat type tapping valves shall be furnished with a raised guide ring cast integrally on the flanged end which is designed to match the groove in the tapping sleeve. The purpose of this guide ring shall be to ensure true alignment of the valve with the tapping sleeve.

c. Tapping sleeves larger than twelve (12) inches shall be iron body, bronze mounted gate valves, with double disc, parallel seat and non-rising stem. The stem shall be bronze and sealed by two "O" rings. The stem nut shall be bronze and cast integrally into the top wedge. The valve disc seating mechanism shall be bottom wedging, hook and wedge type, with disc hooks and wedges as separate interacting parts. The valve shall be designed for vertical mounting in approximately level setting on buried water lines. The valve ends shall be flanged American Standard Class 125 pound steam pressure ratings on one side of the valve and mechanical joint on the other side for use with the class and type of pipe to be installed from the tapping sleeve. Tapping sleeves twelve (12) inches and larger shall be furnished with a raised guide ring cast integrally on the flanged end as specified above for resilient seat type tapping valves.

d. The valve shall open left or counter-clockwise when viewed from the stem. The valve shall be furnished with a 2-inch square AWWA standard nut operator with a valve box and cover as specified herein.

2. Tapping Sleeves

a. Tapping sleeves shall be of the cast iron, mechanical joint type, with a working pressure rating of 200 psi for sizes four (4) inches through twelve (12) inches and 150 psi for sizes fourteen (14) inches and larger, and shall conform to the applicable sections of AWWA Standard C-110, latest revision.

b. Sleeve and glands shall be of the split-type for assembly on the pipe, and the sleeve and mechanical joint glands and gaskets shall be sized for use with the class and type of pipe being tapped. Sleeve and glands shall be standard bituminous coated, and shall be furnished complete with all accessories. The outlet flange shall be Class 125 Standard. The Contractor shall obtain approval from the Engineer for drilling machine used prior to tapping connections.

3. Operator

a. Two (2) inch square nut or other operator specified on the Contract Drawings or by the Engineer.

4. Gate valves shall be manufactured by Mueller Company, Dresser Industries, Inc., American Valve and Hydrant Valve Company, Kennedy Valve Manufacturing Company, or equal.

5. Interior and Exterior coatings shall be in accordance with Article 2.02.

C. Knife Gate Valves (KGV) - Stainless Steel

1. Provide electric operated knife gate valves, in sizes and quantities as indicated on the Drawings for the dewatered solids discharge system.

2. Monitoring and control of the electric actuated knife gate valves to be integrated into the Master Dewatering Control Panel and facility SCADA.

3. The Master Dewatering Control Panel PLC programming shall allow for operator adjustable periodic cycling through all or any selected combination of possible cake discharge points at desired preset time intervals while the dewatering system is in operation. The programming shall allow for the use of only one drop point, cycling among any two adjacent drop points, or cycling between three drop points.

4. Knife gate valves shall be resilient seated, full, round port design for high flow capacity and minimal pressure drop. The valve body port area shall not be less than eighty percent (100%) of the nominal pipe diameter. Valves shall be designed for positive drip-tight shutoff at 150 psi. All materials of construction shall be as specified herein and shall be suitable for use with dewatered biosolids. The valves shall be equipped with automatic actuators and secondary chainwheel operators and extensions or floor stand operator with handwheel and extensions as shown on the Contract Drawings. Provide bevel gear actuators for valves fourteen (14) inches and larger.

5. Body and Gate

    a. The body material shall be Type 316 stainless steel.

    b. The body shall have a lugged design drilled tapped in accordance with ANSI 150 standards.

    c. The gate shall be constructed of Type 316 stainless steel in accordance with ASTM A-240, finish ground on each side to prevent packing or seat damage.

6. Packing and Gland Material

    a. The packing gland shall be Type 316 stainless steel in accordance with ASTM A-240.

    b. Valve packing shall be square braided PTFE impregnated synthetic fiber. Removal or replacement of the packing shall be accomplished without necessitating the removal of the valve from the pipeline.

7. Yoke Sleeve

    a. The yoke super structure shall be constructed of ASTM A-36. The yoke sleeve shall be aluminum bronze in accordance with ASTM B-30, Alloy C84400.

b. The bonnet shall be Type 316 stainless steel.

8. Seat Ring and Seat

   a. The seat ring shall be Type 316 stainless steel in accordance with ASTM A-240.

   b. The resilient seat material shall be EPDM or Neoprene and shall be bonded to the seat ring.

9. The stem and gate shall be manufactured of Type 316 stainless steel in accordance with ASTM A-240.

10. Interior and Exterior coatings shall be in accordance with Article 2.02.

11. The valve shall be cast of stainless steel and shall be manufactured by DeZurik, or approved equal.

2.04 Butterfly Valves

A. General

1. Butterfly valves for shall meet or exceed the design standards of ANSI/AWWA C-504-150B, latest revision and designed for a ***minimum working pressure of 150 psi***.

2. Valves shall be bubble tight in either direction at the rated pressure and shall be suitable for throttling and/or operation after long periods of inactivity.

3. ***The manufacturer shall provide the Engineer with a letter of compliance, within twenty (20) calendar days of the Notice to Proceed*** indicating that the valve and all materials are compatible with the liquid to flow through it and applicable for the intended use.

4. All valves shall be furnished with position indication.

5. Valve discs shall rotate 90° from the fully open position to the fully closed position.

6. Thrust Bearings

   a. Provide thrust bearings to hold the valve disc in the center of the valve seat. No bearings shall be mounted inside the valve body within the waterway.

   b. Do not use thrust bearings in which a metal bearing surface on the disc rubs in contact with an opposing metal surface on the inside of the body.

7. Bronze Components

   a. Bronze components in contact with water shall comply with the following requirements:

Constituent	Maximum Content (%)
Zinc	7
Aluminum	2
Lead	8
Copper + Nickel + Silicon	83

8. Port Sizes

   a. For valves twenty-four (24) inches and smaller, the actual port diameter shall be at least ninety-three percent (93%) of the nominal valve size. For valves larger than twenty-four (24) inches, the port diameter shall not be more than 1.25-inches smaller than the nominal valve size.

   b. The dimension of the port diameter shall be the clear waterway diameter plus the thickness of the seat.

9. Butterfly valves shall be as manufactured by DeZurik, Dresser Industries, Inc., Kennedy Valve Manufacturing Company, Clow Valve Company, Mueller Company, Henry Pratt Company, or equal.

B. Valve Bodies

1. Valve bodies shall be constructed of high-strength cast iron or ductile iron conforming to ASTM A126, Class B.

2. Buried valves shall have integrally cast mechanical joint ends as specified for ductile iron pipe and above-ground valves shall have cast iron flanges.

3. End flanges shall conform in dimensions and drilling to ANSI B 16.1, Class 125.

4. Two trunnions for shaft bearings shall be integral with each valve body.

5. Valve body thickness shall be in strict accordance with ANSI/AWWA C-504, latest revision, for Class 150B valves.

C. Valve Seat Ring

1. The valve seat ring shall be constructed of Type 316 stainless steel. The seating

edges of the seat ring shall be smooth and polished.

2. The seat ring shall be capable of compensating for changes in direction of flow to assure a bubble tight seal in either direction.

D. Valve Discs

1. Valve discs shall be solid (no cores) for 24-inch and smaller valves, and shall be either solid or hollow core for valves greater than 24-inch. Valve discs shall be constructed of ductile iron in conformance with AWWA C-504.

2. The valve disc shall be of the offset type design to provide 360° uninterrupted seating.

E. Valve Shafts

1. Valve shafts may consist of a one piece unit extending completely through the valve disc bearings and into the operating mechanism or may be of the "stub shaft" type, which comprises two separate shafts inserted into the valve disc hubs. If used, stub shafts shall extend a minimum of 1½ shaft diameters into the valve disc hubs.

2. Valve shafts shall be constructed of Type 316 stainless steel or a stainless steel with greater overall corrosion and oxidation resistance.

3. The minimum shaft diameter shall conform to ANSI/AWWA C-504, latest revision, for Class 150B valves.

4. The valve disc shall be attached to the shaft by means of "O" ring sealed taper pins.

5. The valve shaft seal shall consist of "O" rings in bronze cartridge or self adjusting nitrile Vee-type ring seals.

F. Valve Seats

1. Valve seats shall be of a corrosion and chlorine resistant synthetic rubber compound bonded to a high grade stainless steel retaining ring and secured to the valve disc by Type 316 stainless steel set screws or shall be molded in, vulcanized, and bonded to the body.

2. Seats bonded to the body shall withstand a 75-pound pull tested in accordance with ASTM D429, Method B.

3. The valve seat shall be adjustable and replaceable in the field without dismantling operator, disc, or shaft.

G. Valve Bearings

1. Valve shafts shall be fitted with sleeve-type bearings.

2. Bearings shall be corrosion resistant and self-lubricating (Nylon or Teflon).

3. Bearings shall be designed for a pressure not exceeding the published design load for the bearing material, or $^1/_5$ of the compressive strength of the bearing or shaft material.

H. Valve Operators

1. All butterfly valves shall open left or counter-clockwise (CCW) when viewed from the stem. Automatic valve operators shall have motorized valve actuators as specified hereinafter. Manual valve operators shall be of the worm gear or traveling nut type and shall be fully enclosed suitable for buried or submerged service.

2. All operators shall have adjustable mechanical stop limiting devices to prevent over travel of the disc. Should an adjustment of the disc be required to maintain a bubble tight seal, this adjustment shall be made externally without removing the operator housing cover. The operator shall be designed such that all adjustments can be made under pressure and without the possibility of dirt getting into the operator lubricant. Any adjustments through the lower shaft will not be acceptable.

3. Units furnished for buried service shall be fully gasketed and grease packed.

4. Manual valves located above ground and above grating shall be equipped with handwheel or chainwheel operators and shall have a suitable indicator arrow to give valve position from “fully open” to “fully closed”.

5. Buried butterfly valves and valves below grating shall be furnished with a two (2) inch square AWWA nut operator with valve box and cover. The stems shall be “pinned” and shall bring the 2-inch square nut to approximately six (6) inches from the finished valve pad elevation. Operator components shall, at the extreme operator positions, withstand without damage a pull of 200 lbs. for handwheel or chainwheel operators or an input torque of 300 ft-lbs. for operating nuts.

I. Interior and Exterior coatings shall be in accordance with Article 2.02.

J. Valve Testing

1. Prior to shipment from the factory, hydrostatic and leakage tests shall be conducted on each butterfly valve. Hydrostatic and leakage tests shall be conducted in strict accordance with ANSI/AWWA C-504, latest revision, and results shall be submitted to the Engineer.

2.05 Ball Valves

A. PVC Ball Valves

1. General

a. All PVC ball valves ½-inch through 4-inch in size shall be of one piece capsule type manufactured of Type I, Grade 1 PVC.

b. All ball valves shall be true union design with two-way blocking capability and shall have solvent welded socket or NPT threaded ends.

c. All ball valves shall be designed for a 150 psi water working pressure at 120°F.

d. Manually operated ball valves shall be supplied with an ABS lever operating handle. Motorized ball valves shall be equipped with an electric actuator as specified hereinafter.

2. PVC Ball Valves for Anti-Scalant, Sodium Hydroxide, Hydrofluosilicic Acid, Phosphate Inhibitor and Ammonia - NOT USED

3. PVC Ball Valves Used with Halar (ECTFE) Sulfuric Acid Piping Systems - NOT USED

4. PVC Ball Valves Used with Teflon-Lined Carbon Steel Sulfuric Acid Piping Systems - NOT USED

5. PVC Ball Valves for Bulk Sodium Hypochlorite - NOT USED

6. Standard PVC Ball Valves for Water and Reclaimed Water Service

a. All PVC ball valves ½-inch through 4-inch in size shall be of one piece capsule type manufactured of Type 1, Grade 1 PVC.

b. Ball valves shall be true union design with two-way blocking capability and shall have solvent welded socket or NPT threaded ends.

c. Ball valves shall have Teflon seats with Viton backing cushions and Viton O-ring seals, and shall be designed for a 150 psi water working pressure at 120°F.

d. Manually operated valves shall be supplied with ABS lever operating handles. Motorized ball valves shall be equipped with an electric actuator as specified hereinafter.

e. PVC ball valves shall be manufactured by Plast-O-Matic, Asahi/America, Hayward, or an equal approved by the Engineer.

B. Stainless Steel Ball Valves

1. Stainless steel ball valves shall be of the standard port type with flanged connections for the sizes indicated on the Contract Drawings or specified herein.

2. Stainless Steel ball valves shall be designed for a working pressure of 200 psi with positive shut off when in the closed position.

3. The valve shall be a one (1) piece, Grade CF-8M, Type 316 stainless steel body, ANSI B16 with a solid Type 316 stainless steel ball and stem.

4. The seats and seals shall be Teflon.

5. The ball shall have a full bore port design machined from a solid metal piece with highly polished surfaces.

6. Manually operated ball valves shall be furnished with level operators manufactured of forged Type 316 stainless steel with a molded vinyl sleeve.

7. Stainless steel ball valves shall be manufactured by KTM, DeZurik, Neles-Jamesbury, or an equal approved by the Engineer.

C. Electric Actuator for PVC Ball Valves

1. Where indicated on the Contract Drawings, PVC ball valves shall be provided with an electric actuator. The actuator shall be matched to the valve and shall have sufficient operating torque to operate the valve for its maximum expected breakaway torque.

2. The actuator shall be capable of full 90° actuation within ten (10) seconds. The actuator shall be UL listed and suitable for 120 volt AC, 60 Hz, one-phase electric power, and shall be provided with a corrosion-resistant, NEMA 4 enclosure.

3. The valve actuator shall be provided with a manual operator override which is disengageable such that the valve cannot be operated electrically while the manual override is engaged.

4. The actuator shall be furnished with a high torque, reversible, brushless, capacitor run, heavy duty motor with built-in motor overload protection, and gears and shafts shall be heat treated, high allow steel.

5. The unit shall be permanently lubricated and travel limit switches shall be independently adjustable. The actuator shall be provided with an integral electrical

terminal strip, position indicator, over-torque protection, and travel limit switches for position light operation.

6. The valve actuator enclosure shall be provided with a combination heater and thermostat to maintain the case interior above 40°F.

7. Two additional limit switches shall be provided to energize and de-energize a pump interlocked with the valve.

8. The electric actuator shall be a Model 92 Electric Valve Actuator as manufactured by Asahi/America, or an equal approved by the Engineer.

2.06 Diaphragm Valves

A. Bronze Angle Hose Valves

1. Angle-type hose valves, less than two (2) inches in size, shall have a brass or bronze body (ASTM B-62 or ASTM B-584, Alloy C83600) with rising or non-rising stem, composition disc, and bronze or malleable iron handwheel.

2. The stem shall be bronze, ASTM B-62, ASTM B-584 (Alloy 83600), or ASTM B-198 (Alloy 87600).

3. The valve shall have a cold water service pressure rating of 150 psi.

4. Provide a cap and chain with the valve.

5. Threads on the valve outlet shall be American National Standard fire hose coupling screw thread.

6. Valves shall be Nibco T-301-HC, Powell Figure 151 with Figure 527 nipple adapter, Crane 17TF with hose nipple adapter, or approved equal.

B. Bronze Hose Bibbs

1. Hose bibbs of size ½-inch, ¾-inch and 1-inch shall be all bronze (ASTM B-62 or ASTM B-584, Alloy C83600) with rising or non-rising stem, composition disc, and bronze or malleable iron handwheel.

2. The stem shall be bronze, ASTM B-99, Alloy 651; ASTM B-371, Alloy C69400; or ASTM B-584, Alloy 87600. The packing shall be Teflon or graphite.

3. The valve shall have a cold water service pressure rating of 150 psi.

4. Provide a cap and chain with the valve.

5. Threads on the valve outlet shall be American National Standard fire hose coupling screw thread (ANSI B1.20.7).

6. Provide a vacuum breaker approved by the State of Florida Health Department on each hose bibb.

7. Valves shall be Jenkins Figure 112, 113 or 372; Nibco T-113-HC; Powell Figure 503H, or approved equal.

C. Electric Actuator for Diaphragm Valves

1. Where indicated on the Contract Drawings, diaphragm valves shall be provided with an electric actuator. The actuator shall be matched to the valve and shall have sufficient operating torque to operate the valve for its maximum expected breakaway torque.

2. The actuator shall be capable of full 90° actuation within ten (10) seconds. The actuator shall be UL listed and suitable for 120 volt AC, 60 Hz, one-phase electric power, and shall be provided with a corrosion-resistant, NEMA 4 enclosure.

3. The valve actuator shall be provided with a manual operator override which is disengageable such that the valve cannot be operated electrically while the manual override is engaged.

4. The actuator shall be furnished with a high torque, reversible, brushless, capacitor run, heavy duty motor with built-in motor overload protection, and gears and shafts shall be heat treated, high allow steel.

5. The unit shall be permanently lubricated and travel limit switches shall be independently adjustable. The actuator shall be provided with an integral electrical terminal strip, position indicator, over-torque protection, and travel limit switches for position light operation.

6. The valve actuator enclosure shall be provided with a combination heater and thermostat to maintain the case interior above 40°F.

7. Two additional limit switches shall be provided to energize and de-energize a pump interlocked with the valve.

8. The electric actuator shall be a Model 92 Electric Valve Actuator as manufactured by Asahi/America, or approved equal.

2.07 Plug Valves

A. General

1. Plug valves shall be of the non-lubricated eccentric type for use in wastewater service with flanged or mechanical joint ends as specified herein. Valves shall open by turning to the left (counter-clockwise), when viewed from the stem. The port area of the valves shall be a minimum of eighty percent (80%) of the full pipe area. The valves shall be capable of providing a drip-tight shutoff to the full valve rating with the pressure in either direction.

2. Plug valves shall be tested in accordance with AWWA C-504-80, Section 5. Each valve shall be performance tested in accordance with Section 5.2 and shall be given a leakage test and hydrostatic test as described in Articles 5.3 and 5.4. The leakage test shall be applied to the face of the plug tending to unseat the valve. The leakage test shall be performed at the valve rating pressure as specified herein. The manufacturer shall furnish certified copies of the reports covering proof of design testing as described in Section 5.5.

3. All interior ferrous surfaces of the valve that will come into contact with the wastewater shall be coated with a factory applied, thermally bonded epoxy coating in accordance with AWWA C-550, latest revision. Surfaces shall be clean, dry and free from rust, oil and grease before coating. Exterior surfaces shall be coated as specified hereinafter.

4. Valve Joints

    a. All plug valves installed above-ground, in valve vaults or on flange piping shall have flanged ends. Flanges shall comply with facing, drilling and thickness requirements of the ANSI Standards for Class 125 dimensions.

    b. Nuts and bolts for flanged connections in valve vaults or corrosive environments shall be Type 304 stainless steel in accordance with ASTM A-320, Class 2.

    c. Nuts and bolts for above-ground installations or non-corrosive atmospheres shall be carbon steel in accordance with ASTM A-307, Grade B.

    d. All buried plug valves shall have mechanical joint ends with dimensions, bolting patterns and assembly in strict accordance with ANSI/AWWA C-111, latest revision.

    e. Tee head bolts and nuts for mechanical joints shall be manufactured of CORTEN-A, high strength, low alloy, corrosion resistant steel as manufactured by NSS Industries, or an equal approved by the Engineer.

    f. Plug valves four (4) inch in size and larger buried underground, and all plug valves six (6) inch in size and larger installed above-ground, buried or in valve vaults shall be furnished with mechanical gear actuators. Gear actuators shall be furnished with AWWA Standard 2-inch square operating nuts for buried valves, or handwheel, chainwheel or 2-inch square nut operators for above-ground or valve vault installation, as shown on the Contract Drawings. The gear actuator shall be sized for the maximum pressure differential across the valve,

equal to the pressure rating of the valve. All gearing shall be enclosed in a high strength cast iron housing, suitable for running in a lubricant.

B. Prior to shipment from the factory, each valve shall be hydrostatically tested as follows. Valve seats shall be tested to provide leak tight shut off to 175 psi for valves through 12-inch and 150 psi for valves 14 inches and larger, with pressure in either direction. In addition, a hydrostatic shell test shall be performed with the plug open to a pressure twice that of rating specified above to demonstrate overall pressure integrity of the valve body.

C. Plug valves shall be eccentric plug valves as manufactured by DeZurik, Henry-Pratt Co., or approved equal.

D. Eccentric Plug Valves

1. Valve bodies shall be constructed of high strength cast iron conforming to ASTM A126, Class B and AWWA C504, latest revisions. Valve bodies shall be cast with raised eccentric seats which have a corrosion-resistant welded-in overlay of not less than ninety percent (90%) pure nickel on all surfaces contacting the plug face or valve seats shall be replaceable 316 stainless steel seats. Valve seats shall be in accordance with AWWA C504 and AWWA C507, latest revisions.

2. Valves shall be furnished with resilient faced plugs with neoprene facing, suitable for use with wastewater or sludge. Valves shall be furnished with replaceable, permanently lubricated, stainless steel sleeve-type bearings in the upper and lower plug stem journals. Plug stem bearings shall comply with AWWA C504 and C507, latest revisions.

3. The valves shall be of the bolted bonnet design with shaft seals designed so that they can be repackaged without removing the bonnet and the packing shall be adjustable. Packing material shall be Buna-Vee type packing. Valve shaft seals shall be in accordance with AWWA C504 and AWWA C507, latest revisions.

4. All exposed valve nuts, bolts, springs, washers, and the like shall be Type 316 stainless steel.

5. Eccentric plug valves shall be as manufactured by DeZurik, Henry-Pratt Co., or equal.

E. Interior and Exterior coatings shall be in accordance with Article 2.02.

F. Pressure Rating for the valves shall be in accordance with ANSI B16.1-1967 and shall be as follows:

Pipe Size (inches)	Pressure Rating (psi)
≤ 12	175
> 14	150

2.08 Check Valves - NOT USED

2.09 Pressure Relief Valves (PRV's) - NOT USED

2.10 Backpressure Sustaining Valves - NOT USED

2.11 Isolation Valves

A. Isolation valves shall be provided for water and reclaimed water services.

B. The isolation valves shall be of the ball type. Materials of construction of the valve body shall be compatible with the type of service, as indicated above, and as shown on the Contract Drawings.

C. Valves shall be of the threaded, flanged, socket, plain, union or grooved ends as required by the Contractor.

D. The operator shall be of the "handle" type compatible with the type of service.

E. The valve shall be rated for an operating pressure of 150 psi.

F. The isolation valves shall be as manufactured by ASAHI/America, Simtech, or approved equal.

2.12 Solenoid Valves

A. Potable Water Service

1. The solenoid valve shall be normally closed and shall be equipped with a manual override operator.

2. The valve shall be of the general purpose type and shall be fabricated with a body and trim of stainless steel.

3. The operator shall be of the solenoid type rated for 120 V service.

4. The valve shall be rated for an operating pressure of 150 psi.

5. The solenoid valve shall be as manufactured by ASCO Red-Hat or approved equal.

2.13 Pinch Valves - NOT USED

2.14 Electric Motor Operated Pinch Valves - NOT USED

2.15 Telescoping Valves - NOT USED

2.16 Air Release Valves

A. Wastewater and Reclaimed Water Air Release Valves

1. Air release valves for wastewater service shall be of the long stem and body type designed to keep the valve operating mechanism as free from contact with the wastewater as possible.

2. Valves shall have a two (2) inch threaded inlet, with a one (1) inch blow-off connection with a one (1) inch blow-off valve (gate valve), ½-inch back-flushing attachments with a ½-inch outlet. The outlet and back flushing connections shall be quick couplings. The valve shall have a minimum orifice diameter of $^{5}/_{16}$-inch.

3. Valves shall be shall be properly sized for the proposed application and of the proper materials of construction for the intended service (wastewater, reclaimed water, etc.) and shall be a product manufactured by APCO, Valmatic, Valve and Primer Co., or approved equal.

4. Valves shall be constructed of cast iron, ASTM A48, Class 35 with Type 316 stainless steel trim, lever pins and float.

5. Valves shall have a working pressure rating of at least 150 psi.

B. Air and Vacuum Wastewater/Reclaimed Water Valves

1. Air and vacuum valves for wastewater service shall be of the long stem and body type designed to keep the valve operating mechanism as free from contact with the wastewater as possible.

2. Valves shall have a two (2) inch threaded inlet, with a one (1) inch blow-off connection with a one (1) inch blow-off valve (gate valve), ½-inch back-flushing attachments with a ½-inch outlet. The outlet and back flushing connections shall be quick couplings. The valve shall have a minimum orifice diameter of one (1) inch. The valves on the discharge piping of pumping stations shall have the orifice sized as required to expel air on pump starting.

3. Valves shall be shall be properly sized for the proposed application and of the proper materials of construction for the intended service (wastewater, reclaimed water, etc.) and shall be a product manufactured by APCO, Valmatic, Valve and Primer Co., or approved equal.

4. The valve body shall be constructed of cast iron, ASTM A48, Class 35. The valve and float shall be Type 316 stainless steel. Valves shall have a working pressure rating of at least 150 psi.

C. Valve End Connections

1. Valves smaller than three (3) inches shall have threaded ends. Valves four (4) inches and larger shall have flanged ends.

2. Flanges for Class 150 valves shall comply with ANSI B 16.1, Class 125.

3. Flanges for Class 300 valves shall comply with ANSI B16.1, Class 250.

4. Threaded ends shall comply with ANSI B2.1.

D. All air release and vacuum relief valves shall be isolated from the service line with a Type 316 stainless steel gate valve for valves up to 3-inches, and a flanged body butterfly valve for valves greater than three (3) inches (provide a spacer plate if required to clear the rotation of the butterfly disc).

2.17 Surge Anticipating Control Valve - NOT USED

2.18 Reduced Pressure Backflow Preventors (RPBP)

A. Potable Water Service

1. Reduced pressure backflow preventers for potable water service shall meet the requirements of AWWA C-511.

2.19 Valve Operators

A. General

1. All operators shall be sized to operate the valve at the valve's full-rated pressure. Gear actuator shall be sized for the maximum pressure differential across the valve, equal to the pressure rating of the valve. All gearing shall be enclosed in a high-

strength cast iron housing, suitable for running in a lubricant. Housing shall be provided with seals on all shafts to prevent the entry of dirt and water into the actuator. The actuator shaft and quadrant shall be supported on permanently lubricated bronze bearings. The actuator shall clearly indicate valve position for above-ground and valve vault installations and an adjustable stop shall be provided to set closing torque. The actuator shall be capable of withstanding an over-torque without damage up to 450 foot-pounds for two (2) inch square nut operators and to 300 foot-pounds for handwheel or chainwheel operators.

2. Valve operators, handwheels or levers shall open by turning counter-clockwise (CCW) and shall be constructed of non-corrosive materials.

3. Four (4) inch and smaller aboveground valves shall be furnished with manual actuators, one-quarter turn to open. The actuator shall be supplied with an AWWA Standard two (2) inch operating nut with a standard valve operating lever.

4. Exposed operators shall be furnished with chainwheel operators, geared operators, extension stems, floor stands, and other elements to permit operation from the normal operating level.

5. ***All valve stem extensions for buried valves shall be "pinned"***.

B. Manual Operators

1. Manual operators include handwheel, chainwheel, lever and handle type operators. When the maximum force to operate a valve under full operating head exceeds forty (40) pounds, gear reduction operators shall be provided.

2. Lever Operator

   a. ***Levers shall be fabricated of non-corrosive materials***. They shall include a set screw and be grease lubricated.

   b. The operator shall be capable of being locked in any position and shall be provided with an adjustable memory stop.

3. Handwheel

   a. Gate/valve operators shall be selected so that no more than forty (40) pounds effort on the operator will be required to open or close a gate/valve. Gate/valve operators shall be located at a maximum height of forty-two (42) inches above the structure. When the normal yoke elevation is above 42-inches above structure, the geared lift shall be coupled to a ninety degree (90°) bevel gear box by means of a floating shaft and lovejoy couplings. This gearbox shall be mounted on the edge of the self-contained yoke. ***All shafts and couplings***

shall be Type 304 stainless steel and aligned to acceptable coupling tolerance. All cast iron gearbox housings shall be epoxy coated in accordance with Section 09900, *Painting*, for corrosion protection.

b. ***All operators shall be geared and shall have a weatherproof cast iron housing or pedestal with a bronze operating nut***. An effective gear ratio of at least 2:1 is required.

c. The operator shall include a position indicator and self-locking feature to prevent the disc or plug from creeping.

d. Gear operators shall be totally enclosed and lubricated. Operators shall be grease lubricated and provided with grease fittings.

e. Handwheel operators supplied with floorstands and benchstands shall be self-locking at any position of stem travel. ***Cranks and handwheels shall be cast iron and hot dip galvanized after fabrication or as specified on the Contract Drawings***. Cranks shall be no less than twelve (12) inches long and shall be keyed to the operating nut. Handwheels shall not have a diameter greater than thirty (30) inches.

f. Self-locking gear shall be a one-piece design of gear bronze material (ASTM B 427), accurately machine cut. The sector gear shall be hardened alloy steel (ASTM A-322), grade G41500 or ASTM A-148, Grade 105-85, with thread ground and polished. The reduction gearing shall run in a proper lubricant.

4. Buried Operators

a. Buried service operators on valves larger than 2½ inches shall have a 2-inch AWWA operating nut (extended to within 6 inches of the finished valve pad elevation).

b. Buried operators on valves 2-inches and smaller shall have cross handle for operation for forked key. All moving parts of the valve and operators shall be enclosed in a housing to prevent contact with the soil.

c. Buried service operators for quarter-turn valves shall be designed to withstand 450 foot-pounds of input torque at the fully open or fully closed positions without damage to the valve or operator and shall be grease packed and gasketed to withstand a submersion in water to 10 psi.

d. ***Valves shall be installed with "pinned" extension stems, as required, valve boxes, concrete valve pad and valve identification tag***.

C. Electric Motor Operated Valve Actuators

1. General

a. The actuators shall be suitable for use on a nominal 460 volt three-phase 60 Hertz power supply and are to incorporate motor, integral reversing starter, local control facilities, and terminals for remote control and indication connections.

b. The actuator shall include a device to ensure that the motor runs with the correct rotation for the required direction of valve travel with either phase sequence of the three-phase power supply connected to the actuator.

c. It shall be possible to carry out the setting of the torque, turns, and configuration of the indication contacts without the necessity to remove any electrical compartment covers.

2. Actuator Sizing

a. The actuator shall be sized to guarantee valve closure at the specified differential pressure.

b. The safety margin of motor power available for seating and unseating the valve shall be sufficient to ensure torque switch trip at maximum valve torque with the supply voltage ten percent (10%) below nominal.

c. The operating speed shall be such as to give valve closing and opening at approximately 10 - 12 inches per minute.

3. Ambient Temperature

a. The actuator shall be capable of functioning in an ambient temperature ranging from -22 ºF (-30ºC) to +158ºF (+70ºC).

4. Motor

a. The electric motor shall be Class F insulated with a time rating of at least fifteen (15) minutes at 104ºF (40ºC) or twice the valve stroking time, whichever is the longer, at an average load of at least 33% of the maximum valve torque.

b. Electrical and mechanical disconnection of the motor should be possible without draining the lubricant from the actuator gear case. Plugs and sockets are not acceptable as a means of electrical connection for the motor.

5. Motor Protection

a. Protection shall be provided for the motor as follows:

1) The motor shall be de-energized in the event of stall when attempting to unseat a jammed valve.

2) Motor temperature shall be sensed by a thermostat to protect against overheating.

3) Single phasing protection.

6. Gearing

a. The actuator gearing shall be totally enclosed in an oil-filled gear case suitable for operation at any angle. All main drive gearing must be of metal construction.

b. Where the actuator operates gate valves or large diameter ball or plug valves, the drive shall incorporate a lost-motion hammerblow feature.

c. For rising spindle valves, the output shaft shall be hollow to accept a rising stem and incorporate thrust bearings of the ball or roller type at the base of the actuator, and the design should be such as to permit the gear case to be opened for inspection or disassembled without releasing the stem thrust or taking the valve out of service.

d. Standard SAE80EP gear oil shall be used to lubricate the gear case. Special or exotic lubricants shall not be used as they may be difficult to source in remote locations.

7. Hand Operation

a. A handwheel (***non-corrosive material***) shall be provided for emergency operation engaged when the motor is declutched by a lever or similar means; the drive being restored to power automatically by starting the motor.

b. The hand/auto selection lever should be padlockable in both the "Hand" and "Auto" positions. It should be possible to select “Hand” operation while the actuator is running or start the actuator motor while the “Hand/Auto” selection lever is locked in "Hand" without damage to the drive train.

c. The handwheel drive must be mechanically independent of the motor drive, and any gearing should be such as to permit emergency manual operation in a reasonable time.

d. Clockwise (CW) operation of the handwheel shall give closing movement of the valve.

8. Drive Bushing

   a. The actuator shall be furnished with a drive bushing easily detachable for machining to suit the valve stem or gearbox input shaft. Normally the drive bushing shall be positioned in a detachable base of the actuator.

   b. Thrust bearings, when housed in a separate thrust base, should be of the "sealed for life" type.

9. Torque and Turns Limitations

   a. Torque and turns limitation to be adjustable as follows

      1) Position setting range: 2.5 to 100,000 turns, with resolution to 7.5° of actuator output.

      2) Torque setting: 40% to 100% rated torque.

      3) Torque sensing must be affected directly electrically or electronically. Extrapolating torque from mechanically measured motor speed is not acceptable due to response time. Torque measurement shall be independent of variations in frequency, voltage or temperature.

      4) "Latching" shall be provided for the torque sensing system to inhibit torque off during unseating or during starting in mid-travel against high inertia loads.

   b. The electric circuit diagram of the actuator should not vary with valve type remaining identical regardless of whether the valve is to open or close on torque or position limit. An inexpensive setting tool is required for non-intrusive calibration and interrogation of the actuator. This setting tool will provide speedy interrogation capabilities as well as security in a non-intrusive intrinsically safe watertight casing.

10. Remote Valve Position/Actuator Status Indication

    a. In the event of a (main) power (supply) loss or failure, the position contacts must continue to be able to supply remote position feedback and maintain interlock capabilities. If batteries are required to maintain contact functionality the actuator vendor shall provide a supply sufficient for thirty (30) continuous days of unpowered operation with one (1) complete valve cycle every hour.

    b. A backup power source must be provided in the actuator to ensure correct remote indication should the actuator be moved manually when the power supply is interrupted.

c. The position of the actuator and valve must be updated contemporaneously, even when the power supply is not present.

d. Four (4) contacts shall be provided which can be selected to indicate any position of the valve with each contact externally selectable as normally open or normally closed. The contacts shall be rated at 5A, 250V AC, 30V DC.

e. As an alternative to providing valve position, any of the four (4) above contacts shall be selectable to signal one of the following:

1) Valve Opening or Closing

2) Valve Moving (Continuous or Pulsing)

3) Local Stop Selected

4) Local Selected

5) Remote Selected

6) Open or Close Interlock Active

7) ESD Active

8) Motor Tripped on Torque in Mid-Travel

9) Motor Tripped on Torque Going Open

10) Motor Tripped on Torque Going Closed

11) Pre-Set Torque Exceeded

12) Valve Jammed

13) Actuator Being Operated by Handwheel

14) Lost Main Power Phase

15) Customer 24V DC or 120V AC Supply Lost

16) Battery Low

17) Internal Failure Detected

18) Thermostat Tripped

f. Provision shall be made in the design for the addition of a contact less transmitter to give a 4-20 mA analog signal corresponding to valve travel for remote indication when required.

11. Local Position Indication

a. The actuator must provide a local display of the position of the valve, even when the power supply is not present. The display shall be able to be rotated in 90° increments so as to provide easy viewing regardless of mounting position.

b. The actuator shall include a digital position indicator with a display from fully open to fully closed in 1% increments. Red, green, and yellow lights corresponding to Open, Closed, and Intermediate positions shall be included on the actuator. The digital display shall be maintained even when the power to the actuator is isolated.

c. The local display should be large enough to be viewed from a distance of six (6) feet when the actuator is powered up.

12. Integral Starter and Transformer

a. The reversing starter, control transformer, and local controls shall be integral with the valve actuator, suitably housed to prevent breathing and condensation buildup.

b. For ON/OFF service, this starter shall be an electromechanical type suitable for 60 starts per hour and of a rating appropriate to the motor size.

c. For modulating duty, the starter shall be suitable for up to a maximum of 1,200 starts per hour. The controls supply transformer shall be fed from two of the incoming three phases. It shall have the necessary tapings and be adequately rated to provide power for the following functions:

1) 120V AC energization of the contactor coils

2) 24V DC output where required for remote controls

3) Supply for all the internal electrical circuits

4) The primary and secondary windings shall be protected by easily replaceable fuses.

13. Integral Push Buttons and Selector

a. Integral to the actuator shall be local controls for Open, Close, and Stop, and a local/remote selector Switch, padlockable in any one of the following three positions:

1) Local Control Only

2) Off (No Electrical Operation)

3) Remote Control plus Local Stop Only

b. It shall be possible to select maintained or non-maintained local control.

c. The local controls shall be arranged so that the direction of valve travel can be reversed without the necessity of stopping the actuator.

14. Control Facilities

a. The necessary wiring and terminals shall be provided in the actuator for the following control functions described herein.

b. Removable links for substitution by external interlocks to inhibit valve opening and/or closing.

c. Connections for external remote controls fed from an internal 24V DC supply and/or from an external supply of (min. 12V, max. 120V) to be suitable for any one or more of the following methods of control:

1) Open, Close, and Stop.

2) Open and Close.

3) Overriding Emergency, Shutdown to Close (or Open) Valve from a "Make" Contact.

4) Two-Wire Control, Energize to Close (or Open), De-Energize to Open (or Close).

d. Selection of maintained or push-to-run control for modes (1) and (2) above shall be provided and it shall be possible to reverse valve travel without the necessity of stopping the actuator. The starter contactors shall be protected from excessive current surges during travel reversal by an automatic time delay on energization of approximately 300 ms.

e. Provision shall be made for connectivity with field bus control systems via a plug-in card. The following interfaces shall be available:

1) Modbus 2) Approved equal.

f. The internal circuits associated with the remote control and monitoring functions are to be designed to withstand simulated lightning impulses of up to 2.0 kV.

15. Monitoring and Diagnostics Facilities

a. Facilities shall be provided for monitoring actuator operation and availability as defined herein.

b. Monitor (availability) relay, having one change-over contact, the relay being energized from the control transformer only when the Local/Off/Remote selector is in the "Remote" position to indicate that the actuator is available for remote (Operations Building) operation.

c. Where required, it shall be possible to provide indication of thermostat trip and "Remote" selected as discreet signals.

d. A non-intrusive hand-held computer must be available, capable of duplex communication for uploading and downloading all variables for the actuator as well as performing detailed diagnostics.

e. Actuators shall include a diagnostic module, which will store and enable download of historical actuator data to permit analysis of changes in actuator or valve performance. A software tool shall be provided to allow configuration and diagnostic information to be reviewed and analyzed and reconfigured.

f. Diagnostic status screens must be provided to show multiple functions simultaneously so troubleshooting can be affected rapidly and efficiently. All diagnostic information should be contained on no more than eight (8) screens so multiple functions can be checked simultaneously.

g. Provision shall be made to display valve torque demand as a percent of rated actuator torque and position simultaneously, so as to facilitate valve troubleshooting and diagnostics.

16. Wiring and Terminals

a. Internal wiring shall be of tropical grade PVC insulated stranded cable of appropriate size for the control and three phase power. Each wire shall be clearly identified at each end.

b. The terminals shall be embedded in a terminal block of high tracking resistance compound.

c. The terminal compartment shall be separated from the inner electrical components of the actuator by means of a watertight seal.

d. The terminal compartment of the actuator shall be provided with a minimum of three (3) threaded cable entries. When required, a forth cable entry shall be provided.

e. All wiring supplied as part of the actuator to be contained within the main enclosure for physical and environmental protection. External conduit connections between components are not acceptable.

f. Control logic circuit boards mid relay boards must be mounted on plastic mounts to comply with double insulated standards. No more than a single primary size fuse shall be provided to minimize the need to remove single covers for replacement.

g. A durable terminal identification card showing plan of terminals shall be provided attached to the inside of the terminal box cover indicating:

   1) Serial Number.

   2) External Voltage Values.

   3) Wiring Diagram Number.

   4) Terminal Layout.

h. This must be suitable for the contractor to inscribe cable core identification beside terminal numbers.

17. Enclosure

a. Actuators shall be 'O' ring sealed, watertight to NEMA 6, and shall at the same time have an inner watertight and dustproof "O" ring seal between the terminal compartment and the internal electrical elements of the actuator fully protecting the motor and all other internal electrical elements of the actuator from ingress of moisture and dust when the terminal cover is removed on site for cabling.

b. The enclosure must allow for temporary site storage without the need for electrical supply connection.

c. All external fasteners should be of Type 316 stainless steel.

d. Actuators for explosion hazardous applications shall in addition be certified flameproof for Zones 1 and 2 (Divisions 1 and 2) Group gases.

18. Startup Kit

a. Each actuator shall be supplied with a startup kit comprising installation instruction, electrical wiring diagram, and sufficient spare cover screws and seals to make good any site losses during the commissioning period.

19. Performance Test Certificate

a. Each actuator must be performance tested and individual test certificates shall be supplied free-of-charge. The test equipment should simulate a typical valve load and the following parameters should be recorded:

1) Current at maximum torque setting.

2) Torque at maximum torque setting.

3) Flash Test Voltage.

4) Actuator Output Speed or Operating Time.

b. In addition, the test certificate should record details of specification, such as gear ratios for both manual and automatic drive, closing direction, and wiring diagram code number.

20. Warranty

a. Each actuator shall be warranted for a ***three (3) years from the date of Final Project Acceptance by the Owner***.

21. Experience

a. All technologies and devices used in the actuator must have a minimum of five (5) years' of commercial operating experience for that specific manufacturer, including torque and position sensing, lubrication, and electrical compartment design. The manufacturer must provide ten (10) Florida municipal site references of similar applications.

b. Electric motor valve actuators shall be as manufactured by Limitorque, Auma Actuators, Inc., or approved equal.

2.20 Valve Boxes

A. Furnish, assemble, and place a valve box over the operating nut for each buried valve. The valve box shall be designed so as to prevent the transmission of surface loads directly to the valve or piping.

B. Valve boxes shall be of the adjustable slide-type of suitable length with an interior diameter of not less than five (5) inches. The valve boxes shall be manufactured of cast iron and shall be of the two piece design including a bottom section and top section with cover. The cast iron cover shall be cast with the applicable service, "WATER," "WASTEWATER," "REUSE," etc., markings. The top section shall be adjustable for elevation and shall be set to allow equal movement above and below finished grade.

C. The castings shall be manufactured of clean, even grain, gray cast iron conforming to ASTM A48, Class 30B for Gray Iron Castings; and shall be smooth, true to pattern, free from blow holes, sand holes, projections, and other harmful defects. The seating surfaces of both the cover and the top section shall be machined so that the cover will not rock after it has been seated.

D. The valve boxes shall be coated inside and outside with an asphaltic coating prior to machining, so that the machined seating surfaces will be free of any coating. Cast iron valve box assemblies shall be Clow Corp. No. F-2452, Tyler Corp. Series 6855 or 6865 or an approved equal.

E. ***Valve extension stems shall be provided for all buried valves when the operating nut is deeper than three (3) feet below finished grade. The stems shall be "pinned" and shall bring the 2-inch square nut to approximately six (6) inches from the finished valve pad elevation***.

2.21 Tie Rods

A. When prior approval is obtained from the Engineer, ductile iron pipe, fittings, and valves may be restrained using a "*tie bolt joint restraint*".

B. Joint restraint materials for this method of restraint shall be the Super-Star SST Series Joint Restraint System as manufactured by Star National Products, a Division of Star Industries, Inc. Columbus, Ohio, or an equal approved by the Engineer.

C. All bolts, nuts, washers, tie rods, and other fasteners for the joint restraint system shall be manufactured of CORTEN high strength, low alloy, corrosion-resistant steel in conformance with ASTM A242. Tie bolts shall be manufactured of heat treated CORTEN steel. Tie rods and all fasteners f or the system shall be galvanized in conformance with the requirements of ASTM A123. Tie rods shall have a minimum diameter of ¾-inch. The number of tie rods required per joint shall be as recommended by the manufacturer.

D. ***Prior to backfilling after installation, all parts of the joint restraint system shall be coated with bituminous epoxy*** equal to Kop-Coat Bitumastic No. 300-M, for a minimum dry film thickness of twenty (20) mils.

2.22 Valve Identification

A. Aboveground Valve Identification

1. A coded and numbered tag attached with a stainless steel chain and/or stainless steel "S" hooks shall be provided on all valves.

2. Tag Types

a. Tags for valves on pipe shall be stainless steel, or anodized aluminum, 19 gauge thick. Colors for aluminum tags shall, where possible, match the color code of the pipe line on which it is installed.

b. ***Square tags shall be used to indicate "normally closed" valves and round tags shall indicate "normally open" valves***.

3. Coding

a. In addition to the color coding, each tag shall be stamped or engraved with "wording" or abbreviations to indicate the information presented in Article 2.01(G)(1)(a-g) of Specification Section 09905, *Pipe, Valve and Equipment Identification System*.

b. ***All color and letter coding shall be approved by the Engineer***.

c. ***Above ground valve tags shall be furnished with stainless steel (Type 316) wire for attachment thereof***. The tag shall not be attached to the handwheel or crank operators or any part of the valve which would inhibit operation of the valve.

d. Valve service shall either be as listed in Table 09905-1 (Section 09905), or by equipment abbreviation if associated with a particular piece of equipment. Valve numbering shall be as approved by the Engineer and/or Owner.

B. Belowground Valve Identification

1. Buried valves shall have valve boxes protected by a concrete pad as identified on the Contract Drawings. The concrete pad for the valve box cover shall have a 3-inch diameter, 19 gauge thick, bronze disc embedded in the surface as shown on

the Contract Drawings. The bronze disc shall have the following information neatly stamped on it:

a. Valve Service: See Table 09905-1 for the abbreviations to be used

b. Valve Identification No.: To be provided by the Engineer and Owner

c. Size of valve, inches

d. Type of valve

1) GV: Gate Valve
2) BfV: Butterfly Valve
3) PV: Plug Valve
4) Other valve abbreviations shall be provided by the Engineer.

e. Number of turns to fully open the valve

f. Direction to open the valve

g. Year of Installation

2. Submit to the Engineer for approval, within thirty (30) days from the Notice to Proceed, a valve schedule containing all valves required for his/her work.

3. The valve schedule, abbreviations, words, identification, etc. shall be approved by the Engineer and Owner prior to submission for casting.

4. ***The information contained in the valve schedules shall be coded on the tags in a system provided by the Engineer and Owner***.

C. ***Submit to the Engineer for review, two (2) samples of each type of tag proposed and the manufacturer's standard color chart and letter styles***. Tags shall have stamped or engraved on them the information shown on the Contract Drawings and the data described herein. Submit to the Engineer for approval, within thirty (30) days from the Notice to Proceed, a valve schedule containing all valves required for his/her work. The schedule shall contain all of the information required by Articles 2.22(A) and 2.22(B) of this Specification Section.

D. The valve schedule, abbreviations, words, identification, etc. shall be approved by the Engineer and Owner prior to submission for casting.

E. The information contained in the valve schedules shall be coded on the tags in a system provided by the Owner.

F. Above ground valve tags shall be furnished with stainless steel chain and/or stainless steel "S" hooks (Type 316) for attachment thereof. The tag shall not be attached to the handwheel or crank operators or any part of the valve which would inhibit operation of the valve.

2.23 Expansion Joints

A. Water Service

1. Expansion joints shall be manufactured of molded EPDM with a single wide arch. Expansion joints shall be suitable for buried service or above ground service. Flanges shall be drilled to ANSI 125 lb.

2. Working pressures are as follows:

Size (inches)	Pressure (psi)
2 - 12	150
14	130
16 - 20	110
24 - 30	100
36	90

3. The maximum temperature shall be 250°F.

4. Expansion joints shall be Model 100 HT/711 as manufactured by Metraflex or approved equal.

5. ***Expansion joints shall be furnished with 304 stainless steel split, bevelled retaining rings and control rod assemblies*** to limit over expansion or compression. A minimum of two control units shall be furnished with each expansion joint and shall be suitable for working pressures as specified above.

B. Chemical Solution Service - NOT USED

2.24 Sediment Strainers

A. Sediment strainers shall be Y-type manufactured of transparent Type 1, Grade 1 PVC with threaded or solvent welded socket ends.

B. The screen for the strainers shall be 20 mesh, Type 316 stainless steel. The screen shall be easily removed for cleaning or replacement from the filter body without removing the body from the pipeline. The bonnet seal shall be EPDM "O" rings.

C. The sediment strainers shall have a pressure rating as follows:

Strainer Size	Water Non-Shock Pressure Rating
½-inch to 1-inch	150 psi at 70°F
1½-inch to 2-inch	90 psi at 70°F
3-inch to 4-inch	60 psi at 70°F

D. Sediment strainers shall be manufactured by Asahi/America, or an equal approved by the Engineer.

2.25 Unions

A. Unions on ferrous pipe 2 inches in diameter and smaller shall be 150 pounds malleable iron, zinc-coated.

B. Unions on water piping 2½ inches in diameter and larger shall be of the flange pattern, 125-pound class, zinc-coated.

C. Gaskets for flanged unions shall be of the best quality fiber, plastic, or leather.

D. Unions shall not be concealed in walls, ceilings, or partitions.

2.26 Pressure Gauge Assemblies - NOT USED

2.27 T-Handled Operating Wrench

A. ***Provide two (2) galvanized operating wrenches***, 4 feet long.

B. The operating wrenches shall be Mueller; No. A-224610, Clow No.; F-2520, or approved equal.

2.28 Floor Box and Stem - NOT USED

2.29 Emergency Shower/Eye Wash (ES/EW) - NOT USED

2.30 Spare Parts

A. Special tools, if required for normal operation and maintenance, shall be supplied with the equipment.

2.31 Quality Control

A. The Contractor shall follow the Manufacturer's and Supplier's recommended product quality control specifics as required for the Project.

2.32 Hose Bibb/Wash Station

A. Provide the number, type and materials as shown on the Contract Drawings.

B. ***Hose racks shall be fabricated from Type 304 stainless steel***.

2.33 Washdown Hose

A. ***Hoses shall be fifty (50) feet long, or the length specified on the Contract Drawings, 1-inch diameter abrasion and weather resistant and "kink-proof", industrial grade hose with a ¼-turn industrial grade stainless steel ball valve, with a 1-inch stainless steel male x female (NPT) QF series quick connect coupling on the supply end***.

B. ***An industrial grade Type 304 stainless steel spray nozzle*** shall be provided on each hose.

C. All components shall be manufactured by Amazon Hose & Rubber Company or approved equal.

2.34 Miscellaneous Items

A. Other items necessary for the complete installation and not specified herein shall conform to the details and notes shown on the Contract Drawings.

B. All minor items implied, usually included, or required for the construction of a complete operating system shall be installed whether shown on the Contract Drawings or not.

3. EXECUTION

3.01 Inspection

A. All valves and other material shall be subject to inspection and approval by the Engineer after delivery, and no broken, cracked, imperfectly coated, or otherwise damaged or unsatisfactory material shall be used.

B. ***When a defect or crack is discovered, the damaged item shall not be installed and shall be replaced at no additional cost to the Owner***.

3.02 Preparation

A. All exterior surfaces of iron body valves shall be clean, dry and free from rust and grease before coating.

B. For valves installed underground or in valve vaults, all exterior ferrous parts or valve and actuator shall be coated at the factory with a thermally bonded epoxy coating in accordance with AWWA C-550, latest revision, or with a bituminous epoxy (Engineer approval required). ***Bituminous epoxy shall be applied in two (2) 8-mil dry film thickness coats for a minimum total finish dry film thickness of sixteen (16) mils. Prior to backfilling, all uncoated nuts, bolts, glands, rods and other part of joints shall be coated in the field with bituminous epoxy.***

C. For above-ground service, the exterior ferrous parts of all valves shall be coated as follows:

1. Prior to shipment from the factory, valves shall be coated with a thermally bonded epoxy coating in accordance with AWWA C-550, latest revision, or shall be shop painted with one (1) coat, 1.5 mils dry film thickness, of a combination lead and chromate primer with rust-inhibitive pigments and synthetic resins (Engineer approved method).

2. ***Following installation in the field, valves shall be painted with one (1) coat, 1.5 mils dry film thickness, of a combination lead and chromate primer with rust-inhibitive pigments and synthetic resins. Valves shall be finish painted with two (2) coats, 1.5 mils dry film thickness each coat, of a medium to long oil alkyd resin coating.*** Field applied coatings shall be as manufactured by the Carboline Co. or an equal approved by the Engineer. The color of the finish coats shall be in accordance with the piping color code in the painting schedule.

3.03 Installation

A. Excavation, backfill and compaction shall conform to the provisions of Section 02220, *Excavation, Backfill and Compaction*.

B. Cover for buried valves shall not be less than that indicated on the Contract Drawings. The minimum cover for pipe shall be thirty-six (36) inches.

C. ***Valves of the size and type shown on the Contract Drawings shall be set plumb and installed at the locations indicated*** on the Contract Drawings. Valves shall be installed in accordance with manufacturer's installation instructions and with the details shown on the Contract Drawing and shall be rigidly supported.

D. Valves shall be installed such that they are supported properly in their respective positions, free from distortion and strain. ***Valves shall be installed such that their weight is not borne by pumps and equipment*** that are not designed to support the weight of the valve.

E. Valves shall be carefully inspected during installation; they shall be opened wide and then tightly closed and the various nuts and bolts shall be tested for tightness. Special care shall be taken to prevent any foreign matter from becoming lodged in the valve seat. ***Check and adjust all valves for smooth operation***.

F. ***Install valves with the operating stem in either horizontal or vertical position***.

G. ***Allow sufficient clearance around the valve operator for proper operation***.

H. Clean iron flanges by wire brushing before installing flanged valves. Clean carbon steel flange bolts and nuts by wire brushing, lubricate threads with oil or graphite, and tighten nuts uniformly and progressively. Clean threaded joints by wire brushing or swabbing. Apply teflon joint compound or teflon tape to pipe threads before installing threaded valves. All joints shall be watertight.

I. Install all floor boxes, brackets, extension rods, guides, the various types of operators and appurtenances as shown on the Contract Drawings that are in masonry floors or walls, and install concrete inserts for hangers and supports as soon as forms areerected and before concrete is poured. Before setting these items, the Contractor shall check all plans and figures which have a direct bearing on their location and he shall be responsible for the proper location of these valves and appurtenances during the construction of the structures.

J. Pipe for use with flexible couplings shall have plain ends as specified in the respective pipe sections in Division 15, *Mechanical*.

K. ***Flanged joints shall be made with Type 304 stainless steel bolts, nuts and washers***. Mechanical joints shall be made with mild corrosion resistant alloy steel bolts

and nuts. All exposed bolts shall be painted the same color as the pipe. ***All buried bolts and nuts shall be heavily coated with two (2) coats of bituminous paint.***

L. ***Pressure gauges shall not be installed until after the substantial completion date*** unless otherwise requested by the Owner.

M. For buried valves, a valve box shall be centered accurately over the operating nut and the entire assembly shall be plumb. ***The tops of all valve boxes shall be adjusted to the proper elevation*** as specified below and as shown on the Contract Drawings.

1. ***In paved areas, the tops of valve box covers shall be flush with the pavement***. Following paving operations, a twenty-four (24) inch square shall be neatly cut in the pavement around the box and the paving removed. The top of the box shall then be adjusted to the proper elevation and a twenty-four (24) inch square by six (6) inch thick concrete pad poured around the box cover. ***Concrete pads in traffic areas shall be reinforced with No. 4 reinforcement bars as shown on the Contract Drawings. Concrete for the pad shall be 3,000 psi compressive strength at 28 days***.

2. ***In unpaved areas, tops of valve box covers shall be set one (1) inch above finished grade. After the top of the box is set to the proper elevation, a twenty-four (24) inch square by six (6) inch thick concrete pad shall be poured around the box cover. Concrete for the pad shall be 3,000 psi compressive strength at 28 days***.

3. ***The concrete pad for the valve box cover shall have a three (3) inch diameter, identification disc embedded in the concrete surface*** as shown on the Contract Drawings. The *bronze* identification disc shall be as specified in Section 09905, *Piping, Valve and Equipment Identification System* and shall have the information as shown on the Contract Drawings neatly stamped on it.

N. Valve Orientation

1. Install operating stem vertical when the valve is installed in horizontal runs of pipe having centerline elevations 4.5 ft or less above finished floor, unless otherwise shown.

2. Install operating stem horizontal in horizontal runs of pipe having centerline elevations between 4.5 feet and 6.75 feet above finish floor, unless otherwise shown.

3. If no plug valve seat position is shown, locate as follows:

a. Horizontal Flow: *The flow shall produce an "unseating" pressure, and the plug shall open into the top half of valve*.

b. Vertical Flow: *Install seat in the highest portion of the valve*.

O. Install a line size ball valve and union upstream of each solenoid valve, in-line flow switch, or the in-line electrical device, excluding magnetic flowmeters, for isolation during maintenance.

P. Locate valve to provide accessibility for control and maintenance. Install access doors in finished walls and ceilings for valve access.

Q. ***All valves and appurtenances shall be tested hydrostatically for a minimum of four (4) hours***, concurrently with the pipeline in which they are installed at the working pressure corresponding to the class of pipe, unless a different test pressure is specified. Protect or isolate any parts of valves, operators, or control and instrumentation systems whose pressure rating is less than the pressure used for the pressure test(s). If valve joints leak during pressure testing, loosen or remove the nuts and bolts, reseat or replace the gasket, reinstall or retighten the bolts and nuts, and hydrostatically retest the joints.

R. Following installation, all above-ground valves shall be painted in accordance with the painting system specified in Section 09900, *Painting*. Following installation of buried valves or valves installed in valve vaults, repair any scratches, marks and other types of surface damage, etc., with a coating equal to the original coating supplied by the manufacturer.

3.04 Installation of Air Release and Air and Vacuum Valves

A. Piping, fittings, and the air release and air and vacuum valves shall be installed as shown on the Contract Drawings. Air Release/Air and Vacuum valves shall be installed on the discharge side of all “non-submersible” type pumping stations.

B. The air release valve assemblies shall be installed so that they are properly supported and such that they will function properly and freely and no parts shall be strained.

C. Air release/air and vacuum valve testing shall be performed during the testing of pipeline which air release is attached.

3.05 Installation of Tie Rods

A. Tie rods shall be installed in strict accordance with the manufacturer's written installation requirements.

B. Unless otherwise indicated on the Contract Drawings, the size and number of tie rods for a joint or installation shall be as recommended by the manufacturer's design chart for a working pressure of 150 psi.

C. Following installation and prior to backfilling, all parts of the buried tie rod joint restraint system, including tie rods, tie bolts, nuts, washers, and other fasteners, shall be coated with two (2) coats, ten (10) mils DFT per coat, of bituminous epoxy.

3.06 Inspection and Hydrostatic Pressure and Leakage Testing

A. ***Completed pipe shall be subjected to hydrostatic pressure test for four (4) hours at full working pressure***. All leaks shall be repaired and lines retested as approved by the Engineer. Prior to testing, the gravity pipelines shall be supported in an approved manner to prevent movement during tests.

B. Hydrostatic pressure and leakage testing shall be performed in accordance with Section 15044, *Pressure Testing of Piping*.

END OF SECTION

SECTION 15125

PIPE HANGERS AND SUPPORTS

1. GENERAL

1.01 Description

A. Scope of Work

1. Furnish all labor, materials, equipment, accessary items (bolts, screws, nuts, neoprene isolation pads, drip guards, etc.) services, and incidentals required and install pipe hangers, supports, concrete inserts, and anchor bolts including all metallic hanging and supporting devices required for supporting all piping as indicated and as specified herein.

B. Number and Location

1. The Contract Drawings depict only "*minimum*" pipe support locations.

2. ***Adequate pipe supports shall be supplied for all piping systems to provide a "rigid overall" installation and additional support for pipe ends when equipment is disconnected. Non-rigid installation shall be replaced at the Contractor's cost.***

C. Related Work Specified Elsewhere:

Specification Section	Title
05500	Metal Fabrications
09900	Painting
15000	Mechanical - General Requirements
Division	**Description**
3	Concrete
15	Piping and Fittings
Contract Drawings and General Provisions of the Contract	

1.02 Quality Assurance

A. Hangers and supports shall be of an approved standard design where possible and shall be adequate to maintain the supported load in the proper position under all operating conditions. ***The minimum working safety factor for pipe supports shall be five (5) times the material ultimate strength of the material, assuming ten (10) feet of water filled pipe being supported***.

B. ***All pipe and appurtenances connected to equipment shall be supported in such a manner as to prevent any strain being imposed on the equipment***.

C. When manufacturer's have indicated requirements that piping loads shall not be transmitted to their equipment, the Contractor shall submit a certification stating that such requirements have been complied with.

1.03 Submittals

A. Shop drawing submittals shall be in accordance with the General Conditions, Supplementary Conditions, and Section 01300, *Shop Drawings, Submittals, and Samples* and shall be submitted to the Engineer for approval. All submittals shall be in an electronic format (PDF).

B. Submit to the Engineer, for approval, the ***manufacturer's descriptive literature for all pipe support devices*** and materials demonstrating compliance with this Specification and the support details shown on the Contract Drawings and samples of all materials specified herein.

C. ***Submit line drawings of each piping system*** to the scale shown on the Contract Drawings, or larger, locating each support or hanger. Identify each type of hanger or support by the manufacturer's catalog number or figure.

D. ***Submit installation drawings and manufacturer's information on each type of hanger and support used***. Clearly indicate the actual pipe outside diameter (not just nominal pipe size) that is used for the hangers and supports.

1.04 Product Delivery, Storage and Handling

A. The equipment provided under this specification section shall be shipped, handled and stored in accordance with the manufacturer's written instructions and in accordance with Section 01600, *Materials and Equipment*.

1.05 Warranty and Guarantees

A. ***The Contractor shall furnish the Owner with a five (5) year service/parts warranty*** as specified in Section 01740, *Warranties and Bonds*.

B. The equipment manufacturer shall guarantee that the equipment furnished is suitable for the purpose intended and free from defects of design, material and workmanship.

C. In the event that any equipment fails to perform as specified herein, the equipment manufacturer shall promptly repair or replace the defective equipment at no additional cost to the Owner.

D. This warranty is in addition to any other warranty required by the Contract Documents.

2. PRODUCTS

2.01 General

A. ***All piping and tubing shall be supported as required to prevent significant stresses in the pipe or tubing material, valves, and fittings and to support and cure the pipe in the intended position and alignment***. ***Support piping by piping support where it connects to pumps or other mechanical equipment***. All supports shall be designed to adequately secure the pipe against excessive dislocation due to thermal expansion and contraction, internal flow forces, and all probable external forces such as equipment, pipe and personnel contact. ***All pipe supports shall be approved prior to installation***.

B. ***The Contractor shall select and design all piping support systems within the specified spans and component requirements***. Structural design and selection of support system components shall withstand the dead loads imposed by the weight of the pipes, fittings, and valves, all filled with water, plus valve actuators and any insulation***. Commercial pipe supports and hangers shall have a minimum safety factor of five (5) based on material ultimate strength***.

C. ***No attempt has been made to show all required pipe supports in all locations, either on the Contract Drawings or in the details***. The absence of pipe supports and details on any Drawings shall not relieve the Contractor of the responsibility for providing them throughout the facility.

D. All support anchoring devices, including anchor bolts, inserts and other devices used to anchor the support onto a concrete base, roof, wall or structural steel works, shall be of the proper size, strength and spacing to withstand the shear and pullout loads imposed by loading and spacing on each particular support.

E. All materials used in the manufacturing of hangers and supports shall be capable of meeting the respective ASTM Standard Specifications with regard to tests and physical and chemical properties, and be in accordance with MSS SP-58.

F. ***Hangers and supports shall be spaced in accordance with ANSI B31.1.0*** except that the maximum unsupported span shall not exceed ten (10) feet unless otherwise specified herein.

G. Unless otherwise specified herein, pipe hangers and supports shall be as manufactured by ITT Grinnel Co., Inc, Carpenter and Patterson, Inc., or approved equal. Any reference to a specific figure number of a specific manufacturer is for the purpose of establishing a type and quality of product, and shall not be considered as proprietary. Any item comparable in type, style, quality, design and performance will be considered for approval.

2.02 Piping Hangers and Supports for Metal Pipe

A. ***Furnish and install supports necessary to hold the piping and appurtenances in a firm, substantial manner at the lines and grades indicated on the Contract Drawings*** or as specified. Piping supports and hangers shall conform to Federal Specification WW-H-171 or shall be as specifically shown or indicated on the Contract Drawings. ***Piping within structures shall be adequately supported from floors, walls, ceilings or beams***. Supports from the floor shall be approved flange supports, saddle stands or suitable concrete piers as indicated or approved. Pipe saddles shall be shaped to fit the pipe with which they will be used and shall be capable of screw adjustment.

B. Suspended Single Pipes

1. Suspended single pipes shall be supported by hangers suspended by steel rods from galvanized concrete inserts, beam clips or ceiling mounting bolts as follows:

2. Hangers

Pipe Size (inches)	Grinnel Figure No.
< ½	138R
½ - 1	97C
1¼ - 4	104
6 - 12	590
14 - 30	171

3. Hanger rods shall be rolled steel machine threaded with load ratings conforming to ASTM specifications and the strength of the rod shall be based on the root diameter. Hanger rods shall have the following minimum diameters:

Pipe Size (inches)	Minimum Rod Diameter (inches)
< 2½	3/8
2½ - 3	½
4	5/8
6	3/4
8 - 12	7/8
14 - 30	1

4. Where applicable, structural attachments shall be beam clamps. Beam clamps, for rod sizes ½-inch through ¾-inch shall be equal to Grinnel Figure No. 229, and for rod sizes ⅞-inch through 1¼-inches shall be equal to Grinnel Figure No. 228, or approved equal.

5. Concrete inserts for pipe hangers shall be continuous metal inserts designed to be used in ceilings, walls or floors, spot inserts for individual pipe hangers, or ceiling mounting bolts for individual pipe hangers and shall be manufactured by Unistrut Corp., Wayne, Michigan; Carpenter and Patterson, Inc., Laconia, New Hampshire; Richmond or approved equal and shall be as follows:

   a. Continuous concrete inserts shall be used where applicable and/or as shown on the Contract Drawings and shall be used for hanger rod sizes up to and including ¾-inch diameter. Inserts to be used where supports are parallel to the main slab reinforcement shall be Series P3200 by Unistrut Corporation; Figure 1480, Type 2 by Carpenter and Patterson, Inc., or approved equal. Inserts to be used where supports are perpendicular to the main slab reinforcement shall be Series P3300 by Unistrut Corporation; Figure 1480, Type 1 by Carpenter and Patterson, Inc., or approved equal.

   b. Spot concrete inserts shall be used where applicable and shall be used for hanger sizes up to and including ⅞-inch diameter. Inserts shall be Figure 650 by Carpenter and Patterson, Inc. for hanger rod sizes ½-inch through and including ¾-inch, and Figure 266 by Carpenter and Patterson Inc., for ⅞-inch hanger rods, or approved equal.

   c. Ceiling mounting bolts shall be used where applicable and be for hanger rod sizes 1-inch through 1¼-inches and shall be Figure 104M as manufactured by Carpenter and Patterson, Inc., or approved equal.

d. All pipe hangers shall be capable of vertical adjustment under load and after erection. Turnbuckles, as required and where applied, shall be equal to Grinnel Figure No. 230.

C. Wall or Column Supported Pipes

1. Wall or column supported pipes shall be supported by welded steel brackets equal to Grinnel Figure 194, 195 and 199 as required, for pipe sizes up to and including 20-inch diameter. Additional wall bearing plates shall be provided where required.

2. Where the pipe is located above the bracket, the pipe shall be supported by an anchor chair and U-bolt assembly supported by the bracket for pipes four (4) inches and larger and by a U-bolt for pipes smaller than four (4) inches. Anchor chairs shall be equal to Carpenter and Patterson Figure No. 127. U-bolts shall be equal to Grinnel Figure No. 120 and 137.

3. Where the pipe is located below the bracket, the pipes shall be supported by pipe hangers suspended by steel rods from the bracket. Hangers and steel rods shall be as specified above.

D. Floor Supported Pipes

1. Floor supported pipes three (3) inches and larger in diameter shall be supported by either cast-in-place concrete inserts or adjustable pipe saddle supports as directed by the Engineer. In general, concrete supports shall be used when lateral displacement of the pipes is probable (unless lateral support is provided), and adjustable pipe saddle type supports shall be used where later displacement of pipes is not probable.

2. Each concrete support shall conform to the details shown on the Contract Drawings. Concrete shall be poured after the pipe is in place with temporary supports. ***Concrete piers shall conform accurately to the bottom one-third (⅓) to one-half (½) of the pipe***. ***Top edges and vertical corners of each concrete support shall have one (1) inch bevels***. Each pipe shall be secured on each concrete support by a wrought iron or steel anchor strap anchored to the concrete with cast-in-place bolts or with expansion bolts. Where directed by the Engineer, vertical reinforcement bars shall be grouted into drilled holes in the concrete floor to prevent overturning or lateral displacement of the concrete support. ***Unless otherwise approved by the Engineer, maximum support height shall be five (5) feet***.

3. Concrete piers used to support base elbows and tees shall be similar to that specified above. Piers may be square or rectangular.

4. Each adjustable pipe saddle support shall be screwed or welded to the corresponding size 150 lb. companion flange or slip-on welding flange, respectively. The supporting pipe shall be of schedule 40 steel pipe construction. Each flange shall be secured to the concrete floor by a minimum of two (2) expansion bolts per flange. Adjustable saddle supports shall be equal to Grinnel Figure No. 264, or approved equal. Where used under base fittings, a suitable flange shall be substituted for the saddle.

E. Vertical Piping

1. ***Where pipes change from horizontal to vertical, the pipes shall be supported on the horizontal runs within two (2) feet of the change*** in direction by pipe supports as previously specified herein.

2. For vertical runs exceeding ten (10) feet, pipes shall be supported by approved pipe collars, clamps, brackets, or wall rests at all points required to insure a rigid installation.

3. Where vertical piping passes through a steel floor sleeve, the pipe shall be supported by a friction type pipe clamp which is supported by the pipe sleeve. Pipe clamps shall be equal to Grinnel Figure No. 262.

F. Anchor bolts shall be equal to Kwik-Bolt as manufactured by the McCullock Industries, Wej-it as manufactured by Wej-it Expansion Products, Inc., or approved equal.

G. All fabricated steel or cast iron pipe supports, saddles, rolls, brackets, clevises, and the like shall be hot dip galvanized after fabrication and/or machining in accordance with ASTM A123.

H. ***All nuts, bolts, clips and other hardware, and all hanger rods used for pipe supports, shall be Type 316 stainless steel***. All nuts, bolts and threaded rods shall be in accordance with ASTM A-320, Class 2.

2.03 Pipe Hangers and Supports for Plastic Pipe and Rubber Hose

A. Single plastic pipes shall be supported by pipe supports as previously specified herein.

B. Multiple, suspended, horizontal plastic pipe runs, where possible, and rubber hose shall be supported by ladder type cable trays such as the Electray Ladder by Husky-Burndy, the Globetray by the Metal Products Division of United States Gypsum, or approved equal. The ladder shall of mild steel construction. Rung spacing shall be approximately eighteen (18) inches for plastic pipe and twelve (12) inches for rubber hose. The tray

width shall be approximately six (6) inches for single runs of rubber hose and twelve (12) inches for double runs of rubber hose. Ladder type cable trays shall be furnished complete with all hanger rods, rod couplings, concrete inserts, hanger clips, etc., required for a complete support system. Individual plastic pipes shall be secured to the rungs of the cable tray by strap clamps or fasteners equal to Globe Model M-CAC, Husky-Burndy Model SCR or approved equal. The spacing between the clamps shall not exceed nine (9) feet. The cable trays shall provide continuous support along the length of the pipe.

C. Individual clamps, hangers and supports in contact with plastic pipe shall provide firm support but not so firm as to prevent longitudinal movement due to thermal expansion and contraction.

2.04 Pipe Supports for Small Diameter PVC, Copper and Steel Pipe

A. Small diameter PVC piping, three (3) inches in diameter and smaller, and steel or copper piping two (2) inches in diameter or smaller shall be supported with "SUSPORT" system arrangements as manufactured by Universal Suspension Systems Inc., Gillette, New Jersey, or approved equal. Clamping halves for the pipe support shall be manufactured of molded polypropylene and shall support and fit closely for 360□ around the pipe. To support piping carrying non-corrosive fluids or gases located in non-corrosive, indoor environments, all hardware for the "SUSPORT" system shall be nickel chrome plated carbon steel. ***To support piping carrying corrosive fluids or gases located in corrosive environments or piping located outdoors, all hardware for the "SUSPORT" system shall be manufactured of Type 316 stainless steel***.

B. In some cases, to adequately support small diameter PVC or steel piping, a metal frame support structure may be required for support of the "SUSPORT" system specified above. Where required, metal frame support structures shall be constructed using channels, fittings, brackets, hardware and other accessories as manufactured by B-Line Systems, Inc. of Highland, Illinois, or an equal approved by the Engineer. If located in indoor, non-corrosive environments, the materials for the frame structure shall be carbon steel with an epoxy coating applied by a cathodic, electro-deposition process which is equal to "Dura-a-Green" by B-Line Systems, Inc. ***For corrosive or outdoor systems, the materials for the frame structure shall be Type 316 stainless steel unless otherwise noted on the Contract Drawings***. ***Hardware used to construct the frame support structure shall be Type 316 stainless steel***.

C. Pipe supports for small diameter PVC shall be located wherever necessary in the opinion of the Engineer to adequately support the pipe; however, they shall have a maximum spacing as specified below for straight pipe runs. Adequate supports shall especially be used adjacent to valves and fittings in pipelines. The following table is based on spacing requirements for Schedule 80 PVC or Standard Weight (Schedule 40) steel pipe and hard drawn copper tube carrying a fluid with a specific gravity of 1.0

at a temperature not exceeding 120□F. Support spacing for PVC or steel piping carrying fluids with specific gravities or temperatures exceeding those stated above shall be approved by the Engineer.

Nominal Pipe Diameter (inches)	Support Spacing (feet)		
	PVC Pipe	Steel Pipe	Copper
½	3.5	4.5	4.0
¾	4.0	5.0	4.0
1	4.5	5.5	4.0
1¼	5.0	6.5	6.0
1 ½	5.0	7.5	6.0
2	5.5	8.0	6.0
2 ½	5.5		
3	6.0		

2.05 Waffle Isolation Pads

A. Waffle isolation pads shall be a minimum ¼-inch thick.

B. Waffle isolation pads shall be Mason Type “W”; Machinery Installation Systems “Unisorb”, Type S, SB, F or FB; or approved equal.

2.06 Neoprene Isolating Sleeves

A. Neoprene isolating sleeves for metal pipe six (6) inches and smaller shall be Unistrut P2600, B-Line “Vibrocushion”, or approved equal.

2.07 Quality Control

A. The Contractor shall follow the manufacturer’s and supplier’s recommended product quality control specifics as required for this Project.

3. EXECUTION

3.01 Preparation

A. ***Prior to prime coating, all pipe hangers and supports shall be thoroughly clean, dry and free from all mill-scale, rust, grease, dirt, paint and other foreign substances*** to the satisfaction of the Engineer.

B. ***All submerged pipe supports shall be prime coated with Koppers 654 Epoxy Primer or approved equal***. All other pipe supports shall be prime coated with Rustinhibitive Primer No. 621 as manufactured by Koppers Company, Inc.,or equal.

C. ***Finish coating shall be compatible with the prime coating used*** and shall be applied as specified in Section 09900, *Painting* and 09905, *Piping, Valve and Equipment Identification System*.

3.02 Installation

A. ***All pipes, horizontal and vertical, shall be rigidly supported from the building or structure by approved supports. Supports shall be provided at changes in direction and elsewhere*** as shown on the Contract Drawings or specified herein. No piping shall be supported from other piping or from metal stairs, ladders and walkways, unless it is so indicated on the Contract Drawings, or specifically directed or authorized by the Engineer.

B. ***All piping supports shall be designed with liberal strength and stiffness to support the respective pipes under the maximum combination of peak loading conditions to include pipe weight, liquid weight, liquid movement and pressure forces, thermal expansion and contraction, vibrations and all probable externally applied forces***. Prior to installation, all pipe supports shall be approved by the Engineer.

C. ***Pipe supports shall be provided to minimize lateral forces through valves, both sides of split type couplings, and sleeve type couplings and to minimize all pipe forces*** on pump housings. Pump housings shall not be utilized to support connecting piping.

D. ***Install separate hangers or supports at each valve***. Provide one (1) hanger or support around each end of the valve body or on the adjacent connecting pipe within one pipe diameter of the valve end. Provide additional hangers or supports to relieve eccentric loadings imposed by offset actuators.

E. Install separate hangers or supports at each pipe elbow, tee or fitting. Provide separate hangers or supports on both sides of each non-rigid joint or flexible pipe coupling.

F. Install hangers and supports at sufficiently close intervals to maintain proper alignment and prevent sagging.

G. Piping support systems and accessories shall be installed in accordance with the manufacturer's installation instructions.

H. Pipe supports shall be provided as follows:

1. ***Cast iron and ductile iron shall be supported at a maximum support spacing of ten (10) feet with a minimum of one (1) support per pipe section at the joints***.

2. ***All vertical pipes shall be supported at each floor or at intervals of at least ten (10) feet by approved pipe collars, clamps, brackets or wall rests, and at all points necessary to insure rigid construction***.

I. Supporting PVC

1. Support the piping in strict accordance with the manufacturer's instructions and recommendations for the conditions of operation, temperature, and size of pipe.

2. Support the piping in a manner that will prevent subsequent visible sagging of the pipe between supports due to plastic deformation.

J. ***Support drain, waste and vent piping by adjustable hangers***.

K. ***Effects of thermal expansion and contraction of the pipe shall be accounted for in pipe support selection and installation***.

L. ***Inserts for pipe hangers and supports shall be installed on forms before the concrete is poured***. Before setting these items, all Drawings and figures shall be checked which have a direct bearing on the pipe location. The Contractor shall be responsible for the proper location of all pipe supports to be installed as part of this Project.

M. ***Continuous metal inserts shall be embedded flush with the concrete surface***.

N. Standard Pipe Supports

1. Horizontal Suspended Piping

a. Single Pipes: *Adjustable swivel-ring, splint-ring, or clevis hangers.*

b. Grouped Pipes: *Trapeze hanger systems.*

c. Furnish a galvanized steel protection shield and oversized hangers for all insulated pipe.

d. Furnish pre-cut sections of rigid insulation with vapor barrier at hangers for all insulated pipe.

2. Horizontal Piping Supported from Walls

a. Single Pipes: *Wall brackets or wall clips attached to the wall with anchors. Clips attached to wall mounted framing shall also be acceptable*.

b. Stacked Piping

1) Wall mounted framing systems and clips are acceptable for piping smaller than three (3) inches in diameter.

2) Piping clamps which resist axial movement of the pipe through the support shall not be acceptable.

c. Wall mounted piping clips shall not be acceptable for insulated piping.

3. Horizontal Piping Supported from Floors

a. Stanchion Type

1) Pedestal type, adjustable with stanchion, saddle and anchoring flange.

2) Use yoke saddles for piping whose centerline elevation is eighteen (18) inches or greater above the floor and for all exterior installations.

3) Provide neoprene waffle isolation pads under anchoring flanges, adjacent to equipment or where otherwise required to provide vibration isolation.

b. Floor Mounted Channel Supports

1) Use for piping smaller than three (3) inches nominal diameter running along floors and in trenches at piping elevations lower than can be accommodated using pedestal type supports.

2) Attach the channel framing to the floors with anchor bolts.

3) Attach the pipe to the channel with clips or pipe clamps.

c. Concrete Cradles

1) Use for piping larger than three (3) inches along the floor and in trenches at piping elevations lower than can be accommodated using stanchion type supports.

4. Vertical Pipe

a. Support with wall brackets and base elbow or riser clamps on floor penetrations.

5. Standard Attachments

Attachment To	Standard Attachment(s)
Concrete Ceilings	Concrete inserts
Steel Beams	I-beam clamp or welded attachments
Wooden Beams	Lag screws and angle clips to members not less than 2½ inches thick
Concrete Walls	Concrete inserts or brackets or clip angles with anchor bolts

O. Temporary Pipe Supports

1. Layout each section of pipeline and make connections while the pipe is held in temporary supports.

2. After the completion of connections in each section of pipeline, hold the section in place with temporary clamps.

3. Do not remove the temporary clamps until the piping is correctly installed on the permanent supports.

3.03 Painting

A. All fabricated steel or cast iron pipe supports, saddles, brackets , rolls, clevises and the like shall be painted, after installation, as specified in Sections 09900, *Painting* and 09905, *Piping, Valve and Equipment Identification System*.

END OF SECTION

SECTION 15129

COUPLINGS AND CONNECTORS

1. GENERAL

1.01 Description

A. Furnish all labor, materials, equipment, devices, services, ancillary items, accessories and incidentals and perform all operations required, for the correct installation of couplings and connectors of the type(s) and size(s) in the location(s) shown on the Contract Drawings, as specified herein and as required to ensure proper engineering construction methods.

B. Pipe supports shall be placed where shown on the Contract Drawings or as required by Section 15125, *Pipe Hangers and Supports*.

C. The Contractor may install additional pipe supports and flexible couplings to facilitate piping installation, provided that complete details describing their location, the pipe supports and hydraulic thrust protection are submitted. ***Thrust protection shall be adequate to sustain the force developed by one hundred fifty percent (150%) of the design operating pressures specified***.

D. Related Work Specified Elsewhere

Specification Section	Title
15000	Mechanical - General Requirements
15044	Pressure Testing of Piping
15125	Pipe Hangers and Supports
Division	**Description**
15	Piping
Contract Drawings and General Provisions of the Contract	

1.02 Quality Assurance

A. The minimum pressure rating shall be equal to that of the pipeline in which they are to be installed.

B. Couplings and connectors, other than those specified herein, are subject to the Engineer's approval.

1.03 Submittals

A. Shop drawing submittals shall be in accordance with the General Conditions, Supplementary Conditions, and Section 01300, *Shop Drawings, Submittals, and Samples*. All submittal shall be in an electronic format (PDF).

B. Submit shop drawings to the Engineer for approval, including, but not limited to, manufacturer's catalog data on all couplings and connectors. Show the manufacturer's model or figure number for each type of coupling or joint for each type of pipe material for which couplings are used.

C. Submit the manufacturer's recommended torques to which the coupling bolts shall be tightened for the flexible gasketed sleeve-type compression pipe coupling.

D. Show materials of construction by ASTM reference and grade. Show all dimensions.

E. Show the number, size and materials of construction of the rods and lugs for each thrust harness on the Project.

1.04 Product Delivery, Storage and Handling

A. All of the couplings and connectors and all accessories covered by this specification section shall be ***delivered to the job site and stored in a safe, dry place*** with appropriate labels and/or other product identification and in accordance with Section 01600, *Materials and Equipment*.

1.05 Warranty and Guarantees

A. The Contractor shall furnish the Owner with a ***five (5) year service/parts warranty*** as specified in Section 01740, *Warranties and Bonds*.

B. This warranty is in addition to any other warranty required by the Contract Documents.

C. The equipment manufacturer shall guarantee that the equipment furnished is suitable for the purpose intended and free from defects of design, material and workmanship.

D. In the event that any equipment fails to perform as specified herein, the equipment manufacturer shall promptly repair or replace the defective equipment at no additional cost to the Owner.

2. MATERIALS

2.01 Material and Equipment

A. All Couplings and Connectors

1. Gasket Materials: *Material to be manufactured from a composition material suitable for exposure to the liquid, pressure and temperature to be contained within the pipe*.

2. Diameters to properly fit the specified type of pipes on which couplings and connectors are to be installed.

B. Sleeve-Type Couplings (When Applicable)

1. Exposed Couplings (When Applicable)

a. Steel middle ring.

b. Two (2) steel follower rings.

c. Two (2) wedge-section gaskets.

d. Sufficient steel bolts to properly compress the gaskets.

e. Acceptable Manufacturers

1) Dresser Manufacturing Co.: Style 38

2) Smith-Blair, Inc.: Style 411

3) Or approved equal.

2. Buried Couplings (When Applicable)

a. Cast iron middle rings with pipe stops removed.

b. Two (2) malleable iron follower rings with ribbed construction.

c. Two (2) wedge-section gaskets.

d. Bolts and Nuts for buried couplings, shall be Type 316 stainless steel conforming to ASTM A-193, Grade B8 for bolts, and ASTM A-194, Grade 8 for nuts. Bolts and nuts greater than 1c inches shall be carbon steel, ASTM A-307, Grade B, with cadmium plating, ASTM A-165, Type NS.

e. Acceptable Manufacturers

1) Dresser Manufacturing Co.: Style 53

2) Smith-Blair, Inc.: Style 411

3) Or approved equal.

C. Split-Type (Grooved End) Couplings (When Applicable)

1. Constructed from malleable or ductile iron.

2. For use with grooved or shouldered end pipe with a minimum wall thickness as required so as not to weaken the pipe.

3. Cast in two (2) segments for ¾-inch through 14-inch pipe sizes; four (4) segments for fifteen (15) inch through twenty-four (24)inch pipe sizes; and six (6) segments for pipe sizes over twenty-four (24) inches.

4. Coating: Enamel

5. Bolts: Carbon Steel

6. Acceptable Manufacturers

a. Victaulic Company of America: Style 77

b. Gustin-Bacon Co.

c. Or approved equal.

D. Flanged Adapters (When Applicable)

1. For joining plain end of grooved end pipe to flanged pipes and fittings.

2. Adapters shall conform in size and bolt hole placement to ANSI standards for steel and/or cast iron flanges 125 or 150 pound standard unless otherwise required for connections.

3. Exposed Sleeve Type

   a. Constructed from steel.

   b. Coating: Enamel

   c. Bolts: Carbon Steel

   d. Acceptable Manufacturers

      1) Dresser Manufacturing Co.: Style 128 for CI, DIP and steel pipes with diameters of two (2) inches through ninety-six (96) inches.

      2) Or approved equal.

4. Buried Sleeve Type

   a. Construction from cast iron.

   b. Bolts and Nuts for buried sleeves, shall be Type 316 stainless steel conforming to ASTM A-193, Grade B8 for bolts, and ASTM A-194, Grade 8 for nuts and washers. Bolts and nuts greater than 1c inches shall be carbon steel, ASTM A-307, Grade B, with cadmium plating, ASTM A-165, Type NS.

   c. Acceptable Manufacturers

      1) Dresser Manufacturing Co.: Style 127 locking type for CI, DIP, AC and steel pipes with diameters of three (3) inches through twelve (12) inches.

      2) Or approved equal.

5. Split Type

   a. Constructed from malleable or ductile iron.

   b. For use with grooved or shouldered end pipe.

   c. Coating: Enamel

d. Acceptable Manufacturers

1) Victaulic Company of America: Style 741 for pipe diameters of two (2) inches through twelve (12) inches

2) Victaulic Company of America: Style 742 for pipe diameters of fourteen (14) inches through sixteen (16) inches

3) Or approved equal.

E. Deflection Joints

1. Joints designed to permit a nominal maximum deflection of 15□ in all directions from the axis of the adjacent pipe length, will prevent pulling apart, and will remain watertight at any angle of deflection under 15□.

2. Material to be manufactured from a composition material suitable for exposure to the liquid, pressure and temperature to be contained within the pipe.

3. Supplied with control rods as required.

F. Transition Couplings

1. Transition couplings for connecting different types of pipe having different outside diameters shall be steel.

2. Acceptable Manufacturers

a. Dresser Manufacturing Co: Style 62 or 162

b. Rockwell: Series 413

c. Baker: Series 212 or 240

d. Or approved equal

2.02 Accessories

A. Joint Harnesses

1. Tie bolts or studs shall be as shown in the Table 15129 - 1.

2. Bolt or stud material shall conform to ASTM B-193, Grade B7.

3. Nuts shall conform to ASTM A-194, Grade 2H.

4. Lug material shall conform to ASTM A-36, ASTM A-283 (Grade B, C or D) or ASTM A-285 (Grade C). Lug dimensions shall be as shown in AWWA Manual M-11, Table 19.7.

TABLE 15129 - 1

Tie Bolts or Stud Requirements for Flexible Pipe Couplings

Tie Bolt or Stud Minimum Requirements

Nominal Pipe Size (Inches)	150 psi		300 psi	
	No. of Bolts or Studs	Size (inches)	No. of Bolts or Studs	Size (inches)
2	2	e	2	e
3	2	e	2	e
4	2	e	2	e
6	2	e	2	e
8	2	e	2	e
10	2	e	2	e
12	2	¾	2	f
14	2	¾	2	1
16	2	f	2	1¼
18	2	1	2	1d
20	2	1	2	1½
24	4	1	4	1½
30	4	1c	4	1½
36	4	1¼	4	1¾
42	4	1½	6	1e
48	6	1½	6	1f
54	6	1½	6	2¼

TABLE 15129 - 1

Tie Bolts or Stud Requirements for Flexible Pipe Couplings

Tie Bolt or Stud Minimum Requirements

Nominal Pipe Size (Inches)	150 psi		300 psi	
	No. of Bolts or Studs	Size (inches)	No. of Bolts or Studs	Size (inches)
60	6	1e	8	2¼
66	6	1¾	8	2¼
72	6	1f	10	2¼
84	6	2¼	12	2¼
96	8	2¼	14	2¼

5. Select number and size of the bolts based on the test pressure shown in Section 15044, *Pressure Testing of Piping*. For test pressures less than or equal to 150 psi, use the 150 psi design in Table 15129-1. For test pressures between 150 and 300 psi, use the 300 psi design in Table 15129-1.

6. Provide a washer for each lug. The washer material shall be the same as the nut material. The minimum washer thickness shall be 1/8-inch.

2.03 Quality Control

A. The Contractor shall follow the manufacturer's and supplier's recommended product quality control specifics as required for this Project.

3. EXECUTION

3.01 Installation

A. Sleeve Type Couplings (When Applicable)

1. ***Thoroughly clean pipe ends for a distance of eight (8) inches from the ends prior to installing couplings, and use soapy water as a gasket lubricant***.

2. Slip a follower ring and gasket (in that order) over each pipe and place the middle ring centered over the joint.

3. Insert the other length into the middle ring the proper distance.

4. Press the gaskets and followers evenly and firmly into the middle ring flares.

5. Insert the bolts, finger tighten and progressively tighten diametrically opposite nuts uniformly around the adapter with a torque wrench applying the torque recommended by the manufacturer.

6. Insert and tighten the tapered threaded lock pins.

7. Insert the nuts and bolts for the flange, finger tighten and progressively tighten diametrically opposite bolts uniformly around the flanges to the torque recommended by the manufacturer.

B. Split Type Flange Adapters (When Applicable)

1. Install in the same manner as the Split Type Couplings.

C. Buried Couplings, Adapters and Connectors (When Applicable)

1. ***Thoroughly coat all exterior surfaces, including nuts and bolts, after assembly and inspection by the Engineer with a heavy-bodied bituminous mastic as approved by the Engineer***.

D. Install thrust rods, supports, and other provisions to properly support the pipe weight and axial equipment loads.

3.02 Inspection and Testing

A. ***Upon completion of all coupling and connector work covered by this specification section, visually inspect the work and verify that it has been correctly installed***.

B. Hydrostatically test flexible pipe coupling and joints in place with the pipe being tested. Tests shall be in accordance with Section 15044, *Pressure Testing of Piping*.

END OF SECTION

SECTION 15421

FLOOR DRAINS

1. GENERAL

1.01 Description

A. Furnish all labor, materials, equipment, services, and incidentals required and install a complete floor drain plumbing system as shown on the Contract Drawings and as specified herein.

B. All work of this Section shall be governed by all provisions of the General and Supplementary Conditions, Division 3, *Concrete* and Division 15, *Mechanical*, and the Contract Drawings.

1.02 Submittals

A. Shop drawing submittals shall be in accordance with the General Conditions, Supplementary Conditions, and Section 01300, *Shop Drawings, Submittals, and Samples*.

B. Submit catalog information on each device to show compliance with the specifications.

2. MATERIALS

2.01 Floor Drains (FD)

A. For the purpose of explanation and description only, plate numbers have been given in the following schedule; such numbers, unless otherwise noted, are taken from the catalogs of Zurn Industries Inc. or approved equal. All drains shall be of sizes and types shown on the Drawings.

B. Provide floor drains as shown on the Contract Drawings.

C. Refer to the Contract Drawings, which indicate the floor finish in each room or area where floor drains are to be installed.

D. ***All floor drains as required shall be fitted with a deep seal cast iron "P" type trap to suit drain outlet***.

E. ***All floor drains shall have cast iron drainage flanges, seepage control, clamping collar and inside caulk outlet*** unless noted otherwise to be IPS outlet.

F. Provide trap primers for floor drains where indicated on the Contract Drawings and where required by Code.

G. Provide all necessary bolts, clamping rings and incidentals for a complete system.

3. EXECUTION

3.01 Floor Drains

A. Install floor and area drains in accordance with the manufacturer's written procedures and in locations indicated.

B. The Contractor shall coordinate flashing work with work of waterproofing and adjoining substrate work.

C. ***Install drains at low points of surface areas to be drained, or as indicated. Set tops of drains flush with the finished floor***.

D. ***Install drain flashing collar or flange so that no leakage occurs between the drain and the adjoining flooring***. Maintain the integrity of waterproof membranes, where penetrated.

E. ***Position drains so that they are accessible and easy to maintain***. Relief valves and equipment seal water shall be piped to drain over the floor drains.

F. Protect drains during the remainder of the construction period, to avoid clogging with construction materials and debris, and to prevent damage from traffic and construction work.

G. Install trap primers as indicated on the Contract Drawings, and in accordance with the manufacturer's installation instructions. Pitch piping towards the drain trap, a minimum of 1/8-inch per foot (1%). Adjust the trap primer for proper flow.

END OF SECTION

SECTION 16050

ELECTRICAL – GENERAL PROVISIONS

1. GENERAL

1.01 Scope of Work

A. Furnish all labor, materials, equipment and incidentals required for a complete electrical system at the Flagler Beach Wastewater Treatment Facility (WWTF) Sludge Management System Improvements, hereinafter specified and shown on the Drawings.

B. The work, apparatus and materials which shall be furnished under these Specifications and accompanying Drawings shall include all items listed hereinafter and/or shown on the Drawings. Certain equipment will be furnished as specified in other sections of these Specifications which will require wiring thereto and/or complete installation as indicated. All materials necessary for the complete installation shall be furnished and installed by the Contractor to provide complete power, lighting, communication systems, instrumentation, wiring and control systems as indicated on the Drawings and/or as specified herein.

C. The Contractor shall furnish and install the necessary main circuit breakers, cables, transformers, motor control centers, protective devices, panelboards, exterior electrical system, etc., to serve motor loads, lighting loads and miscellaneous electrical loads as indicated on the Drawings and/or as specified hereinafter.

D. The work shall include complete testing of all equipment and wiring at the completion of the work and making any minor connection changes or adjustments necessary for the proper functioning of the system and equipment. All workmanship shall be of the highest quality; sub-standard work will be rejected.

E. It is the intent of the Contract Documents that the Contractor will have the ultimate responsibility for the coordination of the Division 11, 13, 15 and Division 16 systems.

F. Mount and wire speed indicators, variable frequency drives, reduced voltage soft starters, and process instruments furnished under other Divisions of these Specifications.

G. Mount and wire isolation transformers, operator's stations, and power conversion equipment for all variable speed drive systems furnished under other Divisions of these specifications.

H. Make all field connections to process instrument panels and other control panels furnished under other Divisions of these Specifications.

I. For process instrumentation, furnish and install all conduit, wire and interconnections between primary elements, transmitters, local indicators and receivers.

J. Furnish necessary devices and make connections to provide power to drinking fountains and other equipment. This will require appropriate receptacles in some cases and direct wiring in other cases, depending upon equipment furnished.

K. Install and wire all thermostats and other devices furnished under other Divisions of this Specification directly controlling heating equipment or fan motors.

L. Mount and wire electric heaters furnished under other Divisions of this Specification.

M. Wire all ventilation equipment furnished under other Divisions of this Specification.

N. Each bidder or his authorized representatives shall, before preparing his proposal, visit all areas of the site in which work under this division is to be performed and inspect carefully the present installation. The submission of the proposal by this bidder shall be considered evidence that he or his representative has visited the proposed site and noted the locations and conditions under which the work will be performed and that he takes full responsibility for a complete knowledge of all factors governing his work.

O. It is the intent of these Specifications that the electrical system shall be suitable in every way for the service required. All material and all work which may be reasonably implied as being incidental to the work of this Section shall be furnished at no extra cost.

P. Related Work Specified Elsewhere

1. Submittals:	Section 01300
2. Manufacturer’s Field Services:	Section 01460
3. Materials and Equipment:	Section 01600
4. Equipment Testing and Facilities Startup:	Section 01465
5. Operations and Maintenance Data:	Section 01730
6. Sitework:	Division 2
7. Concrete:	Division 3

1.02 Service and Metering

A. Permanent electrical power is existing provided by the Florida Power & Light (FPL) at the voltages indicated on the drawings.

1.03 Codes, Inspection and Fees

A. All material and installation shall be in accordance with the 2020 edition of the National Electrical Code and all applicable national, local and state codes.

B. Pay all fees required for permits and inspections.

1.04 Tests

A. Test all systems and repair or replace all defective work. Make all necessary adjustments to the systems and instruct the Owner's personnel in the proper operation of the systems.

B. The following minimum tests and checks shall be made prior to the energizing of electrical equipment. Test shall be by an independent NETA certified testing firm, and a certified test report shall be submitted stating that the equipment meets and operates in accordance with the Manufacturer's and job specifications, and that equipment and installation conforms to all applicable Standards and Specifications:

1. Testing and setting of protective relays for calibration and proper operation.

2. Mechanical inspection of all circuit breakers 100 amps and larger to assure proper operation.

3. Motors: Megger to ground each motor winding. Record date, motor temperature, terminal, reading and operator and have Owner representative sign off on each reading.

4. Conductors: Megger to ground prior to termination all 600 volt conductors not used for service conductors. Record the date, conductor, reading and operator and have Owner representative sign off on each reading.

5. Service Conductors: Megger to ground prior to termination in the presence of the Engineer or his representative all 600 volt service conductors. Record date, conductor, reading, operator, and have the Owner representative sign off on each reading.

6. 480 Volt Main Breakers and Power Panels: After installing, with circuit breakers closed, but prior to terminating any conductors or bus to the motor control center, megger each phase to phase and phase to ground. Record the date, test (i.e. A/B or A/G), reading and operator and have Owner representative sign off on each reading.

7. Connections & Terminations:

    a. Main Breakers and Power panels: Torque to Manufacturer's values in the presence of the Engineer or his representative. Record the date, conductor, torque, operator and have the Engineer sign off on each reading.

8. Data Base: After equipment suppliers test, calibrations, and inspection, megger all circuits leaving all switchgear and power panels. Record the date, conductor, circuit condition (i.e. load connected or unconnected), reading and operator and have Owner representative sign off on each reading.

9. Hot Spot Testing: Perform infrared hot spot inspection of the main breaker, ATS, motor control centers and associated equipment as soon as determined by the engineer that representative loads are present. Record the date, gear conditions found, operator and have the owner's representative who must be present for the inspection sign off in each instance.

10. Miscellaneous

    a. Meggering must be done at 1000 VDC for one minute. The ground plane used must be the one established at the main source of energy for conductors, switchboards and control centers. The motor frame may be used for the ground plane for motors.

    b. In the course of construction, it will become necessary to temporarily energize some systems for testing. Confirm that any motor has been meggered prior to connection and testing. Do not leave any motor or system unattended and energized without written authorization.

    c. An unsuccessful test will be one in which any one of the three megger readings differs from another by more than 25%. Engineer shall determine if cables and/or equipment bussing shall be replaced.

1.05 Sleeves And Forms For Opening

A. Provide and place all sleeves for conduits penetrating floors, walls, partitions, etc. Locate all necessary slots for electrical work and form before concrete is poured.

1.06 Cutting And Patching

A. All cutting and patching shall be done in a thoroughly workmanlike manner.

1.07 Interpretation Of Drawings

A. The Drawings are not intended to show exact locations of conduit runs.

B. All three-phase circuits shall be run in separate conduits unless otherwise shown on the Drawings.

C. Unless otherwise approved by the Engineer conduit shown exposed shall be installed exposed; conduit shown concealed shall be installed concealed.

D. Where circuits are shown as "home-runs" all necessary fittings and boxes shall be provided for a complete raceway installation.

E. The Contractor shall harmonize the work of the different trades so that interferences between conduits, piping, equipment, architectural and structural work will be avoided. All necessary offsets shall be furnished so as to take up a minimum space and all such offsets, fittings, etc., required to accomplish this shall be furnished and installed by the Contractor without additional expense to the Owner. In case interference develops, the Owner's authorized representative is to decide which equipment, piping, etc., must be relocated, regardless which was installed first.

F. Verify with the Engineer the exact locations and mounting heights of lighting fixtures, switches and receptacles prior to installation.

G. The locations of equipment, fixtures, outlets, and similar devices shown on the Drawings are approximate only. Exact locations shall be as approved by the Engineer during construction. Obtain in the field all information relevant to the placing of electrical work and in case of any interference with other work, proceed as directed by the Engineer and furnish all labor and materials necessary to complete the work in an approved manner.

H. Surface mounted panel boxes, junction boxes, conduit, etc., shall be supported by spacers to provide a clearance between wall and equipment.

I. Circuit layouts shown are not intended to show the number of fittings, or other installation details. Furnish all labor and materials necessary to install and place in satisfactory operation all power, lighting, and other electrical systems shown. Additional circuits shall be installed wherever needed to conform to the specific requirements of the equipment.

J. The ratings of motors and other electrically operated devices together with the size shown for their branch circuit conductors and conduits are approximate only and are indicative of the probable power requirements insofar as they can determined in advance of the purchase of equipment.

K. All connections to equipment shall be made as shown, specified, and directed and in accordance with the Manufacturer's approved shop drawings, regardless of the number of conductors shown on the Drawings.

1.08 Size of Equipment

A. Investigate each space in the building where equipment must pass to reach its final location. If necessary, the Manufacturer shall be required to ship his material in sections, sized to permit passing through such restricted areas in the building.

B. The equipment shall be kept upright at all times. When equipment has to be tilted for ease of passage through restricted areas during transportation, the Manufacturer shall be required to brace the equipment suitably, to insure that the tilting does not impair the functional integrity of the equipment.

1.09 Record Drawings

A. Provide red lined record drawings at appropriate intervals of work on site not to exceed every three months. Red lined drawings shall depict as exact, as-built information.

B. See specification 01720 for additional requirements.

1.10 Component Interconnections

A. Component equipment furnished under this Specification will not be furnished as integrated systems. Contractor shall field install and wire completely all components.

B. Contractor shall analyze all systems components and their shop drawings, identify all terminals and prepare shop drawings and wiring tables necessary for component interconnection. Contractor shall provide crimp on wire numbers on both ends of all control wiring installed between all panels furnished under this contract. These numbers shall directly relate to the interconnect wiring drawing furnished by the Contractor and be reflected in the record drawings submitted.

1.11 Shop Drawings

A. As specified under other sections shop drawings shall be submitted for approval of all materials, equipment, apparatus, and other items as required by the Engineer.

B. Shop drawings shall be submitted for the following equipment as a minimum:

1. Panelboards
2. Main Breakers (MB)
3. Variable Frequency Drives (VFDs)
4. Dry Type Transformers
5. Lighting Contactor Panels
6. Component Interconnect Drawings

7. Process Control Panel (PCP)
8. Lighting Fixtures with Structural Engineering Certification
9. Disconnect Switches
10. Enclosed Circuit Breakers
11. Motor Starters
12. Lighting Contactors
13. Emergency Battery Units
14. Wire and Cable
15. Conduit Layout Drawings
16. Equipment Racks with Structural Engineering Certification
17. Lightning Protection and Grounding System
18. Field Instrument Transmitters and enclosures
19. Coordination, Short Circuit and Arc Flash Study

C. The Manufacturer name and product designation and catalog data sheet shall be submitted for the following material:

1. Conduit
2. Receptacles
3. Boxes and fittings
4. Switches
5. Lamps
6. Control Relays

D. Prior to submittal by the Contractor, all shop drawings shall be checked for accuracy and contract requirements. Shop drawings shall bear the date checked and shall be accompanied by a statement that the shop drawings have been examined for conformity to Specifications and Drawings. This statement shall also list all discrepancies with the Specifications and Drawings. Shop drawings not so checked and noted shall be returned.

E. The Engineer's check shall be only for conformance with the design concept of the project and compliance with the Specifications and Drawings. The responsibility of, or the necessity of, furnishing materials and workmanship required by the Specifications and Drawings which may not be indicated on the shop drawings is included under the work of this Section.

F. The responsibility for all dimensions to be confirmed and correlated at the job site and for coordination of this work with the work of all other trades is also included under the work of this Section.

G. No material shall be ordered or shop work started until the Engineer's approval of shop drawings has been given.

1.12 Manufacturer Services

A. Provide Manufacturer services for testing and start-up of the following equipment:

1. 480 Volt Panelboards

2. Variable Frequency Drives

3. Other items as required by appropriate specification sections.

B. The Manufacturer of the above listed equipment shall provide experienced Field Service Engineer to accomplish the following tasks:

1. The equipment shall be visually inspected upon completion of installation and prior to energization to assure that wiring is correct, interconnection complete and the installation is in compliance with the manufacturer's criteria. Documentation shall be reviewed to assure that all Drawings, operation and maintenance manuals, parts list and other data required to check out and sustain equipment operation is available on site. Documentation shall be red-lined to reflect any changes or modifications made during the installation so that the "As-built" equipment configuration will be correctly defined. Spare parts shall be inventoried to assure correct type and quantity. The Manufacturer shall provide written approval that equipment supplied is approved for energization

2. The Field Service Engineers shall provide engineering support during the energization and check out of each major equipment assembly. They shall perform any calibration or adjustment required for the equipment to meet the Manufacturer's performance specifications.

3. Upon satisfactory completion of equipment test, they shall provide engineering support of system tests to be performed in accordance with Manufacturer's test specifications.

4. Two (2) 4-hour training sessions on operation, and two (2) 4-hour training sessions (one for each system) on maintenance and trouble-shooting procedures shall be provided for the Owner's maintenance personnel. All training shall be

conducted at a facility provided by the Owner. The maintenance and trouble-shooting sessions shall be conducted with record "As-built" electrical drawings sufficient for a class of eight personnel.

5. A final report shall be written and submitted to the Contractor within fourteen days from completion of final system testing. The report shall document the inspection and test activity, define any open problems and recommend remedial action. The Contractor shall forward a copy of this report to the Engineer for approval.

1.13 Materials

A. The materials used in all systems shall be new, unused and as hereinafter specified. All materials where not specified shall be of the very best of their respective kinds. Samples of materials or Manufacturer's specifications shall be submitted for approval as required by the Engineer.

B. Materials and equipment used shall be Underwriters Laboratories, Inc. listed.

C. Electrical equipment shall at all times during construction be adequately protected against mechanical injury or damage by water. Electrical equipment shall not be stored out-of-doors. Electrical equipment shall be stored in dry permanent shelters. If any apparatus has been damaged, such damage shall be repaired by the Contractor at his own cost and expense. If any apparatus has been subject to possible injury by water, it shall be thoroughly dried out and put through such special tests as directed by the Engineer, at the expense of the Contractor, or shall be replaced by the Contractor at his own expense.

1.14 Coordination, Short Circuit And Arc Flash Hazard Study

A. General

1. The Contractor shall provide a complete project wide Power System Study and Arc Flash Study for the electrical power distribution and motor control equipment. The studies shall be a totally independent effort to verify adequacy of all of the existing equipment as well as new additions being implemented under these Specifications. The studies shall be prepared by a professional Engineer, registered in the State of Florida, with demonstrated experience in the performance of industrial power system and fault arc hazard analysis. All work shall be submitted both hard copy and thumb drive. The studies shall be prepared using SKM Power Tools, latest edition. The following firms are approved to perform the study:

   a. Judson Walker P.E., RCDD (904) 219-0885

   b. Industry Electric Design (Mr. Don Trawick, P.E. (678) 617-7507

2. The Contractor shall provide data necessary to perform the study. This includes

feeder cable sizes, approximate feeder length motor data, generator data, existing protective relay settings and any other information relevant to the study.

3. A summary of the short circuit analysis shall be provided to the Contractor at the time shop drawings for all of the new equipment is submitted for approval.

4. The Contractor shall provide complete sets of motor control center and emergency generator shop drawings for use in the studies.

B. Scope

1. The short circuit study shall be in accordance with ANSI Standard C37.010 and C37.13, shall be performed to check the adequacy, and to verify the correct application of circuit protective devices and other system components specified. The study shall address the case when the system is being powered from the normal source as well as from the on-site generating facilities. Minimum as well as maximum possible fault conditions shall be adequately covered in the study.

2. Fault contribution of all motors shall be considered. The Contractor shall be responsible for obtaining all required data of equipment. All back-up calculations shall become part of the final report. The calculations shall be in sufficient detail to allow easy review.

3. The arc flash analysis study shall include the calculations of flash protection boundary limits and the incident energy exposure for the maximum arc producing flash expected from the electrical equipment. The study will determine incident energy exposure level and flash arc protection boundaries for the electrical equipment, based on IEEE-1584 and NFPA-70E. The study shall be based on the protective device settings and interrupting device clearing time.

C. Contents

1. The study shall include representation of the power company's system, the base quantities selected, impedance source-data, calculation methods and tabulations, one-line and impedance diagrams, conclusions and recommendations. Short-circuit momentary duties, shall be calculated on the basis of an assumed bolted three-phase short circuit at the main breaker, ATS, 480 volt motor control center, distribution panelboard, pertinent branch circuit panelboard, and other significant locations throughout the systems. The short circuit tabulations shall include significant X to R ratios, asymmetry factors, KVA, and symmetrical fault current.

2. A protective device time current coordination study shall be included with coordination plots of key and/or limiting devices, tabulated data, rating, and/or settings selected. The study shall present an Engineering balance between the competing objectives of protection and continuity of service for the system specified, taking into account the basic factors of sensitivity, selectivity and speed.

3. Separate plots shall be provided for each mode, "normal," and, "standby," operation. Maximum fault values shall be shown in each case. Both power sources shown in one plot will not be accepted.

4. Generator short circuit decrement curves and thermal limit curves shall be included.

5. Required settings for breakers and relays shall be maximized to provide the most effective protection possible whether the system is fed from the normal or emergency source.

6. Tabulations indicating recommended set points for all protective devices shall be provided. This shall include the normal as well as the emergency source.

7. Arc Flash study shall include representation of the calculation methods and tabulations, and a one-line drawing of all identifying equipment included in this study. The complete study shall be turned over to the Owner. As part of the study, the Contractor shall affix permanent adhesive non-fading labeling indicating the equipment ID number and required information as required by NFPA 70E. Two Arc Flash labels shall be provided for each equipment: The first label shall provide arc flash information based on generator power (generator running). The second label shall provide arc flash information based on utility power (normal power).

8. Samples of arc flash warning labels are presented below:



Figure 1

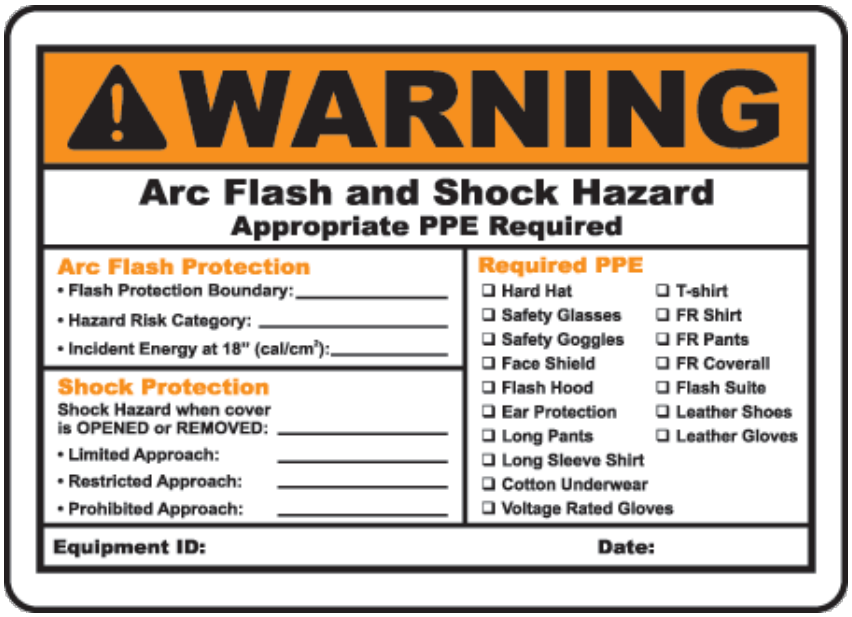


Figure 2

D. Motor Current-Time Characteristic Curves

1. A complete independent set of current-time characteristic curves for all 480 volt motor drives indicating coordination between the protective relays and the thermal characteristics of the motor shall be provided.

2. The Contractor shall obtain from the motor supplier, the necessary information to perform the study. Certified curves for, "Safe time vs. current at 100 percent voltage," and "Accelerating time vs. current at 100 percent voltage," shall become part of the final report.

E. Motor Starting Study

1. A motor starting study for all large electric drives to determine voltage dip or power inrush limitations at selected locations due to starting of motors shall be provided. This applies to both the normal and the emergency mode.

F. Generator Protective Devices

1. The study shall address all of the protective devices provided for generator protection.

2. Protective relays requiring settings shall include, but not necessarily limited to:

a. Differential

b. Overcurrent with voltage restraint

c. Ground

d. Undervoltage

e. Reverse power

f. Unbalanced loading and open phase

g. Loss of excitation

G. General Information for Time-Current Curves Presentation

1. The coordination plots shall include complete titles, representative one-line diagrams, legends, associated power company's relay or system characteristics, significant motor starting characteristics, complete parameters for power, and substation transformers, and complete operating bands for low-voltage circuit breaker trip devices.

2. The coordination plots shall define the types of protective devices selected, together with the proposed coil taps, time-dial settings and pickup settings required.

3. The short-time region shall indicate the medium voltage relay instantaneous elements, the magnetizing in-rush, and ANSI withstand transformer parameters, the low-voltage circuit breaker instantaneous trip devices, fuse manufacturing to tolerance bands, and significant symmetrical and asymmetrical fault currents.

4. Each primary protective device required for a delta-to-wye connected transformer shall be selected so that the characteristic or operating band is within the transformer parameters; which, where feasible, shall include a parameter equivalent to 58 percent of the ANSI withstand point to afford protection for secondary line-to-ground faults.

5. Low-voltage power circuit breakers shall be separated from each other and the associated primary protective device, where feasible, by a 16 percent current margin for coordination and protection in the event of secondary line-to-line faults.

6. Protective relays shall be separated, where feasible, by a 0.3 second time margin when the maximum three-phase fault flows, to assure proper selectivity.

1.15 Conduit Layout Drawings

A. In addition to the manufacturer's equipment shop drawings, the Contractor shall submit for the approval, electrical installation working drawings for the overall site work, existing electrical buildings and all process structures. The layout drawings shall contain the following:

1. Concealed and buried conduit layouts shown on floor plans drawn at not less than 1/4-inch = 1-foot-0-inch scale. The layouts shall include locations of process equipment, motor control centers, transformers, panelboards, control

panels and equipment, motors, switches, motor starters, large junction or pull boxes, instruments, and any other electrical devices connected to concealed or buried conduits.

2. Plans shall be drawn with ACAD 2021, size 34-inch x 22-inch, and shall be presented in a neat, professional manner. Drawing files shall be provided for review.

3. Concrete floors and/or walls containing concealed conduits shall not be poured until conduit layouts are approved.

4. Site plan conduit layout drawings shall be at 1" = 30'-0".

5. Note: ACAD drawing files are available from the Engineer.

1.16 Operation and Maintenance Data

A. Submit complete operations and maintenance data for all equipment furnished under this Division in accordance with Section 01730. The manuals shall be prepared specifically for this installation and shall include all required cutsheets, Drawings, equipment lists, descriptions, complete part lists, etc. that are required to instruct operating and maintenance personnel unfamiliar with such equipment.

1.17 Warranty

A. A one year warranty shall be provided for all electrical equipment. Commencement date shall be after substantial completion.

2. PRODUCTS – (NOT USED)

3. EXECUTION – (NOT USED)

END OF SECTION

SECTION 16108

MISCELLANEOUS EQUIPMENT

1. GENERAL

1.01 Scope of Work

A. Furnish and install all miscellaneous equipment as hereinafter specified and as shown on the Drawings.

2. PRODUCTS

2.01 Materials

A. Disconnect Switches

1. Fusible and non-fusible disconnect switches shall be heavy-duty, NEMA type H, quick-make, quick-break, visible blades, 600 volt, 3 pole with full cover interlock. All current carrying parts shall be copper.

2. Enclosure type shall be NEMA 4X 316 stainless steel unless otherwise noted.

3. Furnish with copper lugs except as otherwise shown on the Drawings.

4. Provide a single dry contact with each disconnect to provide position indication of the switch.

5. Switches shall be horsepower rated as manufactured by Schneider Electric or Eaton.

6. Control wiring shall not pass through any disconnect enclosure. A junction box shall be provided, constructed of the same material as the disconnect switch, and utilized to separate power and control wiring prior to the disconnect enclosure.

7. Each disconnect shall be provided with a plastic nameplate, affixed to the enclosure without screws, identifying the equipment served.

B. Manual Motor Starters

1. Manual motor starters shall be furnished and installed for single-phase motors. Manual starters shall be non-reversing, reversing or two speed type as shown on the Drawings. Built-in control stations shall be furnished where shown on the

Drawings.

2. Enclosure type shall be NEMA 1 except as shown on the Drawings.

3. All outdoor enclosures shall be NEMA 4X 316 stainless steel.

4. Manual motor starters shall be manufactured by the Schneider Electric or approved equal.

C. Magnetic Motor Starters

1. Motor starters shall be 2 or 3 pole, 1 or 3-phase as required, 60 Hz, 600 volt, magnetically operated, full voltage non-reversing except as shown on the Drawings. NEMA sizes shall be as required for the horsepowers shown on the Drawings.

2. Two speed starters shall be for single or two winding motors as shown on the Drawings.

3. Each motor starter shall have a 120 volt operating coil, and control power transformer. Three phase starters shall have 3 overload relays. Auxiliary contacts shall be provided as shown on the Drawings or required.

4. Overload relays shall be non-adjustable, ambient compensated and manually reset.

5. Control power transformers shall be sized for additional load where required. Transformer secondaries shall be equipped with time-delay fuses.

6. Built-in control stations and indicating lights shall be furnished where shown on the Drawings.

7. Enclosure type shall be NEMA 1 except as shown on the Drawings.

8. All outdoor enclosures shall be NEMA 4X 316 stainless steel.

9. Magnetic motor starter shall be as manufactured by Schneider Electric or Eaton.

D. Control Stations

1. Control stations shall be NEMA 4X 304 stainless steel heavy-duty type, with full size operators when located outdoors, in "NEMA 4" locations or in "Corrosive" areas.

2. Control stations shall be Class 9001, manufactured by the Schneider Electric or Eaton.

3. Pilot lights shall be complete with glass jewels and 150 volt lamps.

E. Dry Type Step Down Transformers

1. Transformers shall be dry type, two-winding with KVA and voltage ratings as shown on the Drawings.

2. Four full capacity taps shall be furnished, two 2-1/2% above and two 2-1/2% below rated primary voltage.

3. Transformers shall be built in accordance with ANSI C89 and NEMA ST1-4 with a maximum insulation temperature rise of 115° C.

4. Transformers shall be manufactured by Schneider Electric or Eaton.

F. Unless otherwise noted, all outdoor enclosures shall be NEMA 4X 316 stainless steel. NEMA 4X push buttons and pilot lights shall be provided in all weatherproof control panels.

G. All Enclosures installed in “Corrosive” areas shall be non-metallic fiberglass reinforced polyester.

H. Electrical Switchboard Matting

1. Electrical Switchboard matting shall be provided in the electrical rooms and control rooms around all electrical gear including Switchgear, Switchboard, MCC’s, distribution/lighting panels, transformers and PLC’s.

2. The rubber matting shall provide a floor covering to prevent shock around high voltage electrical apparatus, fuse boxes, switchgear, control panels and heavy machinery.

3. The matting shall meet current ASTM and ANSI (plus IEC Division of ANSI, Tech Committee-78) specifications for this material.

4. The matting shall be 1/4-inch thick, Class 2 as manufactured by The Mat King, or approved equal.

5. Provide floor sealant, suitable for electrical/control rooms.

I. Break-Glass Emergency (Shunt Trip) Stations

1. Break-Glass Emergency Station shall be of the break glass design with a weatherproof cast metal outer case finished in fire red and have an attached chain hung “Hammer”. A glass panel shall be mounted in front of the push button operator. Switch contacts shall be 1-open, 1-closed, rated 10 amps, 600 Volts.

2. Emergency stations shall be NEMA 4X stainless steel heavy-duty type.

3. EXECUTION (NOT USED)

END OF SECTION

SECTION 16110

RACEWAYS AND FITTINGS

1. GENERAL

1.01 Scope of Work

A. Furnish and install complete raceway systems as shown on the Drawings and as specified herein.

1.02 Applications

A. Except where otherwise shown on the Drawings, or hereinafter specified. The following describes the conduit requirements of the project:

1. All exposed raceways shall be in aluminum conduit except as noted below in 2 and 3 below.

2. Exposed raceways in chemically “Corrosive” areas shall be in PVC schedule 80 conduit. Mounting hardware shall be 316 stainless steel

3. Underground raceways shall be PVC schedule 80.

4. Underground raceways containing shielded cable shall be provided with a #10 ground wire.

B. Transition from concrete reinforced or underslab to exposed shall be PVC coated rigid aluminum. All elbows above grade shall be suitably grounded. Conduit spaces shall be provided for underground conduit installation.

C. All conduits entering or leaving Corrosive Areas shall have Crouse Hinds EYS conduit seals installed and filled with Chico Cement.

D. All conduit of a given type shall be the product of one manufacturer.

E. All switch, outlet and control station boxes and fittings shall be cast aluminum FS boxes with aluminum covers.

F. Concealed switch, outlet and control station boxes in NEMA 1 areas shall be aluminum.

G. Terminal boxes, junction boxes, pull boxes, etc.; installed outdoors shall be NEMA 4X 316 stainless steel. All boxes installed indoors (except in corrosive areas) shall be aluminum. Boxes in corrosive areas shall be PVC.

H. Combination expansion-deflection fittings shall be used where exposed or embedded conduits cross structure expansion joints.

2. PRODUCTS

2.01 Materials

A. Rigid Metal Conduit:

1. Rigid metal conduit shall be for use under the provisions of NEC Article 346.

2. Rigid aluminum conduit shall be 6063 alloy and shall be as manufactured by New Jersey Aluminum Corp., AFC Co., VAW of America, Inc., or approved equal.

3. PVC coated aluminum conduit shall have a 1/50-in thick, polyvinyl chloride coating permanently bonded to the aluminum conduit and an internal phenolic coating, and shall be plasti-bond 2" as manufactured by Robroy Industries, Triangle PWC Inc., Perma-Cote Industries, or approved equal.

B. Rigid Nonmetallic Conduit:

1. Rigid nonmetallic conduit shall be for use under the provisions of NEC Article 347.

2. PVC conduit shall be rigid polyvinyl chloride schedule 80 as manufactured by Carlon, An Indian Head Co., Kraloy Products Co., Inc., Highland Plastics Inc., or approved equal.

C. Liquidtight Flexible Conduit, Couplings and Fittings:

1. Liquidtight flexible conduit shall be for use under the provisions of NEC Article 351A.

2. All flexible connections shall be made with liquidtight flexible metal conduit (LFMC) shall be for use under the provisions of NEC Article 351A.

3. Fittings used with LFMC shall be grounded.

D. Construction shall be aluminumFlexible Couplings, Non-metallic:

1. Flexible non-metallic couplings shall be as manufactured by the Crouse-Hinds Co., Appleton Electric Co., Killark Electric Manufacturing Co., or approved equal.

E. Boxes and Fittings:

1. PVC, aluminum and stainless steel switch and outlet boxes shall be manufactured by Carlon, Appleton, or approved equal.

2. NEMA 1 terminal boxes, junction boxes, pull boxes etc., may be fiberglass (FRP) or stainless steel. Boxes shall be as manufactured by Hoffman Engineering Co., Stahlin, or approved equal. NEMA 4 boxes located outdoors shall be 316 stainless steel.

3. Cast aluminum boxes and fittings shall be copper-free aluminum with cast aluminum covers and corrosion-proof screws as manufactured by the Killark Electric Co., Crouse-Hinds Co., Appleton Electric Co., or approved equal.

4. Conduit hubs shall be as manufactured by Meyers Electric Products, Inc., Raco Div., Appleton Electric Co., or approved equal. Conduit hubs shall be provided for all outdoor conduit terminations.

5. Conduit wall seals shall be Type WSK as manufactured by the O.Z. Electrical Mfg. Co., or approved equal.

6. Combination expansion-deflection fittings shall be Type XD as manufactured by the Crouse-Hinds Co., or approved equal.

7. Conduit wall seals for new concrete walls below grade shall be O.Z./Gedney Co., Type WSK, Spring City Electrical Manufacturing Co., Type WDP, or approved equal.

8. Conduit wall seals for cored holes shall be Type CSML as manufactured by the O.Z./Gedney Co., or approved equal.

9. Conduit wall and floor seals for sleeved openings shall be Type CSMI as manufactured by the O.Z./Gedney Co., or approved equal.

10. Conduit sealing bushings shall be O.Z./Gedney Type CSB or approved equal.

F. Conduit Mounting Equipment:

1. 316 Stainless steel channel and stainless steel hardware shall be used in all areas indoors or outdoors unless otherwise noted.

2. In “Corrosive” areas all mounting equipment shall be “non-metallic” or 316 stainless steel.

3. EXECUTION

3.01 Installation

A. No conduit smaller than 3/4-inch electrical trade size shall be used, nor shall any have more than four 90 degree bends in any one run. Pull boxes shall be provided as required or directed. Minimum size in floor slabs shall be 3/4-inch.

B. All empty raceways shall be installed with a pull cord.

C. No wire shall be pulled until the conduit system is complete in all details; in the case of concealed work, until all rough plastering or masonry has been completed; in the case of exposed work, until the conduit system has been completed in every detail.

D. The ends of all conduits shall be tightly plugged to exclude dust and moisture while the buildings are under construction.

E. Conduit supports shall be spaced at intervals as required to obtain rigid construction, but in no case less as required by the NEC.

F. Single conduits shall be supported by means of one-hole pipe clamps in combination with one-screw back plates, to raise conduits from the surface. Multiple runs of conduits shall be supported on trapeze type hangers with steel horizontal members and threaded hanger rods. The rods shall be not less than 3/8-inch diameter. Material type shall be as specified in Section 2.

G. Conduit hangers shall be attached to structural steel by means of beam or channel clamps. Where attached to concrete surfaces, concrete inserts of the spot type shall be provided.

H. All conduits on exposed work shall be run at right angles to and parallel with the surrounding walls and shall conform to the form of the ceiling. No diagonal runs will be allowed. Bends in parallel conduit runs shall be concentric. All conduit shall be run perfectly straight and true. Conduits not installed in this fashion shall be replaced entirely at the Contractor’s expense with no cost to the Owner.

I. No unbroken run shall exceed 300 feet in length. This length shall be reduced by 75 feet for each 90 degree elbow.

J. Conduit terminating in pressed steel boxes shall have double locknuts and insulated bushings.

K. Conduit terminating in gasketed enclosures shall be terminated with conduit hubs.

L. Conduit wall seals shall be used for all conduits penetrating walls below grade or other locations shown on the Drawings.

M. Liquidtight flexible metal conduit shall be used for all motor terminations and other equipment where vibration is present.

N. Flexible couplings shall be used in hazardous locations for all motor terminations and other equipment where vibration is present.

O. Conduit stub outs for future construction shall be provided with threaded PVC end caps at each end.

P. Metallic conduit entering manholes and below grade pull boxes shall be terminated with grounding type bushings and connected to a 5/8" x 10" copperweld rod with a #6 bare copper wire.

Q. Underground 120 volt circuits (Schedule 80 PVC) shall be installed directly to the respective motor control centers, lighting panels, etc. Stainless steel pull boxes shall be wall mounted on structures to eliminate excessive bends. With prior approval, below grade pull boxes, equal to Brooks #2424 (minimum), with hot dip galvanized covers and frames may be used. Splices shall not be made in above or below grade pull boxes without prior approval.

R. All exposed conduits coming up through the ground or slab shall have concrete curbs surrounding conduit, extending 3-inch up from floor level or grade and 3-inch horizontally from conduit. This applies to ALL exposed conduits installed indoors or outdoors.

3.02 Conduit Identification

A. Exposed conduits shall be identified at the source, load, and all intermediate components of the raceway system. Examples of intermediate components include but are not limited to junction boxes, pull boxes, condulets, and disconnect switches. Identification shall be by means of an adhesive label with the following requirements:

1. Labels shall consist of an orange background with black text. Text for the label shall be the conduit number as indicated in the conduit and wire schedules.

2. In addition, at the source end of the conduit, a second line of text shall be included to indicate the load equipment name. This second line shall consist of the word “TO:” and the text in the ‘TO’ column of the conduit and wire schedule (e.g. TO: MCC-1A). At the load end of the conduit, a second line of text shall be included to indicate the source equipment name. This second line shall consist of the word “FROM:” and the text in the ‘FROM’ column of the conduit and wire schedule (e.g. FROM: EEB-SWGR-1). This requirement applies only to the source and load ends of the conduit, and not anywhere in between.

3. For conduits ¾” through 1½” in size, the text shall be a minimum 18 point font. For conduits 2” and larger, the text shall be a minimum 24 point font.

4. Label height shall be ¾” minimum, and length shall be as required to fit required text. The label shall be installed such that the text is parallel with the axis of the conduit. The label shall be oriented such that the text can be read without the use of any special tools or removal of equipment.

5. Labels shall be installed after each conduit is installed and, if applicable, after painting. Labels shall be printed in the field via the use of a portable label printing system. Handwritten labels are not acceptable.

6. Labels shall be made of permanent vinyl with adhesive backing as manufactured by Brady, Seton equivalent, Panduit equivalent, or equal. Labels made of any other material are not acceptable.

B. Conduits that are not exposed but installed beneath free standing equipment enclosures shall be identified by means of a plastic tag with the following requirements:

1. The tag shall be made of white Tyvek material, and have an orange label with black text, as described above, adhered to it. Text for the label shall be the conduit number as indicated in the conduit and wire schedules.

2. The tag shall be affixed to the conduit by means of a nylon cable tie. The tag shall be of suitable dimensions to achieve a minimum text size of 18 points.

3. Tags shall be White Tyvek as manufactured by Brady, Seton equivalent, Panduit equivalent, or equal.

END OF SECTION

SECTION 16120

LOW VOLTAGE WIRE AND CABLE

1. GENERAL

1.01 Scope of Work

A. Furnish, install and test all wire, cable, and appurtenances as shown on the Drawings and as hereinafter specified.

1.02 Submittals

A. Approved samples will be sent to the project location for comparison by the Resident Engineer with the wire actually installed.

B. Installed, unapproved wire shall be removed and replaced at no additional cost to the Owner.

1.03 Applications

A. Wire for lighting and receptacle circuits above grade shall be type THWN-2.

B. Wire for all power motor circuits and below grade lighting and receptacle circuits shall be type XHHW-2, stranded.

C. All cables between the VFD and the motor shall be VFD rated cable.

D. Single conductor wire for control, indication and metering shall be type MTW No. 14 AWG, 19 strand or type XHHW No. 14 AWG stranded.

E. Multi-conductor control cable shall be No. 14 AWG, 19 strand.

F. Wire for process instrumentation or shielded control cable shall be No. 16 AWG, shielded and stranded. All shielded cables shall be provided with a #16 shielded ground.

G. Ethernet shielded Twisted Pair (STP), 600V rated. Cable shall be Cat-6, yellow, Belden 7953A or approved equal.

1.04 Minimum Sizes

A. Except for control and instrumentation wiring, no conductor smaller than No. 12 AWG shall be used.

2. PRODUCTS

2.01 Material

A. All wires and cables shall be of annealed, 98 percent conductivity, soft drawn stranded copper conductors.

2.02 600 Volt Wire and Cable

A. Type XHHW-2 shall be cross-linked polyethylene (XLP); as manufactured by General Cable, Southwire Co., Collyer Insulated Wire Co., Rome Cable or approved equal.

B. Type THWN-2 shall be as manufactured by General Cable, Southwire Co., Collyer Insulated Wire Co., Rome Cable or approved equal.

2.03 Instrumentation And Control Cable

A. Process instrumentation wire shall be twisted pair, 600V, cross-linked polyethylene insulated, aluminum tape shielded, polyvinyl chloride jacketed, type "XLP" as manufactured by General Cable, American Insulated Wire Co., Eaton Corp. "Polyset," or approved equal. Multi-conductor cables shall be supplied with individually shielded twisted pairs.

B. Multi-conductor control cable shall be stranded, 600V, cross-linked polyethylene insulated with PVC jacket, type "XLP" as manufactured by General Cable, American Insulated Wire Co., Eaton Corp. "Polyset," or approved equal.

2.04 Variable Frequency Drive (VFD) Output Power Cable

A. Section applies to power cables routed between the output of VFD’s and motor terminals.

B. Cable shall be rated for 2000 volts and shall meet the requirements below:

1. Conductors shall be stranded Class B bare copper.

2. All wire shall be brought to the job in unbroken packages and shall bear the data of manufacturing; not older than 12 months.

3. Type of wire shall be XLPE RHH/RHW-2 rated 90 degrees C suitable for wet locations.

4. Provide overall 5 millimeter metallic shield (copper tape shield) overlapped 50%.

5. No wire smaller than No. 12 gauge shall be used unless specifically indicated.

6. Cable construction shall consist of three insulated current-carrying phase conductors and three bare ground conductors, symmetrically placed between the phase conductors, and twisted beneath a continuous overall PVC polymeric jacket.

C. Each ground conductor size (circular mil area) shall be one-third (1/3) of the NEC required size (circular mil area) for a single ground conductor. If one third of the required circular mil area does not correspond to a standard size (circular mil area) of construction, the next largest size of standard construction shall be used. All conductors shall be megger tested after installation and insulation must be in compliance with the Insulated Power Cable Engineers Association Minimum Values of Insulation Resistance.

D. Manufacturers

1. Belden

2. Flex

3. Lutze

2.05 CAT 6E Ethernet Cable

A. All Cat 6 Cable shall be suitable for harsh environment and suitable for underground installation in wet areas. Cables shall meet the following requirements:

1. 600 volt rated with shielding.

2. UV-resistant PVC jacket.

3. Suitable for WET installations

4. Operating Temperature Range: -45 to +80 degrees C.

5. Beldon 7953A or approved equal.

B. Surge protection shall be provided at both ends of all ethernet cables installed.

2.06 Terminations and Splices

A. Power Conductors: Terminations shall be die type or set screw type pressure connectors as specified. Splices (where allowed) shall be die type compression connector and waterproof with heat shrink boot or epoxy filling.

B. Control Conductors: Termination on saddle-type terminals shall be wired directly with a maximum of two conductors per termination. Termination on screw type terminals shall be made with a maximum of two spade connectors. Splices (where allowed) shall be made with insulated compression type connectors. Heat shrink boots shall be utilized for all outdoor splices.

C. Instrumentation Signal Conductors (including graphic panel, alarm, low and high level signals): Terminations permitted shall be typical of control conductors. Splices are allowed at instrumentation terminal boxes only.

D. Except where otherwise approved by the Engineer no splices will be allowed in manholes, handholes or other below grade located boxes.

E. Splices shall not be made in push button control stations, control devices (i.e., pressure switches, flow switches, etc.), conduit bodies, etc.

3. EXECUTION

3.01 Installation

A. All conductors shall be carefully handled to avoid kinks or damage to insulation.

B. Lubrications shall be used to facilitate wire pulling. Lubricants shall be U.L. listed for use with the insulation specified.

C. Shielded instrumentation wire shall be installed from terminal to terminal with no splicing at any intermediate point.

D. Shielded instrumentation wire shall be installed in rigid steel conduit and pull boxes that contain only shielded instrumentation wire. Instrumentation cables shall be separated from control cables in manholes.

E. Shielding on instrumentation wire shall be grounded at one end only, as directed by supplier of the instrumentation equipment.

F. Wire and cable connections to terminals and taps shall be made with compression connectors. Connections of insulated conductors shall be insulated and covered. All connections shall be made using materials and installation methods in accordance with instructions and recommendations of the manufacturer of the particular item of wire and cable. The conductivity of all completed connections shall be not less than that of the uncut conductor. The insulation resistance of all completed connections of insulated conductors shall be not less than that of the uncut conductor.

G. All wire and cable shall be continuous and without splices between points of connection to equipment terminals, except a splice will be permitted by the Engineer if the length required between the points of connection exceeds the greatest standard shipping length available from the manufacturer specified or approved by the Engineer as the manufacturer of the particular item of wire and cable.

H. Steel fish tapes and/or steel pulling cables shall not be used in PVC conduit runs.

I. All control and instrumentation circuits and wiring shall be clearly and permanently numbered and labeled at each end so as to identify the location of the opposite end and the function of the circuit. Individual wires in a multi-wire circuit shall be identified with wire numbers. Labeling shall be in place prior to turnover of any equipment, system or sub-system to Owner.

3.02 Tests

A. All 600-volt wire insulation shall be tested with a meg-ohmmeter after installation. Tests shall be made at not less than 1,000 VDC. See section 16050 – Electrical – General Provisions, for additional testing requirements.

B. All service conductors shall be tested as in paragraph A above. These tests shall be witnessed by the Engineer. A written report shall be submitted to the engineer for review.

END OF SECTION

SECTION 16150

MOTORS

1. GENERAL

1.01 Scope of Work

A. Furnish and install the motors as hereinafter specified and as called for in other sections of these Specifications.

1.02 Qualifications

A. Motor shall be sufficient size for the duty to be performed and shall not exceed their full-rated load when the driven equipment is operating at specified capacity. Unless otherwise noted, motors driving pumps shall not be overloaded at any head or discharge condition of the pump.

1.03 Submittals

A. The motor manufacturer shall submit to the Engineer certified dimension prints showing nameplate data and outline dimensions within three weeks of the date they receive the order.

B. Guarantee: All equipment furnished and installed under this Section shall be guaranteed against defects of workmanship, materials and improper installation for the period of time specified Section 16050 – Electrical General Provisions. All such equipment or parts proven defective, due to the above noted causes, shall be replaced in the machines by the Contractor at no expense to the Owner.

2. PRODUCTS

2.01 Ratings

A. Unless otherwise noted, all motors shall be of the low voltage type. All motors 1/2 through 100 horsepower shall be rated 230/460 volt, 3 phase, 60 Hertz A.C.; motors 125 horsepower through 500 horsepower shall be rated 460 volt, 3-phase, 60 Hertz, and motors below 1/2 horsepower shall be rated 115/230 volt, 1 phase, 60 Hertz A.C.

2.02 Three Phase Induction Motors

A. Unless otherwise indicated, Motors 15 HP and larger shall have a 120-volt space heater for moisture control.

B. Unless specifically noted in other sections of these Specifications, all motors shall have a minimum as indicated in the table below. All motors shall be "premium efficiency" type.

TABLE 1

Motor HP	Min. Eff.	Max. dba	Motor HP	Min. Eff	Max. dba
1-2	0.84	74	25-30	0.92	92
3-5	0.865	79	40-50	0.93	97
7.5-10	0.902	84	60-75	0.94	100
15-20	0.91	89	100	0.941	102

C. Motors operating with variable frequency drives shall state that they are suitable for their intended applications. Motor nameplate shall read "Inverter Duty Rated".

D. Motors larger than 1 HP shall have imbedded winding temperature switch in each phase.

E. Motors operating with variable frequency drives (VFD's) shall meet the requirements of NEMA MG1, Part 31.

2.03 Construction

A. General

1. All dripproof and weather protected Type I motors shall have epoxy encapsulated windings. Totally enclosed motors shall not be encapsulated. Motors not readily available with encapsulated windings may be standard type. Motors exposed to the outside atmosphere shall be totally enclosed fan cooled (TEFC) unless otherwise specified.

2. Squirrel-cage rotors shall be made from high-grade steel laminations adequately fastened together and to the shaft, or shall be cast aluminum or bar-type construction with brazed end rings.

B. Low Voltage, Three Phase Motors

1. Motors shall be of the squirrel-cage or wound rotor induction type as noted. Horizontal, vertical solid shaft, vertical hollow shaft, normal thrust and high thrust types shall be furnished as specified herein. All motors shall be built in accordance with current NEMA, IEEE, ANSI and AFBMA standards where applicable. Motors shall be of the type and quality described by these specifications, fully capable of performing in accordance with manufacturer's

standard rating, and free from defective material and workmanship.

2. Motors shall have normal or high starting torque (as required), low starting current (not to exceed 600 percent full load current), and low slip.

3. Motors shall be totally enclosed fan-cooled construction with 1.15 service factor unless otherwise noted. Indoor motors shall be WPI unless otherwise noted.

4. Motors shall be suitable for operation in moist air with hydrogen sulphide gas present.

5. The output shaft shall be suitable for direct connection or belt drive as required.

6. Motors shall have a Class B nonhygroscopic insulation system. Class F insulation shall be used and shall be limited to Class B temperature rise.

7. All motors shall have a final coating of chemical resistant corrosion and fungus protective epoxy fortified enamel finish sprayed over red primer over all interior and exterior surfaces. Stator bore and rotor of all motors shall be epoxy coated.

8. All fittings, bolts, nuts, and screws shall be 316 stainless steel. Bolts and nuts shall have hex heads.

9. All machine surfaces shall be coated with rust inhibiter for easy disassembly.

10. Conduit boxes shall be gasketed. Lead wires between motor frame and conduit box shall be gasketed.

11. Totally enclosed motors shall be provided with condensate drain hole and epoxy coated motor windings to protect against moisture.

12. Nameplates shall be stainless steel. Lifting lugs or "O" type bolts shall be supplied on all frames 254T and larger. Enclosures will have stainless steel screen and motors shall be protected for corrosion, fungus and insects.

13. Low voltage, three phase motors shall be manufactured by General Electric, Siemens, U.S. Motors, Westinghouse or approved equal.

C. Fractional Horsepower

1. Fractional horsepower motors shall be rigid, welded-steel, designed to maintain accurate alignment of motor components and provide adequate protection. End shields shall be reinforced, lightweight die-cast aluminum. Windings shall be of varnish-insulated wire with slot insulation of polyester film, baked-on bonding treatment to make the stator winding strongly resistant to heat, aging, moisture, electrical stresses and other hazards.

2. Motor shaft shall be made from high-grade, cold-rolled shaft steel with drive-shaft extensions carefully machined to standard NEMA dimensions for the particular drive connection.

3. For light to moderate loading, bearings shall be quiet all-angle sleeve type with large oil reservoir that prevents leakage and permits motor operation in any position.

4. For heavy loading, bearings shall be carefully selected precision ball bearings with extra quality, long-life grease, and large reservoir providing 10 years' normal operation without relubrication.

D. Integral Horsepower

1. Motor frames and end shields shall be cast iron or heavy fabricated steel of such design and proportions as to hold all motor components rigidly in proper position and provide adequate protection for the type of enclosure employed.

2. Windings shall be adequately insulated and securely braced to resist failure due to electrical stresses and vibrations.

3. The shaft shall be made of high-grade machine steel or steel forging of size and design adequate to withstand the load stresses normally encountered in motors of the particular rating. Bearing journals shall be gound and polished.

4. Rotors shall be made from high-grade steel laminations adequately fastened together, and to the shaft. Rotor squirrel-cage windings may be cast-aluminum or bar-type construction with brazed end rings.

5. Motors shall be equipped with vacuum-degassed antifriction bearings made to AFBMA Standards, and be of ample capacity for the motor rating. The bearing housing shall be large enough to hold sufficient lubricant to minimize the need for frequent lubrication, but facilities shall be provided for adding new lubricant and draining out old lubricant without motor disassembly. The bearing housing shall have long, tight, running fits or rotating seals to protect against the entrance of foreign matter into the bearings, or leakage of lubricant out of the bearing cavity.

6. Bearings of high thrust motors will be locked for momentary upthrust of 30% downthrust. All bearings shall have a minimum B10 life rating of 100,000 hours in accordance with AFBMA life and thrust values.

7. Vertical hollow-shaft motors will have nonreverse ratchets to prevent backspin.

E. Low Voltage, Single Phase Motors

1. Single phase motors shall be split-phase and capacitor-start induction types rated for continuous horsepower at the rpm called for on the Drawings. Motors shall be rated 115/230 volts, 60 Hertz, single phase, open dripproof, or totally enclosed fan cooled as called for on the Drawings or driven equipment specifications, with temperature rise in accordance with NEMA Standards for Class B insulation.

2. Totally enclosed fan cooled motors shall be designed for severe-duty.

3. Motors shall have corrosion and fungus protective finish on internal and external surfaces. All fittings shall have a corrosion protective plating.

4. Mechanical characteristics shall be the same as specified for polyphase fractional horsepower motors.

3. EXECUTION

3.01 Installation

A. Motor Connections: All motors shall be connected to the conduit system by means of a short section 18-inch minimum of flexible conduit unless otherwise indicated. For all motor connections, the Contractor shall install a grounding conductor in the conduit and terminate at the motor control center with an approved grounding clamp.

3.02 Tests and Checks

A. The following tests shall be performed on all motors after installation but before putting motors into service.

1. The Contractor shall megger each motor winding before energizing the motor, and, if insulation resistance is found to be low, shall notify the Engineer and shall not energize the motor. The following table gives minimum acceptable insulation resistance in megohms at various temperatures and for various voltages with readings being taken after one minute of megger test run.

TABLE 2

Degree Winding Temperature		**Voltage**			
ºF	ºC	115V	230V	460V	4,160V
37	3.9	60	108	210	1700
50	10	32	60	120	1000
68	20	13	26	50	460
86	30	5.6	11	21	195
104	45	2.4	4.5	8.8	84
122	50	1	2	3.7	35
140	60	0.5	0.85	1.6	15

2. The Contractor shall check all motors for correct clearances and alignment and for correct lubrication, and shall lubricate if required in accordance with manufacturer's instructions. The Contractor shall check direction of rotation of all motors and reverse connections if necessary.

3.03 Shaft Grounding Rings (All Motors With Variable Frequency Drives)

A. Shaft grounding rings (SGR) shall be factory installed inside the motors by the manufacturer wherever possible. SGR's may be field installed by installing contractor subject to Engineer's approval. Provide AEGIS SGR Colloidal Silver Shaft Coating, or approved equal, on shafts prior to rings installation, per SGR manufacturer's recommendations, after first cleaning shafts.

B. Install and test SGR's in accordance with manufacturer's recommendations. Install the SGR so that the aluminum frame maintains an even clearance around the shaft. Conductive microfibers shall be in full circumferential contact with conductive metal surface of the shaft. Do not use thread lock to secure the mounting screws as it may compromise the conductive path to ground. If thread lock is required, use a small amount of EP2400 AEGIS Conductive Epoxy, or approved equal, to secure the screws in place.

C. Shafts shall be clean and free of any coatings, paint, or other nonconductive material (clean to bare metal). Depending upon the condition of the shaft, it may require using emery cloth or Scotch-Brite. If the shaft is visibly clean, a non petroleum based solvent may be used to remove any residue. Check the conductivity of the shaft using an ohm meter. Ohms test: Place the positive and negative meter leads on the shaft at a place where the microfibers will contact the shaft. Each motor will have a different reading but in general one should have a maximum reading of less than 2 ohms. If the reading is higher, clean the shaft again and retest.

D. After motors with SGR are fully installed in the field (in equipment, assemblies, or individually), for both factory-installed-SGR and field-installed-SGR cases, test for a conductive path to ground using an Ohm meter. Place one probe on metal frame of SGR and one probe on motor frame. Motor must be grounded to common earth ground with variable frequency drive according to applicable standards. Verify that SGR installations and test readings comply with SGR manufacturer's requirements. Shaft voltage testing and verification of the proper installation of the AEGIS Bearing Protection Ring and its effectiveness can be accomplished by testing the motors for shaft voltages using a digital oscilloscope that is 100-Mhz or faster. An AEGIS Shaft Voltage Test Probe is attached to the oscilloscope probe end which is then placed on the machine's shaft allowing for the "real time" measurement of machines as they are operating under PWM IGBT VFD control.

3.04 High-Frequency Bonding (All Motors With Variable Frequency Drives)

A. All motors operated on variable frequency drives shall be bonded from the motor foot to system ground with a high-frequency ground strap made of flat braided, tinned copper with terminations to accommodate motor foot and system ground connection. Provide AEGIS HF Ground Straps, or equal. After motors with SGR are fully installed in the field (in equipment, assemblies, or individually), for both factory-installed-SGR and field-installed-SGR cases, test for a conductive path to ground using an Ohm meter. Ground resistance must be 2 Ohms or less.

END OF SECTION

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SECTION 16160

PANELBOARDS

1. GENERAL

1.01 Scope of Work

A. Furnish all labor, materials, equipment and incidentals required and install all panelboards as hereinafter specified and as shown on Drawings.

2. PRODUCTS

2.01 Rating

A. Panelboard ratings shall be as shown on the Drawings. All panelboards shall be rated for the intended voltage.

2.02 Standards

A. Panelboards shall be in accordance with the Underwriter Laboratories, Inc. "Standard for Panelboards" and "Standard for Cabinets and Boxes" and shall be so labeled where procedures exist. Panelboards shall also comply with NEMA Standard for Panelboards and the National Electrical Code.

2.03 Construction

A. Interiors

1. All interiors shall be completely factory assembled with circuit breakers, wire connectors, etc. All wire connectors, except screw terminals, shall be of the antiturn solderless type and all shall be suitable for copper wire of the sizes indicated.

2. Interiors shall be so designed that circuit breakers can be replaced without disturbing adjacent units and without removing the main bus connectors and shall be so designed that circuits may be changed without machining, drilling or tapping.

3. Branch circuits shall be arranged using double row construction except when

narrow column panels are indicated. Branch circuits shall be numbered by the manufacturer.

4. A nameplate shall be provided listing panel type, number of circuit breakers and ratings.

B. Buses

1. Bus bars for the mains shall be of copper. Full size neutral bars shall be included. Bus bar taps for panels with single pole branches shall be arranged for sequence phasing of the branch circuit devices. Bussing shall be braced throughout to conform to industry standard practice governing short circuit stresses in panelboards. Phase bussing shall be full height without reduction. Cross connectors shall be copper.

2. Neutral bussing shall have a suitable lug for each outgoing feeder requiring a neutral connection.

3. Spaces for future circuit breakers shall be bussed for the maximum device that can be fitted into them.

4. Buses for 480V panelboards shall be rated for 65,000 amperes RMS symmetrical. Buses for 120/208V panelboards shall be rated 10,000 amperes RMS symmetrical.

C. Boxes

1. Recessed boxes shall be made from galvanized code gauge steel without multiple knockouts. Surface mounted boxes shall be painted to match the trim. Boxes shall be of sufficient size to provide a minimum gutter space of 4-inches on all sides.

2. Surface mounted boxes shall have an internal and external finish as hereinafter specified in paragraph D4.

3. At least four (4) interior mounting studs shall be provided.

4. All conduit entrances shall be field punched.

D. Trim

1. Hinged doors covering all circuit breaker handles shall be included in all panel trims.

2. Doors shall have semi flush type cylinder lock and catch, except that doors over 48-inches in height shall have a vault handle and 3-point catch, complete with lock, arranged to fasten door at top, bottom and center. Door hinges shall be concealed. Two keys shall be supplied for each lock. All locks shall be keyed alike; directory frame and card having a transparent cover shall be furnished on each door.

3. The trims shall be fabricated from code gauge sheet steel.

4. All exterior and interior steel surfaces of the panelboard shall be properly cleaned and finished with ANSI Z55.1, No. 61 light gray paint over a rust-inhibiting phosphatized coating. The finish paint shall be of a type to which field applied paint will adhere.

5. Trims for flush panels shall overlap the box by at least 3/4-inch all around. Surface trims shall have the same width and height as the box. Trims shall be fastened with quarter turn clamps.

E. Manufacturer

1. 120/240V, single phase, 3-wire, and 120/208V 3-phase, 4-wire panelboards shall be manufactured by Schneider Electric, Eaton, Allen Bradley or approved equal.

2. 480V, 3-phase, 3-wire panelboards shall be manufactured by Schneider Electric, Eaton, Allen Bradley or approved equal.

2.04 Construction (NEMA 4X)

A. Interiors and buses:

1. Interiors and buses shall be as herein before specified for NEMA 1 construction.

B. Boxes and Covers:

1. Boxes and covers shall be made from stainless-steel with natural finish.

2. Boxes and covers shall be bolted together and gasketed.

3. Conduit openings shall be tapped.

C. Manufacturers:

1. All panelboards shall be NEMA 4X 304 stainless steel as required by voltage application.

2.05 Circuit Breakers

A. Panelboards shall be equipped with circuit breakers with frame size and trip settings as shown on the Drawings.

B. Circuit breakers shall be molded case, bolt-in type. Plug in circuit breakers not accepted.

C. Circuit breakers used in 120/240V and 120/208V panelboards shall have and interrupting capacity of not less than 10,000 - amperes, RMS symmetrical.

D. Three pole breakers used in 480V panelboards shall have an interrupting capacity of not less than 65,000 - amperes RMS symmetrical.

E. GFCI (ground fault circuit interrupter) shall be provided for circuits where indicated on the Drawings. GFCI units shall be 1 pole, 120 volt, molded case, bolt-on breakers, incorporating a solid state ground fault interrupter circuit insulated and isolated from the breaker mechanism. The unit shall be U.L. listed Class A Group I device (5 milliamp sensitivity, 25 millisecond trip time), and an interrupting capacity of 10,000 amperes RMS.

2.06 Surge Suppressors

A. All panelboards shall be equipped with surge protection devices.

3. EXECUTION

3.01 Installation

A. Boxes for surface mounted panelboards shall be mounted so there is at least 1/2-inch air space between the box and the wall.

B. Unless otherwise noted on the Drawings, top of cabinets shall be mounted 6-feet 6-inches above the floor, properly aligned and adequately supported independently of the connecting raceways.

C. All wiring in panelboards shall be neatly formed, grouped, laced, and identified to provide a neat and orderly appearance. A typewritten directory card identifying all circuits shall be placed in the card holder inside the front cover.

3.02 Warranty

A. The warranty provided shall comply with Section 01740, “Warranties and Bonds”.

END OF SECTION

SECTION 16370

VARIABLE FREQUENCY DRIVES

1. GENERAL

1.01 Scope of Work

A. Furnish all labor, materials, equipment and incidentals required to furnish and install variable frequency drives as shown on the Drawings and as specified herein.

B. These specifications are intended to give a general description of what is required, but do not cover all details which will vary in accordance with the requirements of the equipment furnished. They are, however, intended to cover the furnishing, the shop testing, the delivery and complete installation and field testing, of all materials, equipment and appurtenances for the variable frequency drives herein specified.

1.02 Description of System

A. The variable frequency drives shall be furnished by the Division 16 CONTRACTOR and integrated into the control system by the SYSTEM SUPPLIER specified in Division 13. These VFDs shall be furnished by the designated equipment manufacturer. The CONTRACTOR is responsible for complete system operation and necessary coordination.

B. The variable frequency drives will operate motors as specified in Division 11, 15 and Division 16. The drives furnished herein under shall be totally compatible and adequately sized with the Motors to be supplied.

C. 6-pulse variable frequency drives shall be provided with integrally mounted line reactors. Drives 30 hp and larger shall be furnished with a DC choke. All variable frequency drives shall be provided with integrally mounted dV/dT output filters.

D. Drives shall be sized at a minimum of 125% larger than the full load ampacity of the motor, unless otherwise shown on the single line diagrams.

1.03 Qualifications

A. Variable speed drives shall be of sufficient size for the duty to be performed and shall not exceed their full rated capacity when the driven equipment is operating as

specified. To assure unity of responsibility, all equipment specified in this Section of the specifications shall be furnished and coordinated by the Contractor.

B. The drives covered by these Specifications are intended to be equipment of proven ability as manufactured by reputable manufacturers having long experience in the production of identical units. The equipment furnished shall be designed, constructed and installed in accordance with the best practice and methods, and shall operate satisfactorily when installed.

C. The variable frequency control shall operate satisfactorily when connected to a bus supplying other solid state power conversion equipment which may be causing up to 10% total harmonic voltage distortion and commutation notches up to 36,500 volt microseconds, or when other variable frequency drives are operated from the same bus.

D. Individual or simultaneous operation of the variable frequency drives shall not add more than 5% total harmonic voltage distortion to the normal bus, nor more than 10% while operating from standby generator (if applicable) per IEEE 519, latest edition. The load side of the main breaker shall be the point of common coupling (PCC). The short circuit current at point of common coupling under utility operation is approximately 25,000 Amps. A preliminary harmonic (voltage and current) analysis must be submitted by the variable frequency drive manufacturer withing 30 days after the notice to proceed, this must include all calculations, simply a statement of compliance is not acceptable. Compliance shall be verified by the variable frequency drive manufacturer with field measurements of the harmonic distortion difference at the point of common coupling with and without variable frequency drives operating. See testing requirements.

E. The variable frequency drive manufacturer shall maintain and staff engineering service and repair shops through the United States, including the State of Florida, trained to do start up service, emergency service calls, repair work, service contracts and training of customer personnel.

F. Approved Manufacturers:

1. Schneider Electric
2. Eaton
3. Yaskawa

1.04 Submittals

A. Copies of all materials required to establish compliance with the specifications shall be submitted. Submittals shall include at least the following:

1. Certified shop and erection drawings showing all important details of construction, dimensions and anchor bolt locations.

2. Descriptive literature, bulletins and/or catalogs of the equipment.

3. Data on the characteristics and performance of the variable frequency drives. Data shall include certification that the variable frequency drives are warranted for use with the motors specified in Division 13, 15, and Division 16.

4. Complete drawings shall be furnished for approval before proceeding with manufacture and shall consists of master wiring diagrams, elementary or control schematics including coordination with other electrical control devices operating in conjunction with the variable frequency drive, and suitable outline drawings with sufficient details for locating conduit stub-ups and field wiring. Generic schematics not specific to this project shall not be acceptable.

5. A list of the manufacturer's recommended spare parts with the manufacturer's current price for each item. Include gaskets, packing, etc. on the list. List bearings by the bearing manufacturer's numbers only.

1.05 Operating Instructions

A. See Section 01730: Operation And Maintenance Data.

1.06 Tools and Spare Parts

A. One (1) set of all special tools required for normal operation and maintenance shall be provided. If no special tools are required, then a statement to this effect shall be provided.

B. The Manufacturer shall furnish a complete list of recommended spare parts.

1.07 Product Handling

A. All parts shall be properly protected so that no damage or deterioration will occur during a prolonged delay from the time of shipment until installation is completed and the units and equipment are ready for operation.

B. All equipment and spare parts must be properly protected against any damage during a prolonged period at the site.

C. Factory assembled parts and components shall not be dismantled for shipment unless permission is received in writing from the Engineer.

D. Each box or package shall be properly marked to show its net weight in addition to its contents.

1.08 Warranty

A. The warranty provided shall comply with Section 01740, “Warranties and Bonds”.

2. PRODUCTS

2.01 General

A. The Contractor shall furnish and install complete variable frequency drives as described in this specification and as detailed on the applicable Drawings.

B. The Contractor shall be responsible for the erection, installation, and start up of the equipment covered by this specification.

C. The variable frequency drive shall be furnished by a VFD manufacturer who has actively been manufacturing variable frequency drives for a period of at least five (5) years.

D. The variable frequency drive shall be comply with the latest applicable standards of ANSI, NEMA, IEEE, and the National Electric Code.

E. Variable frequency drive shall operate as specified on standby generators or normal power sources.

F. The Contractor shall provide a listing of all programmable parameters that are different from the factory default values. For each indicate:

1. The factory default and meaning

2. The revised value and meaning

G. The Contractor shall provide hardwired interface to all VFDs specified.

H. The Contractor shall provide a copy of PC compatible remote programming/ diagnostic software to the supplier of the control system. Refer to Section 13300.

2.02. Construction

A. Each variable frequency drive shall consist of a 460V, 3 phase rectifier, DC link and variable frequency inverter with features, functions and options as specified. The inverter shall be voltage source design using pulse width modulation (PWM) techniques.

B. The variable frequency drives shall be rated for the HP, full load current and rpm of the motor. The variable frequency drives shall be designed to provide continuous speed adjustment of three-phase motors. The variable frequency output voltage shall provide constant volts-per-Hertz excitation to the motor terminals up to 60 Hertz.

C. Inverters shall be capable of converting incoming three phase, 460V (+10 to -5%) and 60 Hertz (+/-2) Hertz power to DC bus levels. The DC voltage shall be inverted to a variable frequency drive output.

D. Controllers shall be rated for an ambient temperature of 0ºC to 40ºC, an altitude of up to 3,300 feet above sea level and humidity of 0 to 95% non-condensing.

E. VFDs shall have complete front accessibility.

F. The following standard basic control features shall be provided on the inverter:

1. Start, Stop, and indicating lights as shown on the drawings. Terminations for remote mounted operator control devices shall be furnished.

2. Unidirectional operation, coast to rest upon stop.

3. Variable linear independent timed acceleration.

4. Variable torque performance from 4 to 60 Hertz.

5. Frequency stability of 0.5% for 24 hours with voltage regulation of +2% of maximum rated output voltage.

6. LED status indication for Power On, Run, Inverter Enable, Overcurrent, Overvoltage, Overtemperature, Low Supply, and Phase Loss.

7. 115V AC control power for operator devices.

8. Phase insensitive to input power.

9. Automatic restart upon return of power following a utility outage. Drive shall require manual reset after three (3) attempts in a 60 second period.

G. The following protective features shall be provided on the drive:

1. Input AC circuit breaker with an interlocked, pad lockable handle mechanism and AC input line current limiting fuses for fault current protection of AC to DC converter section and circuit breaker. Minimum short circuit rating of 65,000 AIC shall be provided.

2. Electronic overcurrent trip for instantaneous overload protection.

3. Undervoltage and phase loss protection of output.

4. Over-frequency protection.

5. Over-temperature protection.

6. Surge protection from input AC line transients.

7. Electrical isolation between the power and logic circuits, as well as between the 115V AC control power and the static digital sequencing.

8. Drive to be capable of withstanding output terminal line short or open circuits without component failure.

9. Output filters with di/dt and dv/dt protection for converter semiconductors.

10. Units shall have an English language (no codes) alphanumeric diagnostic display. LED indication of overfrequency, instantaneous overcurrent, DC overvoltage, AC undervoltage/loss-of-phase, emergency stop, overload overtemperature, inverter pole trip and standby modes shall be provided and door mounted. Additional door mounted status indicating LEDs for self-diagnostic including run, phase loss, micro-processor fault, as well as board mounted LEDs including one for each inverter pole gating signal, each inverter pole status and each logic level VDC used. A comprehensive microprocessor based digital diagnostic system which monitors its own control functions and displays faults and operating conditions is also approved.

11. Input Line Reactors

12. Input Filters as required by the required IEEE study to be performed by the Contractor.

H. The following standard independent adjustments shall be provided on the inverter:

1. Minimum speed (1 to 60 HZ).

2. Maximum speed (1 to 60 HZ).

3. Acceleration time 1 to 60 Sec.

4. Deceleration time 1 to 60 Sec.

5. Volts per Hertz.

6. Stability adjustment, if required.

7. Voltage boost (100 to 600 percent of nominal V/HZ ratio at 1 HZ tapering to 100 percent at 20 HZ).

I. Additional control circuitry as shown on the drawings.

3. EXECUTION

3.01 Execution

A. The Contractor shall ensure that all VFDs shall be furnished in a timely fashion.

3.02 Installation

A. Installation shall be in strict accordance with the manufacturer's instructions and recommendations in the locations shown on the Drawings. Field wiring shall be in accordance with manufacturer's recommendations. Anchor bolts shall be stainless steel and set in accordance with the manufacturer's recommendations.

3.03 Shop Painting

A. Prior to shop painting, all surfaces shall be thoroughly cleaned, dry, and free from all mill/scale, rust, grease, dirt, and other foreign matter.

B. Drives shall be shop painted.

3.04 Testing

A. Tests and Check

1. The drive manufacturer shall test the drive controller with a motor load prior to shipment. The motor shall have equal or greater full load current than the specified motor.

2. A certified copy of all tests and checks performed in the field, complete with meter readings and recordings, where applicable, shall be submitted to the Owner.

B. The Contractor shall provide the services of a competent and experienced equipment manufacturer's factory field engineer to supervise start-up and provide training to the Owner's personnel. The factory field engineer shall be available for one (1) - eight (8) hour day to inspect the installed equipment and supervise the start-up demonstration and testing as specified in Section 01465 – Equipment Testing and Facilities Startup, and additional testing and training as specified herein. The factory field engineer shall be available for two (2) additional eight (8) hour days (a total of three (3) - eight (8) hour days) to provide factory and on-site training to the Owner's personnel as specified herein. Training of the Owner's personnel will only be considered valid for approval by the Engineer if it takes place after the successful start-up and demonstration test.

3.05 Training

A. The training and instruction shall be directly related to the System being supplied.

B. The Supplier shall provide classroom training detailed manuals to supplement the training courses. The manuals shall include specific details of equipment supplied and operations specific to the project.

C. The Supplier shall make use of teaching aids, manuals, slide/video presentations, etc. After the training services, such materials shall be delivered to Owner.

D. The training program shall represent a comprehensive program covering all aspects of the variable frequency drive and maintenance of the system.

E. All training schedules shall be coordinated with, and at the convenience of the Owner. Shift training may be required to correspond to the Owner's working schedule.

F. Factory Training: Factory training shall be conducted before the System is commissioned, and subsequent to final manual submittals. Two days of factory training shall be provided and consist of schooling and hands on experience for two people covering the following:

1. Theory of Operation

2. Use of Software

3. Troubleshooting

G. On-site Training: On-site (field) training shall be conducted at the Owner's Plant Site and shall provide detailed hands-on instruction to Owner's personnel covering: system debugging, program modification, trouble-shooting, maintenance procedures, calibration procedures, and system operation.

END OF SECTION

SECTION 16402

UNDERGROUND SYSTEM

1. GENERAL

1.01 Scope of Work

A. Furnish and install a complete underground system of ducts, manholes and handholes all as hereinafter specified and shown on the Drawings.

B. Provide a minimum of one (1) spare conduit of each size in each duct bank from distribution gear to nearest manhole or handhole.

1.02 Related Work

A. Excavation and backfilling is included in Division 2.

B. All concrete and reinforcing steel shall be included under Division 3.

C. Conduit for ducts shall be as specified under Section 16110 – Raceways and Fittings.

D. Ground rods and other grounding materials and methods shall be as specified under other Sections of Division 16.

2. PRODUCTS

2.01 Material

A. Ducts shall be PVC Schedule 40 DB encased in concrete. Direct buried conduits shall not be allowed.

B. Cable racks, supports, pulling-in irons, manhole steps, and hardware shall be stainless steel manufactured by Cope or approved equal. All hardware shall be 304 stainless steel.

C. Precast manholes and handholes shall be heavy duty type, designed for a Class H20 wheel load. Precast manholes and handholes shall be as manufactured by Oldcastle, or approved equal.

D. Class H20 traffic rated handhole covers and frames shall be provided as required.

3. EXECUTION

3.01 Installation

A. Ducts shall be installed to drain away from buildings; ducts between manholes or handholes shall drain toward the manholes or handholes. Duct slopes shall not be less than 3 inches per 100 feet.

B. Duct banks shall be fiber reinforced concrete.

C. Duct lines shall be laid in trenches on a clean backfill bedding not less than 6 inches thick and well graded.

D. Plastic spacers shall be used to hold ducts in place whether concrete encased or not. Spacers shall provide not less than 2-inch clearance between ducts.

E. The minimum cover for duct lines shall be 24 inches unless otherwise permitted by the Engineer.

F. Duct entrances to buildings and structures shall be made with PVC coated rigid aluminum.

G. PVC duct terminations at manholes shall be with PVC end bells. Steel conduits shall be terminated with insulated, grounding-type bushings.

H. Where bends in ducts are required, standard radius elbows, sweeps and offsets shall be used.

I. All ducts shall be rodded and a mandrel drawn through followed by a swab to clean out any obstructions which may cause cable abrasions. The mandrel shall be 12 inches in length and the diameter 1/2 inch less than the inside diameter of the duct.

J. Spare ducts shall be plugged and sealed watertight at all manholes, buildings and structures.

K. Ducts in use shall be sealed watertight at all manholes, buildings and structures.

L. Pulling-in irons shall be installed opposite all duct entrances to manholes, equal to Cope Cat. No. 311-9.

M. Cable racks shall be cut to length for one, two, three or four vertical tiers of cables. Racks shall be mounted with 1/2 inch by 4 inch expansion bolts on manhole walls. Arms similar and equal to Cope Cat. No. 325-T4, 325-T75 and/or 325-T10 for one, two and/or three cables respectively shall be furnished and installed with Cat. No. 326-T22 porcelain insulators for support of cables. Lock clips shall be furnished and installed to secure hooks in position.

N. Cables shall be trained in manholes and supported on racks and hooks at intervals not greater than 3 feet-0 inches and supports shall be installed on each side of all splices. Furnish inserts on all manhole walls for mounting future racks as well as racks required for present installation.

O. PVC coated rigid steel conduit shall be used for risers. For fiber runs, a fiber to PVC coated rigid steel conduit adapter shall be used at the lower end of the elbow and the elbow and all exposed conduit shall be PVC coated.

P. All risers from underground shall be given a heavy coat of bitumastic paint from a point 1 foot-0-inch below grade to a point not less than 6 inches above grade or surface of slab.

Q. All joints shall be made so as to prevent the passage of concrete inside the conduit to form obstructions or cause cable abrasions.

R. Manhole covers in streets shall finish flush with finished paving and in other areas shall finish 3 inches above crown of adjacent roadway. Floor elevations of manholes shall be so set that the center line of the lowest conduit entering will be not less than 1-foot above the floor and center line of the highest conduit entering will be not less than 1 foot below the roof slab.

S. Concrete monuments shall be provided at each stubbed conduit location. Monuments shall be as shown on the Drawings and shall be installed in the same manner outlined for manhole covers.

T. A 5/8-inch by 20-foot copperclad ground rod shall be driven in the bottom of each manhole. After installation, the ground rod opening shall be filled in with non-shrink grout to form a watertight plug. All bond wires and galvanized steel conduits shall be bonded to the ground rod.

END OF SECTION

SECTION 16450

GROUNDING SYSTEM

1. GENERAL

1.01 Scope of Work

A. Furnish and install a complete grounding system in strict accordance with Article 250 of the National Electrical Code and as hereinafter specified and shown on the Drawings.

B. Furnish and install a grounding system for facilities shown on the plans. Grounding grid shall consist of copper ground rod, bare copper ground conductor, ground test well and copper to copper exothermic weld, as indicated. All handrails, walkways, equipment racks, pole mounted lighting fixtures, air pipes and pipe supports shall be bonded to the grounding system.

1.02 Related Work

A. Wire shall be as specified under Section 16120–Low Voltage Wire and Cable.

B. Conduit shall be as specified under Section 16110–Raceway and Fittings.

2. PRODUCTS

2.01 Materials

A. Ground rods: Ground rods shall be copperclad steel 5/8-inch x 20 foot. Ground rods shall be Copperweld or be an approved equal product.

3. EXECUTION

3.01 General

A. As a minimum, the service entrance equipment ground bus shall be grounded to the ground grid, equipment pad structural rebar, electrical equipment racks, and the steel frame of the building. The Contractor shall not allow water pipe connections to be painted. If the connections are painted, they shall be disassembled and remade with new fittings.

B. Ground bus in all switchboards and unit substations shall be connected to the service entrance equipment ground bus with using copper conductors, sized as shown on the single line diagrams.

C. All steel building columns shall be bonded together and connected to the building ground grid and to the service entrance ground with a No. 3/0 copper conductor. The bond wire for all motors shall be connected to the motor casing via Cadweld.

D. Conduits stubbed-up below a motor control center shall be fitted with insulated grounding bushings and connected to the motor control center ground bus. Boxes mounted below motor control centers shall be bonded to the switchboard ground bus. The grounding wire shall, unless otherwise indicated on the drawings, be sized in accordance with Table 250-122 of the National Electrical Code, except that a minimum No. 12 AWG shall be used.

E. Motors shall be grounded as specified in Section 16150-Motors.

F. Step down Transformer neutrals shall be grounded to a grounding electrode and the service entrance ground.

G. Grounding electrodes shall be driven as required. Where rock is encountered, copper grounding plates may be used in lieu of grounding rods.

H. All equipment enclosures, motor and transformer frames, conduits systems, cable armor, exposed structural steel and similar items shall be grounded.

I. Exposed connections shall be made by means of approved grounding clamps. Exposed connections between different metals shall be sealed with No-Oxide Paint Grade A or approved equal. All buried connections shall be made by welding process equal to Cadweld.

J. The plant grounding grid conductors shall be embedded in backfill material around the structures.

K. All underground conductors shall be laid slack and where exposed to mechanical injury shall be protected by pipes or other substantial guards. If guards are iron pipe or other magnetic material, conductors shall be electrically connected to both ends of the guard.

L. The Contractor shall exercise care to ensure good ground continuity, in particular between the conduit system and equipment frames and enclosures. Where necessary, jumper wires shall be installed.

3.02 Tests

A. The Contractor shall test the ground resistance of the system using the 3 point fall of potential method. All test equipment shall be provided by the Contractor and approved by the Engineer. Dry season resistance of the system shall not exceed 5 ohms. If such resistance cannot be obtained with the system as shown, the Contractor shall provide additional grounding as directed by the Engineer, without additional payment. The Contractor shall submit all grounding system test results to the Engineer for review.

END OF SECTION

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SECTION 16500

LIGHTING SYSTEM

1. GENERAL

1.01 Scope of Work

A. Furnish and install complete lighting systems including panelboards, transformers, lighting fixtures, receptacles, switches, contactors, clocks and all necessary accessories and appurtenances required as hereinafter specified.

1.02 Standards

A. All lighting fixtures shall be in accordance with the National Electrical Code and shall be constructed in accordance with the latest edition of the Underwriters Laboratories "Standards for Safety, Electric Lighting Fixtures." All lighting fixtures shall be Underwriters Laboratories labeled.

1.03 Related Work

A. Panelboards shall be as specified under Section 16160.

B. Conduit shall be as specified under Section 16110.

C. Wire shall be as specified under Section 16120.

D. Transformers shall be specified under Section 16050.

2. PRODUCTS

2.01 Materials

A. Switches

1. Wall switches shall be of the indicating, toggle action, flush mounting quiet type. All switches shall conform to Federal Specification W-S-896-D.

2. Wall switches shall be of the following types and manufacturer or approved equal.

a. Single pole - Arrow-Hart No. 1991 or Leviton No. 1221-2.

b. Double pole - Arrow-Hart No. 1992 or Leviton No. 1222-2.

c. Three way - Arrow -Hart No. 1993 or Leviton No. 1223-2.

d. Four way - Arrow-Hart No. 1994 or Leviton No. 1224-2.

e. Single pole, key operated - Arrow-Hart No. 1991-L or Leviton No. 1221-2L.

f. Momentary contact, 2 circuit, center off - Arrow-Hart No. 1895 or Leviton No. 1256.

g. Weatherproof cover for Arrow-Hart 2900 series tap action switches - Arrow-Hart Catalog No. 2881-G.

B. Receptacles

1. Wall receptacles shall be of the following types and manufacturer or approved equal.

a. Single, 20A, 125V, 1P, 3W; Arrow-Hart No. 5361 or Leviton No. 5361.

b. Duplex, 20A, 125V, 2P, 3W; Arrow-Hart No. 5362 or Leviton No. 5362.

c. Weatherproof, 20A, 125V, 2P, 3W; Arrow-Hart No. 5362 or Leviton No. 5361 and Crouse-Hinds WLRD-1 cover or Leviton No. 4926.

d. Corrosion-resistant, duplex, 20A, 125V, 2P, 3W; Arrow-Hart No. 5739-CR or Leviton No. 5362CR and Crouse-Hinds WLRD-1 cover.

e. Ground fault interrupter, duplex, 20A, 125V, 3P, 2W; Arrow-Hart No. GF5362 or Leviton No. 6899.

f. Stainless steel indoor mounting plate for G.F.I. receptacle; Arrow-Hart Catalog No. S-26.

g. Weatherproof cover for G.F.I. receptacle in FS box; Arrow-Hart No. 4501-FS or Leviton No. 6196.

h. Clock hanger, 15A, 125V, 2P, 3W; Arrow-Hart No. 452 or Leviton No. 628.

i. Single, 20A, 250V, 2P, 3W; Arrow-Hart No. 5461 or Leviton No. 5461.

j. Single, 30A, 125V, 2P, 3W; Arrow-Hart No. 5716N; cap: Arrow-Hart No. 5717N or Leviton No. 5371.

k. Clothes dryer, 30A, 125/250V, 3P, 3W; Arrow-Hart No. 9344N. Cap: Arrow-Hart No. 9352AN or Leviton No. 5209 and No. 9382-P.

2. Special wiring devices shall be provided as noted of the drawings.

    a. Tamper resistant duplex receptacle Leviton No. 5262-SG or approved equal.

    b. Scene select microprocessor dimmer Leviton No. 17765 or approved equal.

    c. Surge protective duplex receptacle Leviton No. 5380 or approved equal.

C. Device Plates

1. Plates for flush mounted devices shall be of the required number of gangs for the application involved and shall be 302 (18-8) high nickel stainless steel of the same manufacturer as the device.

2. Plates for surface mounted device boxes shall be of the same material as the box.

D. Lighting Fixtures

1. Lighting fixture types shall be as shown on the "Lighting Fixture Schedule" on the Drawings. The catalog numbers listed are given as a guide to the design and quality of fixture desired. Equivalent designs and equal quality fixtures of other manufacturers will be reviewed. Photometric and minimum in order for Engineer to consider equivalency.

E. Lamps

1. All lamps shall be LED type.

2. All lamps shall be of one manufacturer and shall be as manufactured by Lithonia, Kenall, Hubble Beghelli, Columbia or approved equal.

F. Flexible Fixture Hangers

1. Flexible fixture hangers used in nonhazardous areas shall be Type ARB and flexible fixture supports used in hazardous areas shall be Type ECHF as manufactured by the Crouse-Hinds Company or approved equal.

2. Stainless steel channel, roll formed into U-shape, shall be sued to span between building steel for mounting of fixtures where required by fixture location or as indicated on the Drawings. Channel shall be as manufactured by Unistrut Corporation or approved equal.

G. Lighting Contactor

1. Lighting contactor shall be of the electrically operated, mechanically held type in NEMA 1 steel enclosures of the number of poles as called for on the Drawings.

2. Contactors shall be rated for 20A-600 volt contacts and be equal to Automatic Switch Company bulletin 1255-166 RC.

H. Photocell

1. Intermatic K4400 series or equal.

3. EXECUTION

3.01 Installation

A. Each fixture shall be a completely finished unit with all components, mounting and/or hanging devices necessary, for the proper installation of the particular fixture in its designated location and shall be completely wired ready for connection to the branch circuit wires at the outlet.

B. When fixtures are noted to be installed flush, they shall be complete with the proper accessories for installing in the particular ceiling involved. All flush mounted fixtures shall be supported from the structure and shall not be dependent on the hung ceilings for their support.

C. Flexible fixture hangers shall be used for all pendant mounted fixtures.

D. Conduit run in areas with hung ceilings shall be installed in the space above the hung ceiling as close to the structure as possible. Conduits shall be supported from the structure.

E. Receptacles in process areas and shops shall be mounted 36 inches above the floor unless otherwise noted on the Drawings.

F. Receptacles in office and other like areas shall be mounted 18 inches above the floor unless otherwise noted on the Drawings.

3.02 Cleaning Up

A. All fixtures shall be left in a clean condition, free of dirt and defects, before acceptance by the Engineer.

END OF SECTION

SECTION 16670

LIGHTNING PROTECTION SYSTEM

1. GENERAL

1.01 Scope of Work

A. A Lightning Protection System shall be furnished and installed for the following facilities:

1. Electrical building No. 1.

2. Chemical Facility.

3. Operations/Maintenance Building

B. The system shall be furnished and installed in compliance with provisions of Code for Lightning Protection Systems as adopted by the National Fire Protection Association and Lightning Protection Institute. All equipment to that result shall be included whether or not specifically called for herein or shown on the plans. Installers shall be LPI (Lightning Protection Institute) certified, master and Journeyman in accordance with LPI standards or of equal qualifications as approved by Engineer. A LPI label for the system shall be required.

C. Material shall comply in weight, size and composition with the requirements of the Lightning Protection Institute and the National Fire Protection Code relating to this type of installation, and shall be LPI labeled.

1. All materials, where available by any one manufacturer, shall be cast. All bolts shall have hexagonal heads, no screw heads will be permitted.

2. Lightning protection cable shall be Class I copper. Grounding counterpoise shall be as shown. Fittings and straps shall be cast copper.

1.02 Submittals

A. Shop Drawings: Shop drawings shall be submitted before work is done. Drawings shall include full layout of cabling and points, and connections.

B. Product Data: Product Data shall be submitted on all equipment to show compliance with this section of the specifications and shall include manufacturer's written recommendations for installation.

2. PRODUCTS

2.01 Air Terminals

A. Air terminals shall be copper as required to match roof conductors, and shall have proper base support for surface on which they are attached, and shall be securely anchored to surface. Terminals shall project a minimum of 10" above top of object to which attached.

2.02 Conductors

A. Roof conductors shall consist of copper complying with the weight and construction requirements of the Code, and shall be coursed to interconnect with air terminals, and in general, provide a two-way minimum path to ground. The angle of any turn shall not exceed 90 degrees, and shall provide an approximately horizontal or downward course. Down conductors shall be copper, concealed within the structure. Radius of bends shall not be less than 8 inches. Roof conductors material shall match and/or be compatible with roof flashing material.

2.03 Fastener

A. Conductor fasteners shall be of the same material as the conductor, having ample strength to support conductor. Where fasteners are to be mounted in masonry or structural work, they shall be furnished to the Masonry or Structural Contractor so they may be installed during construction of the project.

2.04 Ground Connections

A. Ground connections shall be made in accordance with requirements of all applicable codes. Ground rods shall be placed in a minimum of two (2) feet from building foundations. In addition to above artificial grounds, one down conductor of each two-path system shall be connected to water piping system with approved water pipe type strap connector.

B. All ground rods shall be 5/8" diameter, with a minimum length of 20' copperweld type. Each installed ground rod shall be checked for resistance to ground. If a 0 to 5 ohm reading is not obtained, extend 10’ rod lengths and continue driving rods until the required reading is obtained.

C. No rod can be connected to the bonding cable without the required ohm reading.

3. EXECUTION

3.01 Installation

A. Installation shall be made in an inconspicuous manner with conductors coursed to conceal equipment as much as possible. Down conductors shall be concealed within structure, and shall be run in 1" schedule 80 PVC conduit. All metallic equipment within 6 feet of any lightning conductor shall be bonded to conductor. System shall also be tied to the main service electrical ground.

3.02 Equipment

A. Equipment shall be as manufactured by Lightning Masters Corp or approved equal.

END OF SECTION

City of Flagler Beach
105 S. 2nd Street
Flagler Beach, Florida 32136
(386) 517 – 2000 ext. 233

ADDENDUM NO. 1

RESPONSE TO INQUIRIES RECEIVED
Waste water Treatment Facility Sludge Management Improvements
Bid Number FB-240111
November 25, 2024

To All Plan Holders:

The following changes, clarifications and additions are hereby made a part of the bidding and contract documents for the above referenced project, and prepared by the City of Flagler Beach as fully completely as if the same were fully set forth therein.

Response to Questions received at the Pre-bid Meeting and before the deadline of 5:00 p.m. Friday, November 22, 2024. Questions are in **Bold** and responses are in *Italics.*

1. **For the underground conduit duct bank, the drawings show it as direct bury while the specs call for it to be concrete encased. Please confirm which is required.** *They shall be concrete encased.*
2. **Would you provide the sign-in sheet and any agenda/notes for the pre-bid meeting?** *The sign in sheet and any notes will be provided.*
3. **Are the building department fees going to be paid through the project allowance?** *Contractor is responsible for building dept. fees.*
4. **Spec 01010, 1.01, E mentions FPL fees to be paid for by the Contractor. It does not appear there is any FPL work in this project. Please confirm.** *We are going to have the power pole removed, so there should not be any FPL fees.*
5. **Please confirm the PWTech Press has been purchased and provided by Flagler County. Therefore, we do not need to include pricing for purchasing the press in our bid.** *Yes, it has been purchased.*
6. **Spec "05XXX – Prefabricated Metal Building" is missing from the bid documents.** *The table of contents has been revised and is attached as exhibit "A" to this Addenda.*
7. **Spec "11XXX – Submersible mixers" is missing from the bid documents.** *The table of contents has been revised and is attached as exhibit "A" to this Addenda.*
8. **The 100 days for substantial completion and 130 days for final completion is not enough time to complete this project. Submittals, approvals, and material deliveries will be in the 90-to-100-day range. Then the work in the field must be completed. Can the tie for constriction be extended?** *We can extend substantial completion to 180 days and final at 210 days.*

9. **Drawing D1.0, and other drawings, show an existing overhead power line and pole that conflict with the new structure location. Please address what to do with the existing uti** *The city will have the pole removed and will not be in the scope.*

10. **On Drawing C1.1 regarding the manholes. For manhole #5 is the flow line elevation to the NW, as SW is indicated? Is there only that one opening for that #5 manhole. For manhole #8, is that a doghole style manhole? Please provide more details as to how to insert the manhole, if it is tying into an existing line.** *The manholes, piping between manholes, and asphalt paving will be removed from this scope.*

11. **On drawing C1.1 the pipe schedule #11 suggests 8" schedule 80 PVC. Between manhole 6 and 7 with the ductile fitting is C900 acceptable to use?** *TBD*

12. **On drawing C1.1 fitting schedule #24, please confirm that the wye is 8x8x8 to match the incoming pipe from the wye. Also can a Ductile Iron fitting be used for the #31 MJ 45 bend, again seen as #42 on drawing M1.1?** *TBD*

13. **On drawing C1.1 on the 20" effluent line, is there a shut off to prevent backflow while making the tie in connection? How long can the 20" effluent be out of service to complete the rerouting of the pipe?** *The 20" effluent line needs to remain in place. Remove the relocation of the 20" effluent line from the scope.*

14. **On Drawing M1.2 what happens at the end of the bisulfate discharge pipe? Capped, connected to by others?** *The bisulfite tank will not be included in this scope, not any of the associated piping.*

15. **On drawing I4.0 the descriptions say Bisulfite while other drawings say Bisulfate. Are these chemical terms the same, and interchangeable, or the same product at a different stage of the process?** *The plans should read Bisulfite.*

16. **Does this project require Davis Bacon wages with certified payroll documentation?** *YES*

17. **Are there any special funding requirements, like USA Domestic only, AIS, or MBE/DBE?** *NO*

18. **The contract time shows 100 days for substantial completion per spec -00 26 00-4.02. The equipment and metal building materials may take that long just to fabricate & ship. Can the contract time be extended to accommodate the long lead equipment deliveries?** *See #8*

19. **Are the building permit fees waived by the City? If the contractor has to pay the permit fees, can there be an allowance for that on the bid form?** *See #3*

20. **Is there an engineer's cost estimate for this project?** *That information is not released unt the bid opening.*

21. **How long can the 20" effluent discharge line on sheet C1.1 be shutdown to tie in the new 20" gate valves and cut in the 20" 45' bend on the new 20" effluent line?** *The 20" effluent discharge line needs to remain in place and will be removed from the scope of this bid.*

22. **How long can the sludge line on sheet C1.1 be shutdown to tie in the 8"x4" tee & 8" plug valve for the new feed line to the presses?** *The sludge line is already turned off with a gate valve upstream.*

23. **How long can the sludge line on sheet C1.1 be shutdown to install the new 8" gate valve and the new seepex pump?** *The sludge line is already turned off and not an issue.*

24. **At manhole #8, how long can the existing drain line be shutdown to install the manhole?** *All manholes and associated piping will be removed from this bid.*

25. **Does the City intend to direct purchase through the contactor any of the equipment and materials on this project in order to save the sales tax?** *YES*

26. **The table of contents shows a spec 09090 Finish Schedule. We couldn't find that in the specs going from section 06702 to 09750. Can a finish schedule be provided to show what specifically gets painting/coatings?** *To be provided*

27. **Section 09090 – Finish Schedule is missing from the specifications. Please provide this section og the specifications.** *To be provided*

28. **Do you have soil borings for this project? If so, can we get a copy? If not, where is the water table on site? We need this to determine if any dewatering will be required for this project and to know if dewatering will be required to obtain compaction under the structures.** *We do not have any soil borings.*

Disclaimer: It is the sole responsibility of bidder to confirm that all addenda have been received prior to submitting bid and acknowledge such in bid documents

END OF ADDENDUM 1

City of Flagler Beach
105 S. 2nd Street
Flagler Beach, Florida 32136
(386) 517 – 2000 ext. 233

ADDENDUM NO. 2

Additional and Revised Documents
Waste water Treatment Facility Sludge Management Improvements
Bid Number FB-240111
November 21, 2024

To All Plan Holders:

The following changes, clarifications and additions are hereby made a part of the bidding and contract documents for the above referenced project, and prepared by the City of Flagler Beach as fully completely as if the same were fully set forth therein.

Attached to this Addendum are revised and additional items for the bid package.

Exhibit "A": Revised Table of Contents to Volume 2 Technical Sections

Exhibit "B": Proposal/Scope from PW Tech on the Screw Press

Exhibit "C": Geotechnical Evaluation performed by Universal Engineering Services

Exhibit "D": Revised Drawings Sheet M2.0 and Sheet S1.1

Exhibit "E": Sign in Sheets from Pre-bid Meeting

Response to additional question:

The bid submission deadline will not be extended and stands as 2:00 PM, Friday, December 6, 2024.

Disclaimer: It is the sole responsibility of bidder to confirm that all addenda have been received prior to submitting bid and acknowledge such in bid documents

END OF ADDENDUM 2

SECTION 00 01 01

CONTRACT DOCUMENTS FOR

CITY OF FLAGLER BEACH

105 S. SECOND STREET
CITY PROJECT NO: 238

CITY INVITATION TO BID NO: FB-240111

NOVEMBER 2024

VOLUME 2
TECHNICAL SECTIONS

CITY OF FLAGLER BEACH
WWTF SLUDGE MANAGEMENT IMPROVEMENTS
2000 AVENUE A
CITY PROJECT NO: 238

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END OF TOC

THESE DOCUMENTS ARE ATTACHED AS INDIVIDUAL DOCUMENTS.

PWTech

PROPOSAL

TO: City of Flagler Beach

PROJECT / REF: Flagler Beach WWTP

SPEC . SECTIONS: N/A

DATE: 1/25/2024

PWT #: VDP-FL-19061

REV: - 6 - firm pricing Jan 25, 2024

SIZING INFORMATION: Sized to dewater 60 GPM of 1.8% municipal WAS sludge

MANUFACTURERS REP:

NOTES:

REVISION NOTES: - 6 - firm pricing Jan 25, 2024

PREPARED BY : Chris Hubbard | Joseph Collar

PROPOSAL CONTENT

- Scope of supply summary
- Scope Details
- Exceptions and Exclusions
- Governing Conditions and Warranty Notes
- Price
- Data Sheets
- GA Drawings
- PWTech Terms and Conditions and Warranty

*Volute is registered with the U.S. Patent and Trademark Office as a registered trademark of AMCON

SCOPE OF SUPPLY

Line	Qty.	Item	Manufacturer / Model / Description
1	1	Volute* Dewatering Press	PWTech - ES-303
2	1	Influent Sludge flowmeter	Rosemount™ Model 8750W with 2" ANSI Flanges
3	1	Control System for Item 1-2	PWTech
4		Documentation	Submittals, O&M manuals, Startup Report
5		Field services	Installation inspection, Commissioning, Testing and operator training
6		Delivery to site	

*Volute is registered with the U.S. Patent and Trademark Office as a registered trademark of AMCON, Inc., Yokohama, Japan

SCOPE DETAILS

1. Volute Dewatering Press - PWTech Model ES-303

Design

- The unit to be supplied will be an ES-303 with a MAXIMUM capacity of 100 GPM of thin sludge (<1%) or 1050 dry pounds per hour for heavier sludge (>3%)

Components

- The Dewatering Press consists of:
  - Flash mixing tank including mixer with gear motor.
  - Flocculation tank including mixer with gear motor.
  - Three (3) x 300 Series Dewatering Drum with a drive motor.
  - Filtrate collection pan and support frame.
  - Integrated, pre-wired control panel for the unit and appurtenances mounted on the flocculation tank. (may be provided mounted separately if requested).
- Connections are:
  - Inlet: DN 3" ANSI B16.5 Class 150 Flange
  - Filtrate outlet: DN 6" ANSI B16.5 Class 150 Flange
  - Drain: DN 2" ANSI B16.5 Class 150
  - Washwater Water inlet: ¾" FNPT

Materials and Construction

- The unit is all stainless steel. No carbon steel is used in the manufacture of the press.
- Unit is manufactured and assembled in the USA. All components are sourced from the USA or Japan.
- Electrical components are manufactured and tested prior to shipment to site in the United States.
- Gear Drives are Nissei GTR gear motors utilizing heloid gear reduction. They are one piece construction and are sealed for life.

Supplied spare parts

- No spare parts are included in this scope.

Additional Press information is appended to this scope.

2. Magnetic flowmeter, 2" Rosemount™ Model 8750W

Design

- 2" Flowmeter is designed for accurate measurement of flows between 10-200 GPM
- Suitable for direct burial and constant flooding (IP 68).
- Includes Compact mounting of transmitter on the flowmeter body
- Flowmeter out-puts analogue signal (4-20 mA) to Volute Press Control panel

Components

- 2 inch ANSI 150# flange connections.
- Includes grounding rings

*Volute is registered with the U.S. Patent and Trademark Office as a registered trademark of AMCON, Inc., Yokohama, Japan

Materials and Construction

- Coated Carbon Steel construction with a polyurethane, ceramic, neoprene, or Teflon liner as required by the application.
- All metallic wetted parts are stainless steel type 316

3. Electrical and Control

The Volute* unit is supplied with a pre-mounted, pre-wired control panel designed to control all aspects of the thickening/dewatering operation unless otherwise specified and noted.

- Control panel is:
  - Fed by a single 208, 240, or 480VAC, 3-phase, 60 Hz, power supply (client specified)
  - NEMA 4X rated manufactured in Stainless Steel type 304
  - Manufactured in a UL accredited facility and is UL listed
- Panel includes HMI and PLC control modules.
  - PLC/HMI is a single Unitronics Unistream 10.4 unit.
- All manual switching operations are undertaken via switches on the HMI
- Unit includes complete control system for unit and ancillary equipment including operation of the polymer preparation system and VFD control for feed pump.
- Control system may utilize a system flow meter and PID loop to allow operator to set the system flow.
- Control panel includes system running and system fault outputs to plant PLC and the ability to connect via Ethernet to external controls.
- A junction box on the polymer preparation skid is pre-wired to the polymer preparation components and designed for easy on-site connection to the main Volute* system control panel.
- Junction box is NEMA 4X FRP and includes numbered terminal block & wires with terminal block legend.

4. Documentation:

Scope includes:

- Submittals (hard copy and electronic) and
- O&M Manuals (hard copy and electronic).
- Startup Report
- PLC/HMI Program (electronic copy) – does not include programming software

5. Field Services:

Scope includes the following start-up services -

- On-site start-up and training services for:
  - One (1) trip consisting of four (4) consecutive days (8 hours per day, Monday-Friday) by a PWT field service engineer and/or qualified manufacturer's representative
- Services include:
  - Installation inspection
  - Commissioning of Volute* unit and Controls
  - Start-up of Ancillary equipment included in this Scope
  - Functional testing and calibration of equipment
  - Training on all equipment
- Phone consultation regarding installation will also be provided.
- Should additional services be deemed necessary by the PURCHASER, the additional services can be procured from PWT on a per diem basis. The current rate is $1000 per day plus travel.

*Volute is registered with the U.S. Patent and Trademark Office as a registered trademark of AMCON, Inc., Yokohama, Japan

6. Delivery and Freight

- Submittals issued approximately six (6) weeks from receipt of written Purchase Order
- Delivery is approx. twenty (20) weeks from receipt of written acceptance of Submittal documents [x]
- Deliver to site for all components **is INCLUDED in the price**.

[x] **PLEASE NOTE:** While seller believes this estimated delivery time to be a valid and realistic estimate, due to the unpredictable nature of current parts shortages, this does not constitute any form of guarantee regarding the delivery schedule.

EXCLUSIONS AND EXCEPTIONS:

The Following items are specifically excluded from this scope unless specifically noted otherwise:

- Taxes, permits, and bonding
- Any civil works including, but not limited to, any building works, construction of suitable foundations, and access structures.
- Installation including, but not limited to, mechanical, plumbing, and electrical hook-ups
- Unloading of delivered equipment on site and storage
- PLC/HMI Programming software unless specified elsewhere.

GOVERNING TERMS AND CONDITIONS AND WARRANTY

This scope is subject to Process Wastewater Technologies, LLC. Standard Terms and Conditions and Standard Warranty as attached. The following items are specific to this project:

Payment Terms:

Payment terms for this scope are as per the table below:

Trigger	Amount		Terms			Condition
Submittals	**20**	%	due NET	30	days	On Approval of Submittals
Delivery	**70**	%	due NET	30	days	On shipping, or the offer to ship
O&M	**5**	%	due NET	30	days	On Delivery of final O&M Manuals
Startup	**5**	%	due NET	30	days	On Completion of startup and any other services provided under this scope.

Validity

Validity of this proposal is strictly 30 days. Written authorization from seller is required to extend this.

Warranty

PWTech warrants that the Products shall be free from defects in material and workmanship for the shorter period of: (i) twelve (12) months from the date of start-up; (ii) the warranty period for the third party good or service embodied in the Product; or (iii) eighteen (18) months from the delivery of the specified Product.

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PRICE

Total price for the ES-303 and appurtenances as per this scope: **$413,000.00**

Alternative offering:
Total Price for the ES-303[2]* and appurtenances as per this scope: **$338,000.00**

*ES-303[2] is the same size and design as ES-303, but delivered with one fewer drum, lowering its capacity by 33%. The ES-303[2] can be expanded to a full ES-303 and it's full capacity via a drum expansion at a later date.

*Volute is registered with the U.S. Patent and Trademark Office as a registered trademark of AMCON, Inc., Yokohama, Japan



Volute Dewatering Press Data Sheet - ES-303

Please note - All information here is generic and for preliminary reference only. Detailed dimensions, and other data is very project specific and this sheet has not been altered to reflect that. Project specific data would be available from PWTech at the appropriate time.

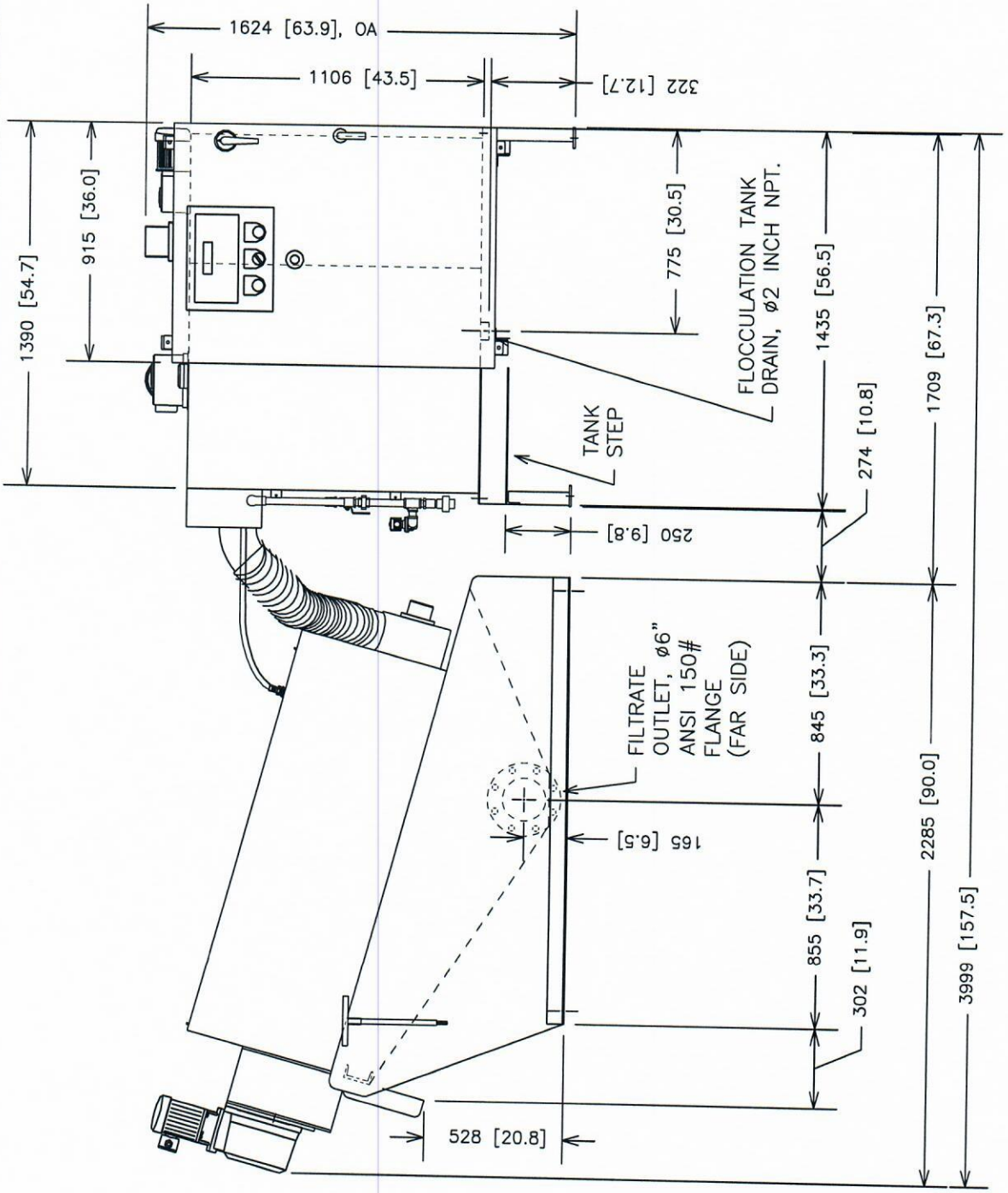
General Data		Over All Dimensions:	158" x 63" x 74" (L x W x H)
		Optimal Space requirement of installation:	218" x 146" (L x W)
		Minimum Opening dimensions for installation:	65" x 60"
	Weight	Empty:	4100 lbs
		Operating:	6650 lbs
		MAX Solids throughput (Solids >4%):	1050 Dry pounds per hour
		MAX Hydraulic throughput (Solids <1%):	105 GPM
		Power use:	3.9 HP
		Washwater use:	16 GPM intermittent, 48 GPH total
Dewatering Drum	General	Dimension:	12" diameter x 61" long
		Quantity:	3
		Rings, Tierods, spacers:	Type 304 Stainless Steel
		Screw:	304 Stainless Steel with CoCr coating
	Drive info	Gear Motor Supplier:	Nissei Corporation
		Model:	FSW-55-750-T040-WEX
		Motor Power:	0.4 kW (0.54HP) 4-Pole
		Insulation:	TEFC / IP65
		Gear Reduction:	750 : 1
Flash mixing tanks	General	Dimensions:	20" x 33" x 43" (L x W x H)
		Volume	112.3 Gallons
		Working Volume:	98.2 Gallons
		Material	Type 304 Stainless Steel
	Drive Info	Gear Motor Supplier:	Nissei Corporation
		Model:	FSW-30-15-T020 WA
		Motor Power:	0.2 kW 4-Pole
		Motor Insulation:	TEFC / IP65
		Gear Reduction:	15 : 1

Flocculation tank	**General**	Dimensions:	33" x 33" x 43" (L x W x H)
		Volume	190.9 Gallons
		Working Volume:	167.0 Gallons
		Material	Type 304 Stainless Steel
	Drive Info	Gear Motor Supplier:	Nissei Corporation
		Model:	FSW-45-60-075 WEX
		Motor Power:	0.75 kW (1.0HP) 4-Pole
		Motor Insulation:	TEFC / IP65
		Gear Reduction:	60 : 1

Electrical	**General**	Supply Voltage:	208/240/440/480 VAC
		Service:	3-Phase, 3-Wire (No Neutral)
		Control Voltage:	Dual - 24VDC & 115VAC
		Minimum Required Breaker Size:*	12 Amps * 480 VAC
	Panel	Standard Panel Size:	36"(w) x 48"(h) x 12"(d)
		Panel Material:	Type 304 Stainless Steel
		Panel Rating:	Nema 4X
		Standard Control Module:	Unitronics Unistream 10 PLC

Polymer System	Supplier:	Velocity Dynamics, Inc.
	Model:	VM-5P-600-X0D
	Mixing Type:	Variable - Mechanical & Hydraulic
	Feed Pump Type:	Progressive Cavity
	Polymer Feed Capacity:	0.25 - 5 Gallons per hour
	Water Use:	60 - 600 Gallons per hour
	Dimensions:	24" x 34" x 42" (L x W x H)
	Weight:	~200 lbs

Connections	Feed Sludge:	3" ANSI 150# Flange
	Filtrate:	6" ANSI 150# Flange
	Drain:	2" FNPT Coupling
	Water:	3/4" FNPT Coupling
	Polymer Water Inlet:	1" FNPT
	Polymer Solutions Outlet.	1"FNPT
	Raw Polymer Feed Inlet:	1"FNPT



**ALL METAL COMPONENTS ARE STAINLESS STEEL

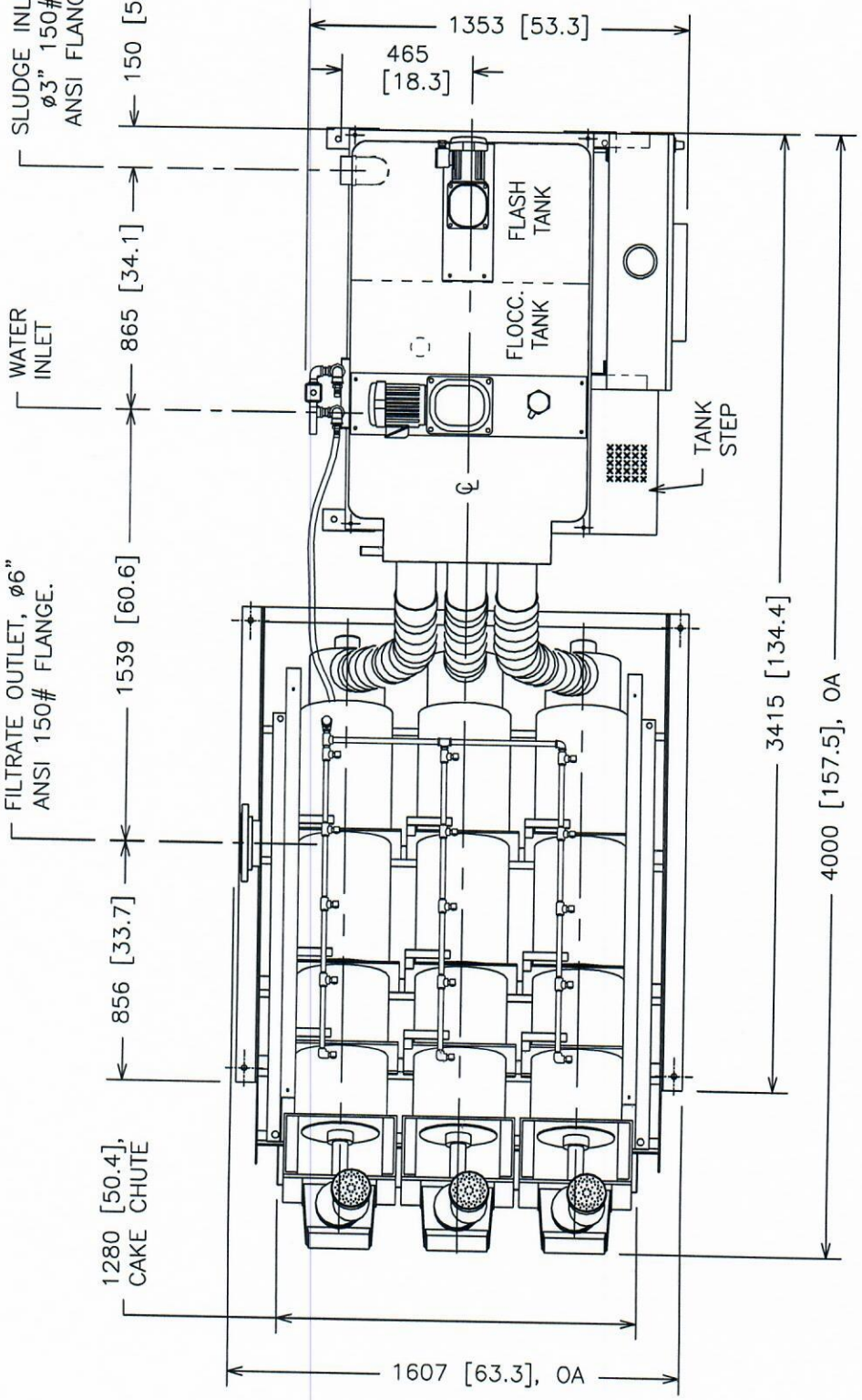
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PWTech
PROCESS WASTEWATER TECHNOLOGIES

VOLUTE DEWATERING PRESS ES-303 GA ELEVATION

JOB# PWT VDP ES-303 GA	SCALE NTS
DATE JAN. 2015	
DRAWN PWTech Inc.	SHEET 1 OF 4
APPROV. ALEX DAVEY	

9004 YELLOW BRICK ROAD, SUITE D, ROSEDALE, MD 21237 PHONE: 410 238 7977 WEB: www.PWTech.us



PLAN VIEW

**ALL METAL COMPONENTS ARE STAINLESS STEEL

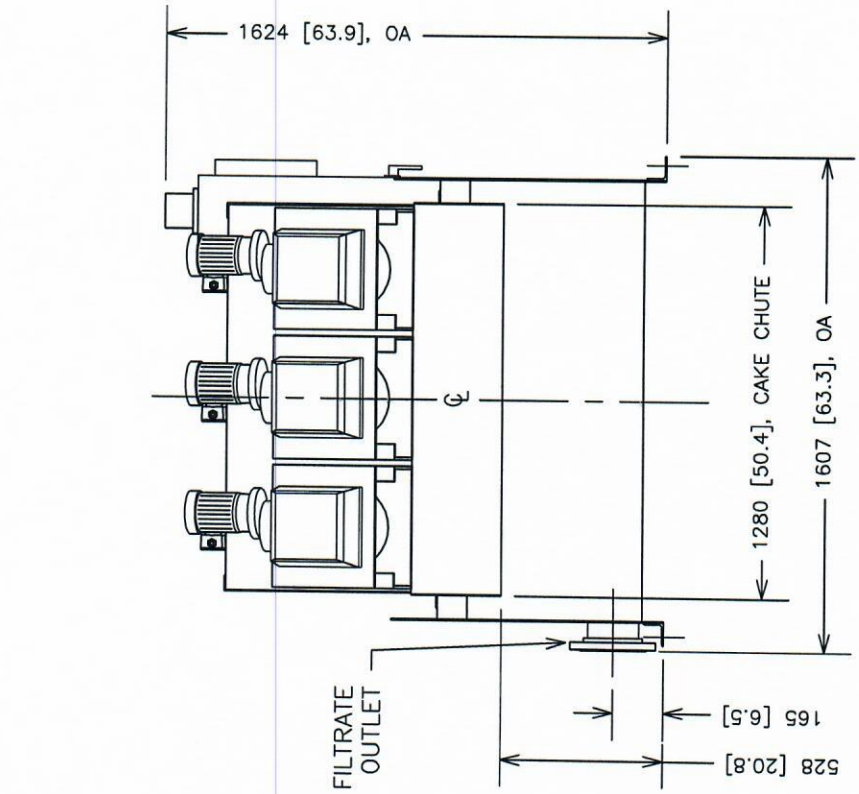
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PWTech
PROCESS WASTEWATER TECHNOLOGIES

VOLUTE DEWATERING PRESS ES-303 GA PLAN

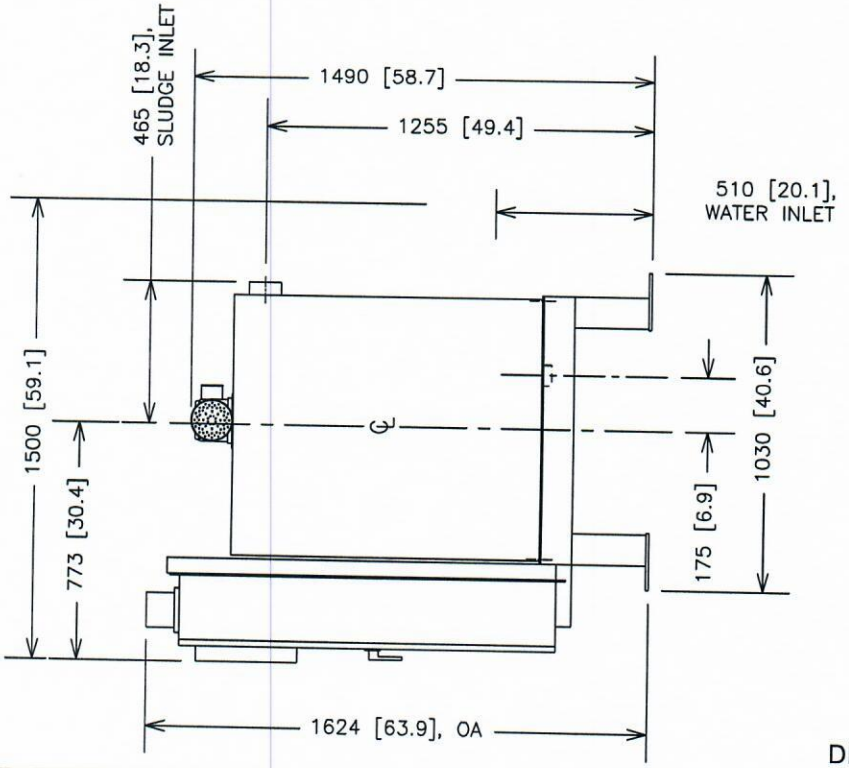
JOB# PWT VDP ES-303 GA	SCALE NTS
DATE JAN. 2015	
DRAWN PWTech Inc.	SHEET 2 OF 4
APPROV. ALEX DAVEY	

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PRESS END ELEVATION

**ALL METAL COMPONENTS ARE STAINLESS STEEL



TANK END ELEVATION

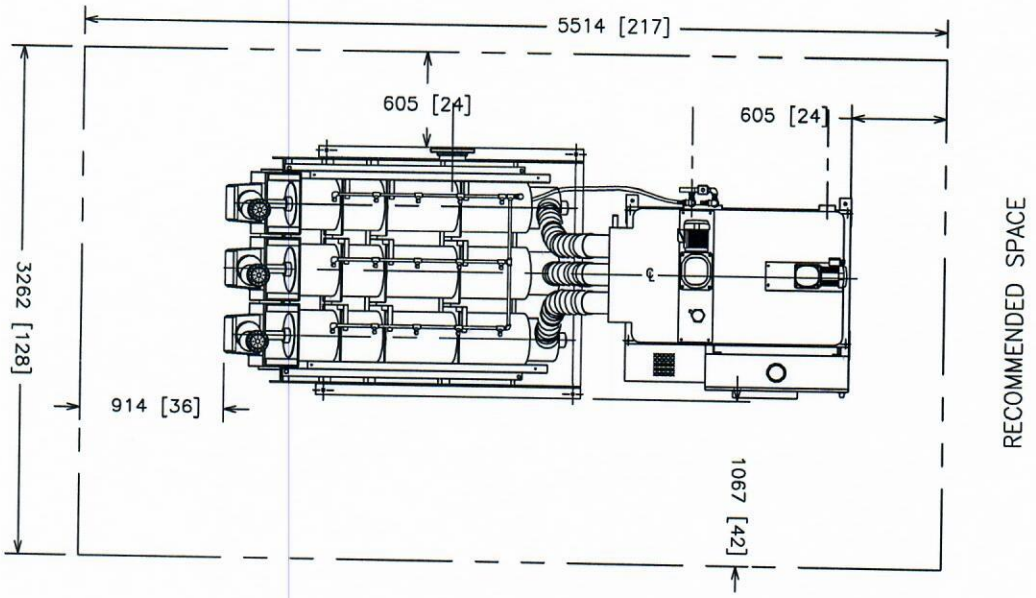
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PWTech
PROCESS WASTEWATER TECHNOLOGIES

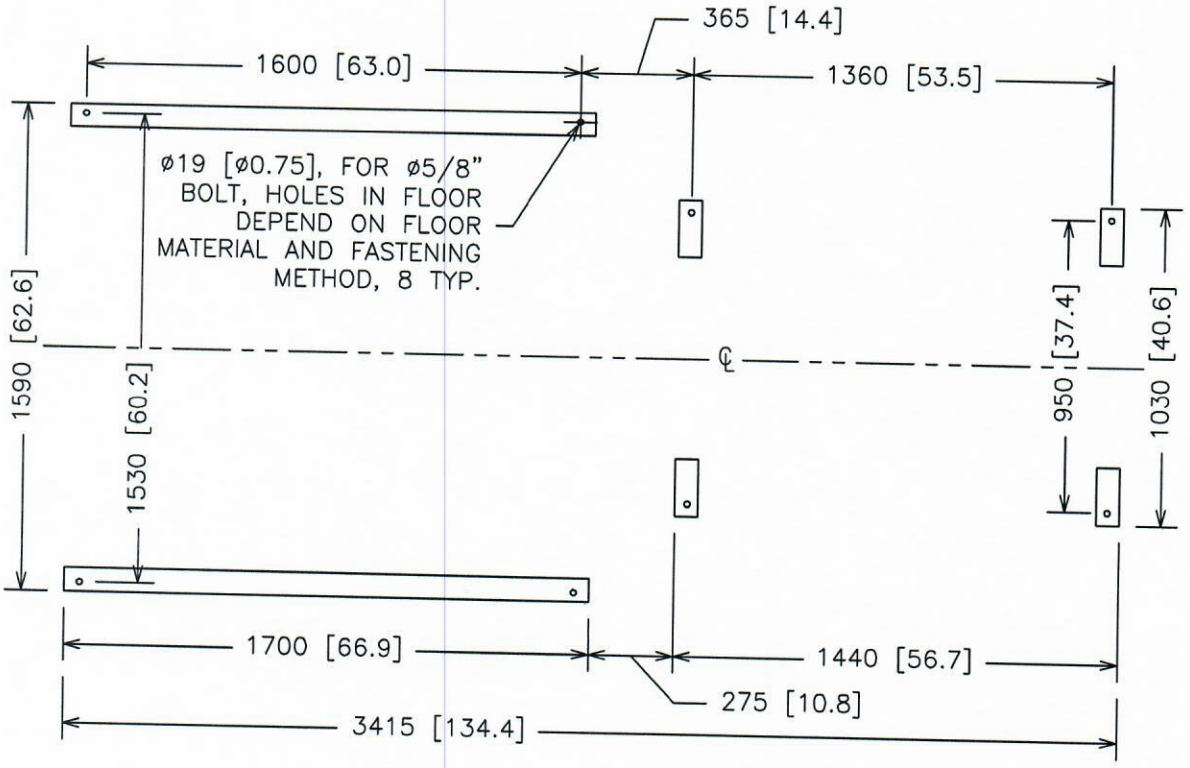
VOLUTE DEWATERING PRESS ES303 GA PRESS AND TANK END ELEV.

JOB# PWT VDP ES303 GA	SCALE NTS
DATE JAN. 2015	
DRAWN PWTech Inc.	SHEET 3 OF 4
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**ALL METAL COMPONENTS ARE STAINLESS STEEL



FOOTPRINT AND ANCHOR POINTS

DIMENSIONS: MM [INCHES]

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VOLUTE DEWATERING PRESS ES303 GA REC. SPACE & ANCHOR PTS.

JOB# PWT VDP ES303 GA	SCALE NTS
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GEOTECHNICAL EVALUATION

Flagler Beach Waste Water Treatment Plant Improvements
Flagler Beach, Flagler County, Florida

UES Project No. 0430.2000179.0000
UES Report No. 136638

October 7, 2020

Prepared for:

Mr. David Mahler
CPH, Inc.
500 West Fulton Street
Sanford, Florida 32771

Prepared by:

UNIVERSAL ENGINEERING SCIENCES
911 Beville Road, Suite 3
South Daytona, Florida 32119

CONSULTANTS:
Geotechnical Engineering • Environmental Engineering • Construction Materials Testing Threshold Inspection • Private Provider Inspection • Geophysical Studies

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- Pensacola
- Rockledge
- Sarasota
- Tampa
- West Palm Beach

October 7, 2020

Mr. David Mahler
CPH, Inc.
500 West Fulton Street
Sanford, Florida 32771

Reference: **GEOTECHNICAL EVALUATION**
Flagler Beach Wastewater Treatment Plant Improvements
Flagler Beach, Flagler County, Florida
UES Project No. 0430.2000179.0000 and UES Report No. 136638

Dear Mr. Mahler:

Universal Engineering Sciences, Inc. has completed the geotechnical evaluation for the subject project. This report contains the results of our evaluation, an engineering interpretation of these with respect to the project characteristics described to us, and recommendations for shallow foundation support and site preparation.

We appreciate the opportunity to have worked with you on this project and look forward to a continued association. Please do not hesitate to contact us if you should have any questions, or if we may further assist you as your plans proceed.

Respectfully submitted,

UNIVERSAL ENGINEERING SCIENCES

Cody Wilson, E.I.
Project Engineer

BRIAN C. POHL LICENSE No 60216 STATE OF FLORIDA PROFESSIONAL ENGINEER

Brian C. Pohl, P.E.
Branch Manager
P.E. Number 60216

Attachments

CW/BCP/cme

1.0 INTRODUCTION

1.1 GENERAL

In this report we present the results of the subsurface evaluation for the proposed construction in Flagler Beach, Florida. We have divided this report into the following sections:

- SECTION 2.0 - SCOPE OF SERVICES
- SECTION 3.0 - FINDINGS
- SECTION 4.0 - FOUNDATION RECOMMENDATIONS
- SECTION 5.0 - CONSTRUCTION RELATED SERVICE
- SECTION 6.0 - LIMITATIONS

2.0 SCOPE OF SERVICES

2.1 PROJECT DESCRIPTION

Project information has been provided to us in correspondence with you. We were provided with a conceptual site plan indicating the location of the proposed structures and the requested boring locations. We understand the proposed project will consist of constructing a lift station, biological nutrient removal unit, flow splitter box, secondary clarifier with supporting infrastructure, disc filtration unit, sludge dewatering building and polymer bulk storage system. We understand the clarifier will have a diameter of 60-feet and a side water depth of 12-feet. Additionally, the pump station and flow splitter box will bear at depths of 25-feet and 10-feet below grade, respectively. A grading plan has not been provided at this time therefore, we have assumed one to three feet of fill will be placed within the structure areas.

Our recommendations are based upon the above considerations. If any of this information is incorrect, or if you anticipate any changes, inform Universal Engineering Sciences so that we may review our recommendations.

2.2 PURPOSE

The purposes of this investigation were:

- to investigate the general subsurface conditions at the site;
- to interpret and review the subsurface conditions with respect to the proposed construction; and,
- to provide geotechnical engineering recommendations for shallow foundation support and site preparation.

This report presents an evaluation of site conditions on the basis of traditional geotechnical procedures for site characterization. The recovered samples were not examined, either visually or analytically, for chemical composition or environmental hazards. Universal Engineering Sciences would be pleased to perform these services, at your request.

Our investigation was confined to the zone of soil likely to be influenced by the proposed construction. Our work did not address the potential for surface expression of deep geological

conditions, such as sinkhole development related to karst activity. A deep geological evaluation requires a more extensive range of field services than performed in this study.

2.3 FIELD INVESTIGATION

2.3.1 Borings

The subsurface conditions within the proposed structure areas were investigated with Standard Penetration Test (SPT) borings advanced to depths varying approximately between 10 and 60 feet below existing grade. The boring designations and approximated boring depths for each of the proposed structures are displayed in the table below. We performed the SPT borings according to the procedures of ASTM D-1586.

Proposed Structure	Boring Designation	Approximate Boring Depth (feet)
Master Lift Station	B-1	40
Biological Nutrient Removal Tank	B-2	40
	B-3 through B-6	10
Flow Splitter Box	B-7	20
Secondary Clarifier Supporting Infrastructure	B-8 and B-9	15
Secondary Clarifier	B-10	60
Disc Filtration	B-11	15
Sludge Dewatering Building	B-12	15
Polymer Bulk Storage System	B-13	15

The borings were located by our field personnel using tape measurements from established landmarks, and should be considered accurate only to the degree implied by the method used. The location of the borings is presented on the attached Boring Location Plan in Appendix A.

Samples obtained from the borings were transported to our laboratory for further evaluation. Samples of the soils encountered will be held in our laboratory for your inspection for 60 days unless we are notified otherwise.

2.4 LABORATORY INVESTIGATION

2.4.1 Index Testing

The soil samples recovered from the soil borings were returned to our laboratory and a UES Engineer visually examined and reviewed the field descriptions. The soils were classified in accordance with the Unified Soil Classification System (USCS). Tests consisting of percent passing a No. 200 sieve determination were performed to aide in classification of the soils.

3.0 FINDINGS

3.1 SUBSURFACE CONDITIONS

The boring locations and detailed subsurface conditions are illustrated in Appendix A: Boring Location Plan and Subsurface Profiles. The classifications and descriptions shown on the profiles are based upon visual characterizations of the recovered soil samples. Also, see Appendix A: Key to Boring Log, for further explanation of the symbols and placement of data on the Subsurface Profiles. The following discussion summarizes the soil conditions encountered.

The results of the borings generally indicated the presence of topsoil in the upper approximate 6 to 12-inches underlain by intermittent layers of fine sand (SP), fine sand with silt (SP-SM), weakly cemented fine sand with silt (SP-SM, HARDPAN) and sandy shell to the deepest boring termination depth of approximately 60 feet below existing grade.

3.2 GROUNDWATER

The groundwater level was encountered at depths varying between approximately 2.3 and 7.5 feet below grade. The depth of the measured groundwater level is noted on the Subsurface Profiles. It should be anticipated the groundwater level will fluctuate due to seasonal climatic variations, surface water runoff patterns, construction operations, and other interrelated factors

We recommend positive drainage be established and maintained on the site during construction. We further recommend permanent measures be constructed to maintain positive drainage from the site throughout the life of the project.

4.0 FOUNDATION RECOMMENDATIONS

4.1 GENERAL

The following recommendations are made based upon a review of the attached soil test data, our understanding of the proposed construction, and experience with similar projects and subsurface conditions. If the structural loadings, construction locations, or grading information change from those discussed previously, we request the opportunity to review and possibly amend our recommendations with respect to those changes.

As presented in the subsurface profiles, very loose sandy soils were observed in the upper approximate 10 feet at Boring Location B-5. To preclude excessive settlement to the structure, we recommend the soils be improved by additional compactive effort. We recommend the upper 2 to 3 feet of the existing soils be removed within the south east corner of the Biological Nutrient Removal Tank and the exposed surface then be compacted with a heavy tracked dozer. The soils removed can then be replaced in compacted lifts in accordance with Section 4.3. With these recommendations we anticipate this will improve the upper 4 to 5 feet of the existing profile. If a significant cut occurs within the proposed tank area, then soil improvement will likely not be required. UES should be provided with the proposed grading plan to evaluate the necessity of the recommended improvements. Also, UES should be contacted during this portion of the site work to delineate the very loose soil zone.

4.2 STRUCTURE FOUNDATIONS

4.2.1 Bearing Pressure

The maximum allowable net soil bearing pressure for shallow foundations should not exceed 2,500 pounds per square foot (psf). Net bearing pressure is defined as the soil bearing pressure at the base of the foundation in excess of the natural overburden pressure. The foundations should be designed based upon the maximum load that could be imposed by all loading conditions.

4.2.2 Foundation Size

The minimum widths recommended for any isolated column footing and continuous wall footings are 24 inches and 18 inches, respectively. Even though the maximum allowable soil bearing pressure may not be achieved, these width recommendations should control the size of the foundations.

4.2.3 Bearing Depth

The exterior foundations should bear at a depth of at least 18 inches below the exterior final grades and the interior footings should bear at a depth of at least 18 inches below the finish floor elevation to provide confinement to the bearing level soils. We recommend stormwater and surface water be diverted away from the building exterior, both during and after construction, to reduce the possibility of erosion beneath the exterior footings.

4.2.4 Bearing Material

The foundations may bear on either the compacted suitable natural soils or compacted structural fill. The bearing level soils, after compaction, should exhibit densities of at least 95 percent of the maximum dry density of the bearing soils as determined by ASTM D-1557 (Modified Proctor), to the depth described subsequently in the Site Preparation section of the report. In addition to compaction, the bearing soils must exhibit stability and be free of “pumping” conditions.

4.2.5 Settlement Estimates

Post-construction settlement of the structures will be influenced by several interrelated factors, such as (1) subsurface stratification and strength/compressibility characteristics of the bearing soils; (2) footing size, bearing level, applied loads, and resulting bearing pressures beneath the foundations; (3) site preparation and earthwork construction techniques used by the contractor, and (4) external factors, including but not limited to vibration from offsite sources and groundwater fluctuations beyond those normally anticipated for the naturally-occurring site and soil conditions which are present.

Our settlement estimates for the structures are based upon the use of successful adherence to the site preparation recommendations presented later in this report. Any deviation from these recommendations could result in an increase in the estimated post-construction settlement of the structures.

Due to the nature of the surficial soils, following the compaction operations, we expect a significant portion of settlement to be elastic in nature. This settlement is expected to occur relatively quickly, upon application of the loads, during and immediately following construction. Using the recommended maximum bearing pressure, the assumed maximum structural loads, and the field test data which we have correlated to the strength and compressibility characteristics of the subsurface soils, we estimate the total settlements of the structures to be less than one inch.

Differential settlement results from differences in applied bearing pressures and the variations in the compressibility characteristics of the subsurface soils. Based on the subsurface conditions as determined by our borings and required improvement, it is anticipated that differential settlements will be within tolerable limits.

4.3 SITE PREPARATION FOR SHALLOW FOUNDATIONS

We recommend the following site preparation procedures for the structure areas:

1. Prior to construction, the location of existing underground utility lines within the construction area should be established. Provisions should then be made to relocate interfering utilities to appropriate locations. It should be noted that if underground pipes are not properly removed or plugged, they may serve as conduits for subsurface erosion which may subsequently lead to excessive settlement of the overlying structures.

2. Strip the proposed construction limits of all debris, grass, roots, topsoil, asphalt and other deleterious materials within and 5 feet beyond the perimeter of the proposed structure. Expect initial clearing and grubbing to depths of approximately 6 to 12 inches.

3. Due to the construction of the pump station and flow splitter box to depths on the order of 25 feet below existing grade, temporary groundwater control measures to dewater the area to facilitate the over-excavation and backfilling processes will be necessary. We recommend implementing temporary groundwater control measures if the groundwater is within two feet of the required depth of excavation at the time of construction. Dewatering measures should be the responsibility of the contractor. We recommend the groundwater control measures remain in-place until compaction of the existing soils is completed and backfilling has reached a height of 2 feet above the groundwater level at the time of construction. The site should be graded to direct surface water runoff from the construction area

4. Excavation work will be required to meet OSHA requirements. Either a braced sheet pile structure or excavation with temporary slopes cut back at 1.5 horizontal to 1 vertical (1.5H:1V) may be used depending on the specific project requirements. The 1.5H:1V slopes are contingent upon the dewatering system adequately controlling slope groundwater seepage. Sheet piling, if required, should be designed in accordance with OSHA requirements by a Florida Registered Professional Engineer.

   Compact the exposed surface using tracked dozer or vibratory equipment. **We recommend that vibratory equipment be operated in static mode within 75 feet of any existing structures.** The upper one foot of soils below the exposed surface within the structure areas should be improved to achieve a minimum compaction requirement of 95% of the Modified Proctor Test (ASTM D-1557). As discussed, we recommend the upper two feet of soils below the exposed surface (after the upper two to three feet are removed) be compacted to 95% of the Modified Proctor Test (ASTM D-1557) within the south east portion of the Biological Nutrient Removal Tank. We recommend the compacted soils exhibit moisture content within 2 percent of the soils optimum moisture content as determined by the Modified Proctor Test (ASTM D-1557). Should the soils experience pumping and soil strength loss during the compaction operations, compaction work should be immediately terminated and (1) the disturbed soils removed and backfilled with dry structural fill soils which are then compacted, or (2) the excess moisture content within the disturbed soils allowed to dissipate before compacting.

5. Test the compacted surface for compliance at a minimum of one location per 2,500 square feet within the building area, or at a minimum of four locations.

6. Place fill material, as required. The fill should consist of "clean," fine sand with less than 5 percent soil fines. You may use fill materials with soil fines between 5 percent and 10 percent, but strict moisture control may be required. Place fill in uniform 8 to 12-inch loose lifts and compact each lift to a minimum density of 95 percent of the Modified Proctor maximum dry density. We recommend the compacted soils exhibit moisture content within

1509

2 percent of the soils optimum moisture content as determined by the Modified Proctor Test (ASTM D-1557). If light compaction equipment is used, we recommend the lift thickness be reduced to 8 inch thick lifts.

7. Perform compliance tests within the backfill and fill soils at a minimum of one location per 2,500 square feet per lift (minimum four locations).

8. Compact and test footing cuts for compaction to a depth of two feet below bearing levels. We recommend that you test one out of every four (25 percent) column footings and perform one test per every 50 linear feet of wall footing. Compaction operations in confined areas, such as footing excavations, can best be performed with a lightweight vibratory sled or other hand-held compaction equipment.

5.0 CONSTRUCTION RELATED SERVICES

We recommend the owner retain Universal Engineering Sciences to perform construction materials tests and observations on this project. Field tests and observations include verification of foundation subgrades by monitoring filling operations and performing quality assurance tests on the placement of compacted natural soils and structural fill. We can also perform concrete testing, pavement section testing, structural steel testing and other construction materials testing services.

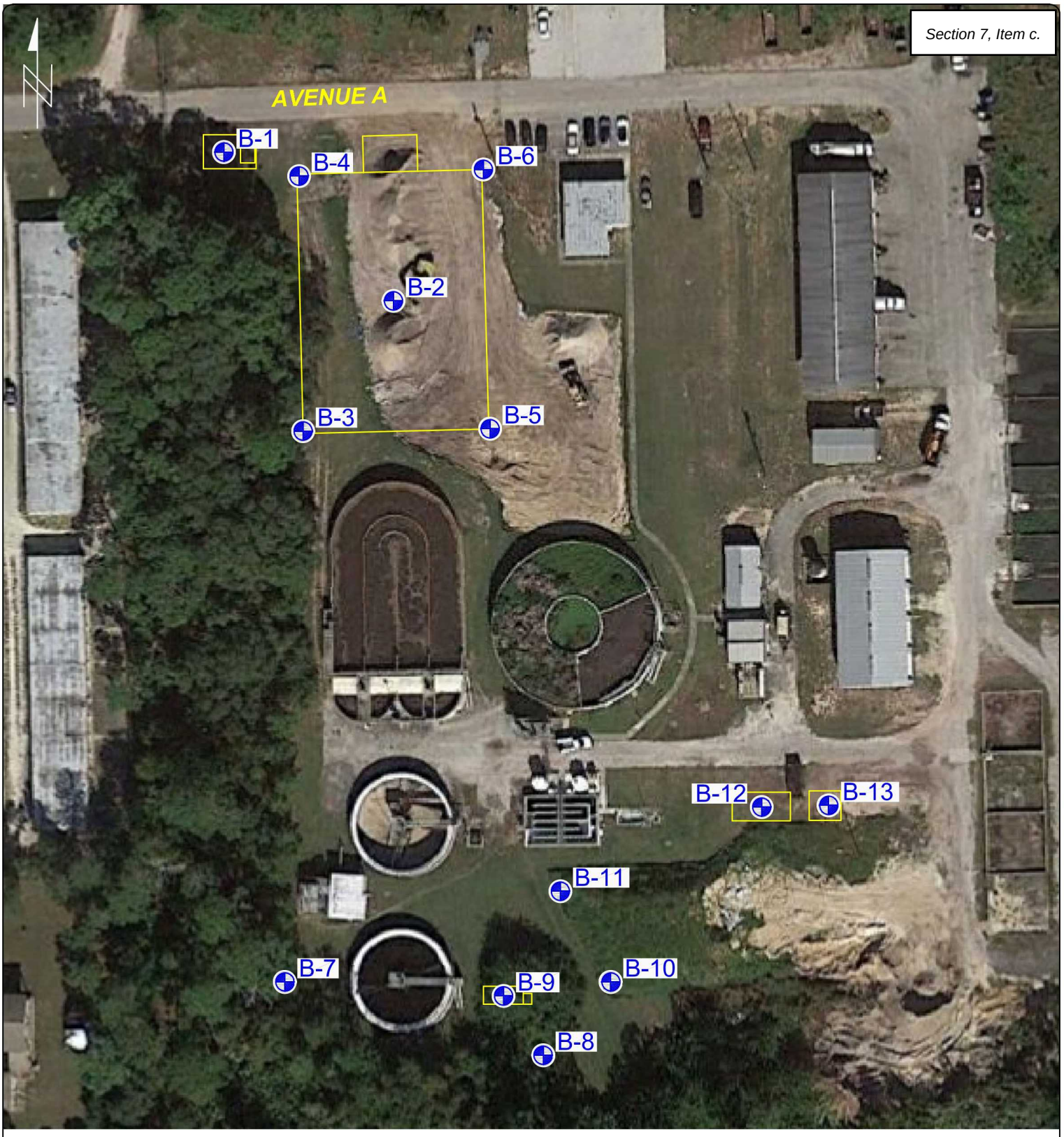
The geotechnical engineering design does not end with the advertisement of the construction documents. The design is an on-going process throughout construction. Because of our familiarity with the site conditions and the intent of the engineering design, we are most qualified to address problems that might arise during construction in a timely and cost-effective manner.

6.0 LIMITATIONS

During the early stages of most construction projects, geotechnical issues not addressed in this report may arise. Because of the natural limitations inherent in working with the subsurface, it is not possible for a geotechnical engineer to predict and address all possible problems. An Association of Engineering Firms Practicing in the Geosciences (ASFE) publication, "Important Information about Your Geotechnical Engineering Report" appears in Appendix C, and will help explain the nature of geotechnical issues. Further, we present documents in Appendix C: Constraints and Restrictions, to bring to your attention the potential concerns and the basic limitations of a typical geotechnical report.

APPENDIX A

BORING LOCATION PLAN
SUBSURFACE PROFILES
SOILS CLASSIFICATION CHART



GRAPHIC SCALE

0 40 80

(IN FEET)

1 INCH ≈ 80 ft.

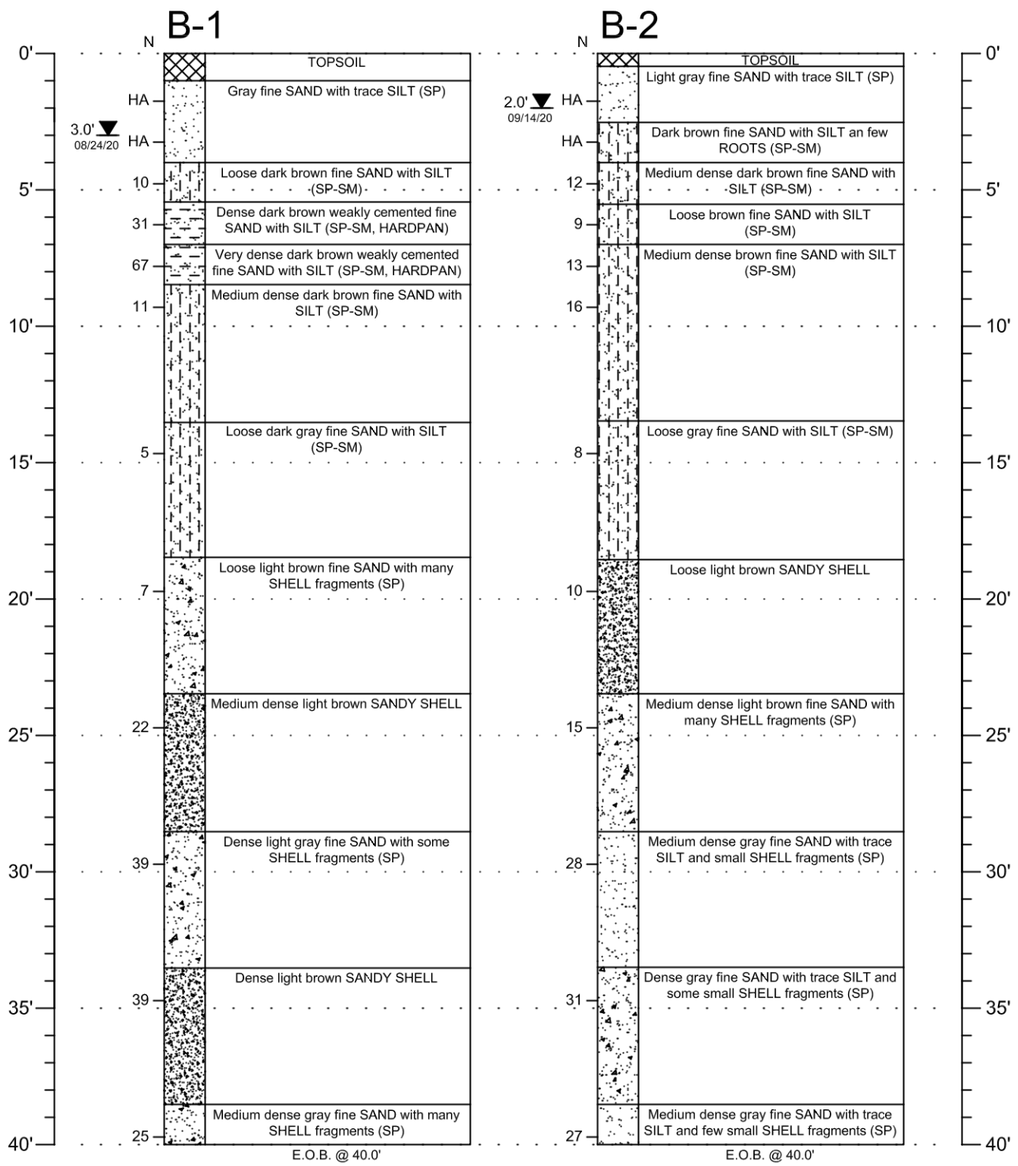
LEGEND

APPROXIMATE LOCATION OF STANDARD PENETRATION TEST (SPT) BORING

UNIVERSAL ENGINEERING SCIENCES

TITLE: BORING LOCATION PLAN			SCALE: 1" ≈ 80'
PROJECT: GEOTECHNICAL EVALUATION FLAGLER BEACH WWTP IMPROVEMENTS FLAGLER BEACH, FLORIDA			PAGE/FIG. NO.: A-1
DRAWN BY: MKL	DATE: 10/06/20	PROJECT NO.: 0430.2000179.0000	1512
CHECKED BY: BP	DATE: 10/06/20	REPORT NO.: 136638	

Exhibit"C"



Fine SAND (SP)

Fine SAND with some to many SHELL fragments (SP)

SHELL

Fine SAND with SILT (SP-SM)

Weakly cemented fine SAND with SILT (SP-SM, Hardpan)

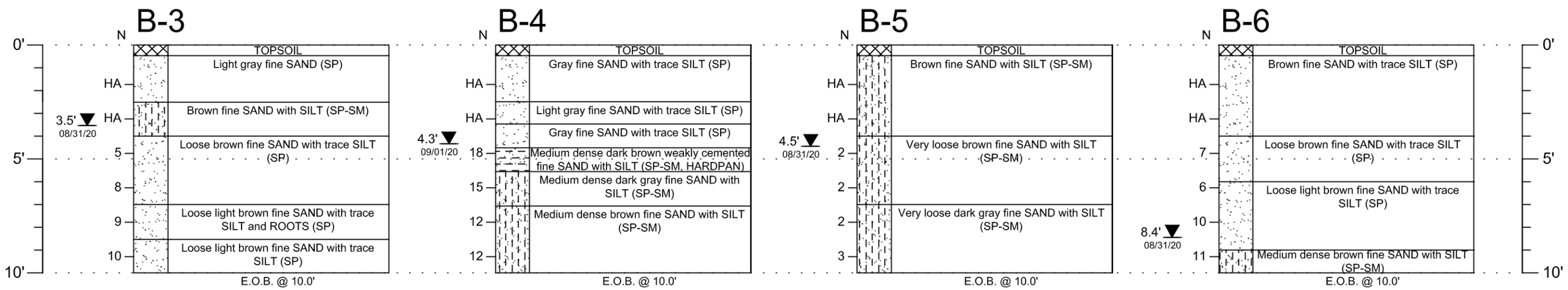
TOPSOIL

NOTES:

▼	Measured Groundwater Level 24 (+) Hours Subsequent to Time of Drilling
(SP)	Unified Soil Classification System
EOB	End of Boring
N	Penetr. Resistance, Blows/ft.
HA	Hand Auger Method

UNIVERSAL ENGINEERING SCIENCES

PROJECT: GEOTECHNICAL EVALUATION FLAGLER BEACH WWTP IMPROVEMENTS FLAGLER BEACH, FLORIDA						TITLE: SUBSURFACE PROFILES	
DRAWN BY:	MKL	DATE:	10/06/20	PROJECT NO.:	0430.2000179.0000	SCALE: NA (in feet)	PAGE/FIG. NO.: A-2
CHECKED BY:	BP	DATE:	10/06/20	REPORT NO.:	136638		



Fine SAND (SP)

Fine SAND with some to many SHELL fragments (SP)

SHELL

Fine SAND with SILT (SP-SM)

Weakly cemented fine SAND with SILT (SP-SM, Hardpan)

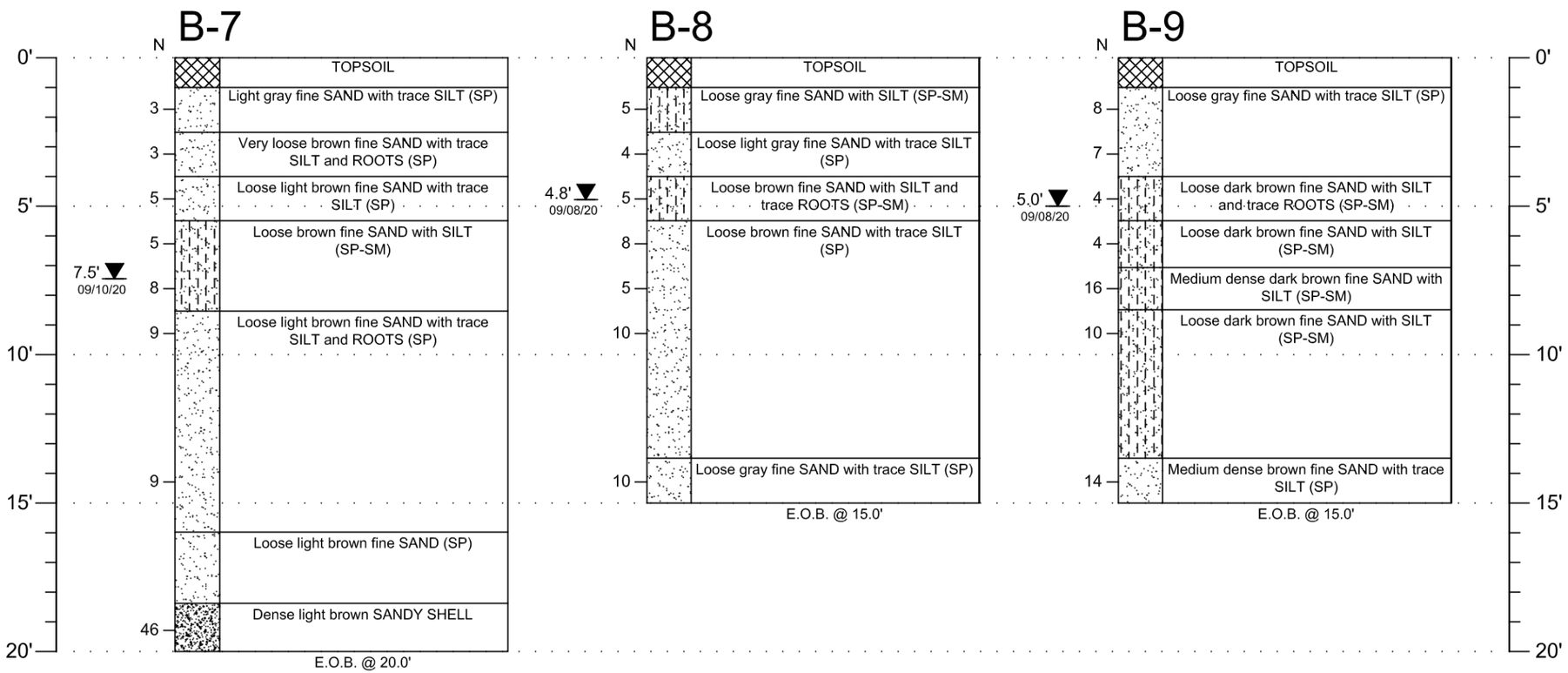
TOPSOIL

NOTES:

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PROJECT: GEOTECHNICAL EVALUATION FLAGLER BEACH WWTP IMPROVEMENTS FLAGLER BEACH, FLORIDA				TITLE: SUBSURFACE PROFILES	
DRAWN BY: MKL	DATE: 10/06/20	PROJECT NO.: 0430.2000179.0000		SCALE: NA (in feet)	PAGE/FIG. NO.: A-3
CHECKED BY: BP	DATE: 10/06/20	REPORT NO.: 136638			



Fine SAND (SP)

Fine SAND with some to many SHELL fragments (SP)

SHELL

Fine SAND with SILT (SP-SM)

Weakly cemented fine SAND with SILT (SP-SM, Hardpan)

TOPSOIL

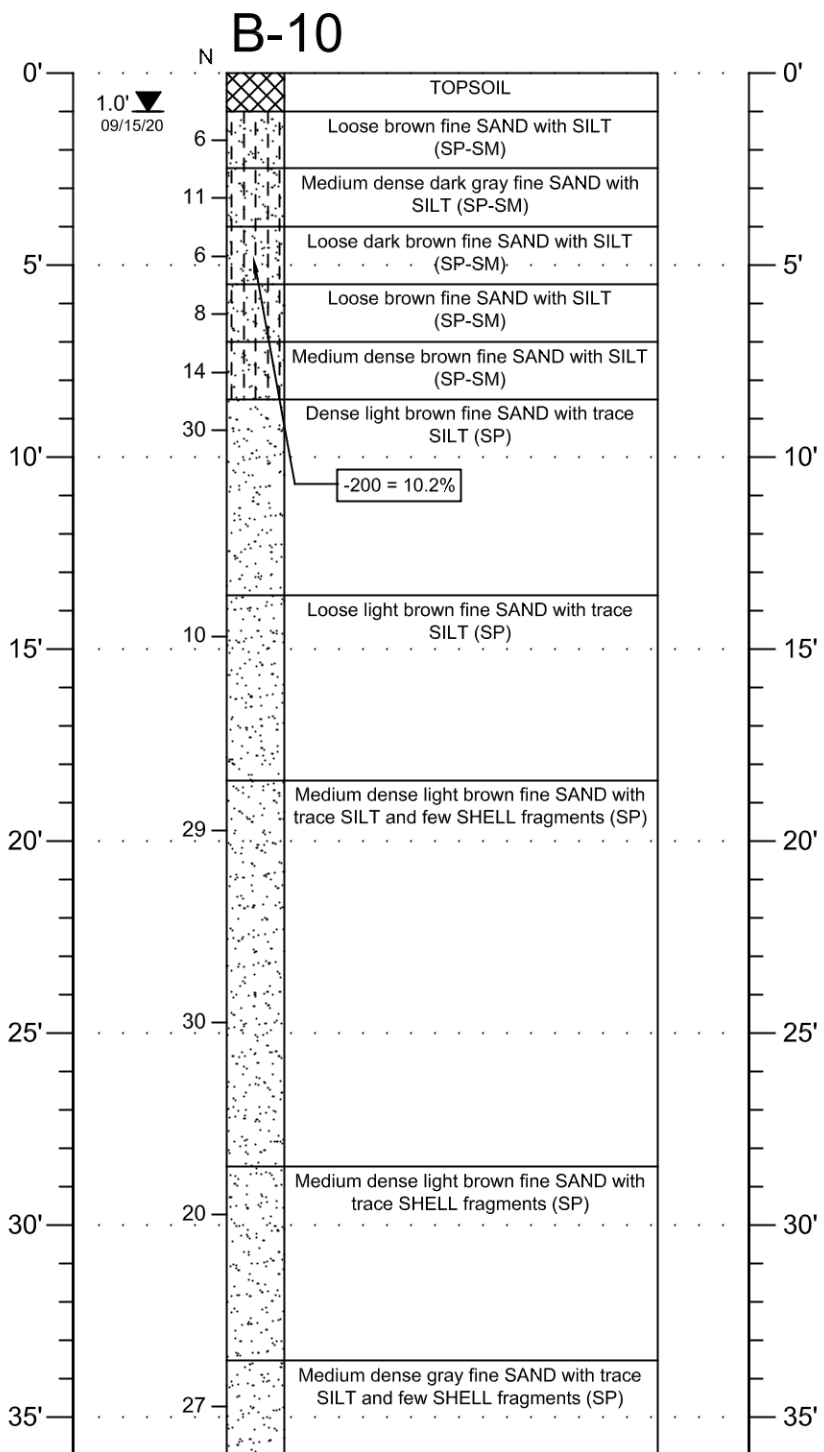
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▼	Measured Groundwater Level 24 (+) Hours Subsequent to Time of Drilling
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PROJECT: GEOTECHNICAL EVALUATION FLAGLER BEACH WWTP IMPROVEMENTS FLAGLER BEACH, FLORIDA						TITLE: SUBSURFACE PROFILES	
DRAWN BY:	MKL	DATE:	10/06/20	PROJECT NO.:	0430.2000179.0000	SCALE: NA (in feet)	PAGE/FIG. NO.: A-4
CHECKED BY:	BP	DATE:	10/06/20	REPORT NO.:	136638		

Exhibit"C"



NOTES:

▼	Measured Groundwater Level 24 (+) Hours Subsequent to Time of Drilling
(SP)	Unified Soil Classification System
EOB	End of Boring
N	Penetr. Resistance, Blows/ft.
HA	Hand Auger Method

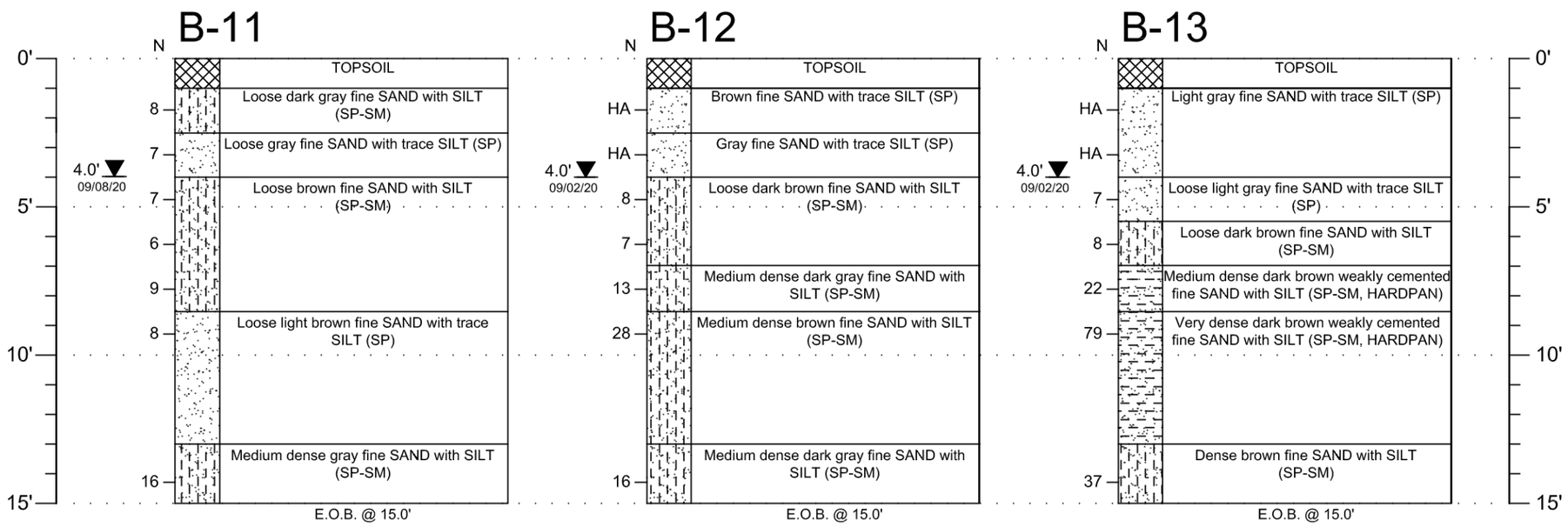
- Fine SAND (SP)
- Fine SAND with some to many SHELL fragments (SP)
- SHELL
- Fine SAND with SILT (SP-SM)
- Weakly cemented fine SAND with SILT (SP-SM, Hardpan)
- SILTY fine SAND (SM)
- TOPSOIL

UNIVERSAL ENGINEERING SCIENCES

PROJECT:
GEOTECHNICAL EVALUATION
FLAGLER BEACH WWTP IMPROVEMENTS
FLAGLER BEACH, FLORIDA

TITLE:
SUBSURFACE PROFILE

DRAWN BY:	MKL	DATE: 10/06/20	PROJECT NO.: 0430.2000179.0000	SCALE: NA (in feet)	PAGE/FIG. NO.: A-5
CHECKED BY:	BP	DATE: 10/06/20	REPORT NO.: 136638		



Fine SAND (SP)

Fine SAND with some to many SHELL fragments (SP)

SHELL

Fine SAND with SILT (SP-SM)

Weakly cemented fine SAND with SILT (SP-SM, Hardpan)

TOPSOIL

NOTES:

▼	Measured Groundwater Level 24 (+) Hours Subsequent to Time of Drilling
(SP)	Unified Soil Classification System
EOB	End of Boring
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UNIVERSAL ENGINEERING SCIENCES

PROJECT: GEOTECHNICAL EVALUATION FLAGLER BEACH WWTP IMPROVEMENTS FLAGLER BEACH, FLORIDA						TITLE: SUBSURFACE PROFILES	
DRAWN BY: MKL	DATE: 10/06/20	PROJECT NO.: 0430.2000179.0000				SCALE: NA (in feet)	PAGE/FIG. NO.: A-6
CHECKED BY: BP	DATE: 10/06/20	REPORT NO.: 136638					

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KEY TO BORING LOGS

SYMBOLS

SYMBOL	DESCRIPTION
N	No. of blows of a 140-lb weight falling 30 inches required to drive standard spoon 1 foot.
WOR	Weight of Drill Rods
WOH	Weight of Drill Rods and Hammer
% REC	Percent Core Recovery from Rock Core Drilling
RQD	Rock Quality Designation
EOB	End Of Boring
BT	Boring Terminated
-200	Fines Content or % Passing N0. 200 Sieve
MC	Moisture Content
LL	Liquid Limit
PI	Plasticity Index
K	Coefficient of Permeability
O.C.	Organic Content
▽	Estimated seasonal high groundwater level
▼	Measured groundwater level at time of drilling

RELATIVE DENSITY
(sand-silt)

Very Loose - Less Than 4 Blows/Ft.
Loose - 4 to 10 Blows/Ft.
Medium - 11 to 30 Blows/Ft.
Dense - 31 to 50 Blows/Ft.
Very Dense - More Than 50 Blows/Ft.

CONSISTENCY
(clay)

Very Soft - Less than 2 Blows/Ft.
Soft - 2 to 4 Blows/Ft.
Medium - 5 to 8 Blows/Ft.
Stiff - 9 to 15 Blows/Ft.
Very Stiff - 16 to 30 Blows/Ft.
Hard - More Than 30 Blows/Ft.

RELATIVE HARDNESS
(Limestone)

Soft - 100 Blows for more than 2"
Hard - 100 Blows for less than 2"

UNIFIED CLASSIFICATION SYSTEM

MAJOR DIVISIONS			GROUP SYMBOLS	TYPICAL NAMES
COARSE-GRAINED SOILS More than 50% retained on No. 200 sieve*	GRAVELS 50% or more of coarse fraction retained on No. 4 sieve	CLEAN GRAVELS	GW	Well-graded gravels and gravel-sand mixtures, little or no fines
			GP	Well-graded gravels and gravel-sand mixtures, little or no fines
		GRAVELS WITH FINES	GM	Silty gravels, gravel-sand-silt mixtures
			GC	Clayey gravels, gravel-sand-clay mixtures
	SANDS More than 50% of coarse fraction passes No. 4 sieve	CLEAN SANDS	SW**	Well-graded sands and gravelly sands, little or no fines
			SP**	Well-graded sands and gravelly sands, little or no fines
		SANDS WITH FINES	SM**	Silty sands, sand-silt mixtures
			SC**	Clayey sands, sand-clay mixtures
FINE-GRAINED SOILS 50% or more passes No. 200 sieve*	SILTS AND CLAYS Liquid limit 50% or less		ML	Inorganic silts, very fine sands, rock flour, silty or clayey fine sands
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
			OL	Organic silts and organic silty clays of low plasticity
	SILTS AND CLAYS Liquid limit greater than 50%		MH	Inorganic silts, micaceous or diatomaceous fine sands or silts, elastic silts
			CH	Organic clays or high plasticity, fat clays
			OH	Organic clays of medium to high plasticity
			PT	Peat, muck and other highly organic soils

* Based on the material passing the 3-in. (75 mm) sieve.
** Use dual symbol (such as, SP-SM and SP-SC) for soil with more than 5% but less than 12% passing through No. 200 sieve.

MODIFIERS

These modifiers provide our estimate of the amount of minor constituents (SILT or CLAY sized particles) in the soil sample.
Trace - 5% or less
With SILT or with CLAY - 6% to 11%
SILTY or CLAYEY - 12% to 30%
Very SILTY or Very CLAYEY - 31% to 50%

These modifiers provide our estimate of the amount of organic components in the soil sample.
Trace - 1% to 2%
Few - 3% to 4%
Some - 5% to 8%
Many - Greater than 8%

These modifiers provide our estimate of the amount of other components (Shell, Gravel, Etc.) in the soil sample
Trace - 5% or less
Few - 6% to 12%
Some - 13% to 30%
Many - 31% to 50%

APPENDIX B

LABORATORY TESTING PROCEDURES

DESCRIPTION OF LABORATORY TESTING PROCEDURES

LABORATORY PERMEABILITY TEST

The laboratory permeability test is a Falling Head Test that is performed on soil samples recovered from this site. The data recovered from this test are used to calculate Darcy's Coefficient of Permeability (k) of the soil.

WASH 200 TEST

The Wash 200 test is performed by passing a representative soil sample over a No. 200 sieve and rinsing with water. The percentage of the soil grains passing this sieve is then calculated.

ORGANIC CONTENT TESTS

The organic content test is performed by weighing a sample before and after placing in a high temperature oven which burns the organic material in the sample. The percent of organic material by weight is then calculated.

MOISTURE CONTENT DETERMINATION ASTM D-2216

Moisture content is the ratio of the weight of water to the dry weight of soil. Moisture content is measured by drying a sample at 105 degrees Celsius. The moisture content is expressed as a percent of the oven dried soil mass.

ATTERBERG LIMITS

The Atterberg Limits consist of the Liquid Limit (LL) and the Plastic Limit (PL). The LL and PL were determined in general accordance with the latest revision of ASTM D-4318. The LL is the water content of the material denoting the boundary between the liquid and plastic states. The PL is the water content denoting the boundary between the plastic and semi-solid states. The Plasticity Index (PI) is the range of water content over which a soil behaves plastically and is denoted numerically by as the difference between the LL and the PL. The water content of the sample tested was determined in general accordance with the latest revision of ASTM D-2216. The water content is defined as the ratio of “pore” or “free” water in a given mass of material to the mass of solid material particles.

CONSOLIDATION TESTING

A single selected portion of the undisturbed sample was extruded from the 3-inch diameter sample tube for consolidation testing. The selected sample was trimmed and confined into a stainless steel disc having a diameter of 2.5 inches and a height of 1 inch. The disc was then “sandwiched” between 2 porous stones, saturated and subjected to incrementally increasing loads. The resulting deformation of the sample within the steel disc was measured using a micrometer gauge.

APPENDIX C

GENERAL CONDITIONS
CONSTRAINTS AND RESTRICTIONS AND
IMPORTANT INFORMATION ABOUT YOUR
GEOTECHNICAL ENGINEERING REPORT

Universal Engineering Sciences, LLC
GENERAL CONDITIONS

SECTION 1: RESPONSIBILITIES

1.1 *Universal Engineering Sciences, LLC, Universal Engineering Inspections, LLC, and GFA International Inc. ("UES"), have the responsibility for providing the services described under the Scope of Services section. The work is to be performed according to accepted standards of care and is to be completed in a timely manner. The term "UES" as used herein includes all of Universal Engineering Sciences, LLC, Universal Engineering Inspections, LLC, GFA International, Inc., its' agents, employees, professional staff, and subcontractors.*

1.2 The Client or a duly authorized representative is responsible for providing UES with a clear understanding of the project nature and scope. The Client shall supply UES with sufficient and adequate information, including, but not limited to, maps, site plans, reports, surveys and designs, to allow UES to properly complete the specified services. The Client shall also communicate changes in the nature and scope of the project as soon as possible during performance of the work so that the changes can be incorporated into the work product.

1.3 The Client acknowledges that UES's responsibilities in providing the services described under the Scope of Services section is limited to those services described therein, and the Client hereby assumes any collateral or affiliated duties necessitated by or for those services. Such duties may include, but are not limited to, reporting requirements imposed by any third party such as federal, state, or local entities, the provision of any required notices to any third party, or the securing of necessary permits or permissions from any third parties required for UES's provision of the services so described, unless otherwise agreed upon by both parties.

1.4 Universal will not be responsible for scheduling our services and will not be responsible for tests or inspections that are not performed due to a failure to schedule our services on the project or any resulting damages.

1.5 **PURSUANT TO FLORIDA STATUTES §558.0035, ANY INDIVIDUAL EMPLOYEE OR AGENT OF UES MAY NOT BE HELD INDIVIDUALLY LIABLE FOR NEGLIGENCE.**

SECTION 2: STANDARD OF CARE

2.1 Services performed by UES under this Agreement will be conducted in a manner consistent with the level of care and skill ordinarily exercised by members of UES's profession practicing contemporaneously under similar conditions in the locality of the project. No other warranty, express or implied, is made.

2.2 The Client recognizes that subsurface conditions may vary from those observed at locations where borings, surveys, or other explorations are made, and that site conditions may change with time. Data, interpretations, and recommendations by UES will be based solely on information available to UES at the time of service. UES is responsible for those data, interpretations, and recommendations, but will not be responsible for other parties' interpretations or use of the information developed.

2.3 Execution of this document by UES is not a representation that UES has visited the site, become generally familiar with local conditions under which the services are to be performed, or correlated personal observations with the requirements of the Scope of Services. It is the Client's responsibility to provide UES with all information necessary for UES to provide the services described under the Scope of Services, and the Client assumes all liability for information not provided to UES that may affect the quality or sufficiency of the services so described.

2.4 Should UES be retained to provide threshold inspection services under Florida Statutes §553.79, Client acknowledges that UES's services thereunder do not constitute a guarantee that the construction in question has been properly designed or constructed, and UES's services do not replace any of the obligations or liabilities associated with any architect, contractor, or structural engineer. Therefore it is explicitly agreed that the Client will not hold UES responsible for the proper performance of service by any architect, contractor, structural engineer or any other entity associated with the project.

SECTION 3: SITE ACCESS AND SITE CONDITIONS

3.1 Client will grant or obtain free access to the site for all equipment and personnel necessary for UES to perform the work set forth in this Agreement. The Client will notify any and all possessors of the project site that Client has granted UES free access to the site. UES will take reasonable precautions to minimize damage to the site, but it is understood by Client that, in the normal course of work, some damage may occur, and the correction of such damage is not part of this Agreement unless so specified in the Proposal.

3.2 The Client is responsible for the accuracy of locations for all subterranean structures and utilities. UES will take reasonable precautions to avoid known subterranean structures, and the Client waives any claim against UES, and agrees to defend, indemnify, and hold UES harmless from any claim or liability for injury or loss, including costs of defense, arising from damage done to subterranean structures and utilities not identified or accurately located. In addition, Client agrees to compensate UES for any time spent or expenses incurred by UES in defense of any such claim with compensation to be based upon UES's prevailing fee schedule and expense reimbursement policy.

SECTION 4: SAMPLE OWNERSHIP AND DISPOSAL

4.1 Soil or water samples obtained from the project during performance of the work shall remain the property of the Client.

4.2 UES will dispose of or return to Client all remaining soils and rock samples 60 days after submission of report covering those samples. Further storage or transfer of samples can be made at Client's expense upon Client's prior written request.

4.3 Samples which are contaminated by petroleum products or other chemical waste will be returned to Client for treatment or disposal, consistent with all appropriate federal, state, or local regulations.

SECTION 5: BILLING AND PAYMENT

5.1 UES will submit invoices to Client monthly or upon completion of services. Invoices will show charges for different personnel and expense classifications.

5.2 Payment is due 30 days after presentation of invoice and is past due 31 days from invoice date. Client agrees to pay a finance charge of one and one-half percent (1 ½ %) per month, or the maximum rate allowed by law, on past due accounts.

5.3 If UES incurs any expenses to collect overdue billings on invoices, the sums paid by UES for reasonable attorneys' fees, court costs, UES's time, UES's expenses, and interest will be due and owing by the Client.

SECTION 6: OWNERSHIP AND USE OF DOCUMENTS

6.1 All reports, boring logs, field data, field notes, laboratory test data, calculations, estimates, and other documents prepared by UES, as instruments of service, shall remain the property of UES.

6.2 Client agrees that all reports and other work furnished to the Client or his agents, which are not paid for, will be returned upon demand and will not be used by the Client for any purpose.

6.3 UES will retain all pertinent records relating to the services performed for a period of five years following submission of the report, during which period the records will be made available to the Client at all reasonable times.

6.4 All reports, boring logs, field data, field notes, laboratory test data, calculations, estimates, and other documents prepared by UES, are prepared for the sole and exclusive use of Client, and may not be given to any other party or used or relied upon by any such party without the express written consent of UES.

SECTION 7: DISCOVERY OF UNANTICIPATED HAZARDOUS MATERIALS

7.1 Client warrants that a reasonable effort has been made to inform UES of known or suspected hazardous materials on or near

7.2 Under this agreement, the term hazardous materials include hazardous materials (40 CFR 172.01), hazardous wastes (40 CFR 261.2), hazardous substances (40 CFR 300.6), petroleum products, polychlorinated biphenyls, and asbestos.

7.3 Hazardous materials may exist at a site where there is no reason to believe they could or should be present. UES and Client agree that the discovery of unanticipated hazardous materials constitutes a changed condition mandating a renegotiation of the scope of work. UES and Client also agree that the discovery of unanticipated hazardous materials may make it necessary for UES to take immediate measures to protect health and safety. Client agrees to compensate UES for any equipment decontamination or other costs incident to the discovery of unanticipated hazardous waste.

7.4 UES agrees to notify Client when unanticipated hazardous materials or suspected hazardous materials are encountered. Client agrees to make any disclosures required by law to the appropriate governing agencies. Client also agrees to hold UES harmless for any and all consequences of disclosures made by UES which are required by governing law. In the event the project site is not owned by Client, Client recognizes that it is the Client's responsibility to inform the property owner of the discovery of unanticipated hazardous materials or suspected hazardous materials.

7.5 Notwithstanding any other provision of the Agreement, Client waives any claim against UES, and to the maximum extent permitted by law, agrees to defend, indemnify, and save UES harmless from any claim, liability, and/or defense costs for injury or loss arising from UES's discovery of unanticipated hazardous materials or suspected hazardous materials including any costs created by delay of the project and any cost associated with possible reduction of the property's value. Client will be responsible for ultimate disposal of any samples secured by UES which are found to be contaminated.

SECTION 8: RISK ALLOCATION

8.1 Client agrees that UES's liability for any damage on account of any breach of contract, error, omission or other professional negligence will be limited to a sum not to exceed $50,000 or UES's fee, whichever is greater. If Client prefers to have higher limits on contractual or professional liability, UES agrees to increase the limits up to a maximum of $1,000,000.00 upon Client's written request at the time of accepting our proposal provided that Client agrees to pay an additional consideration of four percent of the total fee, or $400.00, whichever is greater. The additional charge for the higher liability limits is because of the greater risk assumed and is not strictly a charge for additional professional liability insurance.

SECTION 9: INSURANCE

9.1 UES represents and warrants that it and its agents, staff and consultants employed by it, is and are protected by worker's compensation insurance and that UES has such coverage under public liability and property damage insurance policies which UES deems to be adequate. Certificates for all such policies of insurance shall be provided to Client upon request in writing. Within the limits and conditions of such insurance, UES agrees to indemnify and save Client harmless from and against loss, damage, or liability arising from negligent acts by UES, its agents, staff, and consultants employed by it. UES shall not be responsible for any loss, damage or liability beyond the amounts, limits, and conditions of such insurance or the limits described in Section 8, whichever is less. The Client agrees to defend, indemnify and save UES harmless for loss, damage or liability arising from acts by Client, Client's agent, staff, and other UESs employed by Client.

SECTION 10: DISPUTE RESOLUTION

10.1 All claims, disputes, and other matters in controversy between UES and Client arising out of or in any way related to this Agreement will be submitted to alternative dispute resolution (ADR) such as mediation or arbitration, before and as a condition precedent to other remedies provided by law, including the commencement of litigation.

10.2 If a dispute arises related to the services provided under this Agreement and that dispute requires litigation instead of ADR as provided above, then:

(a) the claim will be brought and tried in judicial jurisdiction of the court of the county where UES's principal place of business is located and Client waives the right to remove the action to any other county or judicial jurisdiction, and

(b) The prevailing party will be entitled to recovery of all reasonable costs incurred, including staff time, court costs, attorneys' fees, and other claim related expenses.

SECTION 11: TERMINATION

11.1 This agreement may be terminated by either party upon seven (7) days written notice in the event of substantial failure by the other party to perform in accordance with the terms hereof. Such termination shall not be effective if that substantial failure has been remedied before expiration of the period specified in the written notice. In the event of termination, UES shall be paid for services performed to the termination notice date plus reasonable termination expenses.

11.2 In the event of termination, or suspension for more than three (3) months, prior to completion of all reports contemplated by the Agreement, UES may complete such analyses and records as are necessary to complete its files and may also complete a report on the services performed to the date of notice of termination or suspension. The expense of termination or suspension shall include all direct costs of UES in completing such analyses, records and reports.

SECTION 12: ASSIGNS

12.1 Neither the Client nor UES may delegate, assign, sublet or transfer their duties or interest in this Agreement without the written consent of the other party.

SECTION 13. GOVERNING LAW AND SURVIVAL

13.1 The laws of the State of Florida will govern the validity of these Terms, their interpretation and performance.

13.2 If any of the provisions contained in this Agreement are held illegal, invalid, or unenforceable, the enforceability of the remaining provisions will not be impaired. Limitations of liability and indemnities will survive termination of this Agreement for any cause.

SECTION 14. INTEGRATION CLAUSE

14.1 This Agreement represents and contains the entire and only agreement and understanding among the parties with respect to the subject matter of this Agreement, and supersedes any and all prior and contemporaneous oral and written agreements, understandings, representations, inducements, promises, warranties, and conditions among the parties. No agreement, understanding, representation, inducement, promise, warranty, or condition of any kind with respect to the subject matter of this Agreement shall be relied upon by the parties unless expressly incorporated herein.

14.2 This Agreement may not be amended or modified except by an agreement in writing signed by the party against whom the enforcement of any modification or amendment is sought.

Important Information about This

Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical-engineering study conducted for a civil engineer may not fulfill the needs of a constructor — a construction contractor — or even another civil engineer. Because each geotechnical- engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client. No one except you should rely on this geotechnical-engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you* — should apply this report for any purpose or project except the one originally contemplated.

Read the Full Report

Serious problems have occurred because those relying on a geotechnical-engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

Geotechnical Engineers Base Each Report on a Unique Set of Project-Specific Factors

Geotechnical engineers consider many unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk-management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical-engineering report that was:

- not prepared for you;
- not prepared for your project;
- not prepared for the specific site explored; or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical-engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light-industrial plant to a refrigerated warehouse;
- the elevation, configuration, location, orientation, or weight of the proposed structure;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical-engineering report is based on conditions that existed at the time the geotechnical engineer performed the study. *Do not rely on a geotechnical-engineering report whose adequacy may have been affected by*: the passage of time; man-made events, such as construction on or adjacent to the site; or natural events, such as floods, droughts, earthquakes, or groundwater fluctuations. *Contact the geotechnical engineer before applying this report to determine if it is still reliable.* A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ — sometimes significantly — from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide geotechnical-construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are Not Final

Do not overrely on the confirmation-dependent recommendations included in your report. *Confirmation-dependent recommendations are not final,* because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations *only* by observing actual subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's confirmation-dependent recommendations if that engineer does not perform the geotechnical-construction observation required to confirm the recommendations' applicability.*

A Geotechnical-Engineering Report Is Subject to Misinterpretation

Other design-team members' misinterpretation of geotechnical-engineering reports has resulted in costly

problems. Confront that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Constructors can also misinterpret a geotechnical-engineering report. Confront that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing geotechnical construction observation.

Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical-engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make constructors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give constructors the complete geotechnical-engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise constructors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure constructors have sufficient time* to perform additional study. Only then might you be in a position to give constructors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

Read Responsibility Provisions Closely

Some clients, design professionals, and constructors fail to recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Environmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform an *environmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical-engineering report does not usually relate any environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own environmental information, ask your geotechnical consultant for risk-management guidance. *Do not rely on an environmental report prepared for someone else.*

Obtain Professional Assistance To Deal with Mold

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold-prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, many mold- prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical- engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; *none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.*

Rely, on Your GBC-Member Geotechnical Engineer for Additional Assistance

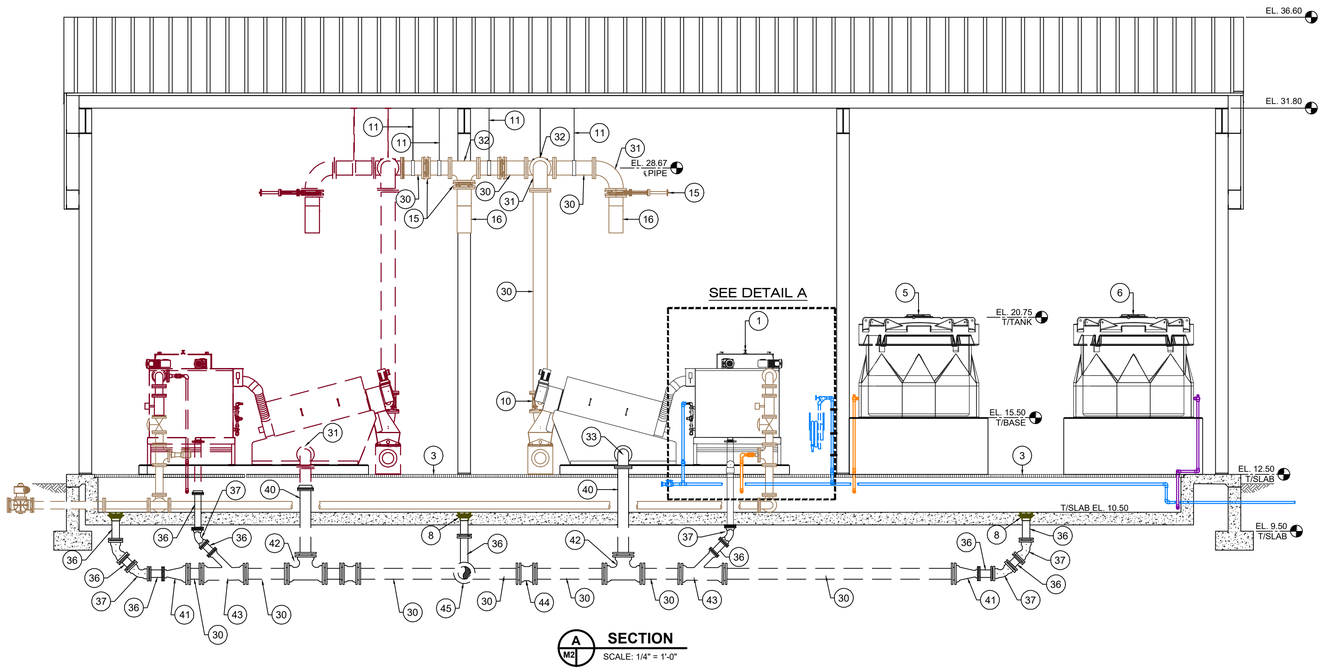
Membership in the Geotechnical Business Council of the Geoprofessional Business Association exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project. Confer with you GBC-Member geotechnical engineer for more information.

GEOTECHNICAL BUSINESS COUNCIL
of the Geoprofessional Business Association

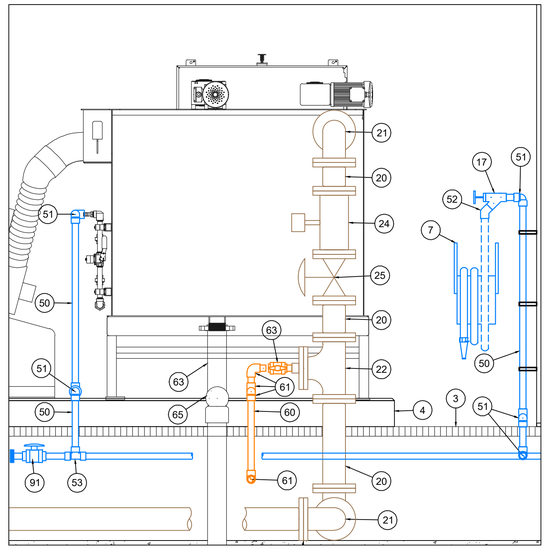
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Telephone: 301/565-2733 Facsimile: 301/589-2017
e-mail: info@geoprofessional.org www.geoprofessional.org

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Exhibit"D"



A M2 **SECTION**
SCALE: 1/4" = 1'-0"



DETAIL A
SCALE 3/4" = 1'

EQUIPMENT SCHEDULE

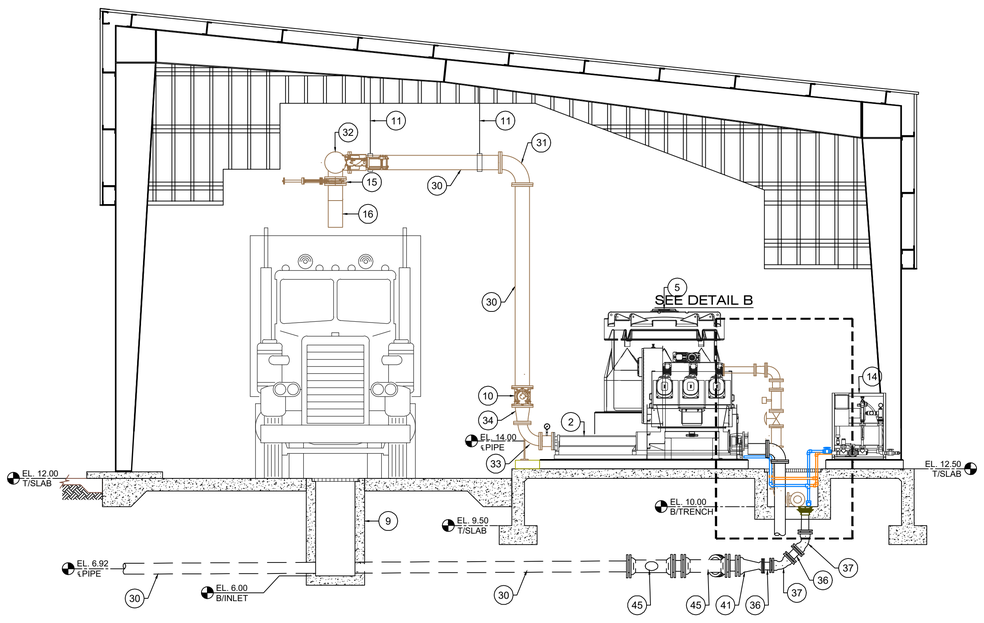
ITEM#	DESCRIPTION
1	DEWATERING PRESS ES303 GA
2	DEWATERED SLUDGE CAKE PUMP
3	PIPE TRENCH W/ FRP-GRATING
4	DEWATERING PRESS HOUSEKEEPING PAD
5	POLYMER TANK
6	BISULFITE TANK
7	HOSE REEL / WASH STATION
8	DRAIN INLET
9	TYPE "C" INLET
10	8" PLUG VALVE
11	PIPE HANGER SUPPORT (TYP.)
14	POLYMER PUMP
15	8" KNIFE GATE VALVE
16	FLEX BOOT
17	HOSE BIB

INFLUENT SLUDGE PIPING SCHEDULE

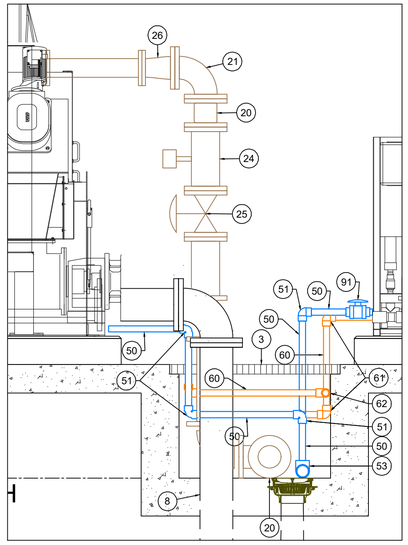
ITEM#	DESCRIPTION
20	4" DUCTILE IRON PIPE, FLG
21	4" DUCTILE IRON 90° BEND, FLG
22	4" DUCTILE IRON TEE, FLG
24	4" SCHEDULE 80 PVC MAGMETER
25	4" 80 PVC PLUG VALVE DIP
26	4" x 3" DUCTILE IRON REDUCER, FLG
27	3" DIP PIPE, FLG

EFFLUENT SLUDGE PIPING SCHEDULE

ITEM#	DESCRIPTION
30	8" DR14 PVC PIPE, PE
31	8" DUCTILE IRON 90° BEND, FLG
32	8" DUCTILE IRON TEE, FLG
33	6" DUCTILE IRON BASE 90° BEND, FLG
34	8"x6" DUCTILE IRON REDUCER, FLG
35	6" DUCTILE IRON 45° BEND, FLG
36	4" DUCTILE IRON PIPE, PE
37	4" DUCTILE IRON 45° BEND, MJ
38	4" DUCTILE IRON 90° BEND, FLG
39	6" DUCTILE IRON WYE, FLG
40	6" DUCTILE IRON PIPE, PE
41	8"x4" DUCTILE IRON REDUCER, MJ
42	8"x6" DUCTILE IRON TEE, MJ
43	8"x4" DUCTILE IRON WYE, MJ
44	8" PVC 45° BEND
45	8" PVC WYE, MJ



B M2 **SECTION**
SCALE: 1/4" = 1'-0"



DETAIL B
SCALE 3/4" = 1'

POLYMER PIPING SCHEDULE

ITEM#	DESCRIPTION
60	1" SCHEDULE 80 PVC POLYMER PIPE
61	1" SCHEDULE 80 PVC 90° BEND
62	1" SCHEDULE 80 PVC TEE
63	2" SCHEDULE 80 PVC CAP
66	1" SCHEDULE 80 PVC CAP

POLYMER EQUIPMENT SCHEDULE

ITEM#	DESCRIPTION
81	1" SCHEDULE 80 PVC BALL VALVE

POTABLE EQUIPMENT SCHEDULE

ITEM#	DESCRIPTION
91	1" SCHEDULE 80 PVC BALL VALVE

POTABLE PIPING SCHEDULE

ITEM#	DESCRIPTION
50	1" SCHEDULE 80 PVC POTABLE PIPE
51	1" SCHEDULE 80 PVC 90° BEND
52	1" SCHEDULE 80 PVC 45° BEND
53	1" SCHEDULE 80 PVC TEE

No.	Date	Revision	No.	Date	Revision
1			1		
2			2		
3			3		
4			4		

cph
www.cphcorp.com
Building Better Communities Together
500 West Fulton Street
Sanford, FL 32771
Ph: 407.322.6841
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Plans Prepared By:
CPH, LLC
A Full Service A & E Firm

ROCCO R. NASSO, P.E.
FL. P.E. NO. 64727

Designed by:	BMF/GMC
Drawn by:	T. MORGAN
Checked by:	D. MAHLER
Date:	2/21/2024
Job No.	F15907

FLAGLER BEACH WWTF SLUDGE MANAGEMENT SYSTEM IMPROVEMENTS
City of Flagler Beach, Florida

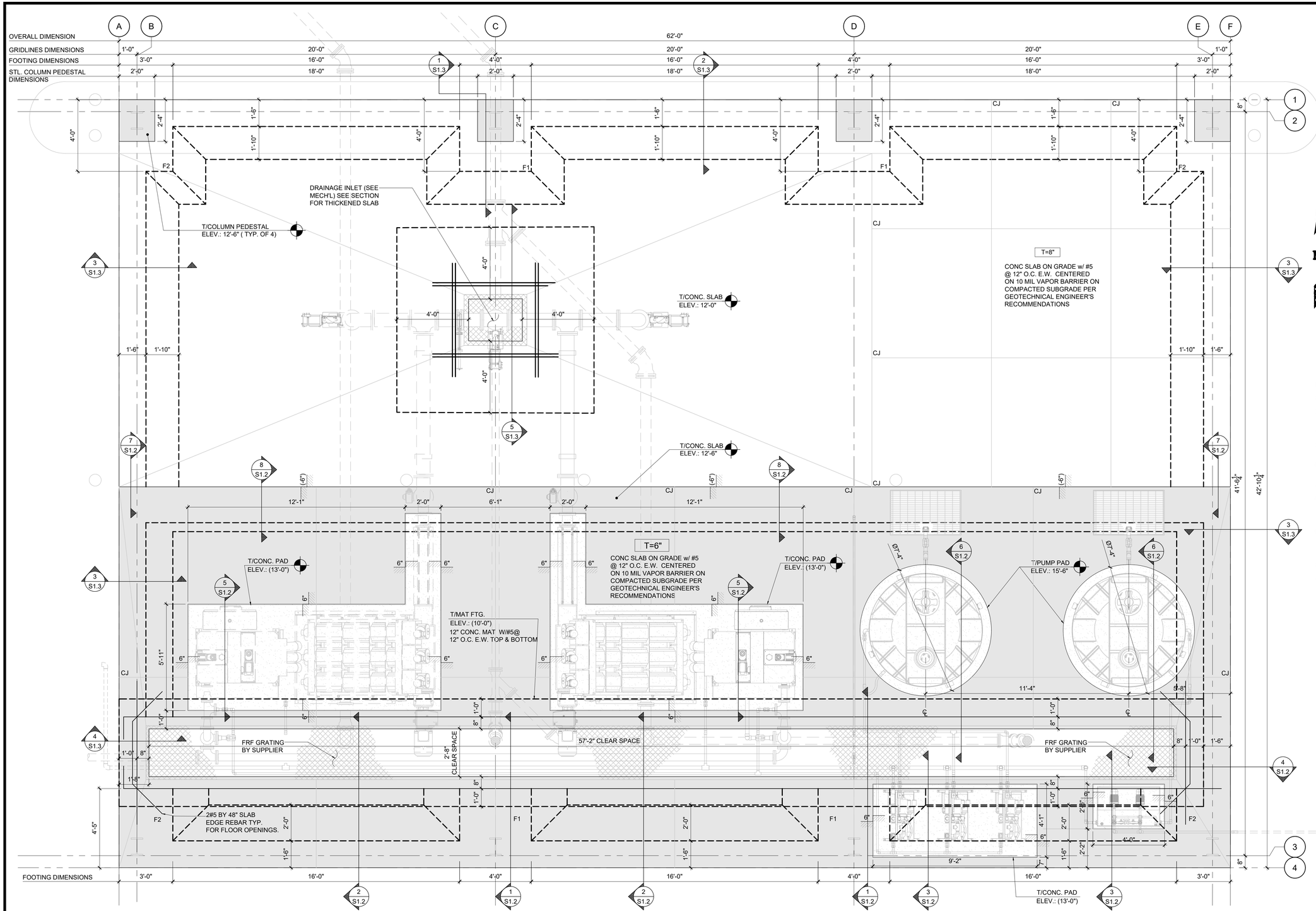
BIOSOLIDS DEWATERING BUILDING/SECTIONS - EQUIPMENT/ INFLUENT/ CHEMICAL LINES

Sheet No.
M2.0

Drawing name: J:\F15907\Civil\DWG_Current_Plan_Set\F15907_PLNT_MECH\F15907 19 M2.0~M2.1.dwg Nov 20, 2024 - 12:22pm gmoore

THIS SHEET NOT VALID FOR CONSTRUCTION WITHOUT COMPLETE SET OF P

Exhibit"D"



FOUNDATION NOTES

1. TOP OF CONCRETE SLAB = SEE PLAN. SEE CIVIL FOR NVGD ELEVATION.
2. SEE CIVIL FOR DIMENSIONS NOT SHOWN.
3. SEE CIVIL AND MECH. FOR ALL SLEEVES, PIPES, INSERTS AND EMBEDDED ITEMS.
4. SEE CIVIL AND MECH. FOR SLOPES AND RECESSES.
5. VERIFY W/ CIVIL AND MECH. DRAWINGS ALL ELEVATIONS AND DIMENSIONS PRIOR TO FABRICATION AND CONSTRUCTION.
6. SEE SHEET S1.0 FOR STRUCTURAL NOTES. SEE SHEET S1.3 FOR SLAB OPENING DETAILS.
7. SEE CIVIL FOR WATERPROOFING.
8. FRP GRATING SHALL HAVE A DESIGN LIVE LOAD CAPACITY OF 250 PSF AND CAPACITY FOR ANY OF THE PLANT'S EQUIPMENT WHICH SHALL BE CONFIRMED WITH PLANT OWNER PRIOR TO CONSTRUCTION. ATTACH GRATING TO SUPPORTS PER SUPPLIER'S RECOMMENDATIONS.
9. WHERE REQUIRED, NEW SLAB SHALL BE 6" AND 8" CONC. SLAB ON GRADE. (P'c=4000 psi) W#5 @ 12" O.C. E.W. CENTERED ON 10 MIL VAPOR BARRIER ON PREPARED SUBGRADE PER GEOTECHNICAL REPORT. REFER TO CIVIL DRAWINGS FOR SLABS ADJACENT TO BUILDING.
10. F# DENOTES NEW CONCRETE FOOTING, SEE SCHEDULE ON THIS SHEET.
11. CJ DENOTES CONTROL JOINTS, SEE DETAIL ON THIS SHEET.

FOOTING SCHEDULE

MARK	SIZE	REINFORCING
F1	4'-0"x4'-0"x2'-6"	(4) #6 O.C. E.W. TOP & BOTTOM
F2	3'-0"x4'-0"x2'-6"	(2) #6 O.C. E.W. TOP & BOTTOM

NOTES

COLUMN FOUNDATIONS ARE PRELIMINARY SIZES. G/C TO PROVIDE PRE-ENGINEERED CANOPY SUBMITTALS WITH COLUMN REACTIONS TO SEOR FOR COLUMN FOUNDATION FINAL DESIGN.

No.	Date	Revision
1	#	#
2	#	#
3	#	#
4	#	#

No.	Date	Revision
5	#	#
6	#	#
7	#	#
8	#	#

cph
A Full Service A & E Firm
##########
##########
Ph: ##########
www.cphcorp.com
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JOSE M. ORTIZ, PE
67920

Designed by:	EA
Drawn by:	DAS
Checked by:	EA/JMO
Date:	02/03/204
Job No.	F15907

FLAGLER BEACH WWTF BIOSOLIDS IMPROVEMENTS
CITY OF FLAGLER BEACH, FLORIDA

STRUCTURAL NOTES

Sheet No.
S1.1

WASTEWATER TREATMENT PLANT
SLUDGE MANAGEMENT
IMPROVEMENTS
PRE-BID MEETING
SIGN-IN SHEET

13-Nov-24	COUNCIL CHAMBER ROOM	10:00 AM

	NAME & EMAIL	COMPANY & PHONE NO.
1	~~Adam Schumacher~~ tcorrigan@conecrahan.com	561-400-1662
2	Lindsey Maguray lindsey@sgscsi.com	SGS Contracting 239-699-0568
3	David Gibbons dgibbons@dsiinnorations.com	DSI Innorations 904-591-0431
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		

WASTEWATER TREATMENT PLANT SLUDGE MANAGEMENT IMPROVEMENTS PRE-BID MEETING SIGN-IN SHEET

13-Nov-24	COUNCIL CHAMBER ROOM	10:00 AM

	NAME & EMAIL	COMPANY & PHONE NO.
1	LEE RICHARDS Lrichards@cityofflaglerbeach.com	City of Flagler Beach 386-517-2000 ext. 248
2	CHRIS NOVAK Cnovak@cityofflaglerbeach.com	City of Flagler Beach 386-517-2000 ext. 242
3	BILL FREEMAN Bfreeman@cityofflaglerbeach.com	City of Flagler Beach 386-517-2000 ext. 230
4	JENIFER CREWS Jcrews@cityofflaglerbeach.com	City of Flagler Beach 386-285-7737
5	JOHNNY LYNN jlynn@cityofflaglerbeach.com	City of Flagler Beach 386-517-2029
6	Cody Mills Sawcross, inc Bids@sawcross.com	8503403698
7	Alex Burgos ~~L7 Constructs~~ aburgos@L7constructs.com	L7 Construction, Inc 321-972-9325
8		
9		
10		
11		
12		
13		
14		

STAFF REPORT

City Commission Regular Meeting

February 13, 2025

To: Elected Officials

From: Dale L. Martin, City Manager

Date: February 7, 2025

Item Name: Resolution 2025-09. A Resolution by the City Commission of the City of Flagler Beach, Florida to close out the Beach Management Reserve and move funds to the Dune Protection Reserve and redesignate the Dune Protection Reserve as the Dune Walkover Reserve; providing for conflict and an effective date.

Background: The Beach Management Reserve was a reserve that was set up several years ago for a beach study that was conducted. The remaining balance in the reserve is $2,582.00. Staff is requesting to close the Beach Management Reserve and transfer the funds to the Dune Protection Reserve.

Additionally, the general intent of the of the Dune Protection Reserve was to provide funding to repair/replace dune walkovers since the City cannot obtain insurance for the dune walkovers. Staff recommends that the Dune Protection Reserve may redesignated as the Dune Walkover Reserve to more clearly identify the purpose and use of the reserve funds.

Fiscal Impact: Reserve balances at conclusion of FY 2023/2024: Beach Management Reserve, $2,582; Dune Protection Reserve, $120,000.

Staff Recommendation: Staff recommends approval of Resolution 2025-09.

Attachment:

Resolution 2025-09

RESOLUTION 2025-09

A RESOLUTION BY THE CITY COMMISSION OF THE CITY OF FLAGLER BEACH, FLORIDA TO CLOSE OUT THE BEACH MANAGEMENT RESERVE AND MOVE FUNDS TO THE DUNE PROTECTION RESERVE AND REDESIGNATE THE DUNE PROTECTION RESERVE AS THE DUNE WALKOVER RESERVE; PROVIDING FOR CONFLICT AND AN EFFECTIVE DATE.

WHEREAS, the City previously created a Beach Management Reserve, appropriating funds to undertake a beach study; and,

WHEREAS, said beach study was conducted and completed by Daytona State College in 2013 ; and,

WHEREAS, City staff seeks to reduce the number of funds and reserves (especially those that are dormant) to provide for more efficient financial reporting;

NOW THEREFORE BE IT RESOLVED BY THE CITY COMMISSION OF THE CITY OF FLAGLER BEACH, AS FOLLOWS:

SECTION 1. The City of Flagler Beach City Commission authorizes the Finance Director to transfer the current funds in the Beach Management Reserve to the Dune Protection Reserve.

FUND	DESCRIPTION	FY25 RESERVE BALANCE AS OF JANUARY 2025
GENERAL	**BEACH MANAGEMENT RESERVE**	**2,582.00**
GENERAL	**BEACH MANAGEMENT RESERVE**	**(2,582.00)**
GENERAL	**DUNE PROTECTION RESERVE**	**120,000.00**
GENERAL	**DUNE PROTECTION RESERVE**	**122,582.00**

SECTION 2. The City Commission approves the redesignation of the Dune Protection Reserve to the Dune Walkover Reserve, clarifying the intent and the use of the reserve funds for dune walkover repair and replacement.

SECTION 3. All resolutions or parts of resolutions in conflict herewith are hereby repealed.

SECTION 4. This Resolution shall become effective immediately upon passage as provided by law.

PASSED AND ADOPTED THIS 13th DAY OF FEBUARY, 2025.

CITY OF FLAGLER BEACH, FLORIDA
CITY COMMISSION

ATTEST:

_____
Patti King, Mayor

_____
Penny Overstreet, City Clerk

STAFF REPORT

City Commission Regular Meeting

February 13, 2025

To: Elected Officials

From: Dale L. Martin, City Manager

Date: February 7, 2025

Item Name: Resolution 2025 - 10. A Resolution by the City Commission of the City of Flagler Beach, Florida, to award a contract to England-Thims & Miller, Inc. in an amount not to exceed $826,586.66 to be the Construction Manager Adviser (CMA) and serve as the City's on-site representative overseeing the construction of the Flagler Beach Pier; providing for conflict and an effective date.

Background: Flagler Beach Pier is located at 215 South Ocean Shore Boulevard in Flagler Beach, Florida. The project consists of the demolition and reconstruction of the historic Flagler Beach Pier that was initially built in 1928. The pier has suffered significant damage due to several storms and hurricanes and was deemed inoperable in 2022.

The scope of this project is complicated and likely requires a full-time, on-site representative (beyond the City staff's capacity). Throughout the project, the Construction Manager Adviser (CMA) will provide the City with professional construction management adviser services and represent the City's interests in completing the project on time, within budget, and as planned with a minimum of difficulties. The American Institute of Architects Document A133-2009 (the Form Contract) will form the basis of the agreement for the CMA Services to be entered into for the project.

Since the City does not have the personnel to serve in this capacity, the City published a Request for Qualifications for qualified CMAs. The submissions were due January 15 and the City received three responsive submissions. A Selection Committee composed of the City Engineer and two additional staff reviewed and scored the submissions in accordance with the procedure originally described in the Request for Qualifications.

Fiscal Impact: Funding for this project will be drawn from the City's Unrestricted Reserves and then reimbursed (75% Federal, 12.5% State).

Staff Recommendation: Staff recommends approval of Resolution 2025-10.

Attachment:

Resolution 2025-10

City of Flagler Beach

P.O. Box 70 • 105 South Second Street
Flagler Beach, Florida 32136
Phone (386) 517-2000

MEMO

DATE: February 03, 2025
TO: Bid Package Holders City of Flagler Beach RFQ NO. FB-242911 Construction Manager Adviser for the construction of Flagler Beach Fishing Pier replacement City Project No. 260
FROM: Penny Overstreet, City Clerk
SUBJECT: Recommendation to award Bid

Memo containing the recommendation of award for the Construction Manager Adviser for the construction of Flagler Beach Fishing Pier replacement City Project No. 260, RFQ NO. FB-242911.
The advertisement for the Request for Qualifications on the above referenced project ran as a legal ad one time in a newspaper of general circulation, the Daytona Beach News Journal, on Tuesday, December 17, 2024, as well as on the City's website, and Demand Star. The number of vendors the City directed the RFQ to was sixty-two of those recipients three (3) responded with qualifications. After a detailed review by Staff of the respondents' qualifications packages and supporting documents, Staff recommends the City Commission award the Project to England-Thims & Miller, Inc. in an amount not to exceed $ 826,586.66. The Flagler Beach City Commission will consider this recommendation at their February 13, 2025, meeting.

RESOLUTION 2025-10

A RESOLUTION BY THE CITY COMMISSION OF THE CITY OF FLAGLER BEACH, FLORIDA, TO AWARD A CONTRACT TO ENGLAND-THIMS & MILLER, INC. IN AN AMOUNT NOT TO EXCEED $826,586.66 TO BE THE CONSTRUCTION MANAGER ADVISER (CMA) AND SERVE AS THE CITY'S ON-SITE REPRESENTATIVE OVERSEEING THE CONSTRUCTION OF THE FLAGLER BEACH PIER, PROVIDING FOR CONFLICT AND AN EFFECTIVE DATE.

WHEREAS, the City's nearly one-hundred-year-old Pier has been damaged sufficiently enough to require its closure; and,

WHEREAS, the City contracted with Moffatt & Nichol to assist the City with design and permitting for the demolition of the existing Pier and reconstruction of a new Pier;

WHEREAS, the City awarded the contract for the demolition and reconstruction to Vecillio & Grogan; and,

WHEREAS, the required oversight necessary to ensure appropriate management is beyond the capacity of City staff; and,

WHEREAS, the City solicited qualifications from interested Construction Manager Advisors, receiving, reviewing, and scoring the three submissions received;

NOW THEREFORE BE IT RESOLVED BY THE CITY COMMISSION OF THE CITY OF FLAGLER BEACH, AS FOLLOWS:

SECTION 1. The City Commission authorizes City staff to issue the Notice to Proceed to England, Thims & Miller to be the City's on-site Construction Manager Advisor overseeing the Contractor awarded the demolition and reconstruction of the pier in an amount not to exceed $862,586.66**.**

SECTION 2. All resolutions or parts of resolutions in conflict herewith be and the same are hereby repealed.

SECTION 3. This Resolution shall become effective immediately upon passage as provided by law.

PASSED AND ADOPTED THIS 13th DAY OF FEBRUARY, 2025.

CITY OF FLAGLER BEACH, FLORIDA
CITY COMMISSION

ATTEST:

_____
Patti King, Mayor

_____
Penny Overstreet, City Clerk

Attachment:
Exhibit A (England-Thims & Miller proposal [portion])

City of Flagler Beach

Construction Manager Advisor for the Flagler Beach Fishing Pier

City Project No. 260 | January 15, 2025



ETM
ENGLAND-THIMS & MILLER

SECTION 00 11 53
REQUEST FOR QUALIFICATION FORMS

Project Name: **FLAGLER BEACH FISHING PIER REPLACEMENT 2024-2026 City Project No.: 260**

Company Name: England-Thims & Miller, Inc.

Contact Name: George Miller, PE

E-mail Address: MillerG@etminc.com

Mailing Address: 14775 Old St. Augustine Road
Jacksonville, Florida 32258

Phone Number: (904) 642-8990

Fax Number: (904) 646-4185

Contractor License Number: 547560

The CITY will post addenda information at Onvia DemandStar, Inc., at the following web address: www.demandstar.com. For technical assistance with this website, please contact Onvia Services at 1-800-711-1712. All Bidders should check the Onvia DemandStar website at least seven (7) calendar days before the date fixed to verify information regarding Addenda. Failure to do so could result in rejection of the submittal as unresponsive. Bidders shall sign, date, and return all addenda with their bid. It is the sole responsibility of the Bidder to ensure he/she obtains information related to Addenda. Oral and other interpretations or clarifications will be without legal effect.

The following Addenda were received:

Addendum No. 1 Date Received 1/8/2025

Addendum No. _____ Date Received _____

Addendum No. _____ Date Received _____

Addendum No. _____ Date Received _____

Addendum No. _____ Date Received _____

Addendum No. _____ Date Received _____

City of Flagler Beach

P.O. Box 70 • 105 South Second Street
Flagler Beach, Florida 32136
Phone (386) 517-2000

ENGINEERING DEPARTMENT

CMA Contract for the Pier Construction
ADDENDUM NO. 1

1. Add this paragraph before Paragraph 5 in the RFQ:

BID FORM

The work write-up / bid form is a general outline of the work to be performed. The total price of this project shall include:

DATE: 1/15/2025

TOTAL FEE: $826,586.66

IN WORDS: Eight Hundred and Twenty Six Thousand, Five Hundred and Eighty Six Dollars and Sixty-Six Cents

All work to be performed in a professional manner, in accordance with the Scope of Work as outlined in the Form Contract. The contractor shall be responsible for all of the services required from the date of Notice to Proceed until the Pier Construction project is officially closed out and 100% complete.

I hereby certify that I am licensed by the State of Florida, Department of Business and Professional Regulation.

CONTRACTOR'S SIGNATURE: George R. Miller

CONTRACTOR'S PRINTED NAME: George Miller, PE / England-Thims & Miller, Inc.

CONTRACTOR'S BUSINESS ADDRESS: 14775 Old St. Augustine Road

Jacksonville, Florida 32258

CONTRACTOR'S PHONE NUMBER: (904) 376-6335

CONTRACTOR'S EMAIL ADDRESS: MillerG@etminc.com

Receipt is acknowledged of the following addenda:

No. 1 Dated 1/8/2025

No. _____ Dated _____

No. _____ Dated _____

Bidder agrees that the Owner has the right to waive informalities in any bid; reject any or all proposals, in whole or in part; re-bid a project, in whole or in part; and to accept a proposal that in its judgment is the lowest responsive bid.

Respectfully submitted, By:

January 15, 2025
(Date)

George R. Miller
(Signature)

Executive Vice President
(Title)

(SEAL – IF BIDDER IS A CORPORATION)

City of Flagler Beach

Construction Manager Advisor for the Flagler Beach Fishing Pier

City Project No. 260 | January 15, 2025



ETM
ENGLAND-THIMS & MILLER

Tab 1
COVER LETTER

ENGLAND-THIMS & MILLER
14775 Old St. Augustine Road, Jacksonville, FL 32258
etminc.com | 904.642.8990

January 15, 2025

The City of Flagler Beach
105 South 2nd Avenue
Flagler Beach, Florida 32136

Dear Members of the Selection Committee,

England-Thims & Miller, Inc. (ETM) is excited to offer our specialized expertise in Construction Management and Administration (CMA) services for the City of Flagler Beach Pier Replacement project. Our team's proactive engagement with the Engineer-of-Record (EOR) throughout the design phase has provided us with a thorough understanding of the project's unique challenges, including compliance, safety, access, and minimizing disruptions. Our promise is to provide reliable and efficient CMA services for the City of Flagler Beach, while serving as Trusted Advisors, Creating Community.

ETM brings unparalleled experience to this critical endeavor, including successful completion of similar projects like the Jacksonville Beach Pier Reconstruction project, and various historical bridge rehabilitation projects. With nearly 70 CEI staff in Northeast Florida, we are well-equipped to address all aspects of the project, from critical inspections and maintenance of traffic to environmental compliance and community engagement.

Key advantages of selecting ETM include:

- **Proven Expertise:** Extensive technical and practical experience with pier and structural projects.
- **Strong Relationships:** Established partnerships with the EOR, Moffatt & Nichol, and likely Contractors.
- **Local Presence:** Our team is embedded in the community, with key personnel located within five miles of the site.
- **Team Continuity:** Leverage the expertise of a cohesive team with proven success on comparable pier and structural projects.
- **Resource Readiness:** CTQP-qualified inspectors and FDOT prequalification in key CMA categories ensure seamless project execution.
- **Community Understanding:** We understand local nuances, like the Funky Monkey bartender placing grenadine on the pier rail to manage an annual beehive and protect customers.
- **Managing Expectations:** Engaging with the community to ensure the project aligns with their interests and values.

ETM is committed to innovation, proactive issue resolution, and maintaining the highest standards of safety and compliance. We understand the significance of this project to the City of Flagler Beach and its residents, and we are dedicated to delivering solutions that align with community expectations and values.

As Principal-in-Charge, I am authorized to represent and legally bind ETM. We respectfully request your consideration and look forward to the opportunity to support the successful completion of this landmark project. Please contact us with any questions.

Sincerely,
ENGLAND-THIMS & MILLER, INC.

George R. Miller, PE
Principal-in-Charge/Executive Vice President
14775 Old St. Augustine Road
Jacksonville, Florida 32258
Phone Number: (904) 376-6335
Email Address: MillerG@etminc.com

Kent Ponder, PE
Project Manager/Primary Point of Contact
463688 State Road 200 #7
Yulee, Florida 32097
Phone Number: (904) 497-8891
Email Address: PonderK@etminc.com

Tab 2

REQUIRED FORMS

SECTION 00 11 53
REQUEST FOR QUALIFICATION FORMS

Project Name: **FLAGLER BEACH FISHING PIER REPLACEMENT 2024-2026 City Project No.: 260**

Company Name: England-Thims & Miller, Inc.

Contact Name: George Miller, PE

E-mail Address: MillerG@etminc.com

Mailing Address: 14775 Old St. Augustine Road
Jacksonville, Florida 32258

Phone Number: (904) 642-8990

Fax Number: (904) 646-4185

Contractor License Number: 547560

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Addendum No._____ Date Received_____

Addendum No._____ Date Received_____

Addendum No._____ Date Received_____

Addendum No._____ Date Received_____

City of Flagler Beach

P.O. Box 70 • 105 South Second Street
Flagler Beach, Florida 32136
Phone (386) 517-2000

ENGINEERING DEPARTMENT

CMA Contract for the Pier Construction
ADDENDUM NO. 1

1. Add this paragraph before Paragraph 5 in the RFQ:

BID FORM

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TOTAL FEE: $826,586.66

IN WORDS: Eight Hundred and Twenty Six Thousand, Five Hundred and Eighty Six Dollars and Sixty-Six Cents

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I hereby certify that I am licensed by the State of Florida, Department of Business and Professional Regulation.

CONTRACTOR'S SIGNATURE: George R. Miller

CONTRACTOR'S PRINTED NAME: George Miller, PE / England-Thims & Miller, Inc.

CONTRACTOR'S BUSINESS ADDRESS: 14775 Old St. Augustine Road

Jacksonville, Florida 32258

CONTRACTOR'S PHONE NUMBER: (904) 376-6335

CONTRACTOR'S EMAIL ADDRESS: MillerG@etminc.com

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No. 1 Dated 1/8/2025

No. _____ Dated _____

No. _____ Dated _____

Bidder agrees that the Owner has the right to waive informalities in any bid; reject any or all proposals, in whole or in part; re-bid a project, in whole or in part; and to accept a proposal that in its judgment is the lowest responsive bid.

Respectfully submitted, By:

January 15, 2025
(Date)

(Signature)

Executive Vice President
(Title)

(SEAL – IF BIDDER IS A CORPORATION)

2. Replace paragraph 5 in the RFQ with the following:

5. RESPONSE, FORMAT, CONTENT, AND EVALUATION CRITERIA

Responses must include the following information in this sequence. Respondents are invited to include innovative methods and/or procedures, which they can provide to assist in ensuring successful completion of the project. Unique qualities and/or capabilities and cost efficiencies may be identified. For each of the specific areas listed below, your responses should include a description of responders' qualification to service as a CMA.

Written Requirements for Responses to Request for Qualifications	**Possible Points For Each Section of Proposal**
1. Cover Letter (limit to one page)	0 points
2. Complete the Forms as provided on Attachments A through D	5 points
3. COMPANY PROFILE. Describe your firm's history, size, resources, philosophy of service, typical volume of work, financial stability, and basic construction management techniques and methods. Describe how your particular expertise, experience and/or techniques can be an advantage to the District in completing the projects.	15 points
4. PROJECT APPROACH. Describe your approach to Providing CMA Services described in the Form Contract. a. Preconstruction Services, b. Construction Services as CM/A. Discuss how you would provide leadership to facilitate teamwork and communications among all parties involved in the project. c. Proposed Team: Identify personnel to whom construction management responsibilities will be assigned by names, titles, roles, qualifications, and experience.	30 points
5. PAST PERFORMANCE. Per Attachment E, list four (4) recent and relevant projects where your firm provided CMA services, demonstrating your firm's ability to serve as the City's representative for project construction oversight and performing all of the duties listed in the Form Contract. Additional points will be awarded for direct experience constructing concrete and/or wood fishing piers.	35 points
6. COST PROPOSAL. Provide a lump sum price to perform all of the services provided in the RFQ/Form Contract	15 points maximum as calculated: $\frac{Lowest\ Bid}{Bidder's\ Bid} \times 15 = \text{Score}$
TOTAL POSSIBLE SCORE	**100 POINTS**

Disclaimer: It is the sole responsibility of bidder to confirm that all addenda have been received prior to submitting bid and acknowledge such in bid documents

END OF ADDENDUM 1

The Bidder acknowledges the receipt, execution, and return of the following attachments:

- Attachment A: Certificate of Corporation
- Attachment B: Contractor Questionnaire
- Attachment C: Required Disclosure
- Attachment D: Bidder Information
- Attachment E: Experience of Bidder
- Attachment F: Sworn Statement Under section 287.133(3) (a), Florida Statutes, on Public Entity Crimes
- Attachment G: Affidavit of Non-Collusion
- Attachment H: Certification of Non-Segregated Facilities
- Attachment I: Drug-Free Work Place
- Attachment J: Conflict of Interest Statement
- Attachment K: Compliance with Public Records Law
- Attachment L: Americans with Disabilities Act Affidavit
- Attachment M: List of Licenses and Certifications
- Attachment N: AIA Document C-132-2019 Form Contract

Name: George Miller, PE

Authorized Signature: George R. Miller

Date: January 15, 2025

Title: Executive Vice President

ACKNOWLEDGEMENT

STATE OF FLORIDA

COUNTY OF Duval

Medina Hadziavdic

Signature of Notary Public

Print, Type or Stamp Commissioned Name of Notary Public below:

Sworn to (or affirmed) and subscribed before me by means of

online notarization ☐ OR physical presence ☒

this 15th day of January, 2025

Personally Known ☒ OR Produced identification ☐

Type of Identification Produced: _____

MEDINA HADZIAVDIC
Notary Public - State of Florida
Commission # HH 107996
My Comm. Expires Mar 23, 2025
Bonded through National Notary Assn.

END OF SECTION

ATTACHMENT A
CERTIFICATE OF CORPORATION

Please include a copy of your Certificate of Corporation from the State of Florida with this attachment.

STATE OF FLORIDA

COUNTY OF Duval

I HEREBY CERTIFY that a meeting of the Board of Directors of England-Thims & Miller, Inc., a corporation under the laws of the State of Florida, was held on 12/13, 20 22. The following resolution was duly passed and adopted:

"RESOLVED, that George Miller, PE as Executive Vice President of the corporation is hereby authorized to execute the Contract dated January 15 20 25, between The City of Flagler Beach, a municipal corporation and this corporation, and that execution thereof, attested by the Secretary of the corporation and with corporate seal affixed, shall be the official act and deed of this corporation."

I further certify that said resolution is now in full force and effect.

IN WITNESS THEREOF, I have hereunto set my hand and affixed the official seal of the corporation

This 15th day of January, 20 25.

Corporate Secretary

END OF ATTACHMENT A

SECTION 00 11 53
REQUEST FOR QUALIFICATION FORMS

ATTACHMENT B
CONTRACTOR QUESTIONNAIRE

DATE: January 15, 2025

NAME OF BIDDER: England-Thims & Miller, Inc.

BUSINESS ADDRESS: 14775 Old St. Augustine Road, Jacksonville, Florida 32258

PHONE NUMBER: (904) 642-8990

CONTRACTOR'S FL LICENSE #: 2584

EXPIRATION DATE: Current

The undersigned warrants the truth and accuracy of all statements and answers herein contained. Include additional sheets as necessary.

1. How many years has your organization been in business as a Construction Manager?

30 years

2. How many years has your organization been in business as a Construction Manager Adviser?

30 years

3. Name of Project Manager and length of time with your company?

Kent Ponder, PE, 19 Years with ETM

4. Describe in detail and give the date and owner, including phone numbers and contact person(s), of the last four (4) projects that you have completed similar in type, size, and nature as the project proposed?

1 - Jacksonville Beach Pier, City of Jacksonville/City of Jacksonville Beach, 2020-2022. William Joyce (904) 255-8763

2 - SR 9B Phases I-III, FDOT D2, 2015-2018, Jeff Williams (386) 312-4831

3 - Newnan Street/Hubbard Street Bridge Rehabilitation, FDOT D2, 2016, Jessica Tippett (904) 360-5504

4 - Broward River Bridge Replacement, FDOT D2, 2022-2024, Sam Lansdale (904) 360-5557

5. Have you ever failed, or been alleged to have failed, to complete work awarded to you? If so, please list the project and explain the reasons why?

No

6. Have you ever failed, or been alleged to have failed, to complete work within the Contract Time? If so, please list the project and explain the reasons why?

No

7. Have you ever had a bond or letter of credit called by the owner of a project? If so, when?

No

Bidder Name: George Miller, PE / England-Thims & Miller, Inc.

Signature: George R. Miller

Title: Executive Vice President

Attach the corporate information sheet from the Florida Department of State, Division of Corporation's,

web site.

ACKNOWLEDGEMENT

STATE OF FLORIDA
COUNTY OF Duval

Sworn to (or affirmed) and subscribed before me by means of

online notarization ☐ *OR* physical presence ☒

this 15th day of January, 2025.

Personally Known ☒ *OR* Produced identification ☐

Type of Identification Produced:_____

Medina Hadziavdic
Signature of Notary Public
Print, Type or Stamp Commissioned Name of Notary Public below:

MEDINA HADZIAVDIC
Notary Public - State of Florida
Commission # HH 107996
My Comm. Expires Mar 23, 2025
Bonded through National Notary Assn.

END OF ATTATCHMENT B

State of Florida
Department of State

I certify from the records of this office that ENGLAND, THIMS & MILLER, INC. is a corporation organized under the laws of the State of Florida, filed on September 26, 1977.

The document number of this corporation is 547560.

I further certify that said corporation has paid all fees due this office through December 31, 2024, that its most recent annual report/uniform business report was filed on April 4, 2024, and that its status is active.

I further certify that said corporation has not filed Articles of Dissolution.

Given under my hand and the Great Seal of the State of Florida at Tallahassee, the Capital, this the Fourth day of April, 2024

Secretary of State

Tracking Number: 9105885915CC

To authenticate this certificate,visit the following site,enter this number, and then follow the instructions displayed.

https://services.sunbiz.org/Filings/CertificateOfStatus/CertificateAuthentication

ATTACHMENT C
REQUIRED DISCLOSURE

The following disclosure is of all material facts pertaining to any felony conviction or any pending felony charges in the last three (3) years in this State or any other state of the United States against (1) the Bidder, any business entity related to or affiliated with the Bidder or (3) any present or former owner of the Bidder or of any such related or affiliated entity. This disclosure shall not apply to any person or entity which is only a stockholder, which person or entity owns twenty percent (20%) or less of the outstanding shares of the Bidder whose stock is publicly owned and traded:

N/A

Bidder Name: George Miller, PE / England-Thims & Miller, Inc.

Signature: George R. Miller

Title: Executive Vice President

Date: January 15, 2025

END OF ATTACHMENT C

ATTACHMENT D
BIDDER INFORMATION

List the full legal name of each officer of the Corporation.

President: Tyler Mathews, PE

Signature: _____ Date: January 15, 2025

Executive **Vice-President:** George Miller, PE

Signature: _____ Date: January 15, 2025

Secretary: Doug Miller, PE

Signature: _____ Date: January 15, 2025

Treasurer: Chris Wilkey

Signature: _____ Date: 1/14/2025

List the Corporate Officer that will sign the contract: George Miller, PE

END OF ATTACHMENT D

ATTACHMENT E
EXPERIENCE OF BIDDER

Bidder Name: England-Thims & Miller, Inc.

Authorized Signature: Geory R. Miller Date: January 15, 2025

Is your company currently involved in any active litigation? X Yes _____No

If Yes, explain: See attached list of litigation.

Has your company ever been sued? X Yes _____No

If Yes, explain and/or submit court decision or judgment, as applicable:

See attached list of litigation.

The Bidder must demonstrate the successful completion of four (4) projects of similar complexity, nature, size, and dollar amount in the capacity of CMA. Any material misrepresentation, as determined by the City of Flagler Beach, shall result in disqualification.

On the following pages, provide the requested information regarding experience within the past ten (10) years on four (4) projects. These projects must be new or rehabilitation projects. Preferred projects should be for a coastal community on or near the beach. Additional credit will be awarded for Fishing Piers, either concrete or wood.

LITIGATION HISTORY

Project: Briar Oaks; Briar Oaks HOA

- Case Number: NA
- Alleged Claim: Construction Defects
- Final Outcome: ETM was excluded from this case.
- Date Settled: January 2019

Project: Bartram Office Park; Bartram Park HOA

- Case Number: 16-2019-CA-1251
- Alleged Claim: Construction Defects
- Final Outcome: Settled out of court
- Date Settled: February 2019

Project: Cobblestone Publix v. May

- Case Number: 162018CA006979XXXXMA
- Alleged Claim: Slip and Fall
- Final Outcome: Settled out of court - confidential agreement
- Date Settled: May 2021

Project: Posley [Donetia as PNG Jamael Butler, a minor] v. Jackson, Butler

- Case Number: 162020CA000236XXXXMA
- Alleged Claim: Negligence
- Final Outcome: Settled out of court - confidential agreement Date Settled: February 2021

England, Thims & Miller, Inc. v. Honan Development, LLC

- Amount: $45,000
- Alleged Claim: England, Thims & Miller, Inc. sued Honan Development, LLC for non-payment.
- Final Outcome: N/A
- Date Settled: N/A

England, Thims & Miller, Inc. v. Montevilla at Bartram Lakes Association

- Amount: $TBD
- Alleged Claim: Construction Defects
- Final Outcome: Pending
- Date Settled: Pending

Project #1:

Contract Date: 2020 - 2022

Contract Amount: $ $9.9 Million

Project Name: Jacksonville Beach Pier

Project Location: Jacksonville Beach, Florida

General Scope of Work: Monitoring and inspecting the construction contract to ensure that the project is constructed in reasonable conformity with the plans, specifications, and special provisions for the construction contract. Reviewing of plans, submittals, and pay requests. Overseeing installation of 96 prestressed concrete piles as well as monitoring of erosion control measures and conducting daily turbidity readings during demolition and construction of extension.

Client Name and Address: City of Jacksonville/City of Jacksonville Beach

555 West 4th Street

Jacksonville, Florida 32208

Client Contact Phone: (904) 255-8763

Client Contact Email: joyce@coj.net

Was the project completed on schedule? X Yes No

Total Amount of Change Orders: $ 75,011.71

Reasons for Change Orders: Standby costs due to delay in COE permit, adjustments to test and production pile lengths.

Please attach photos of the finished project.



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Project #2:

Contract Date: 2015 - 2018

Contract Amount: $ $200 Million

Project Name: SR 9B Phases 1, II, & III

Project Location: Jacksonville, Florida

General Scope of Work: Representing the best interests of the FDOT, St. Johns County and its community, proactively identifying and resolving issues, reviewing and responding to submittals, shop drawings, and RFIs, negotiating extra and unforeseeable work, tracking costs and processing estimates, and managing our inspection staff who were accountable for quality and timely completion of the work.

Client Name and Address: FDOT, District 2
2198 Edison Avenue
Jacksonville, Florida 32204

Client Contact Phone: (386) 312-4831

Client Contact Email: jeff.williams@dot.state.fl.us

Was the project completed on schedule? X Yes No

Total Amount of Change Orders: $ 661,737.91

Reasons for Change Orders: ITS Scope Modification Design, Race Track Road Modification, CR 2209 Forcemain, Hurricane Matthew, TG Utility Tie-in CR 2209, and Hurricane Irma.

Please attach photos of the finished project.





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Project #3:

Contract Date: 2016

Contract Amount: $ $1.5 Million

Project Name: Newnan Street/Hubbard Street Bridge Rehabilitation

Project Location: Jacksonville, Florida

General Scope of Work: Milling and resurfacing, base work, curb and gutters, bridges, sidewalks/bicycle path, and other incidental construction including preservation of historical bridge elements and JEA water main work on Newnan Street/Hubbard Street in Duval County from just south of Orange Street to approximately 200-feet south of Confederate Street.

Client Name and Address: FDOT, District 2
2198 Edison Avenue
Jacksonville, Florida 32204

Client Contact Phone: (904) 360-5504

Client Contact Email: jessica.tippett@dot.state.fl.us

Was the project completed on schedule? X Yes No

Total Amount of Change Orders: $ 113,104.49

Reasons for Change Orders: Added pile lengths and limited pile driving allowances due to existing soil contamination, added bulkhead, gravity wall and pipe railing.

Please attach photos of the finished project.





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Project #4:

Contract Date: 2022 - 2024

Contract Amount: $ $14 Million

Project Name: SR 5/Broward Creek Bridge Replacement

Project Location: Duval County

General Scope of Work: Concrete piles, , concrete beams, retaining walls, sand cement rip rap, barrier wall, roadway widening with column supported soil stabilization, multi-phase MOT, asphalt overbuild, turnout construction, milling and resurfacing, drainage, traffic separators, C&G, sidewalk, guardrail, watermain with bridge attachments and coordination with CSX.

Client Name and Address: FDOT, District 2

2198 Edison Avenue

Jacksonville, Florida 32204

Client Contact Phone: (904) 360-5557

Client Contact Email: sam.lansdale@dot.state.fl.us

Was the project completed on schedule? X Yes No

Total Amount of Change Orders: $ 1,784,171.18

Reasons for Change Orders: Added Grout Inclusion Columns for Pile Supported Pavement Extension, JEA Temporary Watermain Redesign, Impacts Associated with Hurricane Milton, Fire Hydrant Relocations, Bridge Deck Grooving and Type 'F' Curb & Gutter.

Please attach photos of the finished project.





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ATTACHMENT F
SWORN STATEMENT UNDER SECTION 287.133(3) (a),
FLORIDA STATUTES, ON PUBLIC ENTITY CRIMES

THIS FORM MUST BE SIGNED IN THE PRESENCE OF A NOTARY PUBLIC OR OTHER OFFICER AUTHORIZED TO ADMINISTER OATHS.

This sworn statement is submitted to: **The City of Flagler Beach** (Public entity)

By: George Miller, PE, Executive Vice President
(Individual's name and title)

For: England-Thims & Miller, Inc.
(Name of entity submitting sworn statement)

Whose business address is: 14775 Old St. Augustine Road
Jacksonville, Florida 32258

Federal Employer Identification Number (FEIN): 59-1773930

(If the entity has no FEIN, include the Social Security Number of the individual signing this sworn statement)

1. I understand that a "public entity crime" as defined in Section 287.133(1)(g), Florida Statutes, means a violation of any State or Federal law by a person with respect to and directly related to the transaction of business with any public entity or with an agency or political subdivision of any other state or with the United States, including, but not limited to, any bid or contract for goods or services to be provided to any public entity or an agency or political subdivision of any other state or of the United States and involving antitrust, fraud, theft, bribery, collusion, racketeering, conspiracy, or material misrepresentation.
2. I understand that "convicted" or "conviction" as defined in Paragraph 287.133(1) (b), Florida Statutes, means a finding of guilt or a conviction of a public entity crimes, with or without an adjudication of guilt, in any Federal or state trial court of record relating to charges brought by indictment or information after July 1, 1989, as a result of a jury verdict, non-jury trial, or entry of a plea of guilty or nolo contendere.

3. I understand that an "affiliate" as defined in Section 287.133(1)(a), Florida Statutes, means: A predecessor or successor of a person convicted of a public entity crime: or an entity under the control of any natural person who is active in the management of the entity and how has been convicted of a public entity crime. The term "affiliate" includes those officers, directors, executives, partners, shareholders, employees, members, and agents who are active in the management of an affiliate. The ownership by one (1) person of shares constituting a controlling interest in another person, or a pooling of equipment or income among persons when not for fair market value under an arm's length agreement, shall be a prima facie case that one person controls another person. A person who knowingly enters into a joint venture with a person who has been convicted of a public entity crime in Florida during the preceding thirty-six (36) months shall be considered an affiliate.

4. I understand that a "person" as defined in Section 287.133(1) (e), Florida Statutes, means any natural person or entity organized under the laws of any state or of the United States with the legal power to enter into a binding contract and which bids or applies to bid on contracts for the provision of goods or services let by a public entity, or which otherwise transacts or applies to transact business with a public entity. The term "person" includes those officers, directors, executives, partners, shareholders, employees, members, and agents who are active in management of an entity.

Based on information and belief, the statement which I have marked below is true in relation to the entity submitting this sworn statement. (Indicate which statement applies.)

X Neither the entity submitting this sworn statement, nor any officers, directors, executives, partners, shareholders, employees, members, or agent who is active in management of the entity, nor the affiliate of the entity, has been charged with and convicted of a public entity crime subsequent to July 1, 1989.

The entity submitting this sworn statement, or one or more of the officers, directors, executives, partners, shareholders, employees, members or agent who are active in management of the entity, or an affiliate of the entity, has been charged with and convicted of a public entity crime subsequent to July 1, 1989.

The entity submitting this sworn statement, or one or more of the officers, directors, executives, partners, shareholders, employees, members or agents who are active in management of the entity, or an affiliate of the entity, has been charged with and convicted of a public entity crime subsequent to July 1, 1989.

However, there has been a subsequent proceeding before an Administrative Law Jury of the State of Florida, Division of Administrative Hearings and the Final Order entered by the Administrative Law Jury

determined that it was not in the public interest to place the entity submitting this sworn statement on the convicted vendor list. (Attach a copy of the final order.)

I UNDERSTAND THAT THE SUBMISSION OF THIS FORM TO THE CITY OF FLAGLER IS FOR THE CITY ONLY AND, THAT THIS FORM IS VALID THROUGH DECEMBER 31, OF THE CALENDAR YEAR IN WHICH IT IS FILED. I ALSO UNDERSTAND THAT I AM REQUIRED TO INFORM THE CITY PRIOR TO ENTERING IN TO A CONTRACT IN EXCESS OF THE THRESHOLD AMOUNT PROVIDED IN SECTION 287.017, FLORIDA STATUES, FOR CATEGORY TWO OF ANY CHANGE IN THE INFORMATION CONTAINED IN THIS FORM.

Signature: George R. Miller

Date: January 15, 2025

State of: Florida

County of: Duval

PERSONALLY APPEARED BEFORE ME, the undersigned authority,

George Miller, PE who, after first being sworn by me,

(Name of individual signing)

affixed his/her signature in the space provided above on this 15th day of January, 2025.

ACKNOWLEDGEMENT

STATE OF FLORIDA
COUNTY OF Duval

Medina Hadziavdic
Signature of Notary Public
Print, Type or Stamp Commissioned Name of Notary Public below:

Sworn to (or affirmed) and subscribed before me by means of

online notarization ☐ *OR* physical presence ☒

this 15th day of January, 2025.

Personally Known ☒ *OR* Produced identification ☐

Type of Identification Produced:_____

MEDINA HADZIAVDIC
Notary Public - State of Florida
Commission # HH 107996
My Comm. Expires Mar 23, 2025
Bonded through National Notary Assn.

END OF ATTACHMENT F

ATTACHMENT G
AFFIDAVIT OF NON-COLLUSION

The undersigned bidder or agent, being duly sworn on oath, says that he/she has not, nor has any other member, representative, or agent of the firm, company, corporation or partnership represented by him, entered into any combination, collusion or agreement with any person relative to the price to be bid by anyone at such letting nor to prevent any person from bidding nor to include anyone to refrain from bidding, and that this bid is made without reference to any other bid and without any agreement, understanding or combination with any other person in reference to such bidding. He/She further says that no person or persons, firms, or corporation has, have or will receive directly or indirectly, any rebate, fee gift, commission or thing of value on account of such sale.

OATH AND AFFIRMATION

I HEREBY AFFIRM UNDER THE PENALTIES FOR PERJURY THAT THE FACTS AND INFORMATION CONTAINED IN THE FOREGOING BID FOR PUBLIC WORKS ARE TRUE AND CORRECT.

Dated this 15th day of January, 20 25.

George Miller, PE / England-Thims & Miller, Inc.

(Bidder Name)

Executive Vice President

(Title)

George R. Miller

(Signature)

ACKNOWLEDGEMENT

STATE OF FLORIDA

COUNTY OF Duval

Sworn to (or affirmed) and subscribed before me by means of

online notarization ☐ OR physical presence ☒

this 15th day of January, 2025.

Personally Known ☒ OR Produced identification ☐

Type of Identification Produced: _____

Medina Hadziavdic

Signature of Notary Public

Print, Type or Stamp Commissioned Name of Notary Public below:

MEDINA HADZIAVDIC
Notary Public - State of Florida
Commission # HH 107996
My Comm. Expires Mar 23, 2025
Bonded through National Notary Assn.

END OF ATTACHMENT G

ATTACHMENT H
CERTIFICATION OF NON-SEGREGATED FACILITIES

The Bidder certifies that they do not maintain or provide for their employees any segregated facilities at any of his establishments, and that they do not permit their employees to perform their services at any location, under their control, where segregated facilities are maintained. The Bidder certifies further that they will not maintain or provide for their employees any segregated facilities at any location under their control where segregated facilities are maintained. The Bidder agrees that a breach of this certification will be a violation of the Equal Opportunity clause in any contract resulting from acceptance of this Bid. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, time clocks, locker rooms and other storage and dressing areas, parking lots, drinking fountains, recreation or entertainment area, transportation and housing facilities provided for employees which are segregated by explicit directive, or are in fact segregated on the basis of race, color, religious disability or national origin, because of habit, local custom, or otherwise. The Bidder agrees that (except where they have obtained identical certifications from proposed subcontractors for specific time periods) they will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity clause, and that he will retain such certifications in his files.

The nondiscriminatory guidelines as promulgated in Section 202, Executive Order 11246, and as amended by Executive Order 11375 and as amended, relative to Equal Opportunity for all persons and implementations of rules and regulations prescribed by the United States Secretary of Labor are incorporated herein.

Name: George Miller, PE / England-Thims & Miller, Inc.

Signature: George R. Miller

Date: January 15, 2025

Title: Executive Vice President

Official Address: 14775 Old St. Augustine Road

Jacksonville, Florida 32258

END OF ATTACHMENT H

ATTACHMENT I
DRUG-FREE WORKPLACE

The undersigned vendor in accordance with Florida Statute 287.087 hereby certifies that

England-Thims & Miller, Inc. does hereby: (Name of Business)

1. Publish a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the workplace and specifying the actions that will be taken against employees for violations of such prohibition.

2. Inform employees about the dangers of drug abuse in the workplace, the business's policy of maintaining a drug-free workplace, any available drug counseling, rehabilitation, and employee assistance programs, and the penalties that may be imposed upon employees for drug abuse violations.

3. Give each employee engaged in providing the commodities or contractual services that are proposed a copy of the statement specified in subsection (1).

4. In the statement specified in subsection (1), notify the employees that, as a condition of working on the commodities or contractual services that are under proposal, the employee will propose by the terms of the statement and will notify the employer of any conviction of, or plea of guilty or nolo contender to, any violation of Chapter 893, Florida Statutes, or of any controlled substance law of the United States or any state, for a violation occurring in the workplace no later than five (5) days after such conviction.

5. Impose a sanction on, or require the satisfactory participation in a drug abuse assistance or rehabilitation program if such is available in the employee's community, by any employee who is so convicted.

6. Make a good faith effort to continue to maintain a drug-free workplace through implementation of the matters set forth above.

As the person authorized to sign the statement, I certify that this firm complies fully with the above requirements.

Name: George Miller, PE

Signature: George R. Miller

Date: January 15, 2025

Title: Executive Vice President

END OF ATTACHMENT I

ATTACHMENT J
CONFLICT OF INTEREST STATEMENT

Before me, the undersigned authority, personally appeared , who was duly sworn, deposes, and states:

1. I am the Executive Vice President of with a local office in Jacksonville, Florida and principal office in Jacksonville, Florida.
2. The above-named entity is submitting an Expression of Interest for the City of Flagler Beach project described as bid number 260.
3. The Affiant has made diligent inquiry and provides the information contained in this Affidavit based upon his own knowledge.
4. The Affiant states that only one submittal for the above project is being submitted and that the above-named entity has no financial interest in other entities submitting proposals for the same project.
5. Neither the Affiant nor the above-named entity has directly or indirectly entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive pricing in connection with the entity's submittal for the above project. This statement restricts the discussion of pricing data until the completion of negotiations and execution of the Agreement for this project.
6. Neither the entity nor its affiliates, nor anyone associated with them, is presently suspended or otherwise ineligible from participating in contract lettings by any local, state, or federal agency.
7. Neither the entity, nor its affiliates, nor anyone associated with them have any potential conflict of interest due to any other clients, contracts, or property interests for this project.
8. I certify that no member of the entity's ownership, management, or staff has a vested interest in any aspect of or Department of the City of Flagler Beach.
9. I certify that no member of the entity's ownership or management is presently applying for an employee position or actively seeking an elected position with City of Flagler Beach.
10. In the event that a conflict of interest is identified in the provision of services, I, on behalf of the above-named entity, will immediately notify the City of Flagler Beach in writing.

Signature of Affiant

ACKNOWLEDGEMENT

STATE OF FLORIDA

COUNTY OF Duval

Sworn to (or affirmed) and subscribed before me by means of

online notarization ☐ *OR* physical presence ☒

this 15th day of January, 2025.

Personally Known ☒ *OR* Produced identification ☐

Type of Identification Produced:_____

Signature of Notary Public

Print, Type or Stamp Commissioned Name of Notary Public below:

MEDINA HADZIAVDIC
Notary Public - State of Florida
Commission # HH 107996
My Comm. Expires Mar 23, 2025
Bonded through National Notary Assn.

END OF ATTACHMENT J

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ATTACHMENT K
COMPLIANCE WITH THE PUBLIC RECORDS LAW

Upon award recommendation or thirty (30) days after receiving submittals, they become "public records" and shall be subject to public disclosure consistent with Chapter 119, Florida Statutes. Proposers must invoke the exemptions to disclosure provided by law in the response to the solicitation and must identify the data or other materials to be protected, and must state the reasons why such exclusion from public disclosure is necessary.

If the company submits information exempt from public disclosure, the company must identify with specificity which pages/paragraphs of their bid/proposal package are exempt from the Public Records Act, identifying the specific exemption section that applies to each. The protected information must be submitted to the City of Flagler Beach in a separate envelope marked accordingly.

Company Name: England-Thims & Miller, Inc.

Authorized representative Printed Name: George Miller, PE

Authorized Representative Signature: George R. Miller

Date: January 15, 2025

END OF ATTACHMENT K

ATTACHMENT L
AMERICANS WITH DISABILITIES ACT AFFIDAVIT

The undersigned CONTRACTOR swears that the information herein contained is true and correct and that none of the information supplied was for the purpose of defrauding the CITY.

The CONTRACTOR will not discriminate against any employee or applicant for employment because of physical or mental handicap in regard to any position for which the employee or applicant for employment is qualified. The CONTRACTOR agrees to comply with the rules, regulations and relevant orders issued pursuant to the Americans with Disabilities Act (ADA), 42 USC s. 12101 et seq. It is understood that in no event shall the CITY be held liable for the actions or omissions of the CONTRACTOR or any other party or parties to the Agreement for failure to comply with the ADA. The CONTRACTOR agrees to hold harmless and indemnify the CITY, its agents, officers or employees from any and all claims, demands, debts, liabilities or causes of action of every kind or character, whether in law or equity, resulting from the CONTRACTOR's acts or omissions in connection with the ADA.

Name: George Miller, PE

Authorized Signature: George R. Miller

Date: January 15, 2025

Title: Executive Vice President

Affix Corporate Seal:

ACKNOWLEDGEMENT

STATE OF FLORIDA

COUNTY OF Duval

Medina Hadziavdic
Signature of Notary Public
Print, Type or Stamp Commissioned Name of Notary Public below:

Sworn to (or affirmed) and subscribed before me by means of

online notarization ☐ *OR* physical presence ☒

this 15th day of January, 2025.

Personally Known ☒ *OR* Produced identification ☐

Type of Identification Produced:_____

MEDINA HADZIAVDIC
Notary Public - State of Florica
Commission # HH 107996
My Comm. Expires Mar 23, 2025
Bonded through National Notary Assr.

END OF ATTACHMENT L

ATTACHMENT M
LIST OF LICENSES and CERTIFICATIONS

License/Cert. Name	Number	Issuing Authority	Expiration Date
Corporate Certificate	547560	State of Florida	12/31/2024
Kent Ponder, PE Florida PE License	60217	State of Florida	2/28/2025
ETM Florida PE License	2584	State of Florida	Current

END OF ATTACHMENT M

Tab 3

COMPANY PROFILE

3 COMPANY PROFILE



FIRM'S HISTORY

ETM is a full-service engineering and consulting firm located in Northeast and Central Florida. When our founders established ETM in Jacksonville in 1977, they had a vision to raise the standard of service within the civil engineering industry. Doing what is best for the client became ETM's corporate identity and ultimately resulted in our competitive advantage. Our 48 years of commitment to high standards, coupled with our ability to generate technical solutions, empower clients to respond with repeat business, allowing our company to grow and expand our services. As we grew, so did our clients and our reputation, and we became known for providing innovative, quality engineering services for a broad spectrum of infrastructure projects. With a focus on boutique, customer-centric, best-in-class services, ETM has built a business centered around taking care of our client partners, team members, and the communities we call home. Partnering with local clients to shape communities helped our company to grow into a full-service civil engineering firm, where we are dedicated to serving as Trusted Advisors, Creating Community.

FIRM'S SIZE & RESOURCES

Our firm maintains a staff of over 360 Florida-based professionals, and our services encompass the entire duration of the project, beginning with planning and project strategy development, continuing with engineering design and environmental permitting, and culminating with construction inspection post-design services and asset management. ETM's expertise spans the full lifecycle of infrastructure and development projects, offering a comprehensive range of services that include construction management, civil engineering, urban planning, landscape architecture, geospatial technologies, surveying, water and utilities. ETM has the required expertise needed to meet the objectives of this contract.

ETM is the ideal-sized firm - large enough to provide technical expertise to address any item contained in the scope of services, yet small enough to allow direct access to our executive leadership. ETM will effectively manage resources and coordinate between consecutive or interrelated projects, while meeting milestones on time and on budget. If unanticipated items arise on a project or within the City, we will realign our team resources to ensure the right people are available to support you and best address the challenge. ETM has the required expertise and capacity to meet the needs and schedule of the City. ETM's employees consist of:

- 52 Civil Engineers
- 25 Project Managers
- 45 CAD Technicians/Designers
- 70 Construction Inspectors/Managers
- 8 Landscape Architects
- 6 Planners
- 85 Survey Personnel
- 19 GIS Specialists
- 20 Technicians/Analysts
- 40 Administrative Personnel



Structure

ETM currently offers the following expertise:

- Construction Management
- Construction, Engineering & Inspection (CEI)
- Traffic & Transportation Engineering
- Transportation Planning
- Development Consulting & Entitlements
- Geospatial Technologies
- ITS
- Placemaking & Landscape Architecture
- Program Management
- Site Design
- Surveying & Mapping
- Utility Design & Coordination
- SUE

Our CEI Department specifically provides the following services:

- Construction Management
- Roadway and Bridge Inspection
- Project Representation
- Hybrid Inspection Services
- Construction Contract Administration
- Constructibility Reviews
- Bidding Support Services
- Inspection and System Testing of Paving, Drainage, Water, Sewer, Signalization, etc.
- Monitoring and Documentation
- Public Involvement
- ADA Compliance
- Analyzing Critical Path Construction Schedules
- Drainage Improvements
- Maintenance of Traffic Inspection

Effective/Efficient Resource Allocation

ETM strikes the perfect balance in size. Our firm can offer a team of skilled professionals equipped to handle all aspects of the project deliverables while maintaining a size that ensures the City benefits from collaboration with our executive leadership. We regularly complete projects with compressed schedules, and if necessary, can assign multiple teams and resources to ensure project milestones are maintained.

The City will receive technically-sound, efficiently-produced work products because ETM considers four critical factors when assigning staff to a project. We ensure that every team member has:

1. The technical capabilities to perform the assigned task.
2. The appropriate level of experience to efficiently perform the scope of services.
3. The availability to see the assignment through to completion.
4. The interpersonal skills to effectively work as a valued team member.

PHILOSOPHY OF SERVICES

While our firm has experienced tremendous growth over the past four decades, our philosophy has always remained the same. We believe integrity is vital to every project, however large or small. And for every client and project, we are committed to upholding integrity, honesty, and our commitment to client satisfaction.

TYPICAL VOLUME OF WORK

Ability to Maintain Project Schedules

ETM promotes timely project delivery by maintaining project schedules that minimize delays and reduce costs. Without reservation, it is ETM's primary goal on every project to meet our client's time and budget requirements. Our ability to meet project deadlines and maintain a high level of customer service allows us to develop lasting relationships with our clients. This is reflected in the high percentage of repeat business ETM receives from our clients. To deliver projects consistently and reliably, we rigorously track a large number of interim milestones so that we can detect schedule variances while there is still time for course correction. We have successfully employed this approach on similar contracts. For example, ETM recently completed a Continuing Services Contract for FDOT District 2 which included more than 170 Task Work Orders within a five-year period.

Ability to Execute Multiple Concurrent Projects

Our ability to execute multiple projects concurrently is attributed to the size and depth of our staff. Our firm responds to more than 300 new projects every year and regardless of a project's size, each is afforded the same sensitivity to budget and schedule requirements. We include principal involvement in every project and commit the best available managers who maintain constant communication with all the dedicated team members to ensure projects proceed on schedule.

FINANCIAL STABILITY

ETM was founded in Jacksonville, Florida in 1977. The ownership of the firm is dispersed among 33 shareholders. The Executive Leadership team is comprised of ETM's Chief Executive Officer, President, Chief Financial Officer, and seven Executive Vice Presidents. Each Executive Leadership Team member is responsible for managing a team of professionals and overseeing department resources, project schedules, and budgets.

ETM is financially stable and has the necessary resources, human and financial, to provide the services at the level required by the City of Flagler Beach.

Neither ETM nor our subconsultants have failed to complete any contracted work. ETM does not have any outstanding debt and has a strong credit rating of 3A1.

ETM'S BASIC CONSTRUCTION MANAGEMENT TECHNIQUES AND METHODS

ETM employs a proven, comprehensive approach to Construction Management that ensures high-quality project delivery, minimized risks, and streamlined processes. Our methodology focuses on three core principles:

1. **Thorough Understanding of Project Requirements:** From project initiation to completion, we ensure every stakeholder is aligned on goals, scope, and deliverables.
2. **Leveraging Available Resources:** We assess and utilize the most effective tools, technologies, and personnel to meet client needs efficiently.
3. **Strategic Work Planning:** Through clear task division, team expertise alignment, and eliminating redundancies, we create a structured plan that emphasizes communication, accountability, and precision.

General Transition Plan

Under the leadership of Kent Ponder, PE, ETM's transition plan prioritizes seamless coordination with City staff and stakeholders. Key steps include:

- **Communication Protocols:** Establishing open, transparent communication channels.
- **Scope Review:** Analyzing the contractor's CPM schedule to optimize staffing for evolving project needs.
- **Personnel Assignments:** Aligning field personnel with individual strengths to maximize efficiency.
- **Equipment Readiness:** Providing advanced tools (laptops, cell phones) to enhance productivity.
- **Lessons Learned Integration:** Leveraging insights from past projects to preempt challenges.
- **Cost Proposal Development:** Delivering detailed proposals for City review and approval.

Pre-Construction Phase

A structured pre-construction process is vital to set the foundation for project success:

- **Constructability Reviews:** Identifying potential issues early to avoid cost and schedule overruns.
- **Pre-Construction Surveys:** Documenting existing conditions thoroughly with video, photos, and field measurements.
- **Submittal Matrix:** Creating and distributing a comprehensive matrix of contractor deliverables.
- **Pre-Work Meetings:** Hosting meetings to address milestones, pay items, and key project aspects.
- **Community Outreach:** Facilitating communication with stakeholders, schools, emergency services, and residents to ensure minimal disruptions.

Construction Phase

ETM's robust oversight during construction ensures quality and accountability:

- **Daily Inspections:** Monitoring contractor work to ensure compliance with project documents.
- **Submittal Tracking:** Streamlining submittal and shop drawing reviews to avoid delays.
- **Material Testing:** Ensuring quality through rigorous verification testing.
- **Safety and Compliance:** Monitoring MOT and erosion control to protect the public and meet regulatory standards.
- **Contractor Coordination:** Conducting regular meetings to address scheduling, safety, and problem-solving.
- **Cost Control:** Managing budgets and ensuring contractor payments align with work performed.

Post-Construction Phase

ETM focuses on a smooth project close-out and knowledge transfer:

- **As-Built Documentation:** Compiling field changes and EOR updates.
- **Permit Close-Out:** Ensuring all regulatory requirements are met.
- **Final Estimate Preparation:** Aligning quantities and documentation for project closure.
- **Lessons Learned Review:** Capturing insights for future improvements.

ETM's commitment to excellence in construction management ensures that projects like the Flagler Beach City Pier are delivered on time, within budget, and to the highest standards. Our CEI team's expertise in addressing complex challenges, managing community impacts, and ensuring public safety makes us a trusted partner for delivering high-quality pier projects.

LEVERAGING ETM'S EXPERTISE TO ADVANCE THE FLAGLER BEACH CITY PIER PROJECT

In response to the RFQ, the City requested that our team highlight our unique expertise, experience, and techniques that could serve as advantages in completing this project. ETM's extensive track record with similar high-profile pier projects positions us as an ideal partner for the Flagler Beach City Pier. Below, we present two examples from the Jacksonville Beach Pier project that illustrate our ability to anticipate challenges, deliver innovative solutions, and safeguard project success.

Example 1: Transition to Precast Pier Bent Caps

The Jacksonville Beach Pier was initially designed with cast-in-place pier bent caps. However, the contractor submitted a Request for Modification (RFM) proposing a transition to precast pier bent caps. ETM played a pivotal role in reviewing and approving the contractor's Specialty Engineer's shop drawings for this modification. This change delivered significant time savings and improved quality, as the precast caps were manufactured in a controlled facility, ensuring superior product consistency. The time saved was critical to maintaining the project schedule despite delays caused by two hurricanes during construction.

ETM's proactive approach included a rigorous inspection process after the first closure pour for the precast bent caps. During our inspection, we identified voids between the piles and the precast caps. Collaborating with the Contractor, Engineer-of-Record (EOR), and the City of Jacksonville, ETM spearheaded the development and implementation of a revised placement procedure. This included:

- Initiating pours from the interior portion of the bent.
- Utilizing additional placement chutes.
- Adjusting the concrete slump to the upper allowable limits.

These modifications resolved the issue, with subsequent pours achieving the desired quality. By addressing potential challenges early and implementing effective corrective actions, ETM not only minimized project risks but also eliminated additional costs for the City. Our expertise in managing repair procedures, always at the contractor's expense, further demonstrates our commitment to reducing liability and ensuring quality outcomes.

Example 2: Innovative Cost Mitigation for Production Piles

During the Pre-Bid Vendor Question Period for the Jacksonville Beach Pier project, contractors expressed concerns about the lump-sum pricing structure for production piles. This structure posed risks of cost variability due to potential differences in pile lengths. Recognizing the contractors' concerns and the City's interest in cost predictability, ETM recommended a change to a unit rate pricing model based on linear feet.

This strategic adjustment:

- Allowed bidders to submit more accurate pricing.
- Protected the City by ensuring it would receive credit for shorter piles or incur only minimal additional costs for longer piles at a predetermined rate.
- Reduced the risk of claims and disputes related to unknown cost factors during the project.

By fostering transparency and creating a win-win scenario, ETM's recommendation enhanced bidder confidence and controlled financial risk for the City.

Why ETM?

ETM's proactive problem-solving, technical expertise, and ability to innovate under complex conditions make us a valuable asset for the Flagler Beach City Pier project. Our proven success in managing high-stakes projects like the Jacksonville Beach Pier ensures that we can deliver results efficiently, cost-effectively, and with minimal risk to the City.

FIRM'S RELEVANT EXPERIENCE

ETM has proudly provided CMA services for a variety of local agencies for over 30 years. In fact, ETM's CMA department has grown into one of the largest groups in the State of Florida and currently provides services for roadway and bridge construction, paving, drainage, water, sewer and reuse inspection, materials testing, full-time construction contract administration, and bidding services, as well as monitoring and documentation throughout all phases of construction.

Our team of experts boasts 48 years in the industry and an unparalleled knowledge of infrastructure projects. We guarantee peak performance, technical mastery, and a swift response to all your needs, so you can rest assured that this project will run smoothly from start to finish. Our versatility and depth of CMA experience, wealth of FDOT/CTQP qualified staff, essential knowledge and expertise gained through our decades of experience administering multiple projects simultaneously, and our experience with pier and infrastructure projects has uniquely provided us with the skills necessary to service this contract.

Our team has significant expertise providing specialized services that are applicable to the type of project under this contract. Specifically, our project team's experience in the following areas ensures that this type of project will be completed professionally and efficiently.



Preconstruction

This initial phase is crucial as it establishes a comprehensive roadmap for both the construction team, and client. During this stage, we meticulously outline the project's entire scope, detailing every aspect from design specifications to resource allocation. By discussing contract and plan details during this meeting, we set the project up for success and leave nothing for interpretation.

Owners Representation

At ETM, we prioritize our clients' needs and visibility at every stage of a project. We take great care to represent our clients with the utmost professionalism and integrity, ensuring their interests are always at the forefront and their brand and values are prominently showcased, reflecting their investment and importance in the project's success.

Submittal Review

We will evaluate all submittals for compliance with our clients' project specifications. Our process begins with a detailed review of all documentation, including drawings, material samples, product data, and test reports. We meticulously compare these submittals against the established project criteria to verify that they adhere to the specified quality, performance, and regulatory standards.

Closeout

Project closeout is the last major hurdle in the construction process, representing the culmination of months or even years of hard work and collaboration. During this critical phase, our team conducts comprehensive inspections and evaluations to verify that all work has been completed to the highest standards and in accordance with the project specifications and facilitate the preparation and submission of all necessary closeout documentation.

AWARDS AND ACCOMPLISHMENTS IN PREVIOUS SIMILAR PROJECTS

ETM has worked hard to earn our reputation as a firm that provides outstanding service and quality product delivery and this project will be no exception. A measurement of our firm's success is symbolized in the recognition we have received for similar projects through various awards from well-recognized industry associations. These awards embody the long-standing relationships and mutual respect that our team has fostered with Northeast Florida clients and contractors who recognize our staff as problem solvers, and work with us towards mutually beneficial award-winning project solutions.

ETM was ranked in the 2024 Top 500 Design Firms by the Engineering News Record and was recognized by The Jacksonville Business Journal 2024 Book of Lists as one of the Top 5 Engineering Firms, Best Places to Work, as well as, one of the Top 40 Private Companies in 2022.

Florida Transportation Builders' Association (FTBA)

Best in Construction

- Newnan Street Historical Bridge Replacement (w/Hal Jones)
- I-295/Heckscher Drive Interchange (w/Superior Construction)
  SR 50 from Hernando/Sumter County Line
  to East of CR 478A
- SR 21 (Blanding Boulevard) Resurfacing
- I-95/Old St. Augustine Road Interchange
- US 17/Doctor's Inlet Bridge Widening

American Council of Engineering Companies Florida (ACEC FL)

Engineering Excellence Awards; Statewide Grand Special Projects Award

- Graham Swamp Trail and Pedestrian Bridge
  over SR 100

Outstanding Bridge Award

- SR 15 (US 17) 4-Laning over Dunns Creek

Outstanding Design Build

- SR 9B Phase 3 New Alignment

Florida American Concrete Institute (ACI)

Significant Concrete Structure

- I-295/Heckscher Drive Interchange
- SR 9B Phase II System Interchange

Design/Build Institute of America Transportation

- I-95/SR 9B Phase II System Interchange (w/ Superior Construction)
- SR 9B Phase III New Alignment (w/ Superior Construction)

American Public Works Assocation (APWA)

National Award for Historical and Restoration Project

- City of St. Augustine's Downtown Improvements District

Project of the Year for Roads & Highways

- Graham Swamp Trail and Pedestrian Bridge
  over SR 100

American Council of Engineering Company (ACEC)

National Recognition Award

- Graham Swamp Trail and Pedestrian Trail Bridge
  over SR 100



Tab 4
PROJECT APPROACH

4 PROJECT APPROACH

This iconic project has been a focus of ours for some time. To provide effective Construction Management and Administration (CMA) services, our team engaged early with the Engineer-of-Record, Brian Shaw, PE, and Gabriel Perdomo, PE, of Moffatt & Nichol, Inc., to track plan development and finalize the construction timeline. Our approach involves reviewing plans, consulting stakeholders, analyzing contract documents, performing field inspections, and comparing field conditions with contract plans and specifications to ensure a comprehensive understanding of the project scope.

ETM understands that the Contractor is responsible for obtaining all necessary permits, except for environmental permits, which have already been secured from the U.S. Army Corps of Engineers, FDEP, and FWC. No additional FEMA approvals are expected. Coordination with the Volusia and Flagler Turtle Patrols will be essential to ensure compliance with environmental and wildlife regulations during construction.

Based on our experience with the Jacksonville Beach Pier Replacement, we anticipate the Contractor may also need to obtain building permits, which could be an unexpected cost. However, the Building Department's active involvement during the design phase should help streamline the process, if needed. ETM is prepared to support the City and Contractor in effectively navigating these permitting requirements.

After hurricanes damaged portions of the pier, a survey revealed a smaller-than-expected debris field compared to the Jacksonville Beach Pier. This may be due to material differences, with concrete settling beneath the pier while wood was carried away by currents or buried. Regardless, the Contractor must ensure all obstructions are cleared to allow unobstructed pile driving to maintain structural stability.

ETM understands that Hal Jones Contractor - Vecellio & Grogan, Inc., was the sole bidder among the four pre-qualified firms to submit a cost proposal. We have a proven, long-standing partnership with this contractor, highlighted by multiple award-winning projects recognized statewide by the FTBA. Our collaboration on the Jacksonville Beach Pier Replacement project demonstrated our ability to deliver exceptional results together, meeting or exceeding stakeholder expectations. This strong relationship will benefit the Flagler Beach Pier project, ensuring effective collaboration and successful, timely completion.

ETM's approach to the Flagler Beach Pier Replacement project is thorough and multi-faceted, ensuring effective oversight and meticulous execution at every stage. Our strategy is designed to handle the project's complexity, enhance communication, and deliver a high-quality result on time and within budget.



Mobilize & Assemble Cranes



Equipment & Material Deliveries









A key aspect of our process is gaining a comprehensive understanding of the project scope. This includes technical specifications, design requirements, community goals, environmental factors, and local regulations. By addressing all elements proactively, we minimize risks and resolve challenges efficiently.

The Flagler Beach Pier replacement involves reconstructing the historic pier, originally built in 1928 and heavily damaged by storms and hurricanes, leading to its closure in 2022. The project's goal is to modernize the pier while preserving its historical character. The westernmost 113-feet of the original timber pier will be retained and restored, while the remaining 715 feet will be replaced with a resilient, modern structure, resulting in a total pier length of 828 feet and 10 inches.

The new design incorporates several upgrades. The pier's width will increase from 20 feet to 25 feet, enhancing visitor space. The iconic T-head will be reconstructed at the easternmost end, measuring 32 feet by 20 feet. Unlike the original all-timber construction, the new pier will use 24-inch square prestressed concrete piles, concrete pile caps, and beams, with timber decking to maintain its traditional appearance. The deck elevation will be raised by 10.2 feet, greatly improving resilience to future storms.

Modern utilities such as power, low-voltage A/V systems, lighting, potable water, and fire line will be installed, alongside architectural features like lighting, binocular platforms, fish cleaning stations, shade canopies, and benches with end tables. These enhancements will preserve the pier's historic charm while delivering a durable and functional design for future generations.

Understanding and addressing the logistical challenges of the Flagler Beach Pier Replacement is a critical component of ETM's approach. Working in a coastal environment requires careful planning to manage complexities, coordinate concurrent construction activities, and ensure public safety and access.

Originally, three projects were planned within the pier footprint: the beach nourishment project, the A1A resurfacing, and the pier reconstruction. While the beach nourishment project has been completed, there is uncertainty regarding whether the FDOT resurfacing project will proceed concurrently with the pier reconstruction. Ideally, delaying the resurfacing project until after the pier project would prevent potential damage to newly paved surfaces, reduce overlapping operations, and allow for a cohesive finish to the area, creating a seamless, polished outcome for the community.

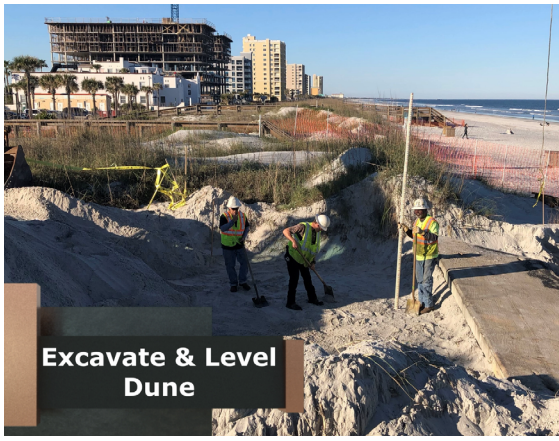
Regardless of the timing, ETM is committed to ensuring smooth coordination between multiple contractors to avoid production disruptions and minimize unnecessary claims. Drawing on our experience with similar projects, such as the Jacksonville Beach Pier reconstruction, we will proactively anticipate and address logistical challenges to keep the project on track and ensure its success.



Equipment & Material Deliveries







A cornerstone of our CMA approach is maintaining continuous communication with all stakeholders. ETM will establish clear and effective lines of communication with key individuals, including City officials, such as Mr. Bill Freeman (City Engineer), Dr. Lee Richards (Engineering Coordinator), and Ms. Christine Novak (Project Manager). Coordination will also extend to Mr. Brian Shaw (Engineer-of-Record), Gabriel Perdomo of Moffatt & Nichol, Inc., the Contractor, subcontractors, and the community. Regular updates and meetings will ensure alignment among all parties, enabling prompt identification and resolution of any issues that arise. This proactive communication strategy is integral to the seamless execution of the Flagler Beach Pier Replacement project.

CASE STUDY

For example, our proficiency in public relations and communication is demonstrated by the success of the $31 Million Doctor's Inlet Bridge Widening Project. The FDOT entrusted us with managing public complaints and specifically requested that our field office number be listed on the Project Information signs, rather than the typical FDOT project hotline. This endorsement highlights our ability to effectively address public concerns, ensuring a transparent and positive project experience for all stakeholders.

Quality control and risk management are integral components of ETM's approach. We will conduct daily inspections, ensure compliance with safety standards, and address any potential risks promptly to ensure the long-term success of the project. Our comprehensive approach guarantees that every aspect of the project, technical, logistical, and managerial, is handled efficiently and effectively.



Our goal is to deliver a high-quality project within budget and on schedule, which is achieved through robust quality control. ETM employs proven resources for project-specific QA, including FDOT guidelines for inspection procedures, multi-step documentation checks, and reviews by internal and third-party experts (such as Melinda Rainwater of (JEAces) for Project Quality Assurance Reviews.

CASE STUDY

For example, our three-step process starts with the Senior Inspector reviewing all daily reports and quantities, then the Contract Support Specialist (CSS) utilizes a secondary marker to review field book quantity tracking logs and then submits to our PA for a final full document review prior to approval for payment and finalizing the as-built certification. This process has resulted in our Jacksonville Beach Pier estimates being submitted ahead of schedule with no noteworthy issues!

In summary, ETM provides the City of Flagler Beach with a reliable, experienced partner, using a comprehensive, multi-pronged strategy to successfully guide the Flagler Beach Pier Replacement project from start to finish.

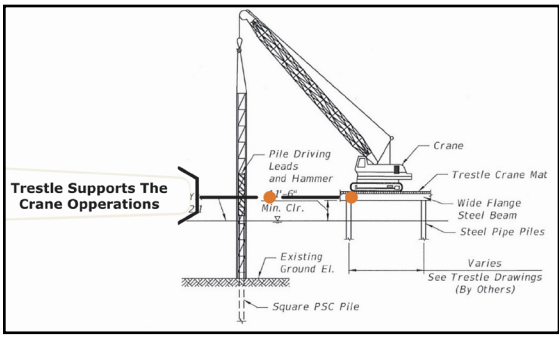




Dry Assembly of Trestle Sections



Construct Temporary Trestle





A. PRECONSTRUCTION SERVICES

ETM's Preconstruction Services will establish a strong foundation for the Flagler Beach Pier reconstruction by fostering collaboration, ensuring compliance, and anticipating challenges:

1. Planning and Coordination:

- Collaborate with the City and design team to finalize any last-minute project plan changes or revisions, including architectural features such as fish cleaning stations, shade canopies, and binocular platform.
- Review construction documents for clarity and constructability, ensuring consistency with FEMA, City, and Moffatt & Nichol's design and project specifications/standards.

2. Permitting and Environmental Compliance:

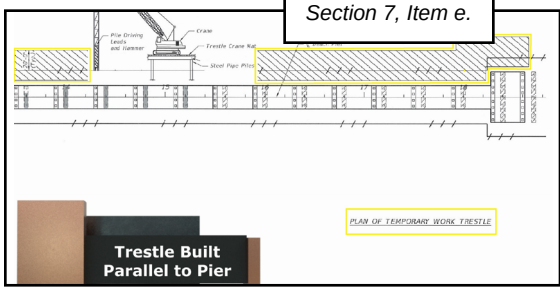
- Assist the Contractor in obtaining necessary permits, i.e. environmental permits, and building permits, including FDOT permitting, as FDOT requires the contractor to submit Signed and Sealed MOT plans for approval to ensure MOT on A1A complies with FDOT Standards.
- Coordinate with FDEP, FWC, and other regulatory agencies to implement measures protecting marine life and turtle nesting habitats.

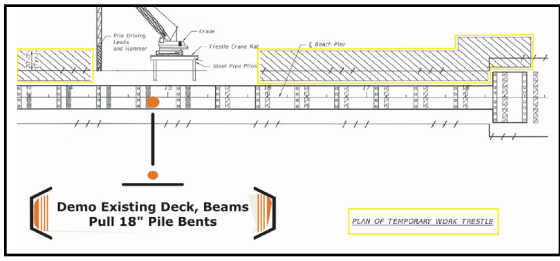
3. Cost and Schedule Management:

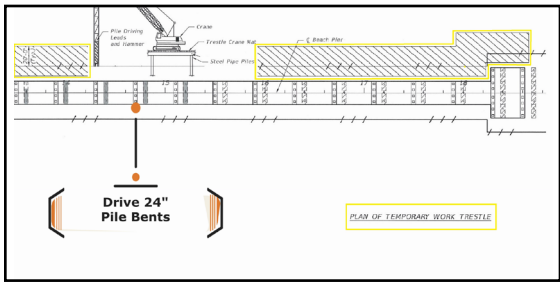
- Evaluate contractor cost proposals to ensure alignment with the Lump Sum contract and identify opportunities for cost efficiency.
- Develop a comprehensive project schedule, accounting for dependencies and potential conflicts with concurrent projects such as FDOT resurfacing.

4. Construction Methodology Review:

- Assess and recommend construction methodologies, such as cast-in-place versus precast pier caps, to optimize timelines and mitigate risks.
- Validate plans for temporary trestles, crane assembly, and pile installation to ensure compliance with safety standards including but not limited to high seas and or high winds.

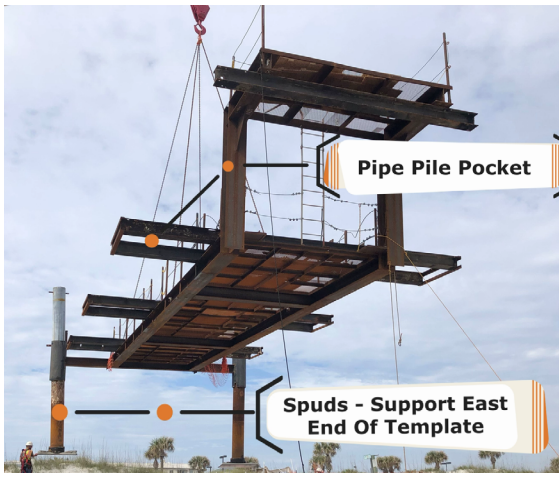






Drive Temporary Trestle Pipe Piles





B. CONSTRUCTION SERVICES AS CMA

92% percent of our business comes from repeat clients, including reputable entities like the FDOT, JTA, JEA, and numerous local municipalities. This high percentage of return business is a testament to the effectiveness of our project approach and methodology, demonstrating the trust and confidence clients place in us to consistently deliver successful projects. It highlights our commitment to excellence, reliability, and building enduring partnerships based on quality work and strong project management.

As the Construction Management Advisor for the Flagler Beach Pier project, ETM will provide leadership and expertise to ensure a successful outcome. Our approach is built on the following principles:

1. Teamwork and Communication:

- Act as the City's representative, ensuring seamless communication among stakeholders, including the Contractor, City officials, FEMA, and local businesses and surrounding community.
- Conduct regular progress meetings to address issues and foster transparency.

2. Leadership in Construction Oversight:

- Oversee the installation of 24" square prestressed concrete piles, concrete caps, and beams, ensuring compliance with contract specifications and safety standards.
- Monitor the assembly and placement of architectural features, including benches, shade canopies, and utilities (lighting, power, potable water, and fire systems).
- Provide detailed daily reports documenting progress, compliance, and challenges.

3. Stakeholder and Community Coordination:

- Engage with local businesses, residents, and recreational users (e.g., surfers) to address concerns and minimize disruptions.
- Coordinate with Flagler Beach Fire & Rescue and other emergency services to ensure safety and accessibility throughout construction.

4. Quality Control and Compliance:

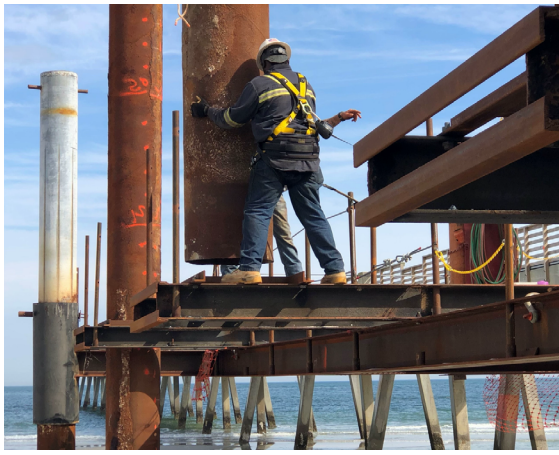
- Ensure the Contractor adheres to approved shop drawings and specifications, including tension dowel bar testing and proper pile installation.
- Maintain environmental compliance, including turbidity monitoring and fencing placement, to protect coastal ecosystems.

5. Documentation and Reporting:

- Maintain meticulous records, including progress logs, compliance reports, and photographic evidence.
- Deliver as-built documentation and FEMA-compliant reports to the City upon project completion.

ETM's proven approach ensures the Flagler Beach Pier Replacement project will be executed efficiently, safely, and with high-quality results.This pier closely mirrors the successful Jacksonville Beach Pier reconstruction project in scope, challenges, and objectives. Both projects involve the reconstruction of iconic coastal structures designed to withstand harsh marine environments while meeting the community's aesthetic and functional needs.







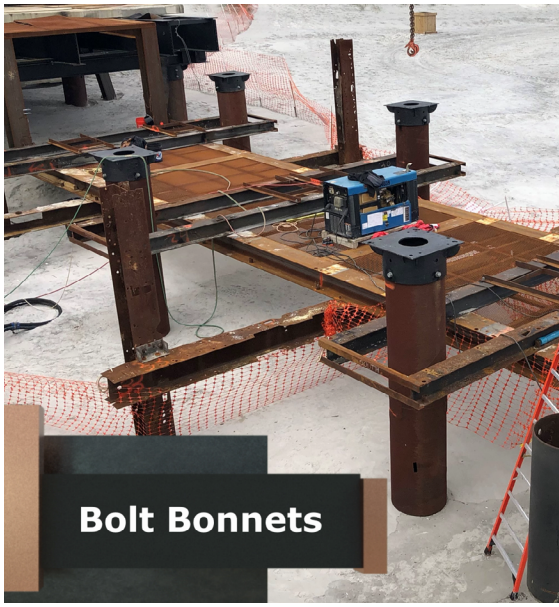


Key similarities include:

1. Material Selection and Durability: Both projects used corrosion-resistant materials to ensure long-term durability against saltwater, high winds, and storm surges.
2. Structural Design for Resilience: Each pier incorporated advanced design elements to meet or exceed FEMA flood and wind design standards for coastal infrastructure.
3. Community-Centric Approach: Both projects focused on stakeholder engagement to ensure the finished product served local residents, businesses, and visitors effectively.
4. Environmental Considerations: Similar to Jacksonville Beach Pier, the Flagler Beach Pier prioritizes sustainable construction practices to protect marine ecosystems.
5. Construction Phasing and Challenges: The two projects faced similar logistical challenges, including maintaining safe access, managing pile delivery within tight city limits, addressing pedestrian and traffic management, minimizing disruptions to nearby businesses, and working within tight timelines and budgets.
6. ETM's anticipated sequencing for the Flagler Beach Pier Replacement mirrors the successful approach used in the Jacksonville Beach Pier Reconstruction, ensuring efficient execution and on-time delivery. To meet the 18-month construction timeline, we plan for the Contractor to mobilize two cranes to boost production and maintain steady progress across all project phases.
7. The first crane will be mobilized early for equipment and material deliveries, initiating the construction of the temporary trestle and starting the demolition of the existing pier. Once sufficient progress is made eastward, the second crane will take over critical tasks, including deliveries, demolition, and permanent construction. This phased crane utilization allows for concurrent operations, with the first crane focusing on trestle construction and the second on demolition and new construction.
8. The process begins with mobilizing specialized equipment, such as a Link-Belt LS-248HII crane, and delivering critical materials like pipe piles and vibratory hammers. Public safety is maintained by securing the work area with fencing to prevent unauthorized access. The controlled dry assembly of trestle sections ensures seamless fitting before installation, improving efficiency and reducing construction risks.
9. A temporary trestle provides a stable platform for crane operations and worker access, facilitating safe, phased demolition of the existing pier. Public safety is prioritized with pedestrian access below the trestle and overhead debris protection. Demolition activities, including the removal of old piles, caps, and debris, are carried out methodically to clear the path for new pile installation.
10. ETM's expertise in pile installation, using jetting techniques and diesel hammers, ensures precise placement. Precast bent caps, beams, and slabs are carefully transported and set to maintain structural integrity. The final stages involve constructing wood deck panels, installing handrails, plumbing, electrical systems, and amenities like fish cleaning stations, binocular platforms, and shade canopies. Comprehensive inspections and FEMA compliant as-built documentation ensure the project meets the highest standards of quality and resilience.
11. The dual-crane strategy maximizes productivity and minimizes downtime, ensuring smooth transitions between phases and faster project completion. The temporary trestle provides a stable platform for efficient material handling, while phased demolition and pile installation proceed systematically. Debris removal will clear obstructions, facilitating continuous progress.
12. By leveraging ETM's proven methodology, the City of Flagler Beach will benefit from a streamlined construction process prioritizing safety, environmental stewardship, and structural quality. The success of the Jacksonville Beach Pier Reconstruction project demonstrates ETM's capability to manage similar complexities, ensuring the Flagler Beach Pier Replacement is delivered on time, within budget, and built to last for generations.







LEADERSHIP, TEAMWORK, AND COMMUNICATIONS

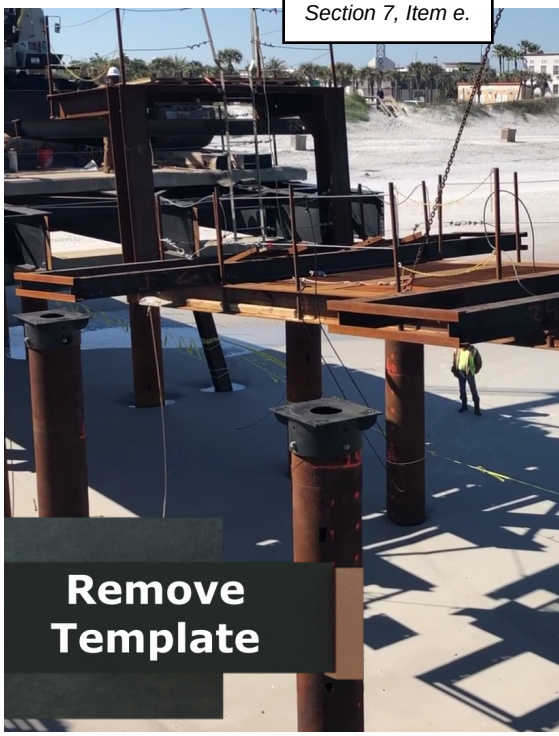
ETM's leadership approach is grounded in a program of principles designed to manage professional services in transportation projects effectively. At the heart of our management methods is the Team Approach, known as the ETM Way. This approach fosters a deep sense of "Ownership" and is supported by the key principles of Team Building, Problem Solving, and Effective Communication. Through the professional execution of these principles, ETM can meet the specific needs of the City with both flexibility and accountability.

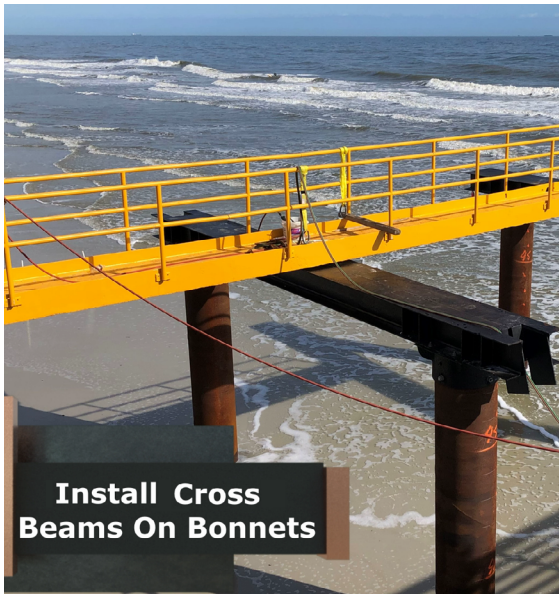
Our sense of "Ownership" extends to a collaborative partnership with all stakeholders. We understand that the Contractor's challenges are also ours, as well as those of the Client and the Community. We work in a spirit of cooperation with the Contractor to reduce their exposure, which in turn mitigates or eliminates the City's exposure. This proactive leadership approach reflects our commitment to ensuring the project's success and minimizing risks for all involved parties.

ETM has earned a reputation for being an "extension of staff" for our clients. This recognition is primarily due to our demonstrated sense of "Pride" and "Ownership" in our projects. We approach every project with the same level of commitment as if it were our own, ensuring that we manage the project lifecycle with a strong sense of responsibility. This mindset enables us to communicate effectively with all levels of the client's organization whether it's the Board of City Commissioners, Engineering Personnel, Procurement, Public Relations, or Maintenance Departments. We adapt our communication style to fit the needs of each stakeholder, ensuring that their perspectives are understood and that our services align seamlessly with their expectations.

Our expertise also extends to managing community concerns. We understand the importance of keeping the public informed about project schedules, milestones, and potential impacts. Our commitment to timely communication, as well as taking and returning calls, helps ensure that adjacent landowners and the public remain informed and confident in the project's progress. This transparency strengthens our relationships with the community and reinforces our accountability to all stakeholders.

At ETM, we lead with a commitment to success, understanding that true achievement occurs when both the Client and Contractor succeed together. Our collaborative approach ensures that every project milestone contributes to shared goals and mutual prosperity. By prioritizing the success of all stakeholders, we build lasting partnerships based on trust, excellence, and a shared vision for success.









C. PROPOSED TEAM

ETM's proposed team brings a wealth of expertise and experience specifically designed to address the complexities of infrastructure projects like the Flagler Beach City Pier Replacement. Our team's experience spans multiple disciplines, allowing us to approach projects with both technical proficiency and a deep understanding of community and environmental considerations.

A key area of our expertise is historical preservation, as demonstrated through our successful projects such as the Jacksonville Beach Pier Replacement and the Historical Newnan and Main Street Historical Bridge Restoration projects. These projects highlight our capability to preserve the historical elements of iconic structures while seamlessly integrating modern construction techniques. Our team excels at balancing the need to maintain the integrity of historical landmarks with the need for structural resilience, durability, and compliance with current safety standards.

By leveraging this unique blend of experience in both preservation and modern construction, ETM is uniquely qualified to manage the Flagler Beach Pier Replacement project with the care and precision it requires. Our team's ability to navigate the challenges of historical preservation, combined with our innovative construction practices, positions us to deliver a project that honors the legacy of the pier while meeting the needs of the community and ensuring the long-term sustainability of the structure.



Kent Ponder, PE
Senior Project Engineer/Team Leader/Primary Point-of-Contact

Years of Experience: 25
Education: BS, Civil Engineering, University of Florida, 1998

Registrations: FL PE, No. 60217
Certifications: (TIN: P53650165): QC Manager, Stormwater Insp., Advanced MOT, Critical Structures, Drilled Shaft, Auger Cast Pile

Mr. Ponder has been a licensed Engineer since 2002 and is well versed in an extensive assortment of complex transportation construction projects. He began his career in the US Navy then transitioned to FDOT where his focus on quality, attention to detail, and ability to lead and communicate well with others helped him advance quickly in the field. His diverse construction experience include major bridges, pile and drilled shaft foundations, fender construction, complex roadway/interchanges, utilities, bridge culverts, mechanically stabilized earthwalls (MSE), high mast lighting, signalization, overhead sign installation and beach pier reconstruction. Mr. Ponder has broad experience managing Task Work Order type assignments on residency and area-wide projects - providing exceptional service in this capacity specifiaclly for the FDOT District 2 and Nassau County. Mr. Ponder is highly regarded for his leadership, ensuring that Contractors are performing satisfactory work and properly submitting necessary project documentation and correspondence in accordance with plans, specifications, and contract documents.

Similar Project Experience:

- Jacksonville Beach Pier, City of Jacksonville
- SR 5/Broward Creek Bridge Replacement, FDOT District 2
- Newnan Street/Hubbard Street Bridge Rehabilitation, FDOT District 2

Set Trestle Section











Tim Thacker
Project Administrator

Years of Experience: 33
Education: High School Diploma

Certifications: (TIN: T26081267): Asphalt Paving 1 & 2, Earthwork 1 & 2, Final Estimate 1 & 2, QC Manager, Concrete Spec., Drilled Shaft, Pile Driving, Concrete Tech 1 & 2, Field Testing Tech, CTCI, PCC Pavement, PCC Grinding/Joints, PCC Paving Insp., Fiber Optics 1 & 2, CCTV, DMS, MFES, MVDS, RWIS, Advance MOT, HAZMAT, Stormwater Insp., MSE Wall, Auger Cast Pile, Critical Structures, FEMA ICS-100-C, 200, 700-B, SSTC High-Strength Bolting

Mr. Thacker specializes in administering major highway and bridge construction projects. He began his career as an airplane mechanic but transitioned to construction where he rapidly advanced to a project Superintendent. His background as a Superintendent on the Constructor side of the industry provides him with valuable insights and knowledge of construction means and methods. He then transitioned to CEI in 1993 and has worked his way from an Inspector to Senior Inspector to Project Administrator. With combined Project Administrator and Senior Inspector positional experience, Mr. Thacker has completed over 40 bridge projects that include new bridge construction, bridge removal/ widening/replacement, pedestrian bridges, and beach pier reconstruction.

Similar Project Experience:

- Jacksonville Beach Pier Replacement, City of Jacksonville
- SR 9B, Ph. I-III, New Interstate Facility, FDOT District 2



Robert Mullin
Assistant Project Administrator

Years of Experience: 21
Education: High School Diploma

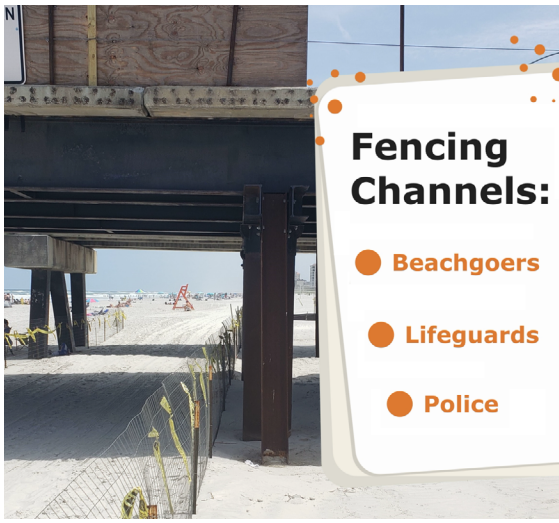
Certifications: (TIN: M45077883): Asphalt Paving 1 & 2, Earthwork 1 & 2, Final Estimate 1 & 2, QC Manager, Concrete Spec., Drilled Shaft, Pile Driving, Concrete Tech 1 & 2, Field Testing Tech, CTCI, PCC Pavement, PCC Grinding/Joints, PCC Paving Insp., IMSA 1 & 2, Fiber Optics 1 & 2, CCTV, DMS, MFES, MVDS, RWIS, Advanced MOT, MSE Wall, HAZMAT, Stormwater Insp., Auger Cast Pile, Critical Structures, FEMA ICS-100, 200, 700

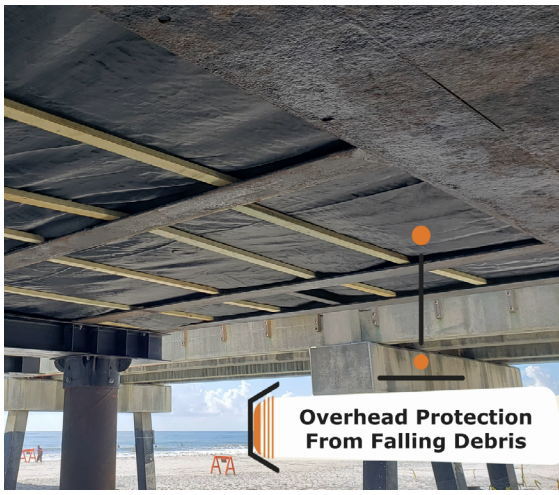
Mr. Mullin is highly skilled in inspection and administering major highway and bridge construction projects, including considerable experience working on bridge construction including bascule bridges. Progressing to roles such as Senior Inspector and Project Administrator, he discovered his true passion as a Lead Bridge Inspector, where he could make the most significant impact on project quality and team development. His bridge expertise spans the rehabilitation of existing concrete and steel structures, constructing new steel trusses, post-tensioned structures, AASHTO, FIBs, mechanical rack and pinion lift spans, hydraulic single-leaf cylinder lift bridges, precast footings, cast-in-place footings both on land and in water, and foundations including piles and drilled shafts.

Similar Project Experience:

- SR 9B, Ph. III, New Interstate Facility, FDOT District 2
- Newnan Street/Hubbard Street Bridge Rehabilitation, FDOT District 2

Install Pedestrian Safety Measures





Demolition of Existing Pier





Clint Proveaux
Senior Bridge Inspector

Years of Experience: 9
Education: SSS, Florida Gateway College

Certifications: (TIN: P61211393): Asphalt Paving 1 & 2, Earthwork 1 & 2, Final Estimate 1 & 2, Drilled Shaft, Pile Driving, Concrete Tech, Field Testing Tech, CTCI - In Training, CCTV, DMS, MFES, MVDS, RWIS, Advance MOT, MSE Wall, HAZMAT, Stormwater Insp., FEMA ICS-100, 200, 700

Mr. Proveaux began his career working as a QC Technician where he quickly honed his skills with material testing. Driven for additional challenges he joined ETM and has been working as a field inspector on complex heavy civil projects. He has been honing his craft to specialize in Bridge construction while continuing to advance his knowledge in road, signalization, and ITS work. He has worked on 11 different structures and his attention to detail assists the team by performing thorough inspections while communicating with the team and Contractor areas of concern. His experience has paired him up with many different contractors creating a diverse background in various construction methods and activities including earthwork, utilities, bridge construction, roadway construction, and signalization.

Similar Project Experience:

- SR 9B, Ph. II-III, New Interstate Facility, FDOT District 2
- SR 5/Broward Creek Bridge Replacement, FDOT District 2



Vicki Bowen
Contract Support Specialist

Years of Experience: 9
Education: High School Diploma

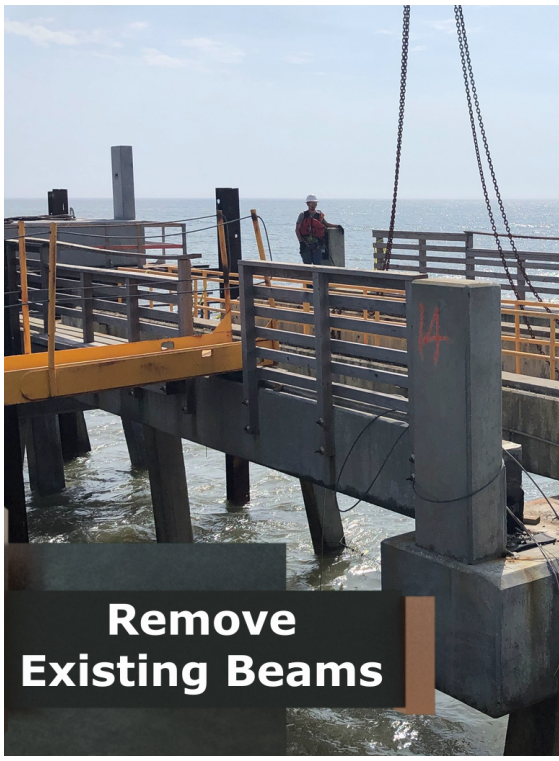
Certifications: (TIN: B50086962): Final Estimates 1, Final Estimates 2, Concrete Tech 1, Construction Math, Contract Plans Reading, Successfully Managing, , FDOT EDMS, EQP Final Measurements, FDOT PrC, FDOT MAC, Adobe, Bluebeam, Microsoft Office

Ms. Bowen's experience includes bridge, design build, and reconstruction projects. She began her career as an Administrative Assistant and through her own initiative advanced to CSS. Her former years of service in the US Navy instilled in her a keen focus of attention to detail that she leverages to the client's advantage in maintaining detailed project records and closing out projects without errors or omissions. Ms. Bowen addresses issues directly and honestly to enhance her relationships with her clients, teams, and contractors. Her duties include daily communication with the inspection staff regarding quantities, producing error free estimates, verifying material certifications, and ensuring the accuracy of project documentation. In addition, she prepares the project final acceptance documentation which includes pay item quantity certification, final offer letter to the contractor and the Final As-Builts. She works effectively as part of an entire project team and independently, with little supervision, to achieve quality results in a timely manner.

Similar Project Experience:

- SR 5/Broward Creek Bridge Replacement, FDOT District 2
- Newnan Street/Hubbard Street Bridge Rehabilitation, FDOT District 2













ETM's team, consisting of Kent, Tim, Robert, Clint, and Vicki, has a deep understanding of the procedural intricacies, guidelines, and requirements essential for ensuring the Flagler Beach City Pier Replacement project aligns with City and FDOT standards. Their expertise is evident in their ability to prepare error-free final estimates, maintain daily documentation, secure FHWA approval, and create Work Orders (WOs) and Supplemental Agreements (SAs). Proficient in utilizing tools like BlueBeam, they ensure that all work aligns with project plans, specifications, and standard plan stipulations.

In terms of compliance, our team prioritizes the implementation of Compliance Process and Procedures Reviews, adhering to project specifications, special provisions, and Statewide and Critical Requirement Guidelists. This process guarantees a high level of quality and compliance throughout project administration, supported by a dedicated inspection staff that ensures project requirements are met efficiently and effectively.

Our construction project management methods are based on structured communication and coordination. Key practices include:

1. **Bi-weekly Meetings:** These meetings bring together representatives from the City, EOR, FDOT, Public Information Office (PIO), utilities, local agencies, and contractors, fostering collaboration, addressing project requirements, and providing a platform for real-time communication.
2. **Pre-Operation Meetings:** Before any significant construction activities - such as MOT installation, temporary trestle installation, pier demolition, pile driving, our team conducts pre-operation meetings to ensure clarity, safety protocols, and smooth execution.
3. **Issue Tracking:** We maintain detailed logs for key project issues, including Notices of Intent (NOI), Requests for Information (RFI), Requests for Clarification (RFC), and Requests for Modification (RFM). This systematic approach ensures timely responses and issue resolution.
4. **Quantity Verification:** To ensure accuracy and compliance, we use a triple-check approach to verify quantities, ensuring that proper payment is made for completed work.



ETM's approach to proactive issue resolution ensures that unforeseen conditions do not disrupt the project's schedule. Kent and Tim lead the team in embracing challenges, making informed decisions, and resolving issues swiftly, ensuring that the project stays on track. By identifying potential issues early and addressing them head-on, our team minimizes disruptions, allowing for smooth and uninterrupted progress throughout the project lifecycle.

CASE STUDY

For example, on the CR 200A JEA Pages Dairy Road project, for approximately 285 LF, there were several very large, old, and majestic oak trees that could be lost due to the alignment of the new main that would compromise the existing root sections of the trees when trenching commenced. The ETM team reviewed the site and proposed shifting the main away from the trees to mitigate possible root damage. ETM reviewed the proposed realignment with the Designer, Nassau County, JEA and the property owner. Upon review, JEA agreed to implement ETM's suggested realignment. This did 3 things: first of which mitigated potential root damage to the existing large oak trees within this corridor; secondly, the elimination of 2 16" 22.5-degree bends provided JEA a cost savings of $1,500; and thirdly, established a working relationship with the property owner that alleviated any possible future complaints.

Teams Ability to Make Decisions and Facilitate Resolution

Our team embraces opportunities to solve problems, make decisions and facilitate resolutions because these opportunities (some may call them challenges) are what sets us apart. Our ability to resolve issues and keep them "under the radar" is a testament to our ability to make decisions and facilitate resolutions.

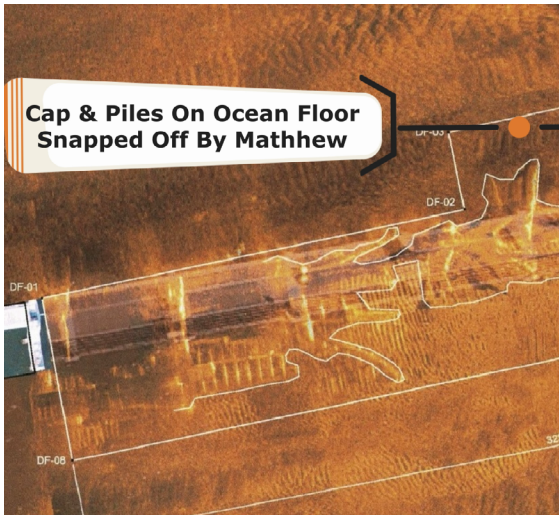
CASE STUDY

One illustrative example, during our past US 1 project for FDOT (FIN 423408-1-52- 01), it became apparent that the depth of the milling at the lane interfaces was much deeper than anticipated and should have been associated with a different typical section. We performed a full project field review and found this affected approximately 50% of the project. Our resolution was to change the milling control point for the remainder of the project and apply a combination of additional milling and overbuild to bring the affected roadway back to its original state. Because of our proactive efforts and decisions, costs associated with this field change were minimal.

These are only a few of the practices that reflect our commitment to effective project management, open communication, issue resolution, and rigorous quality control, all of which contribute to successful project execution and stakeholder satisfaction.



Remove Debris from Ocean Floor to Eliminate Obstructions to Pile Driving







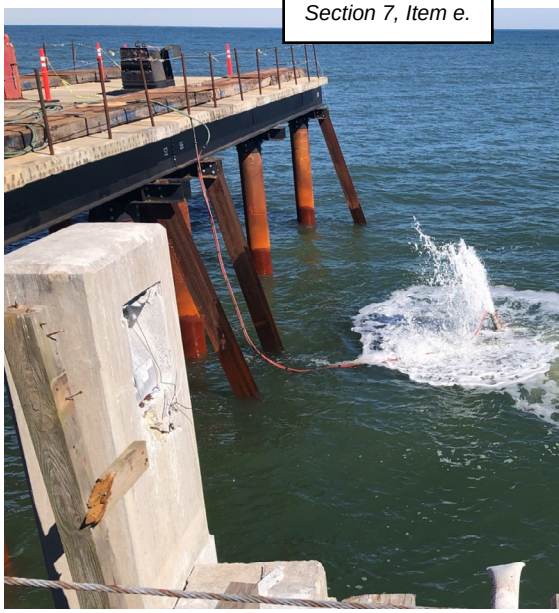
D. INNOVATIVE METHODS/PROCEDURES AND COST EFFICIENCIES

Building upon the innovative strategies outlined earlier, ETM's project management approach emphasizes rigorous project controls and cost containment methods. By proactively addressing challenges and ensuring transparency, we aim to safeguard the project's success while mitigating risks for all stakeholders involved. Below are some key strategies we implement:

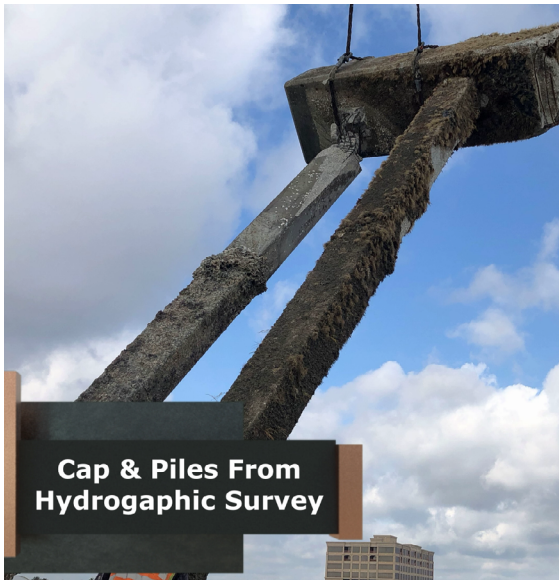
Effective Project Controls

1. **Pre-Construction Survey:** ETM conducts extensive pre-construction surveys that include photographic documentation, video recording, and field measurements of existing conditions. These surveys also assess private improvements within public right-of-ways and existing utilities. Engaging in this thorough documentation process before construction begins helps protect the City from potential claims from Contractors or residents. By establishing a clear record of existing conditions, we minimize disputes and ensure that any changes during construction are clearly documented, reducing the risk of misunderstandings and additional costs.
2. **Submittal Matrix:** We provide Contractors with a comprehensive submittal matrix that outlines all required documentation based on Contract Documents. This includes schedules, QC plans, affidavits, certifications, and shop drawings, among others. The matrix ensures that there is full transparency regarding what is required, improving communication among all project stakeholders, including City staff. This proactive measure fosters alignment and minimizes delays associated with submittal approvals.
3. **Pre-Work Meetings:** ETM prioritizes comprehensive pre-work coordination by scheduling and administering Pre-Construction, Pre-Utility, and Pre-Pile Driving meetings. These meetings address key elements of the construction process and ensures that all team members are aligned. In addition, we hold internal pay item review and documentation meetings to ensure that financial considerations are managed effectively and accurately throughout the project.
4. **Detailed Project Documentation:** Maintaining a comprehensive set of project documents is a cornerstone of ETM's approach. This includes Daily Work Reports (DWRs), correspondence tracking, RFI (Request for Information) and submittal tracking logs, and other relevant documentation. These records provide a transparent and accurate account of project activities and decisions, enabling efficient project management and smooth progress throughout the construction phase.
5. **Internal Project Review Meetings:** ETM conducts regular internal project review meetings to assess project progress and proactively address potential issues. These meetings provide a platform for team collaboration, ensuring that we anticipate challenges and respond effectively before they escalate. By aligning resources, making informed decisions, and staying ahead of upcoming construction activities, we can optimize project outcomes. This ongoing assessment fosters continuous improvement, minimizes risks, and helps to ensure that the Flagler Beach Pier Replacement project remains on track and delivers successful results.

Through these strategies, ETM reinforces its commitment to project efficiency, cost control, and risk management, ensuring that the Flagler Beach Pier Replacement is completed on time, within budget, and to the highest standards of quality.









Schedule Management

ETM's approach to schedule management is built around a commitment to efficiency and proactive management, particularly in projects like the Flagler Beach Pier Replacement. With our dual-crane strategy and phased construction schedule, we ensure that every step is meticulously planned to maximize production while reducing the potential for delays.

CPM Schedule Reviews

ETM employs a team-based approach for the review and management of schedules, incorporating feedback from both management and inspection personnel. This ensures that the perspectives and insights of all team members are considered when evaluating the timeline. Our collaborative approach focuses on:

- **Logical Sequence of Work:** We assess the sequence of construction activities to ensure that they align with the overall project timeline. This allows us to identify any inefficiencies or dependencies early on.
- **Evaluation of Durations:** We closely examine the estimated durations for each task, ensuring that they align with realistic field production rates and contractor resources.
- **Key Milestone Dates:** We prioritize the identification of key project milestones and deadlines, ensuring that these critical points are met on time.
- **Stakeholder Responsibilities:** We track the responsibilities of all stakeholders, providing clarity and accountability throughout the project's lifecycle.
- **Early Identification of Delays:** By taking a proactive approach, we can anticipate potential delays and take corrective action before they impact the overall schedule.

While the contractor retains control over the means and methods of construction, ETM's proactive questioning approach helps keep the project moving forward. Our focus on transparency and collaboration ensures that all stakeholders are aligned and that the project remains on track.

Critical Path Method (CPM) Schedule Analysis

A meticulous analysis of the Critical Path Method (CPM) schedule is essential to ensuring that the Flagler Beach Pier Replacement project is completed on time, or even ahead of schedule. Kent is responsible for conducting and documenting these reviews. The process includes:

- **Comprehensive Schedule Review:** ETM conducts activity-to-activity, resource loading, and logic reviews to assess the accuracy and feasibility of the schedule. We rely on industry-standard tools such as P6 and Claim Digger software for these analyses.
- **Real-World Perspective:** Our field experience plays a crucial role in ensuring that schedules reflect real-world conditions. We use this knowledge to identify potential risks, such as material delivery times or the coordination of complex tasks, and ensure that adequate lead times are factored in.
- **Logical Construction Sequences:** We evaluate the construction sequence for efficiency, ensuring that critical path tasks are given the necessary time to avoid delays downstream.
- **Allocation for Technical Specifications:** We ensure that the schedule accounts for all technical specifications and requirements, including any specific regulatory or safety protocols that may affect the timeline.

Drive Production Piles







Commitment to Ongoing Schedule Review

ETM's commitment to schedule management extends beyond the initial baseline schedule submission. Our ongoing schedule reviews occur at critical junctures throughout the project:

- **Baseline Schedule:** Our review begins with the baseline schedule submission, ensuring that it provides a realistic and achievable timeline.
- **Monthly Estimate Submissions:** We continue to review the schedule after each monthly estimate submission, making adjustments as necessary based on the progress of the work.
- **Supplemental Agreements and Time Requests:** If additional time is requested through Supplemental Agreements or other time adjustments, we thoroughly assess these changes and incorporate them into the overall schedule review.

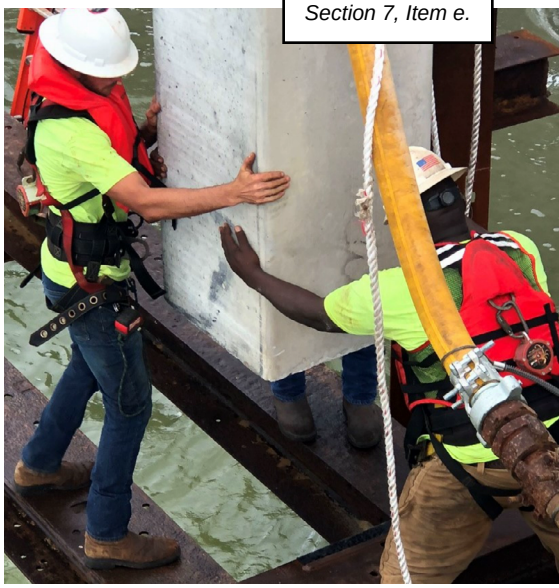
This ongoing process of schedule analysis ensures that the Flagler Beach Pier Replacement project stays on track, enabling timely completion while minimizing disruptions or delays. Through our collaborative approach and commitment to real-world experience, ETM consistently delivers projects with precision and efficiency, meeting the expectations of both the City and the community.

CASE STUDY

One illustrative example of our schedule review efforts is derived from our work on the I-295/Heckscher Interchange project. In this case, the Cost Saving Initiatives (CSI) procedure permitted the Department to grant time for the development of a CSI, as stipulated in Specification 4-3.9.1(4), prior to commencing construction. The Department chose to initiate construction and CSI development concurrently, rendering the originally submitted baseline schedule ineffective. Through numerous iterations and detailed reviews, ETM ensured the contractor developed a pre-CSI baseline. This baseline accurately accounted for the CSI design and submittal timelines, and it accurately represented the limited field work that could be executed during the CSI's development and submission phases. This effort is emblematic of our commitment to meticulous schedule management and our ability to adapt to dynamic scenarios.

Cost Management

ETM's approach to cost management centers on meticulous oversight and proactive measures to ensure the Flagler Beach Pier Replacement project remains within budget and meets all financial goals. Our experienced project managers are dedicated to tracking expenditures, managing change orders, and overseeing every aspect of budgeting. This comprehensive approach guarantees that financial management is handled effectively throughout the project lifecycle.









CMA Cost Estimate Savings Methodology

To provide an accurate and competitive CMA Cost Estimate, we follow a structured methodology that begins with a thorough understanding of the project requirements and scope. Our process includes:

1. **Obtaining Detailed Plans and Conducting Site Visits:** We start by reviewing detailed plans and conducting comprehensive site visits. This helps us gain a deep understanding of the site conditions and any potential challenges, allowing us to tailor our estimate to the project's unique needs.
2. **Aligning Resources with the Project Scope:** With a clear understanding of the project, we align our resources strategically, ensuring that personnel with relevant expertise are assigned to specific tasks. This allows us to efficiently manage the project and provide high-quality service to the City.
3. **Identifying Phases and Timing Requirements:** We carefully assess the project's phasing and identify key elements that require specific timing, such as critical path activities or tasks that must be completed within certain windows. This insight enables us to accurately calculate manhours and costs, ensuring that our estimate reflects the full scope and complexities of the project.
4. **Efficiency and Cost Savings:** We look for opportunities to drive efficiencies throughout the project. Our commitment to maximizing value is reflected in every aspect of the CMA Cost Estimate, ensuring that the City receives the best possible return on investment.

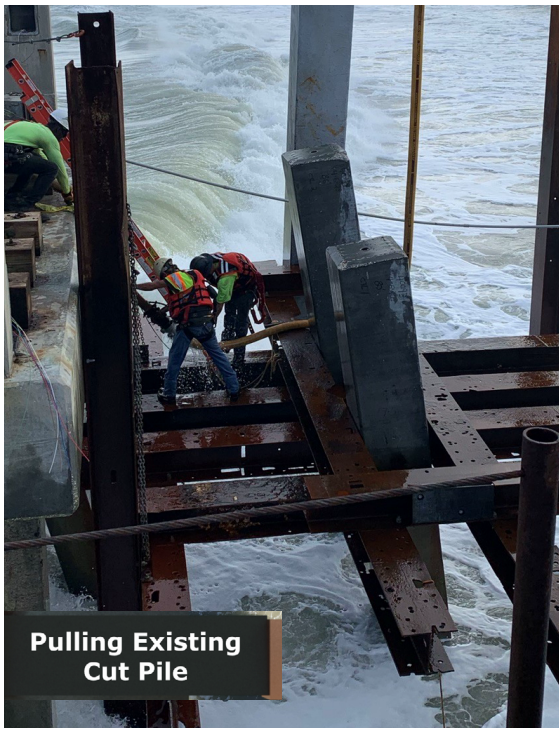
Efficient and Scalable Staffing Strategy

In addition to our precise cost estimating approach, we also propose a staffing strategy designed to maximize efficiency and minimize costs while maintaining high-quality service delivery:

1. **Streamlined On-Site Staffing:** We propose reducing the number of on-site personnel to only one person per day. Rather than billing for an entire team, we will utilize an Assistant Project Administrator, a skilled individual with years of field inspection experience who is also proficient in the administrative side of project management. This role combines both inspection and administrative duties, optimizing staffing costs while ensuring the project remains on track.
2. **Oversight from Senior Engineer and Project Administrator:** The Senior Engineer and Project Administrator will continue to provide oversight for the project, ensuring that all tasks are managed effectively, and the project progresses according to plan. By focusing on a lean, efficient staffing structure, we can keep costs low without sacrificing quality or service.
3. **Scalable Staffing Capacity:** We advocate for a scalable staffing strategy that enables us to quickly adjust the workforce based on the Contractor's needs and schedule. Whether there's a need for additional personnel during critical phases or a lull in activity, we can quickly scale up or down to meet the project's demands.
4. **Optimized Cost-to-Value Ratio:** Our staffing strategy ensures that the City receives high-quality services while minimizing overhead costs. By using a smaller, more efficient team, we can provide all necessary support without unnecessary billing for additional staff.

In summary, ETM's cost management strategy combines precise cost estimating, efficient staffing practices, and a commitment to delivering the project on time and within budget. By aligning our resources with the project's specific needs, we ensure that every aspect of the Flagler Beach Pier Replacement project is executed with financial discipline and strategic oversight. Our approach is designed to provide maximum value to the City, enhancing project outcomes while maintaining cost-effectiveness.





Pulling Existing Cut Pile



Tim Teaching Interns

ETM COST SAVINGS METHODOLOGY - CONTRACTOR'S REQUEST FOR EXTRA COMPENSATION

When a Contractor submits a request for extra compensation, our first step is to determine the legitimacy of the request. We approach this process with a comprehensive evaluation to ensure that any extra compensation is reasonable, substantiated, and in alignment with the project's scope and contractual obligations.

Step 1: Assessing the Legitimacy of the Request

The initial task is to evaluate whether the contractor's request is legitimate. ETM reviews the request by asking the following key questions:

- Does the Contractor's request align with the terms and conditions outlined in the contract?
- Is the additional work or cost truly necessary due to unforeseen conditions or changes in scope?
- Has the Contractor provided adequate documentation to support their request?

If the request is deemed legitimate, we move forward with our internal cost estimation process.

Step 2: Independent Engineering Cost Estimate

Before receiving the Contractor's official submittal, ETM will perform an independent engineering cost estimate to assess the request accurately. This step helps us ensure that any compensation granted is reasonable and fair, avoiding the acceptance of potentially inflated claims.

Step 3: ETM's Multifaceted Cost Estimation Approach

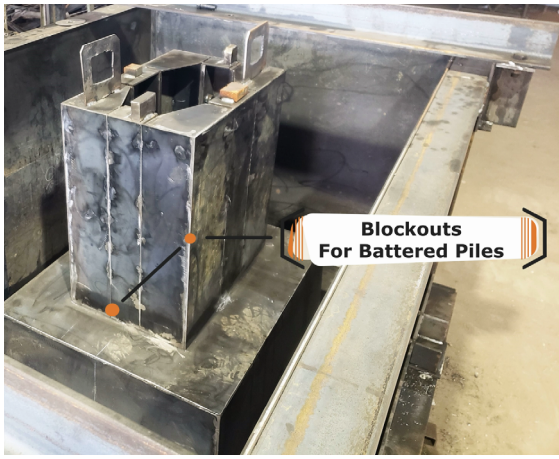
Our cost estimation methodology employs a combination of various data sources and techniques to arrive at an accurate, well-supported estimate:

1. **Actual Costs:** When possible, ETM relies on actual cost data, such as historical project costs, market rates, and real-time pricing, to generate accurate estimates. This data helps us compare the contractor's request against industry standards and the specific conditions of the project.
2. **Historical Data:** We draw from a wide range of historical cost data, such as:
    - **FDOT's Historical Statewide and Areawide Unit Cost Averages:** These cost averages provide valuable benchmarks for assessing the reasonableness of the contractor's request.
    - **Equipment Watch:** We utilize detailed information about equipment costs and usage, allowing for accurate estimations of equipment-related expenses.
    - **US Department of Labor's Annual Wage Rate Information:** Labor rates are a key component of cost calculations, and we use up-to-date data from trusted sources to ensure accuracy.
    - **FDOT's Production Rate Guidelines:** These guidelines help determine the efficiency and expected productivity levels for various construction tasks.
3. **Combination Approach:** Depending on the nature of the request, ETM may combine the above sources of information to create a comprehensive cost estimate. This combined approach is useful for handling complex situations where a simple unit cost or time-and-material estimate may not be sufficient.

Precast Bent Cap Form Construction









Step 4: Accounting for Key Variables

In addition to the primary data sources mentioned, ETM takes several other factors into account to refine our cost estimates, including:

- **Cost Inflation/Deflation:** We account for the potential impact of inflation or deflation over the course of the project, ensuring that pricing is up to date and reflects current economic conditions.
- **Overhead and Profit Allowances:** We assess the Contractor's overhead and profit margin to ensure they are in line with industry norms and the project's financial constraints.
- **Small vs. Large Quantities:** For larger quantities, we may apply unit cost discounts or adjust the estimate to reflect economies of scale.

Step 5: Evaluation and Negotiation

Once the independent cost estimate is complete, ETM compares it to the contractor's request. If the request is found to be inflated, we will engage in a negotiation process with the Contractor to reach a fair and reasonable amount of compensation. This ensures that the Contractor is paid appropriately for the work performed, while also safeguarding the project's budget and financial goals.

ETM's comprehensive and detailed approach to cost estimation ensures that contractor requests for extra compensation are handled fairly and efficiently. Our commitment to accuracy, transparency, and accountability protects the interests of the City and ensures that all claims are substantiated and reasonable.

CASE STUDY

As an example of our multifaceted approach, on our recent FDOT SR 200 widening project, the Contractor encountered existing concrete under the existing southbound roadway that was not shown in the plans. ETM reviewed the 1974 roadway plan as-builts, used a plotting program to plot the past roadway plan top of concrete elevations and current plans bottom of subgrade elevations and plotted where existing concrete was expected to be encountered and require removal, used time and material logs to document concrete removals during the investigation period, as not to delay the contractor, and ultimately calculated the additional concrete removals necessary within 0.7% accuracy. It was estimated that 38,008 SY of existing concrete would need to be removed. At the end of the day, the actual amount removed was 37,754 SY. During negotiations with the contractor ETM also secured the addition of 111 non-compensable contract days, resulting in substantial cost savings of over $403,000.

PROACTIVE ENGINEERING COST ESTIMATE PROCESSES FOR FLAGLER BEACH PIER REPLACEMENT

ETM's Proactive Engineering Cost Estimate processes are custom-tailored to meet the specific needs of each project, ensuring both efficiency and effectiveness while providing cost savings. We bring forward methodologies honed through our experience with past pier projects, such as the Jacksonville Beach Pier Replacement. Below are some direct applications from our past projects that will benefit the Flagler Beach Pier Replacement:

DIRECT CITY OF FLAGLER BEACH PIER REPLACEMENT APPLICATIONS

1. Precast Pier Caps

- **Innovation:** During the Jacksonville Beach Pier Replacement, ETM coordinated the switch from cast-in-place pier caps to precast pier caps. This adjustment expedited the construction timeline and saved on labor costs, without compromising the structural integrity of the pier.
- **Application to Flagler Beach:** ETM will evaluate the use of precast pier caps for the Flagler Beach Pier Replacement to reduce construction time and associated costs.

Set Precast Bent Caps









2. Temporary Trestle Oversight

- **Innovation:** ETM ensured that the temporary trestle construction followed approved shop drawings and met all steel pipe pile driving resistance and blow count requirements, ensuring public safety and minimizing risks.
- **Application to Flagler Beach:** ETM will ensure that the temporary trestle is constructed in compliance with safety standards and will closely monitor any deviations from the plans to mitigate delays.

3. Turtle Nesting Protection

- **Innovation:** ETM worked with the Florida Department of Environmental Protection (FDEP), Florida Fish and Wildlife Conservation Commission (FWC), and marine experts to ensure the proper placement of construction fencing and the protection of turtle nesting areas.
- **Application to Flagler Beach:** ETM will collaborate with relevant local agencies to implement similar turtle nesting protection measures, ensuring minimal impact on local wildlife.

4. Turbidity Monitoring and Reporting

- **Innovation:** ETM ensured compliance with FDEP's turbidity monitoring requirements during the Jacksonville Beach project, submitting weekly documentation to authorities.
- **Application to Flagler Beach:** We will apply the same level of detailed monitoring to Flagler Beach's construction activities, submitting reports to ensure environmental compliance.

5. Fireworks Coordination During Construction

- **Innovation:** ETM coordinated with the City of Jacksonville Beach and the Fire Marshal to accommodate public events such as fireworks displays, ensuring minimal disruption to construction activities.
- **Application to Flagler Beach:** ETM will work with the City of Flagler Beach and other local stakeholders to minimize disruption during public events, keeping construction schedules intact.

6. Pile Tension Dowel Bar Testing

- **Innovation:** ETM facilitated pile tension dowel bar testing in the Jacksonville Beach project to ensure compliance with project specifications, contributing to the pier's structural integrity.
- **Application to Flagler Beach:** ETM will ensure the same rigorous testing processes are implemented on the Flagler Beach Pier to maintain structural integrity and compliance with specifications.

7. Regulatory Collaboration

- **Innovation:** ETM maintained proactive communication with FDEP, the U.S. Army Corps of Engineers, and other agencies, ensuring timely approvals and providing as-built documents to the City of Jacksonville Beach.
- **Application to Flagler Beach:** ETM will proactively collaborate with all necessary agencies, ensuring all permits and approvals are obtained in a timely manner.

8. Multi-Agency Coordination

- **Innovation:** ETM coordinated efforts with a wide range of stakeholders including local event organizers, nearby hotel developers, and environmental groups to avoid conflicts and ensure smooth project operations.
- **Application to Flagler Beach:** ETM will manage relationships with all relevant stakeholders, ensuring seamless coordination and minimizing project delays.

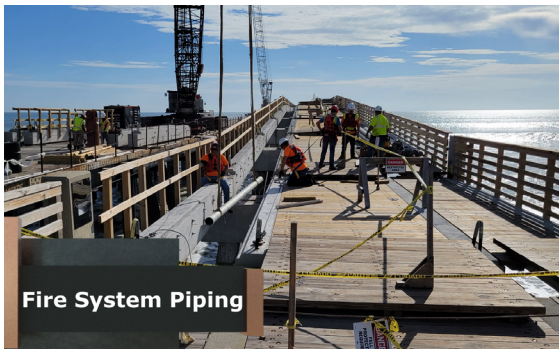


Set Precast Beams





Plumbing, Electrical, & Fire Break Slab Installation



9. Proactive Inspection Management

- **Innovation:** ETM worked with the City of Jacksonville Beach's Building Department and Fire Marshal to ensure timely inspections, which prevented delays in the project schedule.
- **Application to Flagler Beach:** ETM will work with the City of Flagler Beach's local departments to ensure inspections are conducted promptly, keeping the project on schedule.

10. Fish Cleaning Station Design Interpretation

- **Innovation:** ETM demonstrated problem-solving expertise during the Jacksonville Beach project by navigating design ambiguities in the fish cleaning stations, ensuring the project moved forward smoothly.
- **Application to Flagler Beach:** ETM's problem-solving approach will be applied if any ambiguities arise during the Flagler Beach Pier project, minimizing delays and ensuring the correct execution of designs.

11. Cost Efficiencies through Communication

- **Innovation:** ETM's proactive approach to resolving design and coordination issues helped minimize costly delays. By ensuring clear communication with Contractors, suppliers, and stakeholders, ETM kept costs under control.
- **Application to Flagler Beach:** ETM will continue this proactive communication strategy for the Flagler Beach Pier Replacement, addressing potential issues before they lead to project delays or cost overruns.

COMMITMENT TO SCHEDULE AND BUDGET MANAGEMENT

ETM's seasoned management approach ensures vigilant monitoring of both the project's construction budget and our internal budget. We are committed to proactively addressing any issues that may lead to cost overruns or schedule delays, safeguarding the financial and timeline integrity of the project.

By applying these time-tested practices from previous successful pier projects, ETM is confident in our ability to deliver the Flagler Beach Pier Replacement project efficiently, within budget, and on time.

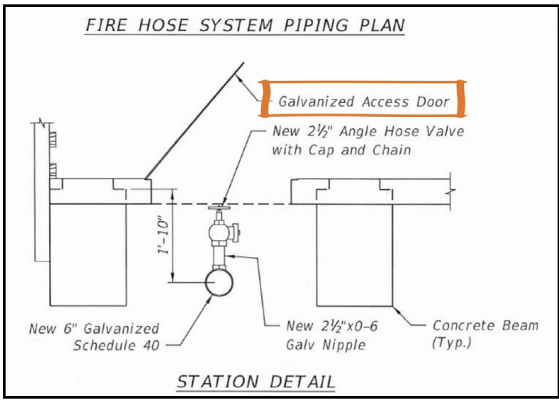
CLOSING THE APPROACH SECTION: OUR COLLABORATIVE RELATIONSHIP WITH MOFFATT & NICHOL

In closing, we would be remiss if we didn't mention the invaluable partnership ETM has established with Moffatt & Nichol, the project's design team. Over the years, we have fostered a close collaboration built on mutual respect and trust. The significance of this relationship cannot be overstated, as it provides the City of Flagler Beach with a proven and effective partnership capable of addressing unforeseen challenges and resolving issues quickly.

This long-standing trust between ETM and Moffatt & Nichol ensures a cooperative and solution-oriented environment throughout the project. Rather than engaging in disputes over potential errors or omissions, our history of collaboration promotes effective problem-solving, keeping the focus on the success of the Flagler Beach Pier Replacement project.

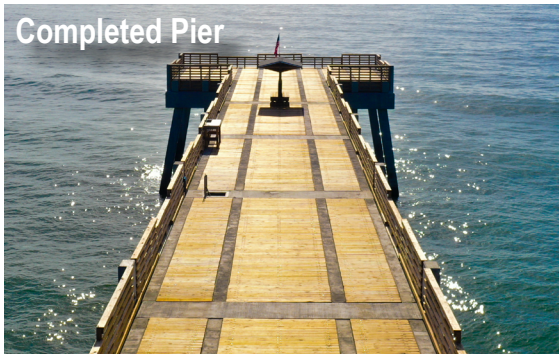
With this partnership, combined with our innovative methods, cost-saving strategies, and the unique qualifications of our team, ETM is fully committed to delivering the Flagler Beach Pier Replacement on time, within budget, and with minimal disruption. We will preserve the pier's historical significance while ensuring the project meets the City's objectives and high standards of excellence.











Kent Ponder, PE
Senior Project Engineer

Mr. Ponder has been a licensed Engineer since 2002 and is well versed in an extensive assortment of complex transportation construction projects. He began his career in the US Navy then transitioned to FDOT where his focus on quality, attention to detail, and ability to lead and communicate well with others helped him advance quickly in the field. His diverse construction experience includ major bridges, pile and drilled shaft foundations, fender construction, complex roadway/interchanges, utilities, bridge culverts, mechanically stabilized earthwalls (MSE), high mast lighting, signalization, and overhead sign installation. Mr. Ponder has broad experience managing Task Work Order type assignments on residency and area-wide projects - providing exceptional service in this capacity specifiaclly for the FDOT District 2 and Nassau County. Mr. Ponder is highly regarded for his leadership, ensuring that Contractors are performing satisfactory work and properly submitting necessary project documentation and correspondence in accordance with plans, specifications, and contract documents.

EDUCATION:
BS with Honors, Civil Engineering
University of Florida, 1998

YEARS OF EXPERIENCE:
Total: 25 | with ETM: 19

POSITION EXPERIENCE:
Senior Project Engineer: 19 years
FDOT Project Engineer: 6 years

CERTIFICATIONS & TRAINING:
(TIN: P53650165)

REGISTRATIONS:
FL P.E., No. 60217

Professional Associations:
American Society of Highway Engineers

Chi Epsilon, National Engineering Honor Society

CTQP:
QC Manager

ADDITIONAL CERTS:
Critical Structures
Stormwater Insp.
Drilled Shaft
Auger Cast Pile
Advanced MOT

PROJECT EXPERIENCE:

Senior Project Engineer, Jacksonville Beach Pier Project No. 9925-03, City of Jacksonville (COJ), $9.9 Million, Duval County, Florida - The project demolished, removed, and replaced the Jacksonville Beach Public Fishing Pier damaged during Hurricane Matthew in October 2016. Approximately 350 LF of the pier was destroyed, and an additional 450 LF of the structure was damaged. Reconstruction of the damaged and destroyed portions of the pier occurred within the alignment of the previous structure starting at Bent 12 and continued to Bent 34. The project scope consisted of removal of the existing damaged pier still standing, removal of submerged pier debris from ocean floor, installation of 8,568 LF of 24" pre-stressed concrete pile foundation, over 300 CY of mass concrete, 2,640 LF of 24" pre-stressed beams, and over 3,000 LF of wooden walkways and handrails. Responsibilities included administering the contract in accordance with the plans and specifications, review of plan and shop drawing submittals, reviewing RFI's, provide daily technical assistance in the field, monthly pay request and reviewing pricing submitted by contractor for additional work. **Service:** 10/2019 to 07/2022; **Reference:** Tom Goldsbury, P.E., City of Jacksonville Project Manager, (904) 255-8799.

Senior Project Engineer, SR 5/Broward Creek Bridge Replacement, FDOT District 2, $14 Million, FIN: 437441-1-52-01 & 437441-1-56-01, Duval County, Florida - The project consisted of removing two existing aging bridges and replacing them with one structure. The work includes 4,052 LF of 24" concrete piles, 2,814 LF of Type-2 concrete beams, 456 LF of retaining walls, 30.9 CY of sand cement rip rap,1,783 LF of barrier wall, approximately ½ mile of roadway widening with column supported soil stabilization consisting of 12" diameter grout columns installed to a minimum tip elevation of minus 33 or refusal with a load transfer platform, multiphase MOT, asphalt overbuild, turnout construction, milling and resurfacing, drainage, traffic separators, C&G, sidewalk, guardrail, watermain with bridge attachments and coordination with CSX. Early in the project, Mr. Ponder and his team identified and investigated voids under the existing northbound roadway that were not included in the design and worked closely with FDOT Geotech office to identify the best solution and prevent future failures. The team coordinated closely with FDOT and CSX, providing and executing an approved plan of action that avoided delays to the project schedule. **Service:** 06/2022 to Present; **Reference:** Sam Lansdale, Project Manager, FDOT, (904) 360-5557.

Senior Project Engineer, Newnan Street/Hubbard Street; From Just South of Orange Street to a Point South of Confederate Street, FDOT District 2, $1.5 Million, FIN: 415254-1-52-01 & 415254-1-56-01, Duval County, Florida - This 250-day federally funded project, an extension of ETM's SR 200 CEI contract by the Department, encompassed milling and resurfacing, base work, curb and gutters, bridges, sidewalks/bicycle paths, and the preservation of historical bridge elements. Situated in Duval County, the JEA water main work spanned Newnan Street/Hubbard Street, featuring the historically significant Hubbard/Newnan Street Bridge, designed by renowned architect Henry John Klutho. Due to soil contamination, the City of Jacksonville

collaborated with the Department for oversight. This off-system bridge rehabilitation project, in partnership with FDOT and the City, addressed contaminated soils, with FDOT's CAR Contractor handling excavations and the City handling soil disposal. Notably, the project involved close coordination with the Florida Department of the Interior State Historic Preservation Officer (SHPO) and necessitated meticulous restoration of historical elements, verified through 3D scans. The project also managed tight tolerances during construction, conducting vibration monitoring to prevent delays while adhering to specifications. Project won the Florida Transportation Builders Association (FTBA) award as Florida's Best in Construction for Bridge. **Service:** 02/2016 to 10/2016; **Reference:** Jessica Tippett, P.E., Project Manager, FDOT, (904) 360-5504.

Senior Project Engineer, SR 117/Moncrief Creek Bridge Replacement, FDOT District 2, $6 Million, FIN: 437438-1-52-01, Duval County, Florida - This project consisted of removing two existing deficient bridges and replacing them with one structure, roadway widening, milling and resurfacing, drainage, curb & gutter, sidewalk, installation of a temporary acrow panel bridge with pedestrian walkway, phased MOT with pedestrian detours, new light pole installations, utility coordination and adjustment. Work included 1,574 LF of 24". concrete piles, 1,612 LF of concrete slab beams, 380 LF of concrete traffic railing. **Service:** 11/2021 to 3/2023; **Reference:** Jessica Tippett, P.E., Project Manager, FDOT, (904) 360-5504

Senior Project Engineer, Lofton Creek Bridge Replacement, FDOT District 2, $4.5 Million, FIN: 437407-1-52-01 & 437407-1-56-01, Nassau County, Florida - This 300-day Federally Funded, off system, unit price project, which included Rural Economic Development Initiative (REDI) funds consisted of replacement of the CR 200A bridge over Lofton Creek on Pages Dairy Road in Nassau County using an acrow panel bridge, reconstruction of the approaches and new 16" water main installation on the utility shelf of the new bridge in an environmentally sensitive area. Work included 1,574 LF of 24" concrete piles, 1,612 LF of concrete slab beams, 380 LF of concrete traffic railing, and 673 LF of ductile iron water main installed on extended bridge utility shelf. Mr. Ponder's team identified a conflict within the Project MOT Plans that interfered with construction of the Nassau County roadway project. This required collaborative negotiations between the Department, Nassau County, JEA and two separate contractors that resulted in the process and execution of two Change Orders and a Supplemental Agreement. Early discovery and the due diligence of his team prevented a 300-day delay in both roadway and utility completion while saving Nassau County unbudgeted funds and preventing the Department from encumbering additional funds. While continuing contract progress, a significant limestone layer was noted at an elevation that would not allow Intermediate Bent 2 and 3 to be driven at a compliance minimum tip depth. Proactive communications with the Contractor and providing possible solutions enabled the Engineer-of-Record to develop and implement a redesign in time to seamlessly integrate changes to the existing schedule at no additional costs to the Department. **Service:** 06/2021 to 01/2023; **Reference:** Jessica Tippett, P.E., Project Manager, FDOT, (904) 360-5504

CEI Consultant Engineer, CEI Districtwide Continuing Services Contract, FDOT District 2, $7.5 Million/5 Years, FIN: 433811-1-62-22, CAJ10, Clay, Duval, Nassau, and St. Johns County, Florida - This contract completed dozens of projects to support FDOT mission to provide a safe transportation system that ensures the mobility of people and goods, enhances economic prosperity, and preserves the quality of Florida's environment and communities. The projects included resurfacing, ITS, Safety Improvements (Pedestrian, Bicycle, and Vehicle), Signalization, and High Friction Surface Treatment. Kent was responsible for coordination and execution of FDOT's Continuing Services CEI contract. He worked closely with key team members, apply a hands-on approach to understanding the ever-changing need of FDOT's work program, collaborated with Department personnel in navigating staffing and funding requirements, and assists in performing Quality Assurance reviews for ETM and subconsultant inspection personnel. Additional responsibilities included monitoring of budgets to ensure adequate funding throughout each project timeline and at critical fiscal times in the Department's funding cycle. Mr. Ponder fosters great communication channels with FDOT Project Administrators and is a cohesive point of contact internal at ETM and with both the Jacksonville and Palatka Resident Offices that fall under this contract. **Service:** 08/2022 to Present; **Reference:** Sandy Douglas, CPM, FDOT CSS II, (904) 360-5548, Brian Kirts, PE, Program Manager, FDOT, (904) 360-5556

Tim Thacker
Project Administrator

Mr. Thacker specializes in administering major highway and bridge construction projects. He began his career as an airplane mechanic but quickly transitioned to construction where he rapidly advanced to a project Superintendent. His background as a Superintendent on the Constructor side of the industry provides him with valuable insights and knowledge of construction means and methods. He then transitioned to CEI in 1993 and has worked his way from an Inspector to Senior Inspector to Project Administrator. With combined Project Administrator and Senior Inspector positional experience, Mr. Thacker has seen to completion over 40 bridge projects that include new bridge construction, bridge removal/widening/replacement, and pedestrian bridges. From these bridge projects Mr. Thacker has gained invaluable experience with driven piles, drilled shaft foundations, steel structural beams, concrete girders and bridge demolition. Additionally Mr. Thacker has extensive roadway experience which includes both asphalt and concrete roadways, box culverts, mechanically stabilized earth walls, sound walls, drilled shafts, high mast lighting, conventional lighting, overhead signs, mast arm / span wire signalization, and utility construction for large diameter water, reuse, and force mains. Mr. Thacker's strong CPM schedule analysis background, expertise Supplemental Agreement and Work Order negotiating skills, and professional addressing of public concerns makes him an anchor on any CEI team.

EDUCATION:
High School Diploma

YEARS OF EXPERIENCE:
Total: 33 | with ETM: 15

POSITION EXPERIENCE:
Project Administrator: 23 years
Sr. Bridge Inspector: 3 years
Inspector: 4 years
Inspector Aide: 1 year
Superintendent: 2 years

CERTIFICATIONS & TRAINING: (TIN: T26081267)

CTQP:
Asphalt Paving 1 & 2
Concrete Spec.
Drilled Shaft
Earthwork 1 & 2
Final Estimate 1 & 2
Pile Driving
QC Manager
Concrete Tech 1 & 2

ACI/TC3:
Field Testing Tech
CTCI
PCC Pavement
PCC Grinding/Joints
PCC Paving Insp.

IMSA/ITS:
Fiber Optic 1 & 2
CCTV
DMS
MFES
MVDS
RWIS

ADDITIONAL CERTS:
Advance MOT
HAZMAT
Stormwater Insp.
MSE Wall
Auger Cast Pile
Critical Structures
ICS-100-C
ICS-200
ICS-700-B
SSTC High-Strength Bolting

PROJECT EXPERIENCE:

Project Administrator, Jacksonville Beach Pier, City of Jacksonville (COJ), $9.9 Million, Project No. 9925-03, Duval County, Florida - The project demolished, removed, and replaced the Jacksonville Beach Public Fishing Pier damaged during Hurricane Matthew in October 2016. Approximately 350 LF of the pier was destroyed, and an additional 450 LF of the structure was damaged. Reconstruction of the damaged and destroyed portions of the pier occurred within the alignment of the previous structure starting at Bent 12 and continued to Bent 34. The project scope consisted of removal of the existing damaged pier still standing, removal of submerged pier debris from ocean floor, installation of 8,568 LF of 24" pre-stressed concrete pile foundation, over 300 CY of mass concrete, 2,640 LF of 24" pre-stressed beams, and over 3,000 LF of wooden walkways and handrails. Responsibilities included administering the contract in accordance with the plans and specifications, review of plan and shop drawing submittals, reviewing RFI's, provide daily technical assistance in the field, monthly pay request and reviewing pricing submitted by contractor for additional work. **Service:** 10/2019 to 07/2022; **Reference:** Tom Goldsbury, P.E., City of Jacksonville Project Manager, (904) 255-8799.

Project Administrator, SR 9B Phase III: I-95 to CR 2209, Design/Build - New Interstate Facility, FDOT District 2, $79.7 Million, FIN: 431418-2-52-01 & 431418-2-56-01, Duval & St. John's County, Florida - This project was Design/Build of a new multi-lane facility that completed the SR 9B corridor from I-95 to CR 2209 and provided a new vital link to I-95 for St. Johns County residents. The 9B corridor pavement design consisted of 141,155 SY of jointed plan PCCP with thickness ranging from 8.5" to 11.5". Significant project scope elements include a new Single Point Urban Interchange (SPUI) at Peyton Parkway, full reconstruction of CR 2209, construction of twin 900 LF bridge structures over the environmentally sensitive Durbin Creek and its adjoining wetland, and substantial JPA relocations of water main (16" and 24"), force main (20") and reuse main (12"). This project features the placement of 1.7 million CY embankment, 21,381 tons of asphalt, 37,304 LF of storm pipe up to 72" diameter, full ITS feature integration including a DMS sign, multiple microwave vehicle detection devices, CCTV's and BlueTOAD devices, 22 overhead sign structures, 7 new high mast lights, and a new 136 LF single span steel truss pedestrian bridge over CR 2209. This project also consisted of construction for 8 new bride structures with 20,147 LF of driven 18" and 24" pile foundations, 15,974 LF of FIB girders with 36", 45", and 84" girder depths, 49,413 SF of MSE Walls, and 7,150 CY of structural concrete. A special project highlight includes the construction of a temporary truss founded upon steel pipe piles and utilizing top-down construction for the full length of the Durbin Creek bridge. Direct responsibilities on this project included oversight of inspection personnel responsible for quality assurance inspection of the project construction which includes the new Verification Testing Procedures in District 2. **Service:** 06/2015 to 01/2018; **Reference:** Jeff Williams, P.E., Resident Engineer, FDOT, (386) 312-4831.

ENGLAND-THIMS & MILLER

Tim Thacker
Project Administrator

Project Administrator, SR 9B Phase II: US 1 to I-95, Design/Build/Finance, New Interstate Facility, FDOT District 2, $94.9 Million, FIN: 209294-9-52-01 & 209294-9-56-01, Duval County, Florida - This new multi-lane interstate facility extended the existing SR 9B corridor from north of US 1 to south of I-95, completed the full directional interchange at US 1, and provided a new interchange at I-95. Due to the increased demand for this project, the Department implemented this project via entering into a public-private partnership where the project funding was financed by the design/build team, being the first of its kind in Northeast Florida. Significant project scope elements include completion of the full interchange connection at US 1, full reconstruction of US 1 to a 6-lane urban section and widening/reconstruction of I-95 to an 8-lane section within the project limits. These elements comprised of 2.18 million CY embankment, 476,085 SY of asphalt or limerock base, 88,434 tons of asphalt, 186,645 SY of PCCP, 40,473 LF of storm drainpipe, 221,720 SY of sound walls, jack and bore of 24" and 36" steel casing across I-95, multiple over span and truss signs, relocation of an existing DMS sign, and a full conventional lighting system installation. Bridge construction on the project consisted of 18,381 LF of 45", 54", or 78" FIB's, 13,085 LF of 24" prestressed concrete piles, 9,770 CY of cast-in-place structural concrete, and 101,595 SF of MSE Retaining Walls. **Service:** 08/2012 to 06/2015; **Reference:** Jeff Williams, P.E., Resident Engineer, FDOT, (386) 312-4831.

Project Administrator, SR 9B, Phase I: US 1 to SR9A, Design/Build, New Interstate Facility, FDOT District 2, $68.4 Million, FIN: 209293-2-52-01 & 209294-1-52-01, Duval County, Florida - This new alignment interstate facility, funded by the American Recovery and Reinvestment Act of 2009 (ARRA), provided a new connection from I-295 to US 1 and began the new SR 9B corridor. At the time, this project was one of the largest design/build projects implemented in the Northeast Florida area. Mr. Hansgen served as the lead for all project issues that included design reviews, design changes, bridge construction aspects, MSE construction aspects and negotiating all contract changes. During the project, FDOT requested an increase of the roadway construction from the original planned 4-lanes to 6-lanes, resulting in a $6 million Supplemental Agreement (SA) to the contract. Major project features included 125,000 CY of subsoil excavation, 1.68 million CY of embankment, 17,150 LF of storm drainpipe, 142,089 SY of 11.5" concrete pavement, 13 bridge structures utilizing 31,285 LF of 45", 54", and 78" FIB for their superstructure framing, 24" driven pile foundations, MSE wall bridge abutments, as well as signal installations, and milling and resurfacing along US 1. JPA work included the installation/relocation of a 20" force main and a 24" water main via installation of 36" and 42" steel casing. Project responsibilities included, but were not limited to, administering the contract in accordance with the plans and specifications, review of plan and shop drawing submittals, reviewing RFIs, provide daily technical assistance in the field, monthly pay request, and reviewing pricing submitted by Contractor for additional work. **Service:** 02/2010 to 08/2012; **Reference:** Jeff Williams, P.E., Resident Support Engineer, FDOT, (386) 312-4831.

Project Administrator, I-95 & SR 115 (MLK Expressway) Interchange, FDOT District 2, $80 Million, FIN: 433899-2-52-01 & 433899-2-56-01, T2891, Duval County, Florida - The purpose of the project is to increase the bridge clearance under I-95 along MLK to 16'8" by raising I-95 approximately 3', replacing the adjacent pedestrian bridge to increase the clearance to 17'-6", and improve the community driven aspects including aesthetics and noise walls. The existing I-95 bridge clearance is 13'-9" and is the most struck bridge in NE Florida. To minimize the elevation change on I-95 the (2) new I-95 bridges are constructed using (64) 70' long 2' tall weathering steel plate girders beams (4.480'). The project includes removal of both existing I-95 bridges and pedestrian bridge, 6,345 LF of 18" concrete piles, 632,699 lbs of reinforcing steel, 3,670 CY of structural concrete, 27,392 SF of MSE walls, Prefabricated Pedestrian Bridge with laser cut window accents and Architectural Gateway Icon Signs, bridge construction, 59,312 SY of milling, 29,091 tons of Asphalt Pavement, 1,882 SY of High Friction Surface Coarse, 44,986 CY of embankment, 50,241 CY of Subsoil Excavation, 51,929 SY of Type B Stabilization, 46,100 SY of Base Work, 111 drainage structures, 10,785 LF of Drainage pipe, 1,401 LF of Jack and bore drainage pipe, 7,286 LF of Curb & Gutter, 12,157 of Barrier Wall that included 14' noise wall, 47,066 SF of Sound Walls, 61,045 SY of performance turf, 31 Overhead sign structures, 61,551 LF of street lighting conductor cable, 167 overhead street lights, removal and installation of 2 new traffic signals on 6 prestressed concrete poles, 13,463 LF of fiber optic cable, 7 vehicle detection systems, ITS, 2,216 LF of 20" JEA waterline, 20 EA fittings, 303 LF of Jack and bore under pipe, and utility work. **Service:** 08/2023 to Present; **Reference:** Jessica Tippett, P.E., Resident Engineer, (904) 360-5504.

Project Administrator, SR 13 San Jose Boulevard - Driveway Modification, FDOT District 2, $0.2 Million, FIN: 4454262-2-52-01, Duval County, Florida - This project provided highly needed driveway improvements to facilitate safer ingress/egress on SR 13. Project included selective clearing and grubbing, removal of concrete pavement, excavation and truck borrow embankment, stabilized subgrade, limerock base, structural and friction asphalt, signage, and thermoplastic pavement markings. **Service:** 11/2022 to 03/2023; **Reference:** Brian Kirts, P.E., Resident Engineer, (904) 360-5556.

ENGLAND-THIMS & MILLER

Robert Mullin
Senior Inspector

Mr. Mullin is dedicated and highly skilled in inspection and administering major highway and bridge construction projects, including considerable experience working on bridge construction including bascule bridges. Starting his career as an Inspector in 2003, Mr. Mullin's journey has been characterized by an unwavering attention to detail, a strong work ethic, and a commitment to continuous self-improvement through education and experience. Progressing to roles such as Senior Inspector and Project Administrator, he discovered his true passion as a Lead Bridge Inspector, where he could make the most significant impact on project quality and team development. His bridge expertise spans the rehabilitation of existing concrete and steel structures, constructing new steel trusses, post-tensioned structures, AASHTO, FIBs, mechanical rack and pinion lift spans, hydraulic single-leaf cylinder lift bridges, precast footings, cast-in-place footings both on land and in water, and foundations including piles and drilled shafts. Leveraging his experience and in-depth knowledge of project administration, final estimate documentation, and project closeout requirements, Mr. Mullins guides and trains his field staff, ensuring seamless collaboration between the office and the field. Mr. Mullin's personal focus centers on ensuring contractor compliance with plans and specifications, aiming for the highest quality of work and meeting client expectations.

EDUCATION:
High School Diploma

YEARS OF EXPERIENCE:
Total: 21 | with ETM: 12

POSITION EXPERIENCE:
Assist. Project Administrator: 5 years
Senior Inspector: 7 years
Inspector: 9 years

CERTIFICATIONS & TRAINING:
(TIN: M45077883)

CTQP:
Asphalt Paving 1 & 2
Concrete Tech 1 & 2
Concrete Spec.
Earthwork 1 & 2
Final Estimates 1 & 2
Pile Driving
Drilled Shaft
QC Manager

ACI / TC3:
CTCI
Field Testing Tech
PCC Pavement
PCC Grinding/Joints
PCC Paving Insp.

IMSA / ITS:
IMSA 1 & 2
Fiber Optic 1 & 2
CCTV
DMS
MFES
MVDS
RWIS

ADDITIONAL CERTS:
Advanced MOT
Stormwater Insp.
HAZMAT
MSE Wall
Auger Cast Pile
Critical Structures
FEMA ICS -100, 200, 700

PROJECT EXPERIENCE:

Assistant Project Administrator, Starke Railroad Overpass from US-301 to East of CSX Railroad, FDOT District 2, $25 Million, FIN: 436558-1-52-01 & 436558-1-56-01, Bradford County, Starke, Florida - The project improves the emergency service response time by constructing a bridge over CSX railroad and eliminating an at grade crossing. The project includes reconstructing SR 100 from undivided to divided while constructing a 1,038 LF concrete bridge spanning over the Railroad in the downtown district. This complex and aesthetically featured project includes an eight-span bridge supported on over 4,000 LF of 42" drilled shafts, decorative substructure, and 42'-wide superstructure supported on Florida I beams including 45", 53", and 63". Additional highlights include over 9,000 SF of retaining walls on the approach, four new PCCP stamped concrete roundabouts, pattern banded sidewalks, uniquely imprinted brick railings, pier rustifications, railroad coordination, custom lighting, utility work, and signalizations. Contamination removals, 7,500 CY of subsoil excavation, two new ponds, and added parking lots all in part to beautify the area. **Service:** 7/2020 to Present; **Reference:** Patrick Gallagher, PE Project Manager (352) 494-5240.

Senior Bridge Inspector, Timucuan Trail Bridge Over Haulover Creek, FDOT District 2, $2.7 Million, FIN: 434028-1-52-01, Duval County, Jacksonville, Florida - The Timucuan Trail provides unmatched coastal cycling opportunities through Amelia Island State Park and is connected to the 3,000-mile East Coast Greenway that runs along the Atlantic Coast. The project separated bicycle and pedestrian traffic from vehicle traffic to improve safe access to Huguenot Memorial Park. The project consisting of a new 248' long pedestrian bridge within space constraints of an existing 71-year-old SR A1A Heckscher Drive bridge. The new pedestrian bridge structure included AASHTO beams spanning Haulover creek, five bents of substructure, and 24x24 prestressed concrete piling foundations, permanent steel sheetpile walls, gravity walls, new guardrails, aluminum handrailing, drainage, striping, signage, and sodding all in part to connect this paved shared use path to Huguenot Memorial Park. **Service:** 8/2018 to 5/2019; **Reference:** James Salter, FDOT Project Manager, (904) 497-2369.

Senior Bridge Inspector, SR 9B Phase III: I-95 to CR 2209, Design-Build - New Interstate Facility, FDOT District 2, $79.7 Million, FIN: 431418-2-52-01 & 431418-2-56-01, Duval & St. John's County, Florida - This project was Design/Build of a new multi-lane facility that completed the SR 9B corridor from I-95 to CR 2209 and provided a new vital link to I-95 for St. Johns County residents. The 9B corridor pavement design consisted of 141,155 SY of jointed plan PCCP with thickness ranging from 8.5" to 11.5". Significant project scope elements include a new Single Point Urban Interchange (SPUI) at Peyton Parkway, full reconstruction of CR 2209, construction of twin 900 LF bridge structures over the environmentally sensitive Durbin Creek and its

adjoining wetland, and substantial JPA relocations of water main (16" and 24"), force main (20") and reuse main (12"). This project features the placement of 1.7 million CY embankment, 21,381 tons of asphalt, 37,304 LF of storm pipe up to 72" diameter, full ITS feature integration including a DMS sign, multiple microwave vehicle detection devices, CCTV's and BlueTOAD devices, 22 overhead sign structures, 7 new high mast lights, and a new 136 LF single span steel truss pedestrian bridge over CR 2209. This project also consisted of construction for 8 new bride structures with 20,147 LF of driven 18"and 24" pile foundations, 15,974 LF of FIB girders with 36", 45", and 84" girder depths, 49,413 SF of MSE Walls, and 7,150 CY of structural concrete. A special project highlight includes the construction of a temporary truss founded upon steel pipe piles and utilizing top-down construction for the full length of the Durbin Creek bridge. Direct responsibilities on this project included oversight of inspection personnel responsible for quality assurance inspection of the project construction which includes the new Verification Testing Procedures in District 2. **Service:** 06/2015 to 01/2018; **Reference:** Jeff Williams, P.E., Resident Engineer, FDOT, (386) 312-4831.

Assistant Project Administrator, I-10/US-301 Ramp Modifications, FIN 428865-1-52-01/428865-1-56-03, FDOT District 2, $107 Million, Duval County, Florida - The project replaces 4 existing bridges deemed structurally deficient and increases capacity on I-10 to accommodate population growth on the west side of Jacksonville while improving traffic flow for a major hurricane evacuation route and eases congestion of the US 301 interchange which is a major truck route. This project consists of four bridge removals and the construction of eight new bridges with concrete beams over US 301 and steel beams spanning 235' over CSX Baldwin Railroad Yard all supported on concrete pilings. Project highlights include 603,000 CY of embankment, 310,000 CY of regular excavation, subsoil excavations, 2-stage MSE walls with settlement monitoring, construction of four new ponds, 3.4 miles of drainage improvements, railroad coordination, high mast lighting, signalizations, guardrails, box culvert rehabilitations, 24,000 LF of driven piles, ITS, wrong-way detection, and contamination removals. **Service:** 7/2022 to Present; **Reference:** Maksim Milovidov, PE, Project Manager (904) 625-5074

Senior Bridge Inspector, Newnan Street/Hubbard Street; from Just South of Orange Street to a Pt. S. of Confederate Street, FDOT District 2, $1.5 Million, FIN: 415254-1-52-01, Jacksonville, Florida - This 250-day, federally funded, unit price project and consisted of milling and resurfacing, base work, curb and gutters, bridges, sidewalks/bicycle path, and other incidental construction including preservation of historical bridge elements and JEA water main work on Newnan Street/Hubbard Street in Duval County, just south of Orange Street to approximately 200' south of Confederate Street. He was responsible for the intense coordination required between all stakeholders, documentation, and testing on the project. This project was an off-system bridge rehabilitation project that was federally funded in cooperation with FDOT and the City of Jacksonville. Major elements of work revolved around contaminated soil removal in which FDOT's CAR contractor performed all soil excavations and the City of Jacksonville participated with taking ownership and proper disposal thereof. **Service:** 2/2016 to 10/2016; **Reference:** Jessica Tippett, PE, Project Manager, FDOT, (904) 360-5504

Project Administrator, SR 15 (US 17) Dunn's Creek Road and Bridge Reconstruction, FDOT District 2, $36.5 Million, FIN:435444-1-52-01, Palatka County, Florida - The project reconstructed US 17 from a 2-lane to a 4-lane expressway in South Palatka. The new bridge consisted of 27,000 LF of a 24" concrete pile foundation, 3,900 CY of mass concrete, and 14,000 LF of 78"-tall Florida-I beams to provide a minimum of 45 LF clearance over the navigable waterway. The roadway included construction of column supported embankment for the approach to the bridges, 47,000 CY of subsoil excavation, 219,000 CY of embankment, drainage installation, and construction of the shared use path throughout the US 17 project. **Service:** 01/2018 to 01/2019; **Reference:** Taylor Byrd, (386) 312-4826

Senior Inspector, CR 315 (Sharron Road), Bridge Replacement, (RFP No. 11/12-5), Clay County, Florida - This 270-day design/build bridge replacement over Green's Creek increased the vertical height of the bridge to raise it above flood level. This project involved complete removal of an existing timber bridge supported on timber piling and replacing it with a modern concrete span superstructure supported on 18" prestressed pilings. Safety improvements included rip rap protection for each end bent, W-beam guardrail at end approaches, concrete barriers each side of the bridge, and roadway elevations raised to comply with flood stage demands. **Service:** 2/2013 to 5/2013; **Reference:** Warrick L. Sams, Senior Project Manager, 904-759-4469.

Senior Inspector, US 1 Resurfacing and SR 13 Safety Improvements at I-295, FDOT District 2, $13.6 Million, FIN :423922-1-52-0 & 423922-1-56-0, Jacksonville, Florida - This 270-day, federally funded, unit price project that consists of milling and resurfacing, base work, shoulder treatment, drainage improvements, curb and gutter, traffic signals, highway signing, guardrail, sidewalks/bicycle paths, utility work, and other incidental construction along SR 13 San Jose Boulevard/Claire Lane. This contract also includes a lump sum, Joint Project Agreement (JPA) with JEA for utility adjustments, and installations of a 10" force main and 8" watermain. **Service:** 9/2012 to 2/2013; **Reference:** Jessica Tippett, PE, Project Manager, FDOT, (904) 360-5504.

ENGLAND-THIMS & MILLER

Clint Proveaux
Senior Inspector

Mr. Proveaux began his career working as a QC Technician where he quickly honed his skills with material testing. Driven for additional challenges he joined ETM and has been working as a field inspector on complex heavy civil projects. Mr. Proveaux has been honing his craft to specialize in Bridge construction while continuing to advance his knowledge in road, signalization, and ITS work. He has worked on 11 different structures and his attention to detail assists the team by performing thorough inspections while communicating with the team and contractor areas of concern. His experience has paired him up with many different contractors creating a diverse background in various construction methods and activities including earthwork, utilities, bridge construction, roadway construction, and signalization. While exceedingly competent in material sampling and testing, he also demonstrates efficient prioritization for daily tasks, contributes to the team and pitches in on project assignments when other areas of the project need additional support. His initiative for professional growth drives him to continue expanding his construction skills, knowledge, and certifications.

EDUCATION:
AA, Florida Gateway College

YEARS OF EXPERIENCE:
Total: 9 | with ETM: 7

POSITION EXPERIENCE:
Senior Inspector: 2 year
Inspector: 5 years
QC Technician: 2 years

PROJECT EXPERIENCE:

Senior Inspector, SR 5/Broward Creek Bridge Replacement, FDOT District 2, $14 Million, FIN: 437441-1-52-01 & 437441-1-56-01, Duval County, Florida - The purpose of the project is to replace the aging bridge over Broward River. Work consist of removing two existing bridges and is replacing them with one structure, 4052 LF of 24-inch concrete piles, 2814 LF of Type-2 concrete beams, 456 LF of retaining walls, 30.9 CY of sand cement rip rap,1,783 LF of barrier wall, approximately ½ mile of roadway widening with column supported soil stabilization consisting of 1286 CY, 16" 45 LF long columns including a load transfer platform, multiphase MOT, 1,451-TN of asphalt overbuild, turnout construction, milling and resurfacing, drainage, traffic separators, C&G, sidewalk and guardrail, watermain with bridge attachments and coordination with CSX FDOT District Rail Administrators. Mr. Proveaux is currently serving as the bridge and pile driving inspector for phase 3, performing material sampling and verification, assisting with reinforcement sampling and verification, and more. **Service:** 02/2023 to Present; **Reference:** Samuel Lansdale, P.E., (904) 360-5557

Senior Inspector, SR 115/Moncrief Creek Bridge Replacement, FDOT District 2, $5.7 Million, FIN: 437438-1-52-01, Duval County, Florida - Improvements under this contract consist of bridge removal and replacement, roadway widening, milling and resurfacing, drainage, curb & gutter, sidewalk, installation of a temporary acrow panel bridge with pedestrian walkway, phased MOT with pedestrian detours, utility coordination and adjustment. This Contract includes 2,500 LF of 24" concrete pile, 1,978 LF of Prestressed Florida Slab Beams, 6,240 SF of Temporary Sheet piling, 471.4 CY of Class 4 Concrete, 226.4 CY of Class 2 Concrete, 115,828 lbs of Reinforcing Steel. Mr. Proveaux was responsible for providing as-built drawings of field changes for PA/PM review, assisted the APA with wet check of deck, created the 90%/final project punch lists, supporting the PA/CSS administratively and with project close-out. **Service:** 12/2022 to 03/2023; **Reference:** Jessica Tippett, P.E., Project Manager, FDOT, (904) 360-5504

Inspector, Lofton Creek Bridge Replacement, FDOT District 2, $4.2 Million, FIN: 437407-1-52-01, Nassau County, Florida - Improvements under this contract consist of replacement of the SR 200A bridge over Lofton Creek, reconstruction of the approaches and new 16" water main installed on the utility shelf of the new bridge. This Contract includes 1,663 LF of 18" concrete pile, 1,612 LF of Prestressed Florida Slab Beams, 1,790 SF Temporary Sheet Pile, 67.2 CY of Class 4 Concrete, 285.9 CY of Class 2 Concrete, 59,118 lbs of Reinforcing Steel. Mr. Cronk was the Assistant Project Administrator overseeing all inspection personnel responsible for the inspection, documentation, and testing on the project. Mr. Proveaux was responsible for 15 pile logs, assisted with inspecting reinforcing steel, material sampling and verification of concrete, earthwork, and asphalt, ensure conformance of bullet rail and guardrail installations, and assisted with project close-out. **Service:** 07/2021 to 12/2022; **Reference:** Jessica Tippett, P.E., Project Manager, FDOT, (904) 360-5504

CERTIFICATIONS & TRAINING:
(TIN: P61211393)

CTQP:
Asphalt Paving 1
Asphalt Paving 2
Concrete Field Tech
Pile Driving
Drilled Shaft
Earthwork 1
Earthwork 2
Final Estimates 1 & 2

ACI:
Field Testing Tech
CTCI – In-Training

ITS:
MFES
DMS
CCTV
RWIS
MDVS

FEMA:
ICS-100
ICS-200
ICS-700

ADDITIONAL CERTS:
Advance MOT
Stormwater Insp.
HAZMAT
MSE Wall

ENGLAND-THIMS & MILLER

Clint Proveaux
Senior Inspector

Inspector, Nassau County Pages Dairy Road, Nassau County, $3.5 Million, Contract No. CM2923, Florida - Resurfaced the existing lanes and widening approximately 1 LF on both sides of Pages Dairy Road in Nassau County. Additional work items include constructing new 5 LF paved shoulders, re-grading ditches, intersection improvements at Pages Dairy Road and Felmor Road to include turn lanes, replacing existing driveways, and constructing new asphalt driveways. The work to be performed is generally described as resurfacing and includes resurfacing of existing pavement, constructing roadside swales, constructing cross drain extensions and side drains, construction box culvert extensions, asphalt and concrete driveway construction, clearing and grubbing, placing performance turf and sod, MOT, installing pavement marking, roadway signage and new JEA water main construction. Mr. Proveaux was responsible for completing accurate and timely asphalt reports, rolling straight edge verification, earthwork material sampling and verification, provided precise monthly/weekly quantities, completed final punch list with the County, and assisted PA/PM with project closeout. **Service:** 05/2021 to 03/2022; **Reference:** Robert Companion, Nassau County Engineer, (904) 530-6225

Inspector, SR 200 Reconstruction, Phase II; from West of Rubin Davis Lane to East of O'Neil Scott Road, FDOT District 2, $60 Million, FIN: 210712-4-52-01, Duval County, Florida - The scope specifically includes the reconstruction of 5.5 miles of 4-lane rural to a 6-lane urban arterial roadway including the replacement of the mainline bridges over Lofton Creek. The conversion to a curb and gutter section will require a higher profile grade line in order to capture and convey drainage to 9 ponds. The main drainage trunk line will run on the north side. Other incidental work on this project includes box culvert extensions, 28 drilled shafts, 9 interconnected signalized intersections actuated by advanced traffic loops and video detection, and directional drill at Lofton Creek to replace both the water and sewer mains that are currently attached to the existing bridges. Mr. Proveaux assisted with project close-out, completed the final punch list, entering accurate material sampling information, assisted in completing the pile driving logs, completed weekly/monthly estimate documentation, and more. **Service:** 12/2015 to 5/2021; **Reference:** John Patterson, P.E., Project Manager, FDOT, (904) 360-5576

QC Technician, SR 9B Phase III: I-95 to CR 2209, Design-Build - New Interstate Facility, FDOT District 2, $79.7 Million, FIN: 431418-2-52-01 & 431418-2-56-01, Duval & St. John's County, Florida - This project was Design/Build of a new multi-lane facility that completed the SR 9B corridor from I-95 to CR 2209 and provided a new vital link to I-95 for St. Johns County residents. The 9B corridor pavement design consisted of 141,155 SY of jointed plan PCCP with thickness ranging from 8.5" to 11.5". Significant project scope elements include a new Single Point Urban Interchange (SPUI) at Peyton Parkway, full reconstruction of CR 2209, construction of twin 900 LF bridge structures over the environmentally sensitive Durbin Creek and its adjoining wetland, and substantial JPA relocations of water main (16" and 24"), force main (20") and reuse main (12"). This project features the placement of 1.7 million CY embankment, 21,381 tons of asphalt, 37,304 LF of storm pipe up to 72" diameter, full ITS feature integration including a DMS sign, multiple microwave vehicle detection devices, CCTV's and BlueTOAD devices, 22 overhead sign structures, 7 new high mast lights, and a new 136 LF single span steel truss pedestrian bridge over CR 2209. This project also consisted of construction for 8 new bride structures with 20,147 LF of driven 18" and 24" pile foundations, 15,974 LF of FIB girders with 36", 45", and 84" girder depths, 49,413 SF of MSE Walls, and 7,150 CY of structural concrete. A special project highlight includes the construction of a temporary truss founded upon steel pipe piles and utilizing top-down construction for the full length of the Durbin Creek bridge. Mr. Proveaux prepared various QC reports and formulated specific recommendations to resolve or correct quality issues. **Service:** 2016 to 2018; **Reference:** Jeff Williams, P.E., Resident Engineer, FDOT, (386) 312-4831.

QC Technician, SR 9B Phase II: US 1 to I-95, Design-Build-Finance, New Interstate Facility, FDOT District 2, $94.9 Million, FIN: 209294-9-52-01 & 209294-9-56-01, Duval County, Florida - This new multi-lane interstate facility extended the existing SR 9B corridor from north of US 1 to south of I-95, completed the full directional interchange at US 1, and provided a new interchange at I-95. Due to the increased demand for this project, the Department implemented this project via entering into a public-private partnership where the project funding was financed by the design/build team, being the first of its kind in Northeast Florida. Significant project scope elements include completion of the full interchange connection at US 1, full reconstruction of US 1 to a 6-lane urban section and widening/reconstruction of I-95 to an 8-lane section within the project limits. These elements comprised of 2.18 million CY embankment, 476,085 SY of asphalt or limerock base, 88,434 tons of asphalt, 186,645 SY of PCCP, 40,473 LF of storm drainpipe, 221,720 SY of sound walls, jack and bore of 24" and 36" steel casing across I-95, multiple over span and truss signs, relocation of an existing DMS sign, and a full conventional lighting system installation. Bridge construction on the project consisted of 18,381 LF of 45", 54" or 78" FIB's, 13,085 LF of 24" prestressed concrete piles, 9,770 CY of cast-in-place structural concrete and 101,595 SF of MSE Retaining Walls. Mr. Proveaux ensured density of the roadway, asphalt thickness and determined deficiencies located in the wheel paths. **Service:** 2016 to 2017; **Reference:** Jeff Williams, P.E., Resident Engineer, FDOT, (386) 312-4831.

ENGLAND-THIMS & MILLER

Vicki Bowen
Contract Support Specialist

Ms. Bowen's diversified project and administrative experience includes bridge, design build, and reconstruction projects. She began her career as an Administrative Assistant and through her own initiative advanced to CSS. Her former years of service in the US Navy instilled in her a keen focus of attention to detail that she leverages to the client's advantage in maintaining detailed project records and closing out projects without errors or omissions. Ms. Bowen addresses issues directly and honestly to enhance her relationships with her clients, teams, and contractors. Her duties include daily communication with the inspection staff regarding quantities, producing error free estimates, verifying material certifications, and ensuring the accuracy of project documentation. In addition, she prepares the project final acceptance documentation which includes pay item quantity certification, final offer letter to the contractor and the Final As-Builts. She works effectively as part of an entire project team and independently, with little supervision, to achieve quality results in a timely manner.

EDUCATION:
High School Diploma, Naval - Rated Data Processing "A"

YEARS OF EXPERIENCE:
Total: 9 | with ETM: 5

POSITION EXPERIENCE:
CSS: 5 years
Administrative Assistant: 4 years

CERTIFICATIONS & TRAINING:
(TIN: B50086962)

CTQP:
Final Estimates 1
Final Estimates 2
Concrete Tech 1

ADDITIONAL CERTS:
Construction Math
Contract Plans Reading
Successfully Managing

COMPUTER SKILLS:
FDOT EDMS
EQP Final Measurements
FDOT PrC
FDOT MAC
Adobe
Bluebeam
Microsoft Office

PROJECT EXPERIENCE:

Contract Support Specialist, SR 5/Broward Creek Bridge Replacement, FDOT District 2, $14 Million, FIN: 437441-1-52-01 & 437441-1-56-01, Duval County, Florida - The purpose of this project is to replace the aging infrastructure including the bridge over Broward River. Work consist of removing two existing bridges and is replacing them with one structure, 40,52 LF of 24" concrete piles, 2,814 LF of Type 2 concrete beams, 456 LF of retaining walls, 30.9 CY of sand cement rip rap,1,783 LF of barrier wall, approximately ½ mile of roadway widening with column supported soil stabilization consisting of 1,286 CY, 16" 45 LF long columns including a load transfer platform, multiphase MOT, 1,451-TN of asphalt overbuild, turnout construction, milling and resurfacing, drainage, traffic separators, C&G, sidewalk and guardrail, watermain with bridge attachments and coordination with CSX FDOT District Rail Administrators. **Service:** 06/2022 to Present; **Reference:** Sam Lansdale, PE, FDOT Project Manager, (904) 360-5557.

Administrative Assistant, Newnan Street/Hubbard Street; From Just South of Orange Street to a Point South of Confederate Street, FDOT District 2, $1.5 Million, FIN: 415254-1-52-01 & 415254-1-56-01, Duval County, Florida - This 250-day, federally funded, unit price project consisted of milling and resurfacing, base work, curb and gutters, bridges, sidewalks/bicycle path, preservation of historical bridge elements, and JEA water main work on Newnan Street/Hubbard Street in Duval County. This project was a federally funded, off-system bridge rehabilitation project in cooperation with FDOT and the City of Jacksonville. Major elements of work revolved around contaminated soils in which FDOT's CAR Contractor performed all soil excavations and the City of Jacksonville participated with the scheduling and payment of all roll off containers. In addition, the City of Jacksonville was responsible for removal and disposal of excavated soils. Responsibilities include assisted field and office staff as needed by scanning and attributing all project related documents and correspondence into EDMS, as well as organizing and maintaining the official project files, processing incoming and outgoing mail and project submittals, attending weekly progress meetings, taking minutes for distribution, and maintaining office and breakroom supplies. **Service**: 02/2016 to 10/2016**; Reference**: Jessica Tippett, PE, Project Manager, FDOT Project Manager, (904) 360-5504.

Contract Support Specialist, SR 115/Moncrief Creek Bridge Replacement, FDOT District 2, $5.7 Million, FIN: 437438-1-52-01, Duval County, Florida - The purpose of this project is to replace the aging infrastructure removing two existing deficient bridges and replacing them with one structure. Improvements under this contract consist of bridge removal and replacement, roadway widening, milling, and resurfacing, drainage, curb & gutter, sidewalk, installation of a temporary Acrow panel bridge with pedestrian walkway, phased MOT with pedestrian detours, utility coordination and adjustment. This project includes 2,500 LF of 24" concrete pile, 1,978 LF of prestressed Florida slab beams, 6,240 SF of temporary sheet piling, 471.4 CY of Class 4 Concrete, 226.4 CY of Class 2 Concrete, 115,828 lbs. of reinforcing steel. **Service:** 11/2021 to 03/2023; **Reference:** Jessica Tippett, PE, FDOT Project Manager, (904) 360-5504.

ENGLAND-THIMS & MILLER

Vicki Bowen
Contract Support Specialist

Contract Support Specialist, Lofton Creek Bridge Replacement, FDOT District 2, $4.5 Million, FIN: 437407-1-52-01 & 437407-1-56-01, Nassau County, Florida - The purpose of this project was to replace and widen an aging bridge and relocating/replacing a watermain to a utility shelf. Improvements under this contract consist of replacement of the SR 200A bridge over Lofton Creek, reconstruction of the approaches and a new 16" water main installed on the utility shelf of the new bridge. This Contract includes 1,663 LF of 18" concrete pile, 1,612 LF of prestressed Florida slab beams, 1,790 SF temporary sheet pile, 67.2 CY of Class 4 concrete, 285.9 CY of Class 2 concrete, 59,118 lbs. of reinforcing steel**.** Ms. Bowen was responsible for preparing the final offer letter to the Contractor and final estimate package to the Department, both were turned in on time. **Service:** 06/2021 to 12/2022; **Reference:** Jessica Tippett, PE, FDOT Project Manager, (904) 360-5504.

Contract Support Specialist, JEA Pages Dairy Road, JEA, $ 2.2 Million, Contract No. CM2923, Nassau County, Florida - This project provided approximately 2,221 LF of 16" ductile iron water main along Felmor Road, which will included approximately 160 LF of a 30" cased railroad crossing from the 12" water main termination on Felmor Road to Pages Dairy Road (200A). Additionally, improvements included approximately 13,489 LF of 16" ductile iron water main from Felmor Road along Pages Dairy Road (200A) to Chester Road and approximately 520 LF of open cut 16" water main for tying in the new 16" water main to the existing 16" water main along Chester Road. **Service:** 01/2021 to 03/2022**; Reference:** Tom Hamilton, JEA Project Manager, (904) 544-1883.

Contract Support Specialist, Nassau County Pages Dairy Road, Nassau County, $3.5 Million, Contract No. CM2923, Florida - Due to heavy use and a growing population, Nassau County needed to resurface and widen 5-miles of Pages Dairy from 22 LF to 32 LF. This project included resurfacing the existing lanes and widening approximately 1 LF on both sides of Pages Dairy Road, constructing new 5' paved shoulders, re-grading ditches, intersection improvements at Pages Dairy Road and Felmor Road to include turn lanes, replacing existing driveways, and constructing new asphalt driveways, cross drain extensions and side drains, box culvert extensions, clearing and grubbing, MOT, pavement marking, roadway signage and new JEA 12" water main. **Service:** 01/2021 to 03/2022; **Reference:** Robert Companion, Nassau County Engineer, (904) 468-0005.

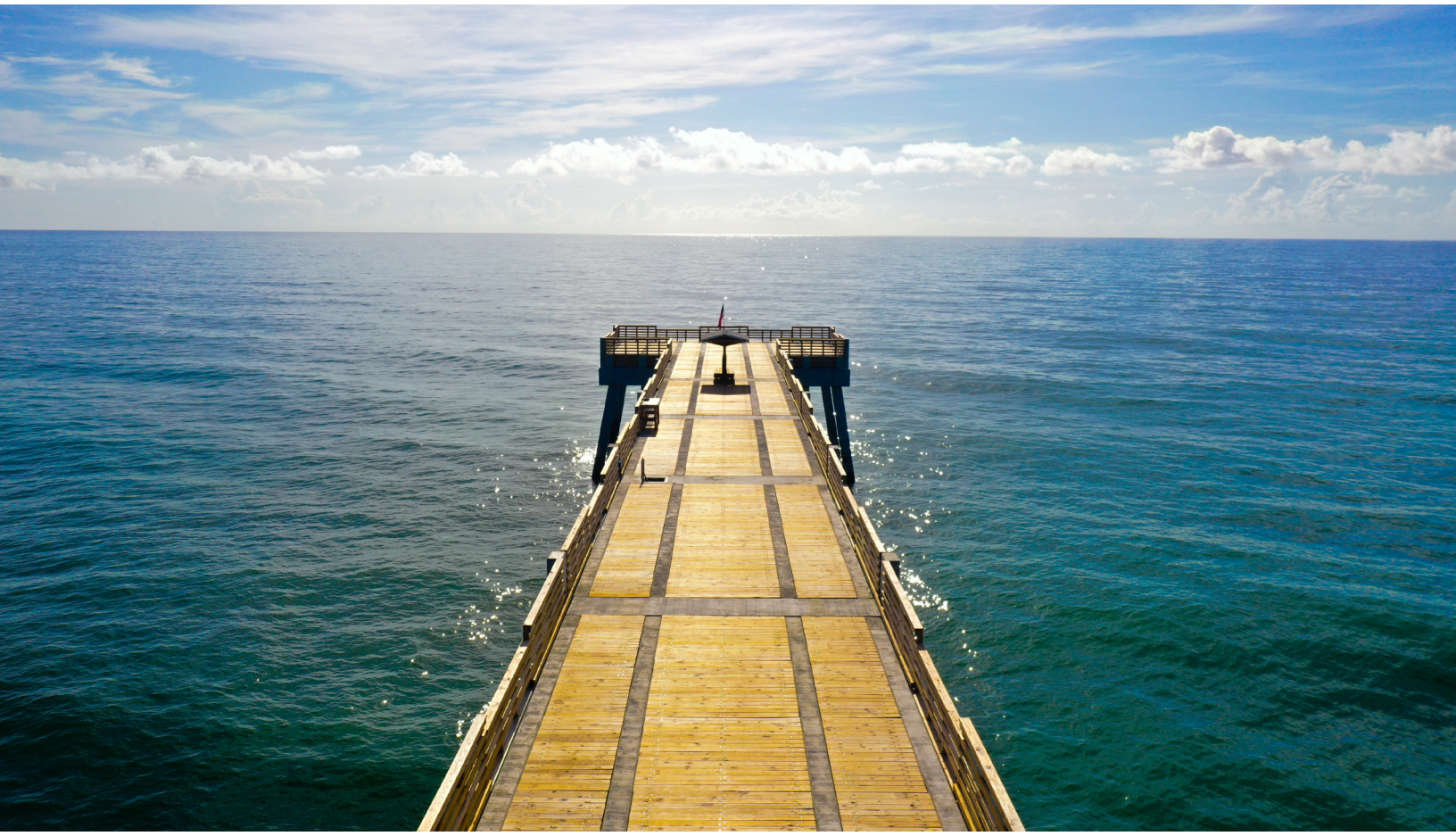
Contract Support Specialist & Administrative Assistant, SR 200 Reconstruction Phase II; from West of Rubin Davis Lane to East of O'Neil Scott Road, FDOT District 2, $60 Million, FIN: 210712-4-52-01, Duval County, Florida - The purpose of this project was the reconstruction of 5.5 miles of a 4-lane rural to 6-lane urban arterial roadway including the replacement of the mainline bridges over Lofton Creek. Project includes the conversion to a curb and gutter section requiring a higher profile grade line to capture and convey drainage to nine new ponds. Other work on this project includes box culvert extensions, 28 drilled shafts, nine interconnected signalized intersections actuated by advanced traffic loops and video detection, and a directional drill at Lofton Creek to replace both the water and sewer mains that are currently attached to the existing bridges. Responsibilities include monthly and final estimates, checking of field books, maintaining computation books and as-builts, checking and maintaining asphalt records, maintaining SA/WO and time files, helping in the process of preparing the Monthly CPPR, preparing Weather/Holiday Letters, working within Site Manager for estimates, Change Orders, DWRs, and various other duties. **Service**: 12/2015 to 06/2021; **Reference**: John Patterson, PE, FDOT Project Manager, (904) 360-5576.

Administrative Assistant, Main Street over Hogan's Creek SR 5/US 17, FDOT District 2, $2.1 Million w/$250,000 Incentive Clause, FIN: 439601-1-52-01, Duval County, Florida - This 280-day lump sum emergency design-build with incentive bonus project consisted of design, removal, replacement, and disposal of the existing 17' 9" long reinforced concrete structure over Hogan's Creek in Duval County. The project replaced the concrete structure, existing roadway, sidewalks, curb and gutter, bridge railing removal/rehabilitation/reinstallation, including preservation of historical bridge elements, utilities, storm sewer, and lighting necessary to restore the facility to its original condition. The utility relocations (water and sewer) were included as a Joint Participation Agreement (JPA) with the JEA. Responsibilities included assisted field and office staff as needed by scanning and attributing all project related documents and correspondence into EDMS, as well as organizing and maintaining the official project files. Responsible for processing incoming and outgoing mail and project submittals, attending weekly progress meetings, taking minutes for distribution, and maintaining office and breakroom supplies. **Service**: 07/2016 to 04/2017**; Reference**: Brian Kirts, PE, Project Management, (904) 271-1585.

Tab 5

PAST PERFORMANCE

5 PAST PERFORMANCE



ETM has proudly provided CMA services for a variety of local agencies for over 30 years. Our CEI department has grown into one of the largest groups in Florida and currently provides services for roadway and bridge construction, paving, drainage, water, sewer and reuse inspection, materials testing, full-time construction contract administration, and bidding services, as well as monitoring and documentation throughout all phases of construction.

Our team of experts boasts 48 years in the industry and an unparalleled knowledge of infrastructure projects. We guarantee peak performance, technical mastery, and a swift response to all your needs - so that you can rest assured that the projects under this contract will run smoothly from start to finish. ETM has proven that we can muster the resources when needed and/or scale them back to meet the changing demands of different project types and award timings. Our clients have come to trust us to deliver on our promises and we are proud of being selected for repeat work on these types of contracts.

SIMILAR PROJECTS

We highlight relevant projects of similar scope which were completed within the past ten years on the following pages, demonstrate our competency and experience in the specified work areas as defined in the scope of services for this contract, and have included applicable reference information for each project listed. In addition, we identify team members that were part of the referenced projects and will be involved with this project.

ATTACHMENT E
EXPERIENCE OF BIDDER

Bidder Name: England-Thims & Miller, Inc.

Authorized Signature: Geory R. Miller Date: January 15, 2025

Is your company currently involved in any active litigation? X Yes ____No

If Yes, explain: See attached list of litigation.

Has your company ever been sued? X Yes ____No

If Yes, explain and/or submit court decision or judgment, as applicable:

See attached list of litigation.

The Bidder must demonstrate the successful completion of four (4) projects of similar complexity, nature, size, and dollar amount in the capacity of CMA. Any material misrepresentation, as determined by the City of Flagler Beach, shall result in disqualification.

On the following pages, provide the requested information regarding experience within the past ten (10) years on four (4) projects. These projects must be new or rehabilitation projects. Preferred projects should be for a coastal community on or near the beach. Additional credit will be awarded for Fishing Piers, either concrete or wood.

LITIGATION HISTORY

Project: Briar Oaks; Briar Oaks HOA

- Case Number: NA
- Alleged Claim: Construction Defects
- Final Outcome: ETM was excluded from this case.
- Date Settled: January 2019

Project: Bartram Office Park; Bartram Park HOA

- Case Number: 16-2019-CA-1251
- Alleged Claim: Construction Defects
- Final Outcome: Settled out of court
- Date Settled: February 2019

Project: Cobblestone Publix v. May

- Case Number: 162018CA006979XXXXMA
- Alleged Claim: Slip and Fall
- Final Outcome: Settled out of court - confidential agreement
- Date Settled: May 2021

Project: Posley [Donetia as PNG Jamael Butler, a minor] v. Jackson, Butler

- Case Number: 162020CA000236XXXXMA
- Alleged Claim: Negligence
- Final Outcome: Settled out of court - confidential agreement Date Settled: February 2021

England, Thims & Miller, Inc. v. Honan Development, LLC

- Amount: $45,000
- Alleged Claim: England, Thims & Miller, Inc. sued Honan Development, LLC for non-payment.
- Final Outcome: N/A
- Date Settled: N/A

England, Thims & Miller, Inc. v. Montevilla at Bartram Lakes Association

- Amount: $TBD
- Alleged Claim: Construction Defects
- Final Outcome: Pending
- Date Settled: Pending

Project #1:

Contract Date: 2020 - 2022

Contract Amount: $ $9.9 Million

Project Name: Jacksonville Beach Pier

Project Location: Jacksonville Beach, Florida

General Scope of Work: Monitoring and inspecting the construction contract to ensure that the project is constructed in reasonable conformity with the plans, specifications, and special provisions for the construction contract. Reviewing of plans, submittals, and pay requests. Overseeing installation of 96 prestressed concrete piles as well as monitoring of erosion control measures and conducting daily turbidity readings during demolition and construction of extension.

Client Name and Address: City of Jacksonville/City of Jacksonville Beach

555 West 4th Street

Jacksonville, Florida 32208

Client Contact Phone: (904) 255-8763

Client Contact Email: joyce@coj.net

Was the project completed on schedule? X Yes No

Total Amount of Change Orders: $ 75,011.71

Reasons for Change Orders: Standby costs due to delay in COE permit, adjustments to test and production pile lengths.

Please attach photos of the finished project.

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JACKSONVILLE BEACH PIER REPLACEMENT

General Scope of Work:
ETM provided CEI services for the Jacksonville Beach Pier project. The scope of the project included coordination with the City of Jacksonville/City of Jacksonville Beach and includes the planned demolition, debris removal from ocean floor, and reconstruction of the sub and super structure of the pier. Responsibilities include monitoring and inspecting the construction contract to ensure that the project is constructed in reasonable conformity with the plans, specifications, and special provisions for the construction contract. Reviewing of plans, submittals, and pay requests. Overseeing installation of 96 prestressed concrete piles as well as monitoring of erosion control measures and conducting daily turbidity readings during demolition and construction of extension.

After Hurricane Matthew wreaked havoc on the Jacksonville Beach Pier, ETM provided CEI services to repair 350' of the destroyed pier along with an additional 450' that suffered damage. The project included the removal of the existing pier, the removal of submerged debris from the ocean floor, the installation of 8,568 LF of 24" pre-stressed concrete pile foundation, over 300 CY of mass concrete, 2,640 LF of 24" pre-stressed beams, and over 3,000 LF of wooden walkways and handrails, including ADA compliant fishing sections. ETM was responsible for coordinating with the City of Jacksonville, City of Jacksonville Beach, FDEP, Florida Fish and Wildlife Conservation Commission, and the USACE to ensure permits were complied with and that the project was constructed in reasonable conformity with the plans, specifications, and special provisions. This project included contract administration, plan, and shop drawing submittal reviews, RFIs reviews, daily technical assistance in the field, monthly pay requests, and the review of pricing submitted by the Contractor for additional work.

Key Team Members:
- Kent Ponder
- Tim Thacker

Similar Project Elements:
- Pier Replacement
- Construction Management
- CEI Services
- Temporary Trestle Construction
- Existing Pier Renovation
- Demolition of Existing Pier
- Debris Removal from Ocean Floor
- Raise New Pier Elevation
- 24" Prestressed Concrete Driven Piles
- Environmental
- Public Safety
- Precast Bent Caps
- Grouting







Project #2:

Contract Date: 2015 - 2018

Contract Amount: $ $200 Million

Project Name: SR 9B Phases 1, II, & III

Project Location: Jacksonville, Florida

General Scope of Work: Representing the best interests of the FDOT, St. Johns County and its community, proactively identifying and resolving issues, reviewing and responding to submittals, shop drawings, and RFIs, negotiating extra and unforeseeable work, tracking costs and processing estimates, and managing our inspection staff who were accountable for quality and timely completion of the work.

Client Name and Address: FDOT, District 2
2198 Edison Avenue
Jacksonville, Florida 32204

Client Contact Phone: (386) 312-4831

Client Contact Email: jeff.williams@dot.state.fl.us

Was the project completed on schedule? X Yes No

Total Amount of Change Orders: $ 661,737.91

Reasons for Change Orders: ITS Scope Modification Design, Race Track Road Modification, CR 2209 Forcemain, Hurricane Matthew, TG Utility Tie-in CR 2209, and Hurricane Irma.

Please attach photos of the finished project.

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SR 9B PHASES I, II, III NEW CONSTRUCTION

General Scope of Work:
In 2009, Congress passed "The American Recovery and Reinvestment Act" (ARRA). This bill, also known as the "Stimulus Package," funded federal infrastructure projects across the US. The first phase of SR 9B was one of the largest funded by ARRA, with a total cost of $68 Million. When all three phases are completed, the SR will connect the counties of Duval and St. Johns, and run as a 4 lane, divided highway from CR 2209 to SR 9A (I-295 Outer Beltway). The initial planning stages for the project, which included a Project Development and Environmental (PD&E) Study, had begun as early as 2002, but stalled due to the lack of funding.In 2010, ETM was contracted by the FDOT to provide professional CEI services for the first phase of the project. We then won the CEI bid for each of the two remaining phases. As CEI Managers, ETM provided onsite inspection and engineering services for the FDOT, and coordinated with the Federal Highway Administration, Resident, District and Central Office FDOT personnel. This design-build project completed the new multi-lane limited access facility, providing a most anticipated and new vital link to I-95 for St. Johns County residents. Significant project elements included the placement of approximately 1.7 million CY of embankment, over six miles of new stormwater drainage system, a new Single Point Urban Interchange (SPUI) at Peyton Parkway, full reconstruction of CR 2209, construction of eight new bridge structures, including a pedestrian bridge over CR 2209 and twin 900' structures over the environmentally sensitive Durbin Creek and adjoining wetland, 101,595 SY of MSE walls, and significant water and sewer force main JPA relocations on Race Track Road, Russell Sampson Road, and CR 2209. Project responsibilities included representing the best interests of the FDOT, St. Johns County and its community, proactively identifying and resolving issues, reviewing and responding to submittals, shop drawings, and RFIs, negotiating extra and unforeseeable work, tracking costs and processing estimates, and managing our inspection staff who were accountable for quality and timely completion of the work. Project challenges included installing the bridges in the environmentally sensitive Durbin Creek, which required top-down bridge construction.

Key Team Members:
- Tim Thacker
- Robert Mullin
- Clint Proveaux
- Vicki Brown

Similar Project Elements:
- Construction Management
- CEI Services



Project #3:

Contract Date: 2016

Contract Amount: $ $1.5 Million

Project Name: Newnan Street/Hubbard Street Bridge Rehabilitation

Project Location: Jacksonville, Florida

General Scope of Work: Milling and resurfacing, base work, curb and gutters, bridges, sidewalks/bicycle path, and other incidental construction including preservation of historical bridge elements and JEA water main work on Newnan Street/Hubbard Street in Duval County from just south of Orange Street to approximately 200-feet south of Confederate Street.

Client Name and Address: FDOT, District 2
2198 Edison Avenue
Jacksonville, Florida 32204

Client Contact Phone: (904) 360-5504

Client Contact Email: jessica.tippett@dot.state.fl.us

Was the project completed on schedule? X Yes No

Total Amount of Change Orders: $ 113,104.49

Reasons for Change Orders: Added pile lengths and limited pile driving allowances due to existing soil contamination, added bulkhead, gravity wall and pipe railing.

Please attach photos of the finished project.

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NEWNAN STREET/HUBBARD STREET BRIDGE REHABILITATION

General Scope of Work:
This was a 250-day, federally funded, unit price project that the FDOT added to ETM's SR 200 CEI contract and consisted of milling and resurfacing, base work, curb and gutters, bridges, sidewalks/bicycle path, and other incidental construction including preservation of historical bridge elements and JEA water main work on Newnan Street/Hubbard Street in Duval County from just south of Orange Street to approximately 200' south of Confederate Street. This project was an off-system bridge rehabilitation project that is federally funded in cooperation with the FDOT and the City of Jacksonville. Major elements of work revolved around contaminated soils removals in which FDOT's CAR Contractor performed all soil excavations and the City of Jacksonville participated with the scheduling and payment of all roll off containers and was responsible for removing and disposing of excavated soils.

Key Team Members:
- Kent Ponder, PE
- Robert Mullin
- Vlcki Brown

Similar Project Elements:
- Construction Management
- CEI Services







Project #4:

Contract Date: 2022 - 2024

Contract Amount: $ $14 Million

Project Name: SR 5/Broward Creek Bridge Replacement

Project Location: Duval County

General Scope of Work: Concrete piles, , concrete beams, retaining walls, sand cement rip rap, barrier wall, roadway widening with column supported soil stabilization, multi-phase MOT, asphalt overbuild, turnout construction, milling and resurfacing, drainage, traffic separators, C&G, sidewalk, guardrail, watermain with bridge attachments and coordination with CSX.

Client Name and Address: FDOT, District 2

2198 Edison Avenue

Jacksonville, Florida 32204

Client Contact Phone: (904) 360-5557

Client Contact Email: sam.lansdale@dot.state.fl.us

Was the project completed on schedule? X Yes No

Total Amount of Change Orders: $ 1,784,171.18

Reasons for Change Orders: Added Grout Inclusion Columns for Pile Supported Pavement Extension, JEA Temporary Watermain Redesign, Impacts Associated with Hurricane Milton, Fire Hydrant Relocations, Bridge Deck Grooving and Type 'F' Curb & Gutter.

Please attach photos of the finished project.

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END OF ATTACHMENT E

SR 5/BROWARD CREEK BRIDGE REPLACEMENT

General Scope of Work:
The project consisted of removing two existing aging bridges and replacing them with one structure. The work includes 4052 LF of 24 in. concrete piles, 2814 LF of Type-2 concrete beams, 456 LF of retaining walls, 30.9 CY of sand cement rip rap,1,783 LF of barrier wall, approximately ½ mile of roadway widening with column supported soil stabilization consisting of 12 in. diameter grout columns installed to a minimum tip elevation of minus 33 or refusal with a load transfer platform, multiphase MOT, asphalt overbuild, turnout construction, milling and resurfacing, drainage, traffic separators, C&G, sidewalk, guardrail, watermain with bridge attachments and coordination with CSX. Early in the project, Ms. Smithheart and her team identified and investigated voids under the existing northbound roadway that interfered with planned progress. With coordination with FDOT and CSX, she provided and executed an approved plan of action that avoided delays to the project schedule.

Key Team Members:
- Kent Ponder, PE
- Clint Proveaux
- Vicki Bowen

Similar Project Elements:
- Construction Management
- CEI Services
- Structural Demo
- Pile Driving
- Cast-in-Place Caps
- Precast Beam Construction
- Environmental
- Safety







Tab 6
COST PROPOSAL

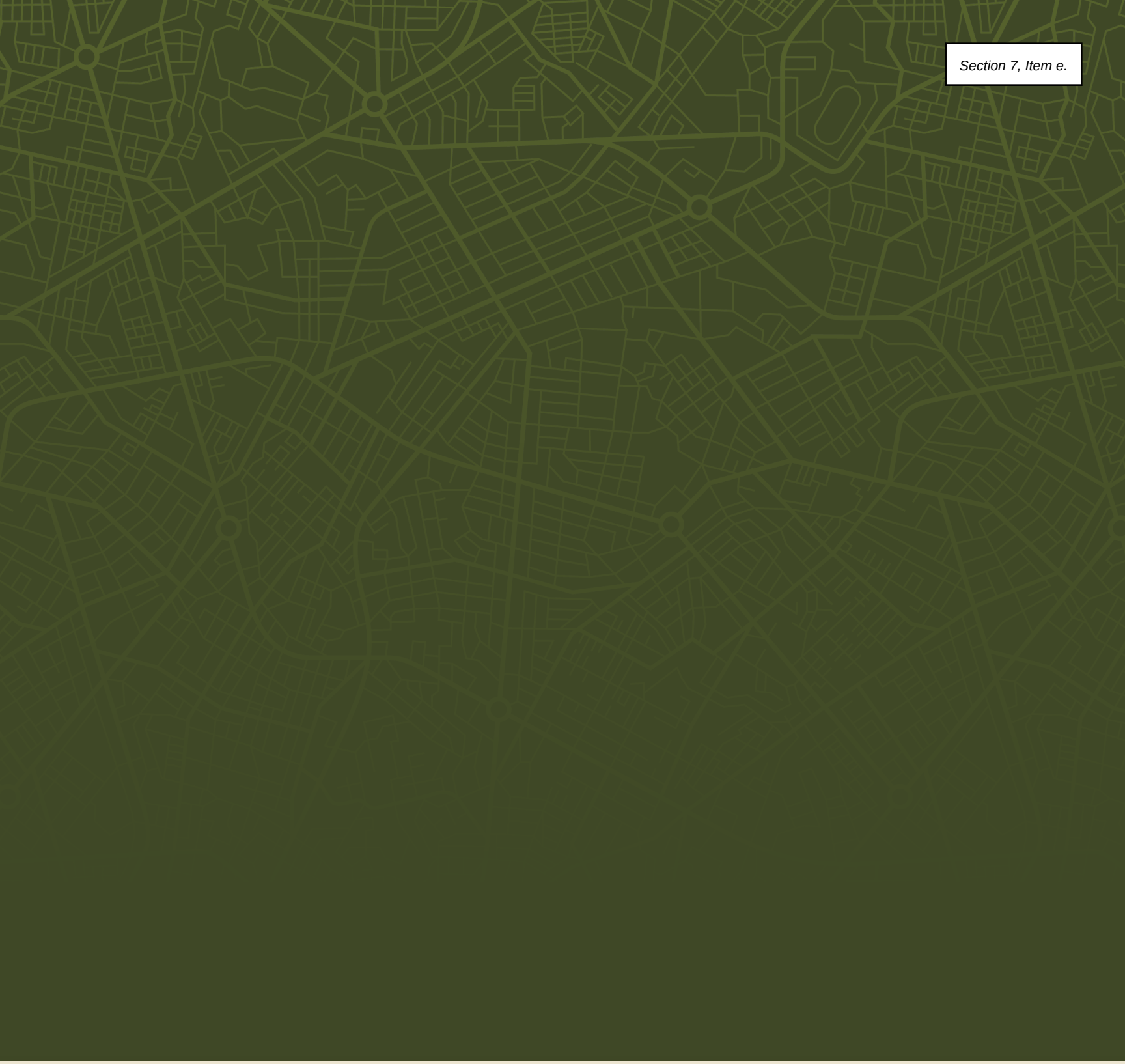
6 COST PROPOSAL

The work write-up / bid form is a general outline of the work to be performed. The total price of this project shall include:

DATE: 1/15/2025

TOTAL FEE: $826,586.66

IN WORDS: Eight Hundred and Twenty Six Thousand, Five Hundred and Eighty Six Dollars and Sixty-Six Cents



ENGLAND-THIMS & MILLER

14775 Old St. Augustine Road
Jacksonville, Florida
(904) 642-8990
www.etminc.com

procon consulting

CONSTRUCTION MANAGER ADVISER

City of Flagler Beach, FL







RFP# FB-242911
January 15, 2025

PROCON CONSULTING LLC
1800 Tysons Boulevard, Suite 620
McLean, VA 22102
703.527.7059

FLORIDA REGIONAL OFFICE
113 King Street
Cocoa, FL 32922

POINT OF CONTACT
Mark Ilich
703.869.3933
milich@proconconsulting.com

ORIGINAL

STATEMENT OF QUALIFICATIONS

January 15, 2025

Penny Overstreet
City Clerk
City of Flagler Beach
105 S. 2nd Street
Flagler Beach, FL 32136

VIA: Hand delivery

RE: Construction Manager Adviser for the Construction of Flagler Beach Fishing Pier Replacement, RFQ No. FB-242911 (City Project No. 260)

Dear Ms. Overstreet:

Procon, a Top 100 Nationally Recognized Construction Advisory firm with 25 years of experience in construction management, is excited to submit our proposal for the City of Flagler Beach Fishing Pier Replacement project. Our extensive history of partnering with municipal and federal clients positions us uniquely to deliver exceptional results for this historic and community-centered endeavor.

One of our flagship projects is the Construction Management and Inspection Services for the U.S. Coast Guard. Procon provided on-site inspection for the replacement and demolition of floating docks, rehabilitation of a concrete wharf, waterfront repairs, and demolition of hurricane-damaged day beacons. Such expertise mirrors the challenges and opportunities of reconstructing the Flagler Beach fishing pier and exemplifies our capability to manage projects with historic significance. Procon is also supporting the National Park Service with Construction Management Services to Rehabilitate Seawalls and Shoreline.

Our team brings a full suite of construction management services, from acting as the Owner's Representative to conducting submittal reviews, progress payment evaluations, and detailed schedule analyses. We excel in negotiating contractor and subcontractor proposals, coordinating with diverse stakeholders, ensuring quality inspections, and managing project closeout—all essential for the success of this historic pier replacement.

We are eager to collaborate with the City of Flagler Beach to restore this iconic community asset. Please contact me or Jason Lopez if you have any questions.

Sincerely,

Procon Consulting LLC

Mark Ilich, Executive Vice President
1800 Tysons Boulevard, Suite 620
McLean, VA 22102
milich@proconconsulting.com
703.869.3933 phone | 703.852.2733 fax

Jason Lopez, Senior Vice President
Florida Regional Office
113 King Street, Cocoa, FL 32922
jlopez@proconconsulting.com
954.444.6792 | 703.852.2733 fax

January 15, 2025

Penny Overstreet
City Clerk
City of Flagler Beach
105 S. 2nd Street
Flagler Beach, FL 32136

VIA: Hand delivery

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Sincerely,

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procon consulting

CONSTRUCTION MANAGER ADVISER

City of Flagler Beach, FL







Company Profile

FIRM PROFILE

Firm History, Size, and Philosophy

As an industry leader, we provide our clients with technical and professional services for all phases of a project lifecycle; from project planning, design, construction, and commissioning, to ongoing facility maintenance and operations. We have provided these services for the past 25 years. With headquarters in McLean, Virginia, and offices in Florida, Texas, California, Colorado, Illinois, and Delaware to serve a broad range of municipal government, and federal clients. We have successfully delivered projects in almost all 50 states including Alaska and Hawaii. Our nationwide network of nearly 200 professionals ensures projects and clients are well supported regardless of their location.

Procon offers comprehensive construction, program, project, and facility management services, as well as commissioning, project controls and technology services for a range of project sizes, from small remodeling projects up to the $4.6B renovation of the historic St. Elizabeths' campus for the Department of Homeland Security's headquarters. Our broad range of projects includes renovations and modernizations in occupied buildings, and new construction, utilities infrastructure, and large-scale site work, with an emphasis on maximizing the usefulness of BIM, GIS, electronic project management, augmented reality, and other technology to deliver successful projects for our clients. The table below provides a more detailed listing of our services.

DESIGN
Design management
Owner's review
Codes & standards review
Constructability review
Cost estimating
Value engineering
LEED certification planning

PROCUREMENT
Market studies
Vendor assessment & selection
RFP/RFQ development
Scope planning & development
Selection process management

PRE-CONSTRUCTION
Construction staging
Management plan
Scope planning & definition

WORKSPACE DESIGN
Needs assessment
Space design & layouts
Blocking & stacking plans
Test fit analysis & layouts
Design standards
Base building coordination

CONSTRUCTION
Owner's representation
Master scheduling
Budgeting, forecasting, EVM
Inspection services
Quality assurance/control
Site & safety supervision
Document/submittal management
RFI management
Change order management
Cost estimating
Draw schedules
Payment review
Electronic project management
Dispute resolution
LEED monitoring
Change management

BIM SERVICES
Program integration & support
BIM interaction visualization
Video & virtual reality animation
BIM drafting
Clash detection analysis
Model integrity checks
Spatial data analysis
Facility management data checks

COMMISSIONING
Design evaluation & comment
Certification verification Checklists
Sequence of operations testing
Functional performance testing & documentation
Systems balancing/ recertification

CLOSEOUT
Punch list management
As-built drawings, final records
O&M manuals & warranties
LEED certification management

Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal.

Staff Resources and Approach to Managing Workload

Procon has a deep pool of internal resources to support the various roles/positions anticipated under this contract. With nearly 200 multi-disciplinary staff, and a local office in Cocoa, Florida, Procon is in a great position to resource this contract if selected for this project. One of our benefits is the ability to multi-task by leveraging our staff's multiple skill sets. Over the years, as Procon has grown as a firm, we have developed a team of staff trained in multiple service areas and have become accustomed to serving in multiple roles. For example, a number of our project control staff can perform as schedulers, estimators, contract administrators, and document control specialists; this allows us to consolidate positions and do more with less budget depending on the degree of engagement required for the project.

Financial Stability

As a 25-year-old established firm, Procon is financially stable and fully capable of efficiently allocating resources, and assessing and managing any foreseeable financial risks, while maintaining our current employment levels.

Volume of Work

Procon's staff and resources provide maximum flexibility to meet our clients' scheduling needs. The nature of our work requires us to typically provide services on an expedited basis. Our typical backlog is made up of many short duration assignments and therefore our workload varies on a weekly basis. Furthermore, long-term contracts are of indefinite quantity making workload dependent upon individual work orders, and difficult to predict. Our personnel have the flexibility, ability and capacity to handle all the services required and to meet the scheduling requirements for this project. Our team has the capacity to perform this work based on actual and projected workload. If Supplemental Services are required, we are committed to increasing staff levels and provide additional resources to provide these services.

Basic Construction Management Techniques and Methods

At Procon Consulting, we deliver superior construction management services by combining best practices, innovative tools, and a commitment to quality. Our team excels in creating efficient workflows, reducing risks, and ensuring each project phase is executed seamlessly. With our holistic approach, we consistently meet client expectations for time, cost, and quality.

Scheduling

Proactive scheduling is essential to the success of any construction project. At Procon Consulting, we utilize advanced scheduling techniques and tools to plan, monitor, and adjust timelines effectively. Our schedules ensure that resources are optimized, milestones are met, and potential delays are mitigated to maintain project momentum.

Key Components:

- Detailed Project Scheduling
- Critical Path Analysis
- Resource Allocation Planning
- Milestone Tracking
- Progress Monitoring

Cost Estimating

Accurate cost estimating is the foundation of successful project execution. We employ state-of-the-art tools and industry expertise to deliver precise, realistic estimates that align with project goals and market conditions. Our estimates enable clients to make informed decisions, optimize budgets, and manage financial risks effectively.

Key Components:
- Budget Development
- Quantity Takeoffs
- Cost Forecasting
- Risk-Based Estimating
- Value Engineering

Inspections for Quality Assurance

Maintaining high standards of quality is a cornerstone of our construction management approach. Our team conducts rigorous inspections throughout the project lifecycle to ensure compliance with design specifications, industry standards, and client expectations. Our thorough quality assurance process reduces rework, enhances safety, and delivers superior outcomes.

Key Components:
- Pre-Construction Site Inspections
- Material and Equipment Verification
- Workmanship Standards Checks
- Safety Compliance Audits
- Documentation and Reporting

Risk Management

Effective risk management minimizes uncertainties and safeguards project objectives. Our team will apply a structured approach to identify, analyze, and mitigate risks at every stage of the project. By proactively addressing potential challenges, we ensure projects remain on track and within budget.

Key Components:
- Risk Identification Workshops
- Risk Register Development
- Mitigation Strategies
- Contingency Planning
- Monitoring and Updating Risks
- Stakeholder Communication Plans

Collaboration and Communication

Seamless collaboration and communication are vital to the success of any construction project. Our team will leverage platforms and tools to ensure transparency, coordination, and accountability among all stakeholders. Our communication strategies keep projects organized and ensure real-time decision-making.

Key Components:

- Document Management Systems
- Stakeholder Coordination
- Digital Collaboration Platforms
- Reporting Dashboards

BENEFITS OF SELECTING PROCON

Procon can execute large complex CMa contracts as demonstrated in our relevant project examples. Throughout our firm's history, we have proven our ability to handle similar contracts and our dedication to providing quality services to clients is exemplified through:

- **Technical Knowledge:** Previous CMa experience, and comprehensive knowledge and understanding of constructions standards and requirements.

- **Ability to Meet Deadlines and Address Project Challenges:** Highly skilled and experienced project and construction management, and quality professionals capable of overcoming any project challenge, and meet multiple project deadlines.

- **Value-Added Services:** If desired, Procon can assist with Supplementary Services listed in the RFQ. Procon provides cost estimating, scheduling, and risk management and comprehensive Commissioning, Building Automation, and Energy Services.

Our integrated and flexible approach enables us to effectively meet the City of Flagler Beach's requirements. Procon will maintain continuous collaboration and communication with the City, and other stakeholders.

procon consulting

CONSTRUCTION MANAGER ADVISER

City of Flagler Beach, FL







Project Approach

PROJECT UNDERSTANDING

We understand that the historic Flagler Beach Fishing Pier has suffered significant damage due to storms and hurricanes. Procon has extensive experience managing similar projects, including assisting the U.S. Coast Guard with construction management services to address hurricane damages at the Sector Field Office in Fort Macon and Emerald Isle, North Carolina.

Our team has nearby resources available through our office in Cocoa Beach, Florida, and Project Manager **Casey Cloonan, LEED GA, CAPM,** who is based locally. This proximity ensures timely support, rapid response, and seamless coordination with stakeholders and contractors. Casey's local presence, combined with the oversight of our experienced Project Executive, **Sean Person, PMP, LEED AP,** strengthens our ability to address the unique challenges of this project while maintaining efficient communication and effective project management.

Procon's proven experience in hurricane damage restoration, access to local resources, and strong leadership from Sean Person and Casey Cloonan ensure a reliable and results-driven approach for this important project.

PRECONSTRUCTION SERVICES

Procon's approach to similar projects will include construction staging, scope planning & definition, and development of a management plan.

Communication and Coordination

Procon will work with project stakeholders to establish roles, responsibilities, and lines of communication that optimize the collective expertise of the project team and provide transparency and accountability at all levels. Getting early buy-in supports cooperative teamwork, fosters an open environment of proactive problem-solving, and focuses everyone on the success of the project and the objectives of the client.

As part of our communications management process, Procon will develop project-specific communication protocols, including means and methods, scheduled document exchange, and document identification among all team members, as well as routine and emergency contact information. Procon's team will also provide the City with the support needed to keep customers and property managers well-informed before, during, and after construction. We will prepare and post advisory notices before construction commencement, issue periodic construction updates, ensure that adequate signage, impermeable partitions, and barricades are provided where needed, and work with the subcontractors to develop contingency plans to handle disruptions and work environment concerns.

Meetings

Procon will coordinate and facilitate a kick-off meeting to discuss key elements of the project, which include validating the project scope and client expectations, discussing project communication protocols and the nature of collaboration, identifying key stakeholders who should be engaged in the process, discussing milestones and deliverables for each of the initiatives, and agreeing on critical success factors for the project, technical direction, and logistics.

Procon will conduct project meetings regularly that will cover the budget, schedule, scope, quality, safety, proper use of ePM, and many other critical categories. These meetings will be the primary means of direct exchange among the project stakeholders. In advance of each project meeting a preliminary agenda will be circulated so that all participants can adequately prepare for items related to their scope of service. Within 72 hours Procon will issue meeting minutes for review and comment.

The team will schedule mini-kick-off meetings at important project milestones to clarify expectations and allow team members to ask questions before the next phase of the project begins. Our team will also regularly conduct informal status checks with all parties. These discussions often lead to problem avoidance and establish a firm foundation for mutual commitment and trust. Information from formal and informal meetings will be regularly communicated to the City's Project Manager in detailed progress.

Progress Reports

Procon will provide regular reports that track project status during all phases of work. Our Project Manager will provide regularly scheduled briefings to the City's Project Manager and appropriate team members and will be responsible for all report preparation and documentation submitted to the City. Project reporting will provide a formal means of recording ongoing progress, measuring the differences between planned and actual, and when there is a negative variance, identifying corrective actions to realign the project plan. Procon will produce accurate, detailed reports to track project status at every phase. Reports will be provided in situation-specific format: monthly reports for management review and tracking, weekly reports with one and two-week look-ahead forecasts, daily reporting for more detailed labor and trade progress, and extemporaneous reports for non-routine events or issues analysis. Reporting frequency will be consistent with the project scope.

CONSTRUCTION SERVICES AS CONSTRUCTION MANAGER AS ADVISER

Based in McLean, Virginia with a local office in Cocoa, FL, Procon was established in 2000 and brings the expertise and capability to perform all the required Construction Manager as Adviser services for this contract. Our successful project experience providing comprehensive construction, program and project management services include design management, procurement, construction services, quality monitoring and inspection, commissioning, and closeout for a broad range of projects.

Procon has successfully executed hundreds of CMa projects across the country for municipal, and federal government clients including NASA's Kennedy Space Center in Merritt Island, Orange County Government, and the University of Central Florida in Orlando, Florida. A sampling of our national client based include all Regions of the U.S. General Services Administration, U.S. Architect of the Capitol, National Park Service, and the Federal Deposit Insurance Corporation. We have also provided construction management, cost estimating, and commissioning services as a sub-consultant to numerous engineering firms.

Leadership and Teamwork Facilitation

Procon understands that successful project delivery depends on fostering collaboration and open communication among all stakeholders, including architects, engineers, general contractors, subcontractors, and consultants. Our team provides strong leadership to establish a unified vision and align the efforts of diverse parties. By creating an environment of trust, accountability, and shared objectives, we ensure that each stakeholder works cohesively toward project success.

Our leadership approach is built on:

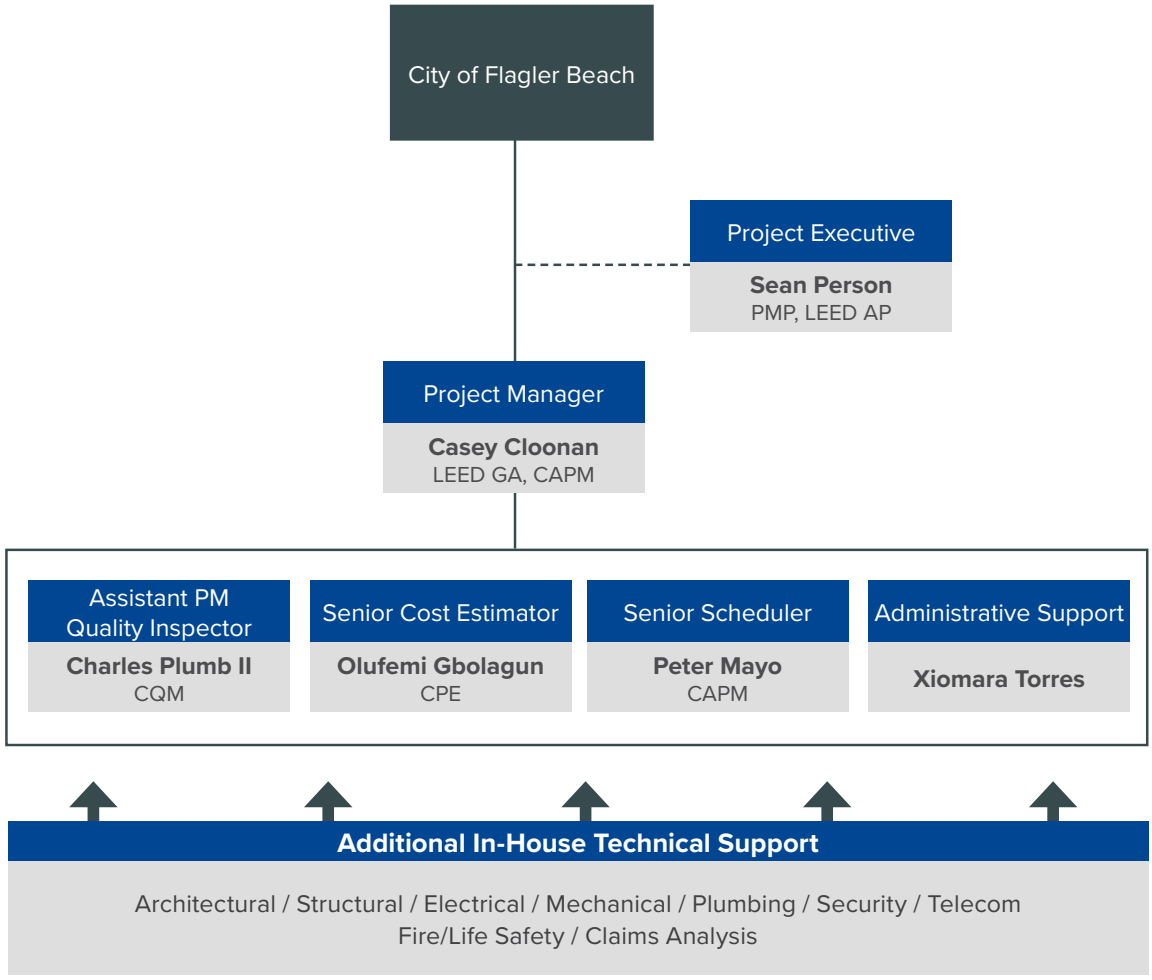
- **Establishing a Shared Vision:** We work with all parties to define clear project goals and priorities, ensuring alignment from the outset.
- **Structured Communication Plans:** Our team develops comprehensive communication protocols, including regular meetings, progress updates, and centralized reporting tools to keep everyone informed.
- **Conflict Resolution:** We proactively address potential conflicts through mediation and collaborative problem-solving, minimizing disruptions and fostering cooperation.
- **Team Integration:** By bringing together diverse stakeholders in workshops and planning sessions, we promote mutual understanding and cohesive project execution.
- **Technology-Driven Collaboration:** Utilizing platforms such as Procore, Kahua, and Smartsheet, we streamline communication and provide real-time access to project data for all team members.
- **Leadership by Example:** Our project managers lead with integrity and professionalism, setting a standard for teamwork, accountability, and efficiency.

This holistic approach to leadership ensures that every party involved remains engaged, aligned, and motivated, driving the project forward with precision and excellence.

PROJECT STAFFING PLAN AND ORGANIZATIONAL CHART

Our team is structured to provide comprehensive support throughout the duration of the project, ensuring successful delivery from construction commencement in January 2025 through closeout in 100 percent construction completion. Over this period, Procon will deploy a highly experienced team tailored to meet the needs of the project timeline and objectives.

Our Project Executive, **Sean Person, PMP, LEED AP** will provide oversight to ensure the overall success of the project, offering strategic guidance and leadership throughout all phases. C**asey Cloonan, LEED GA, CAPM, our Project Manager,** will play a pivotal role in managing construction activities, overseeing schedule and budget reviews, participating in project meetings, and managing contract deliverables to ensure all goals are achieved. **Charles Plumb, II, CQM,** our Assistant Project Manager and Quality Inspector, will be full-time on-site, conducting inspections, overseeing day-to-day project activities, and ensuring safety and effective coordination among stakeholders.



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To support these efforts, our administrative assistant, scheduler, and cost estimator will handle support services, including monthly schedule and change order reviews, invoice and pay application review, and document management. This structured approach ensures that all aspects of the project, from day-to-day operations to high-level oversight, are managed with precision and attention to detail.

This well-rounded team is dedicated to delivering the project's milestones, through 100 percent construction completion by June 2026, include part-time support through Project Closeout in September 2026.

PROPOSED TEAM'S EXPERIENCE

Table 1 on the following page provides qualifications of the project team responsible for the successful execution of this contract, followed by resumes.

Table 1 Proposed Team's Qualifications and Experience			
Name	Title/Role	Qualifications	Experience
Sean Person, PMP, LEED AP	Project Executive	MBA, Business Analytics Juris Doctor, International Law, BS, Business	• Senior Project Executive, City of Pensacola, Pensacola Bridge, Pensacola Beach, FL - managed 13 engineers, 12 divisions, and over 300 construction operations • Engineering Officer, USACE, Tyndall Air Force Base Reconstruction, Panama City, FL - Directed multi-disciplinary teams for reconstruction of Tyndall AFB
Casey Cloonan, LEED GA, CAPM	Project Manager	BS, Civil Engineering CAPM Certification Cryogenics Single Walled Stainless Steel & Vacuum Jacketed Piping Inspection Certification	• Assistant Project Manager, NASA, Kennedy Space Center (KSC) Upgrade LH2 System Launch Complex 39 Vent Line Replacement, Merritt Island, FL - supporting project management and coordinating visits, and updates with QA Inspector • Assistant Project Manager, National Park Service (Denver Service Center) CM Services, Selma, AL - redevelopment of several historic properties on Broad Street, and 1119 Water Avenue into the new Selma Interpretive Center for the Selma to Alabama National Historic Trail
Charles Plumb II, CQM	Quality Inspector	Procore Superintendent Certification Army Corps CQM Certified	• Inspector, NASA, KSC, Modify Vehicle Assembly Building for SLS Platforms, Merritt Island, FL - managing schedule, cost estimate, risk assessment, coordinating and tracking • Backup Inspector, NASA, KSC, Install Liquid Nitrogen System at LC-39B, Merritt Island, FL - assisted in oversight of general contractor daily progress and provided daily construction reports to project stakeholders

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Table 1 Proposed Team's Qualifications and Experience			
Name	Title/Role	Qualifications	Experience
Olufemi Gbolagun, CPE	Senior Cost Estimator	BS, Quantity Surveying Certified Professional Estimator	• Senior Cost Estimator, NASA, KSC, Solid Rocket Motor (SRM) Rail Study, FL - provided cost estimates for the study which evaluated options to deliver SRM segments (included repair or replace bridge, establish rail yard as a barge terminal, install a new rail spur, and rail to ground support equipment • Senior Cost Estimator, USDOT, Suitland Parkway Design, Washington, DC & Maryland - provided cost estimates for trail options that included identifying potentially sensitive areas, and developing schematic designs
Peter Mayo, CAPM, PMI-SP	Senior Scheduler	BS, Construction Management CAPM Certification PMI-SP Certification	• Scheduler, FBI, Redstone Arsenal North Campus FBI Innovation Center & Central Utility Plant, Huntsville, AL - monitor and review contractor project master schedule and contractor payment applications • Transmission Operations Scheduler (Pegasus Organization) Duke Energy Tarpon Springs, FL - schedule development and progress updates, resource loading, lookaheads, workload forecasting, time impact analysis
Xiomara Torres	Administrative Support	BBA, Business Administration & Management	• Administrative Assistant, Orange County Government, OCCC, Cost Estimating, Scheduling and Project Management Services IDIQ: Phase 5A Building Expansion Project, Orlando, FL - administrative support to staff at the construction project field office • Project Assistant II, FDOT District 5, Direct Connect Ramps to/from I-4 and Turnpike Mainline and Express Lanes on Turnpike Mainline (Beachline to I-4) - administrative support to staff at the construction project field office

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Sean Person, PMP, LEED AP

Project Executive

QUALIFICATIONS

Sean Person is a seasoned Project Executive and Senior Project Manager with a proven track record in construction, excelling in strategic project management and team leadership. Sean recently joined Procon as a Senior Project Manager and has extensive experience managing complex, high-budget projects across the U.S. and internationally. He is an expert in regulatory compliance, stakeholder engagement, and fostering cross-functional collaboration. Sean spearheaded a $5.2B healthcare campus project, achieving a 15% cost reduction and has managed multiple phases of other large-scale endeavors.

EDUCATION AND CERTIFICATIONS

MBA, Business Analytics, Indiana University, Bloomington, IN
Juris Doctor, International Law, Indiana University, Bloomington, IN
BS, Business, Indiana University, Bloomington, IN
Project Management Institute (PMI), Project Management Professional (PMP)
LEED Accredited Professional, U.S. Green Building Council (USGBC)
EPA Asbestos Certification (All Levels), Environmental Protection Agency (EPA)
EPA Lead-Based Paint Certification, Environmental Protection Agency (EPA)
Procore Certified Project Manager (Multiple Specializations), Procore Technologies
OSHA 30-Hour (ID:14-602255897)
FAA Private Pilot License (Instrument & Commercial Ratings in Progress)
CPR & First Aid Trainer Certification (Previously Held)

RELEVANT PROFESSIONAL EXPERIENCE

City of Pensacola, Pensacola Bridge, Pensacola Beach, FL ($850M) ***Senior Project Executive.*** Built Florida's second-largest bridge, managing 13 engineers, 12 divisions, and over 300 construction operations personnel. Enhanced storm resistance through innovative design solutions.

Greg Brothers, Majestic Oaks, Crestview, FL ($130M) ***Senior Project Manager.*** Constructed 205 homes with infrastructure and sitework, including landscaping design. Developed low-cost solutions during the 2008 market downturn to maximize profitability.

Xiuang Brothers, Fort Walton Beach Mall-Resort, Fort Walton, FL ($205M) ***Senior Project Executive.*** Developed 567-acre mixed-use resort community. Delivered the project on schedule and under budget.

U.S. Army Corps of Engineers, Fort Benning Training Grounds Modernization, Fort Moore, GA ($750M) ***Engineering Officer.*** Upgraded training facilities, shooting ranges, and base infrastructure to meet modern Army training requirements. Delivered innovative designs to enhance training efficiency and safety.

U.S. Army Corps of Engineers, Tyndall Air Force Base Reconstruction, Panama City, FL ($4B) ***Engineering Officer.*** Comprehensive reconstruction of Tyndall Air Force Base following hurricane damage, including resilient infrastructure upgrades for long-term sustainability. Directed multi-disciplinary teams to deliver state-of-the-art facilities while ensuring military readiness.

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Sean Person, PMP, LEED AP (continued)

Project Executive

U.S. Army Corps of Engineers, Eglin Air Force Base Expansion, FL ($1B) ***Engineering Officer.*** Expansion of test ranges and advanced weapons systems infrastructure. Led teams to integrate innovative solutions for advanced testing capabilities.

U.S. Navy, Pensacola Naval Station Facility Enhancements, Pensacola, FL ($500M) ***Engineering Officer.*** Infrastructure modernization and coastal protection upgrades to sustain mission-critical operations. Ensured seamless coordination across stakeholders, maintaining operational continuity.

CK Construction, Columbus, OH. ***Vice President.*** Directed all company operations, including the management of multimillion-dollar projects across commercial, residential, and public infrastructure sectors. Designed and implemented company-wide project management tools, reducing inefficiencies by thirty percent and enhancing project tracking accuracy. Led cross-departmental teams in planning and executing construction activities, ensuring compliance with LEED and sustainability standards. Spearheaded budgeting processes for over $100M in annual projects, optimizing resource allocation and cutting overhead expenses by twenty percent. Established and nurtured long-term relationships with clients, stakeholders, and government agencies, contributing to repeat business growth by forty percent.

Gilbane/FA Wilhelm, Indianapolis, IN. ***Senior Project Executive.*** Directed procurement and operations for a $5.2B healthcare campus project, ensuring compliance with all safety and operational standards. Conducted comprehensive facility assessments and audits, identifying key deficiencies and developing strategic plans for sustainable modernization. Streamlined procurement processes, reducing project costs by fifteen percent and improving vendor reliability through performance-based contracts. Led a multidisciplinary team of engineers, architects, and contractors, fostering collaboration to ensure project milestones were achieved on time and within budget. Oversaw the development of facility databases, enabling efficient tracking of work orders, maintenance schedules, and associated costs.

GBS Global, Bloomington, IN. ***Founder & Principal Consultant.*** Established and managed GBS Global, a consultancy, specializing in providing strategic advisory services for USAID-funded projects and international development initiatives ($300M). Secured and successfully executed a high-profile USAID contract to oversee strategic and operational development in Ukraine. Designed and implemented capacity-building programs in collaboration with host-country government officials, U.S. Embassy representatives, and key stakeholders. Directed all operational aspects of the consultancy, including program design, budget allocation, and staff recruitment, ensuring adherence to USAID and federal standards. Represented USAID and GBS Global at executive levels with host-country leadership, advocating for sustainable development priorities and mutual goals. Oversaw risk management strategies, ensuring program safety and operational continuity amidst complex geopolitical challenges. Developed comprehensive program evaluations to measure impact and inform future policy and programmatic decisions. Successfully planned and executed a multi-million-dollar USAID-funded development program in Ukraine, meeting key milestones ahead of schedule. Enhanced interagency collaboration through innovative policy advisement and stakeholder engagement frameworks. Implemented financial strategies that optimized resource allocation, saving 20% of projected operational costs without compromising program quality.

Sean Person, PMP, LEED AP (continued)

Project Executive

IU Health, IU Health Hospital, Indianapolis, IN ($3B) ***Senior Project Executive.*** Designed and constructed a state-of-the-art medical campus featuring 864 private patient beds, advanced outpatient services, and a medical education building. Successfully contributed to the scaling and implementation of the project, ensuring the infrastructure met current and future healthcare demands.

Skanska Corporation, Parsippany, NJ. ***Senior Project Executive.*** Managed infrastructure projects valued at over $100M, ensuring safety compliance and alignment with regulatory requirements. Directed a team of 50+ engineers, contractors, and subcontractors, promoting collaboration to achieve on-time project delivery. Achieved $2M in savings over five years through the adoption of innovative value engineering strategies. Conducted detailed inspections and quality assurance checks, ensuring high standards across all project phases. Championed sustainability efforts by incorporating energy-efficient designs and materials, reducing environmental impact by 25 percent.

U.S. Army Corps of Engineers, Fort Leonard Wood Modernization, MO ($800M) ***Engineering Officer.*** Upgraded operational and training facilities, housing, and utilities infrastructure to support U.S. Army readiness. Ensured the selection of highly skilled teams to meet specific military requirements and timelines.

EMPLOYMENT HISTORY

Senior Project Manager — **Jan 2025 - Present**
Procon Consulting, McLean, VA

Founder & Principal Consultant — **Aug 2024 - Dec 2024**
GBS Global, Bloomington, IN

Vice President — **Jan 2023 - Aug 2024**
CK Construction, Columbus, OH

Senior Project Executive — **Dec 2022 - Jan 2023**
Gilbane/FA Wilhelm, Indianapolis, IN

Senior Project Executive — **Feb 2013 - Dec 2022**
Skanska Corporation, Parsippany, NJ

Engineering Officer — **Apr 2004 - Dec 2025**
U.S. Army Corps of Engineers, Fort Leonard Wood, MO

Construction Analyst — **Jan 2000 - Dec 2004**
U.S. Small Business Administration, Washington, DC

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Casey Cloonan, LEED GA, CAPM

Project Manager

QUALIFICATIONS

Casey Cloonan is a construction Project Manager and Engineer who brings a background working as both a General Contractor and as a Construction Management Professional. Her experience includes managing complex, high-profile projects for governmental agencies nationwide ensuring contract compliance and delivery of project control systems. Casey's duties include project reporting and documentation, on-site inspection and QA/QC responsibilities, weekly project meeting coordination with project representatives and various contractor/subcontractor trades, RFI, submittal, and change order management, formulating SOWs and IGEs, negotiating contractor/subcontractor proposals, progress payment review, performing and preparing schedule reviews and project closeout and punch list procedures. Her ability to forecast potential issues and conflict has contributed to smooth project workflows in her holistic approach to project management.

EDUCATION, CERTIFICATIONS, TRAINING

BS, Civil Engineering, University of Pittsburgh, Pittsburgh, PA
Leadership in Energy & Environmental Design Green Associate (LEED GA)
Project Management Institute (PMI) CAPM Certification
Cryogenics Single Walled Stainless Steel & Vacuum Jacketed Piping Inspection Certification
OSHA 30-Hour Training, 2022
Asbestos Awareness, 2021
Confined Space Entry, 2020
Lead Awareness, 2020
Permits & Fees, 2020
Quality Control, 2020
Silica Awareness, 2020
Scaffolding Hazard Awareness, 2020
FAR/Ethics, 2022

PROJECT EXPERIENCE

NASA, Kennedy Space Center (KSC), Replace O&C South Wing Electrical Distribution Equipment, Merritt Island, FL ($13.9M / 295,000 SF) ***Assistant Project Manager.*** Providing construction management services that include coordinating RFIs and documentation processing. Conduct submittal reviews and formally captures meeting decisions.

NASA, Kennedy Space Center (KSC), Upgrade LH2 System Launch Complex 39 Vent Line Replacement, Merritt Island, FL. ***Assistant Project Manager.*** Liquid Hydrogen (LH2) Vent Line Replacement project at KSC's Launch Complex 39B. Provide project correspondence documentation for all weekly meetings. Coordinate site visits and progress updating with the QA Inspector.

National Park Services (NPS), Denver Service Center CM Services, Selma, AL ($10M / 27,000SF) ***Assistant Project Manager.*** Redevelopment of the historic properties at 2, 4, 6, 8, 10, and 12 Broad Street, and 1119 Water Avenue into the new Selma Interpretive Center for the Selma to Alabama National Historic

Casey Cloonan, LEED GA, CAPM (continued)

Project Manager

Trail. The rehabilitation will include structural improvements to provide universal accessibility, a theater for 100 people, exterior rehabilitation to the floors and roof, fire suppression, and enhancement to mechanical, electrical, and plumbing system to support the improvements. Project duties include initial setup and training of personnel for use of PMIS software (ProjectTeam), and submittal and RFI review/control.

GSA Region 11, Ronald Reagan Building Phase 7, USAID, Washington, DC ($1M / 62,000SF) ***Project Manager.*** Complete demolition and renovation of the 3rd floor. Scope of work includes professional Architect/Engineer services, contract management, and construction services. Construction services include supervision of labor and materials, professional inspection and testing services per commissioning requirements, systems and equipment start-up, functional performance testing, documentation of tests, procedures and installations, and coordination and requirements of training events. Responsible for the execution of the CMa scope of services including but not limited to; document control (RFIs, submittals) using PMIS software, design review comment tracking and coordination, running weekly progress meetings and preparation of meeting minutes, coordinating access and security requirements for contractors, monitoring the change control process, schedule review and analysis, and reviewing payment applications and monthly schedule updates.

FDIC, Headquarters Realignment, Arlington, VA ($26.9M / 260,000 SF) ***Project Engineer.*** Developed cost effective plan and generated master schedule that incorporated planned projects, future projects, and various projects and contract initiatives for holistic approach for FDIC planning. Interviewed staff and contractors for incorporation of all key activities and milestones. Reviewed and provided comments on A/E procurement contract documents. Assisted in development of a general contractor multiple award contract solicitation. Assisted in developing Program Management, Capital Improvement Plan, and Headquarters Realignment for FDIC assets in the Washington, DC metro area.

GSA Region 1, New Madawaska Land Port of Entry Project (LPOE), Madawaska, ME ($60M / 76,717 SF) ***Project Engineer.*** The new LPOE will contain facilities placed on a 10.73-acre site between Mill Street and Main Street. The program facilities include a Main Port Building (MPB), Commercial Inspection Building (CIB), Canopies, Booths, 3 primary inspection lanes, a bypass lane and Surface Parking. The project is required to achieve LEED Gold and SITES Silver Certifications. Responsibilities included, but are not limited to project and document controls of RFIs and Submittals, change order management and cost generation, preparation of meeting minutes and quality assurance documents, and schedule management and development.

Grunley Construction Company, Rockville, MD. ***Senior Project Engineer.*** Responsible for determining scope, compiling pricing, and managing the change order process for change documents issued by the Owner/ Architect and change orders resulting from unforeseen conditions. Formulated and submitted Request for Information (RFIs) to clarify discrepancies in the project drawings and/or specifications. Communicated with the Architect. Engineers. and Consultants when unforeseen existing conditions arise. and assisted with problem-solving and analysis to develop design solutions that are constructible, cost-effective, and schedule-friendly. Coordinated with the Owner, Architects, Engineers, and Consultants to work through complex unforeseen conditions in order to create an end-product that is historically accurate and fully functional. Coordinated and directed contractors on site to ensure completion of work per the project drawings and

Casey Cloonan, LEED GA, CAPM (continued)

Project Manager

specifications, as well as organized and posted change-documents to drawings and specifications. Project Engineer performed QC on site to ensure materials are installed per project drawings and specifications, and ran meetings and completed/distributed meeting minutes. Project Engineer was responsible for completing project close-out and turnover including submission of operation and maintenance manuals and warranty documentation, coordination for completion of training for facilities management to operate systems, and gathering of extra stock materials for turnover to the client. Project Engineer completed punch-lists and assigned tasks for contractors to complete to deliver a complete product to the client. Project Engineer completed daily field reports to document manpower on site and tasks completed by contractors.

The U.S. Foundation for the Commemoration of World Wars & The National Park Service (NPS), New National WWI Memorial, Washington, DC ($20M / 1.78 Acres) ***Project Engineer.*** Responsible for integrating existing park features constructed on the historic Pershing Park. The statue to General John J. Pershing, commander of the American Expeditionary Forces, was protected during construction and remains as part of the fabric of the memorial. Project included the cataloging, restoration, and re-installation of existing granite stone on site, demolition, new landscaping, drainage, utilities, lighting, irrigation, and signage. A new below-grade space houses the controls for the fountain, irrigation, security, and lighting systems. The focal-point of the memorial is a complex fountain system that feeds a custom granite-clad feature wall. The feature wall showcased an approximately 70' long bronze relief sculpture titled "A Soldier's Journey." Read and interpreted technical drawing sets, reviewed material product data and shop/ fabrication drawings to verify conformance with design requirements, and procured specified materials for on-time delivery to the job site.

EMPLOYMENT HISTORY

Assistant Project Manager — **Jan 2023 - Present**
Procon Consulting, McLean, VA

Senior Project Engineer — **Oct 2022 - Jan 2023**
Grunley Construction Company, Rockville, MD

Project Engineer — **Oct 2021 - Oct 2022**
Grunley Construction Company, Rockville, MD

Engineer — **Jun 2020 - Oct 2021**
Grunley Construction Company, Rockville, MD

Jr. Engineer — **Apr 2019 - Aug 2019**
Grunley Construction Company, Rockville, MD

Intern — **May2018 - Dec 2018**
Warfel Construction Company, East Petersburg, PA

Intern — **Summer 2016, Summer 2017**
Advanced Geotechnical Services, West Chester, PA

Charles Plumb II, CQM

Quality Inspector

QUALIFICATIONS

Charles Plumb II is a Quality Inspector with more than 15 years of hands-on leadership experience in fabrication, welding, structural systems, site safety, and quality assurance. Charles has a strong track record as a Superintendent leading teams to achieve project goals while maintaining a strong focus on quality control and safety. He has the ability to forecast the work and identify discrepancies ahead of time, to minimize any potential delays. He has experience producing look ahead schedules, laying out the scheduled work, reviewing submittals, material verification, and coordinating with all trades. Charles' knowledge of site safety protocols has led to numerous projects being completed with zero incidents. His quality control protocols has reduced the need to correct non-compliant installation of work. In addition, Charles has created training programs to improve the quality and efficiency of the project team. He is proficient in the following software packages: Microsoft Office, Procore, Submittal Exchange, BIM 360, and NavisWorks.

EDUCATION, CERTIFICATIONS, TRAINING

Procore Superintendent Certification
USACE CQM Certified
40-Hour EM-385 Course Completion
OSHA 30-Hour Training
24-Hour Competent Person Fall Protection
Confined Space Supervisor
Scaffolding Competent Person
Trenching & Excavation Competent Person
CPR/AED Certified
Safety in Welding Certification
Certified Welding Inspector #09071301
Journeyman Pipefitter

RELEVANT PROJECT EXPERIENCE

NASA, Kennedy Space Center, Modify Vehicle Assembly Building (VAB) for SLS Platforms, Merritt Island, FL ($53M / 130M CF) ***Inspector.*** Entails fabrication and installation of four new extensible vehicle platform halves, six new vehicle platform inserts, and two new vehicle platform outer mold lines (OMLs). Includes modification of High Bay (HB) three of the existing VAB to accommodate the new platforms and inserts, and additional structural assemblies that provide access to the platform levels (elevator landing platforms, fixed landing platforms, and egress ramps). Also includes reinforcement of existing structure in the VAB that must be installed prior to installing any new extensible platforms or relocating any existing extensible platforms. Responsibilities include managing shcedule, cost estimate, risk assessment, coordinating and tracking. Tracked financial obligations and monitored implications of change proposals. Led daily site inspections to monitor activity and ensure quality. Coordinated approval and regulatory processes with clients and external agencies. Coordinated scheduling for special inspections.

NASA, Kennedy Space Center, Install the Liquid Nitrogen System at LC-39B, Merritt Island, FL ($6M) CWI SME. ***Backup Inspector.*** Assisted in oversight of general contractor daily progress and provide

Charles Plumb II, CQM (continued)

Quality Inspector

daily construction reports to project stakeholders. Review project submittals and RFI's, review materials upon arrival to the site and ensure the materials were the correct, approved product. Review contractor work installation for quality and conformance with project requirements.

Boiler Replacement, Altoona, PA ($8M) ***Project Superintendent/SSHO/QC Manager.*** Scope of work to install two temporary boilers, demo and replace existing boilers and associated equipment. Developed field activity schedule, managed Subcontractor's daily activities to maintain schedule, verified installed work in compliance with the contract documents, conducted preparatory phase meetings, and maintained safety standards as required by contract and OSHA. Inspected structural foundations for new boilers, and structural support systems for overhead 12" black iron piping systems.

Reverse Osmosis Boiler Water Supply System, Norfolk, VA ($4.5M) ***Project Superintendent/SSHO/QC Manager.*** Scope of work to demo existing water filtration system and install a reverse osmosis system that feeds the boiler plant. Developed field activity schedule, managed Subcontractor's daily activities to maintain schedule, verified installed work were following compliance with the contract documents, conducted preparatory phase meetings, and maintained safety standards as required by contract and OSHA. Inspected structural reinforcements for new equipment and structural stands for 10-12 piping systems.

Air Handler Unit (AHU) and VAV Replacement, Richmond, VA ($5.5M) ***Project Superintendent/SSHO/QC Manager.*** A phased demolition and replacement of 6 AHUs and 210 VAVs. Developed field activity schedule, managed Subcontractor's daily activities to maintain schedule, verified installed work met contract documents, conducted preparatory phase meetings, and maintained safety standards as required by contract and OSHA. Inspected structural reinforcements for new equipment and structural supports for all VAVs installed.

Chillers Replacement. Hillard, FL ($1.2M) ***Project Superintendent/SSHO/QC Manager.*** Scope of work includes replacing Chiller 300 and 400 and the installation of additional distribution piping. Developed field activity schedule, managed Subcontractor's daily activities, verified installed work met contract documents, conducted preparatory phase meetings, and maintained safety standards as required by contract and OSHA. Inspected temporary structural supports for lifting and setting chillers into the basement for installation.

Boilers Replacement, Gainesville, FL ($16M) ***Project Superintendent/SSHO/QC Manager.*** Ground up construction of a new boiler plant for hospital to include a tunnel and installation of 70k underground fuel storage tank for the existing generator facility. Developed field activity schedule, managed Subcontractor's daily activities, verified installed work met contract documents, conducted preparatory phase meetings, and maintained safety standards as required by contract and OSHA. Inspected materials, equipment, and installation that included the underground storm water system, tunnel, fuel tank, and the concrete/steel structure of the boiler plant. Also inspected electrical, mechanical, structural, and interior components.

Boilers and Chillers Replacement, Charlottesville, VA ($3M) ***Project Superintendent/SSHO/QC Manager.*** Scope of work includes the installation of three, small new boilers, and three, medium-sized chillers, one York 1300 chillers, and 4 pumps. Developed field activity schedule, managed Subcontractor's daily activities to maintain schedule, verified installed work met contract documents, conducted preparatory

Charles Plumb II, CQM (continued)

Quality Inspector

phase meetings, and maintained safety standards as required by contract and OSHA. Inspected structural reinforcements for new equipment and structural supports for the piping system.

Water Softening System, New Orleans, LA ($1.5M) ***Project Superintendent/SSHO/QC Manager.*** The installation of two stage redundant water softening systems to include a 12k gallon brine storage tank. Developed field activity schedule, managed Subcontractor's daily activities to maintain schedule, verified installed work met contract documents, conducted preparatory phase meetings, and maintained safety standards as required by contract and OSHA. Inspected installation of 20" piping support system that included wall penetrations and structural adjustments as needed to keep the integrity of the building intact.

Boilers Replacement, Alexandria, LA ($14M) ***QC Manager.*** Scope of work to include the installation of new boilers, DA package, CST package, and associated equipment. Reviewed submittals and RFIs. Inspected all installed work to include the steel/cinder block addition for the new control room, generator housing, and the offices and telecom space. Performed preparatory phase meetings, witnessed all testing, and verified conformance to contract documents and specifications.

EMPLOYMENT HISTORY

Superintendent — **Feb 2024 - Present**
Procon Consulting, McLean, VA

Superintendent/QC Manager/Site Safety & Health Officer — **Sep 2016 - Apr 2023**
Greenland Enterprises

Quality Assurance/Welding Inspector — **Aug 2015 - May 2016**
AM Technical Solutions, Frederick, MD

Quality Assurance/Welding Inspector — **Dec 2014 - Aug 2015**
Total Facility Solutions, Conyers, GA

QA Manager/Welding & Piping Inspector — **Sep 2012 - Dec 2014**
FST Technical Services, Malta, NY

Journeyman Pipefitter/Orbital Welder/Welding Inspector — **Jun 2006 - Sep 2012**
UA Local, Richmond, VA

Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal.

Olufemi Gbolagun, CPE

Senior Cost Estimator

QUALIFICATIONS

Olufemi Gbolagun, a Senior Cost Estimator with more than 20 years of expertise, provides construction cost estimating, quantity surveying, and construction management for projects ranging from $10M to $4.5B. He specializes in cost estimating and lifecycle costing, constructability reviews, market analysis, project controls, and providing reconciliations as a third-party Cost Estimator. He has provided estimates for numerous private, institutional, and governmental agency construction programs and is well versed in various industry standards including CSI and Uniformat. Femi's experience includes preconstruction and construction services including conceptual estimates and detailed cost estimates. He has substantial experience completing cost estimating on both new construction and renovation of office buildings and various commercial projects and facilities.

EDUCATION AND CERTIFICATIONS

BS, Quantity Surveying, Obafemi Awolowo University, Ile-Ife, Nigeria
Certified Professional Estimator, American Society of Professional Estimators
Association for the Advancement of Cost Engineering (AACE International), Member

RELEVANT PROFESSIONAL EXPERIENCE

University of Central Florida, Lake Nona Cancer Center Renovation, Orlando, FL (44,356 SF) ***Senior Cost Estimator.*** Provided design review estimates for the renovation of cancer research wet laboratories. Project included build-out of three faculty offices, a dedicated generator and associated infrastructure to support critical research equipment, electrical modifications, fume hood installations, access control and security camera installations, and telecom infrastructure upgrades and modifications.

U.S. Department of Transportation (DOT), Suitland Parkway Design, Washington, DC & Maryland. ***Project Estimator.*** The Volpe National Transportation Center sought the assistance in development and feasibility analysis of at least three conceptual alignments to extend the Suitland Parkway Trail approximately 2.4 miles from the DC/Maryland border to the Henson Creek Trail. Evaluated potential trail options, including determining the area of disturbance, identifying potentially sensitive areas, and ultimately developing schematic designs that met a 30% conceptual design standard for future potential alignments. Provided an evaluation of the constructability and areas of disturbance for each conceptual alignment, a cost analysis of each proposed conceptual alignment, incorporated pedestrian, bicycle, and equestrian access considerations from the existing Henson Creek Trail, provided a summary of the major findings and conclusions associated with the preceding tasks in the form of a project technical memorandum, and prepared a detailed listing of additional information requirements needed for the completion of construction documents: permits, survey, geotechnical analysis, hydraulic analysis, and traffic analysis.

FDA NE Quadrant, Campus Transit East Access Road and Bridge, White Oak, MD, ($19M) Provided construction cost estimating services on a multi-phase new access road and bridges connecting the FDA White Oak Campus to Cherry Hill Road. Construction consisted of building and surface demolition, roadways, earthwork, and utility relocation for electrical distribution, telecommunication distribution, waterlines, and sanitary sewer systems; relocation/support of steam line and nitrogen gas systems in addition to security installations including fencing, barriers, and guard booths; electrical overhead and underground

Olufemi Gbolagun, CPE (continued)

Senior Cost Estimator

power and lighting, guardrails, bridges, concrete blast wall, and earth berms; and landscaping and storm water management piping and systems.

NASA, Kennedy Space Center, Solid Rocket Motor (SRM) Rail Study, FL, *Senior Cost Estimator.* The study's focus was to evaluate options to deliver SRM segments to the rotation, processing, and surge facility. Options evaluated include, but are not limited to, repair or replace bridge, establish rail yard as a barge terminal, install a new rail spur, and rail to ground support equipment. Revalidation of existing cost data, rough order of magnitude lifecycle costs included parametric cost estimating, detailed cost estimates, and quantity take-off.

(Affilliated Engineers) U.S. Architect of the Capitol (AOC), Power Plant PH06 Cost Estimate Washington, DC. ***Senior Cost Estimator.*** Included the replacement of the switchgear, the removal of three condenser water pumps, the installation of two new condenser water pumps, two new variable primary chilled water pumps, and the associated variable speed drives. Provided detailed cost estimates.

U.S. Architect of the Capitol (AOC), Task 014 James Madison Memorial Building (JMMB) Generator Risk Review, Washington, DC. ***Project Estimator.*** Construction management services during the design of the emergency generator replacement. Provided third-party cost estimate and reconciliation, constructability review, quantitative risk assessment, cost loaded schedule, and commissioning review.

Architect of the Capitol (AOC), James Madison Memorial Building (JMMB) Fire Alarm & Audibility Upgrade, Washington, DC. ***Senior Cost Estimator.*** Design construction management services consisting of a Constructability Provided review, development, and reconciliation of construction cost estimates.

Architect of the Capitol (AOC), Thurgood Marshall Federal Judiciary Building (TMFJB) Facade Stabilization, Washington, DC. ***Senior Cost Estimator.*** Provided services to include third-party cost estimate and reconciliation, and Constructability Review for the façade stabilization project.

Architect of the Capitol (AOC), Hart Senate Office Building (HSOB) Prescriptive Egress, Washington, DC. ***Senior Cost Estimator.*** Design phase construction management services for prescriptive egress improvements.

Architect of the Capitol (AOC), U.S. Capitol Police (USCP) K9 Training Storage Facility, Washington, DC (1,262 SF) ***Senior Cost Estimator.*** Peer review services for the latest design documents submitted for the construction of the training storage facility. The current design documents are for the construction of new one-story free standing metal framed, slab on grade structure to be used as a canine food storage facility with support spaces. The project site work included asphalt paving, concrete walks, patterned concrete, planters, pea gravel, benches, and a fence.

GSA Region 11, U.S. Department of Homeland Security (DHS) Headquarters at St. Elizabeths, Washington, DC ($4.6B / 4.5M SF) ***Senior Cost Estimator.*** Prepared cost estimates for the redevelopment projects at the DHS' headquarters. The 176-acre project site includes four million square feet of office space in new construction and renovation of 50 historic buildings, as well as major infrastructure projects, barriers, guard booths, and high speed overhead doors.

Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal.

Olufemi Gbolagun, CPE (continued)

Senior Cost Estimator

GSA Region 11, Building 54 West Addition at St. Elizabeths, Washington, DC ($45M / 97,000 SF) ***Cost Estimator.*** Multiple projects. Supported consultants, provided scheduling support, performed reconciliations between Construction Manager and Design team, provided construction administration, and miscellaneous tenant activities between government agencies.

GSA Region 11, U.S. Citizenship and Immigration Service (USCIS), Camp Springs, MD ($116M / 547,767 SF) ***Cost Estimator.*** Design and construction of new headquarters building, including secure work area, data center, state-of-the-art auditorium, fitness center, emergency generator, and enhanced electronic and physical security.

FDIC, Construction Management Services, Arlington, VA ($17.9M / 150,000 SF) ***Senior Cost Estimator.*** Multiple, simultaneous projects under a single contract in occupied, secure federal facilities. Projects included refurbishment of four air handlers, replacement of chilled water plant, refurbishment of mechanical/HVAC, electrical equipment and controls, replacement of electrical equipment (switchgear, MCC, ATS), BAS control upgrades, and security vehicular.

MIT, U.S. Department of Transportation Volpe Center, Cambridge, MA ($545M / 400,000 SF) ***Cost Estimator.*** Construction of new federal facility that includes workspaces, laboratory spaces, child care center, dining facility, and structured parking. Laboratory spaces include transportation simulation spaces with high bay facilities with heavy floor loading and at grade access.

EMPLOYMENT HISTORY

Senior Cost Estimator — **June 2016 - Present**
Procon Consulting, McLean, VA

Senior Cost Estimator — **Apr 2007 - Jun 2016**
Project Cost, Alexandria, VA

Senior Cost Consultant — **Dec 2004 - Apr 2007**
Faithful+Gould, Alexandria, VA

Cost Estimator Consultant — **Aug 2002 - Feb 2005**
Construction Cost Systems, Bethesda, MD, U.S. Cost, Arlington, VA,
SC Myers & Associates, and Washington, DC

Project Quantity Surveyor — **Feb 1998 - Jul 2002**
PIVOT Engineering Company, Lagos, Nigeria

Peter Mayo, CAPM

Senior Scheduler

QUALIFICATIONS

Peter Mayo has over 10 years of experience successfully working in project controls and project management in all phases of multi- million-dollar commercial construction, infrastructure, and industrial projects for government and private-sector clients. As Senior Scheduler, Peter performs a variety of scheduling services for projects including detailed analysis of contractor prepared construction schedules, creation of integrated master schedules, identifying variances and proactively developing mitigation strategies, utilizing Claim Digger, forecasting, developing WBS and activity coding, and detailed cost and resource loading as well as the analysis of their trend. Peter's support for the DOD and DOS make him an important part of our expert team in Project Controls. Other capabilities include project management of large projects, estimating and EV management.

EDUCATION AND CERTIFICATIONS

BS, Construction Management, Arizona State University Del E Webb School of Construction
CAPM Certification

RELEVANT PROJECT EXPERIENCE

FBI, Redstone Arsenal North Campus FBI Innovation Center & Central Utility Plant, Huntsville, AL ($390M / 240,000 SF) ***Scheduler.*** The project includes construction management for 240,000 square feet of office space and a training complex with two parking garages. Responsible for monitoring and reviewing contractor project master schedule and contractor payment applications.

Acuity International, Djibouti, Djibouti, US Embassy Ambassador's Residence Compound ($10M/10,000GSF) ***Project Manager and Scheduling Coordinator*** for greenfield building of USG Ambassador's residence including all phases of construction from demolition to project closeout on 10,000SF residence. US Embassy Photovoltaic Power Installation, (1M) Project manager for installation of solar power at US Embassy designed to power one quarter of the facility power requirements. Scheduling responsibilities included performance monitoring, identifying issues and providing constructive solutions for their mitigation, schedule analysis, trend evaluation, comparative analysis, forecasting, time impact analysis, and creating milestone schedules including cost and execution milestones, furniture acquisition, alternate workspace design and construction.

PAE Global Services, Andros, Bahamas, USN AUTEC facility ($250K/100,000GSF) ***Scheduler and Estimator*** for prime contractor. Scheduling responsibilities included baseline development, cost-loading, creating milestones, creating and assigning activity codes and calendars, close communication with site team to develop the feasible and realistic sequencing in compliance with CPM and scheduling specification. Progress schedule updates, look- ahead, time impact analysis development, identifying variances and proactively developing mitigation strategies to keep project on schedule.

1099 Independent Project Manager and Scheduling Services, Residential Housing Interior Improvements, Tampa FL ($100K / 5,000 GSF) ***Scheduler*** whose responsibilities included managing and planning the project. Scheduling duties included baseline development, identifying variances and

Peter Mayo, CAPM (continued)

Senior Scheduler

proactively developing mitigation strategies, utilizing Claim Digger, forecasting, look-aheads, and time impact analysis.

(Pegasus Organization) Duke Energy Tarpon Springs, FL. ***Transmission Operations Scheduler*** for multiple crew operation for transition site maintenance and line relay control. Scheduling responsibilities included schedule development and progress updates, resource loading, look-aheads, workload forecasting, time impact analysis.

DynCorp International, Kandahar Afghanistan, LOGCAP5 ($100M) ***Estimator and Project Controls Lead*** on a multi- billion-dollar project. Primary responsibilities included maintenance of the Base Operations Services of the USG personnel in the South theatre of the US operations in Afghanistan, led the group of estimators and schedulers to produce estimates and plans for any new proposed work during operations to assure the scheduling requirements of the war effort are met.

EMPLOYMENT HISTORY

Senior Project Scheduler — **Mar 2023 - Present**
Procon Consulting, McLean, VA

Project Manager — **Mar 2021 - Dec 2022**
Acuity International, Djibouti, Djibouti

Planner, Estimator — **May 2019 - Mar 2021**
PAE Global Services, Andros, Bahamas

Project Manager — **Nov 2016 - May 2019**
Self-Employed, Tampa, FL

Contract Scheduler — **Sep 2013 - Oct 2016**
(Pegasus Organization) Duke Energy, Tarpon Springs, FL

Estimator, Project Controls — **Feb 2010 - Sep 2013**
DynCorp International, Kandahar, Afghanistan

Project Field Engineer — **Jan 2009 - Jan 2010**
CCC Group Inc, Southport, NC

Estimator — **Feb 2007 - Dec 2008**
KBR Inc., Mosul, Iraq

Estimator — **Sep 2006 - Feb 2007**
Wheeler Construction, Phoenix, AZ

Xiomara Torres

Administrative Support

QUALIFICATIONS

Xiomara Torres is an administrative professional with six years of experience providing coordinating administrative tasks and providing support to project administrators, managers and engineers. She prepares, maintains, and organizes contract records, and coordinates project task schedules. Xiomara attends progress meetings, reviews meeting minutes, and manages project databases for efficient project tracking and retrieval of project documents. She is proficient in the following computer programs: Microsoft Office 365, Microsoft Teams, Concur, SAP Business One, Rapid Card, Bluebeam, Adobe DC, ADP Workforce, Maximo, LDMS, and Outlook.

EDUCATION AND CERTIFICATIONS

Business Administration & Management, Sistema Universitario Ana G Mendez, Universidad Del Turabo Gurabo, PR

RELEVANT PROJECT EXPERIENCE

Orange County Government, Orange County Convention Center (OCCC), Cost Estimating, Scheduling and Project Management Services IDIQ: Phase 5A Building Expansion Project, Orlando, FL Procon is serving as the Owner Representative for the OCCC's Phase 5A Building Expansion Project. Xiomara is working closely with the Project Administrator and Senior Project Managers to provide administrative support for the construction project field office. Prepares, maintains, and organizes contract records (correspondence, contractor documents, meeting minutes, daily inspection reports, specifications, and non-compliance notices). Coordinates project task schedules, attends progress meetings, reviews minutes, and systematically manages transmittal documents by copying, scanning, and filing them into a database for efficient tracking and copying, scanning, and filing them into a database for efficient tracking and retrieval.

Florida Department of Transportation, District 5, Direct Connect Ramps to/from I-4 (SR 400) and Turnpike ML (SR 91) & Express Lanes on Turnpike ML (SR 91) from Beachline (SR 528) to I-4 (SR 400) (Contract) 437166-2-52-01 (E8Q38) (JMT), Orlando, FL ($84M) ***Project Assistant II.*** JMT provided construction inspection services for the construction of direct connectivity ramps from the Turnpike Mainline (SR 91) to and from I-4 (SR 400) to improve traffic operations and safety at the interchange. The project included replacing six existing toll sites within the project limits with AET. The project also included express lanes on the Turnpike Mainline between the Beachline (SR 528) and I-4, and operational improvements at the Consulate Drive southbound off-ramp with AET and intersection improvements. As the Project Assistant II, Xiomara worked closely with Project Administrator and Senior Project Engineer assisting with the construction project field office, preparing, maintaining and/or securing contract records including correspondence, contractor documents, meeting minutes, daily inspection reports, specifications, non-compliance notices, etc. Assisted with scheduling project tasks, attending project progress meetings and reviewing minutes, systematically obtaining and tracking all applicable transmittals document management; copying, scanning and filling into database.

Xiomara Torres (continued)

Administrative Support

Ultimate Staffing Agency, Orlando, FL ***General Administrative Support.*** Coordinated office activities and operations to secure efficiency and compliance to company policies. Managed agendas/travel arrangements/appointments, etc. for upper management. Managed phone calls and correspondence (e-mail, letters, packages etc.). Supported budgeting and bookkeeping procedures. Created and updated records and databases with personnel, financial, and other data. Tracked inventory of office supplies and placed orders when necessary. Submitted timely reports and prepared presentations/proposals as assigned. Assisted colleagues whenever necessary.

Full Tilt, Sanford, FL ***Human Resources Generalist.*** Performed timely processing of accurate time and quantity. Communicated with Project/Field Leads to collect time, material quantities, and executed accurate data entry. Created adjustments/shortages as necessary to correct payroll errors and issued field checks as appropriate. Communicated with appropriate roles to execute the subsistence process - Per Diem, Rapid Pay Cards, Expense Reports. Conducted new hire orientations and concisely delivered all information regarding benefits, policies, and procedures to new and existing coworkers and engaged to validate comprehension. Completed I-9 and E-Verify paperwork accurately and in accordance with government rules and regulations in a timely manner.

DRMP, CEI Group, Orlando, FL ***Administrative Assistant.*** Responsible for providing advanced correspondence including letters, memoranda, and reports. Becoming familiar with a variety of the field's concepts, practices, and procedures. Relied on experience and judgment to plan and accomplish goals with ability to work independently. At times, responsible for confidential material. Prepared monthly expense reports for corporate credit cards. Monitored inspectors' certifications. Created weekly, monthly, quarterly, and annual reports.

EMPLOYMENT HISTORY

Administrative Assistant — **Dec 2023 - Present**
Procon Consulting, McLean, VA

General Admin — **Oct 2022 - Jun 2023**
Ultimate Staffing Agency, Orlando, FL

Human Resources Generalist — **Jan 2022 - May 2022**
Full Tilt, Sanford, FL

Eligibility Specialist — **Sep 2021 - Jan 2022**
AppleOne Employment Services, Orlando, FL

Administrative Assistant — **Oct 2019 - Jun 2020**
DRMP, Orlando, FL

Project Assistant II — **Jan 2018 - Feb 2019**
JMT, Orlando, FL

procon consulting

CONSTRUCTION MANAGER ADVISER

City of Flagler Beach, FL







Past Performance

Project #1:

Contract Date: May 20, 2024 - Ongoing

Contract Amount: $1,685,885.26

Project Name: Construction Management Services to Rehabilitate Seawalls and Shoreline, Washington DC

Project Location: Tidal Pool adjacent to the Jefferson Memorial, Washington, DC

General Scope of Work: Providing construction management services for the NPS NAMA Park concerning the Tidal Wall Project. The phase of this project is a $168 million design-build marine civil infrastructure improvement by Cianbro, the largest design-build project procured by the NPS Denver Service Center to date.

The project includes raising the Tidal Wall by 4 feet. This work includes the driving of 455 piles over a linear horizontal foot length of 6,663 feet. Once completed, this build will lower the NAMA Parks operating and maintenance costs by 8%.

Client Name and Address: National Park Service, Denver Service Center Contracting Services Division

Marcello Arroiobebiannosimoes

P.O. Box 125287

Denver, CO 80225-0287

Client Contact Phone: 720.701.0146 (cell)

Client Contact Email: marcello_arroiobebiannosimoes@nps.gov

Was the project completed on schedule? _____Yes _____No N/A (The project is ongoing.)

Total Amount of Change Orders: $ None currently

Reasons for Change Orders: N/A

Please attach photos of the finished project. – **CURRENT PROJECT STATUS PHOTOS ARE INCLUDED**

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CONSTRUCTION MANAGEMENT SERVICES TO REHABILITATE SEAWALLS AND SHORELINE, WASHINGTON DC









Project #2:

Contract Date: Aug 15, 2020 – Aug 14, 2023

Contract Amount: $219,208.52

Project Name: Construction Management Services at U.S. Coast Guard Sector Field Office (SFO) at Fort Macon and Emerald Isle

Project Location: Fort Macon, Beaufort, NC and Emerald Isle, NC

General Scope of Work: Construction management and inspection services for multiple concurrent projects at USCG SFOs at Fort Macon and Emerald Isle in North Carolina. Conducted in-field construction site inspections of contractor-installed work, assessed project progress, and provided project reporting. Provided inspection and quality assurance for HVAC systems, above and below deck repairs for a concrete wharf, addressing multiple drainage issues, and replacement and demolition of a floating dock.

Client Name and Address: United States Coast Guard
Clayton McBeth, Construction Project Manager
1240 E. Ninth St. RM 2179
Cleveland, OH 44199-2060

Client Contact Phone: 216.339.1783 (m)

Client Contact Email: Clayton.P.McBeth@uscg.mil

Was the project completed on schedule? X Yes ____No

Total Amount of Change Orders: $ N/A

Reasons for Change Orders: N/A

Please attach photos of the finished project. – **PROJECT PHOTOS ARE INCLUDED**

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CONSTRUCTION MANAGEMENT SERVICES AT USCG SECTOR FIELD OFFICES AT FORT MACON AND EMERALD ISLE, BEAUFORT AND EMERALD ISLE, NC







Project #3:

Contract Date: January 16, 2024 - Ongoing

Contract Amount: $404,000.00

Project Name: Construction Management Services, Atlantic Intracoastal Waterway (AIWW) Bridge Replacement at Deep Creek,

Project Location: Fort Macon, Beaufort, NC and Emerald Isle, NC

General Scope of Work: Through the Hana-Procon 8(a) JV, Procon is delivering Construction Management (CMa) and Quality Assurance (QA) services for the replacement of the functionally obsolete Atlantic Intracoastal Waterway (AIWW) Deep Creek Bridge. These services will support USACE in ensuring compliance with contract plans, specifications, safety regulations (such as EM 385-1-1 and OSHA requirements), and industry best practices. The new 144-foot long, 60-foot wide five-lane drawbridge bridge will include approach slabs, abutments, supporting piers, piles, pile caps, bulkheads, a fender system, mechanical and electrical systems, lighting, emergency power generation, controls, radio systems, signage, and an operator's control house equipped with HVAC, lighting, a restroom, and parking.

Client Name and Address: U.S. Army Corps of Engineers

Stephen Reed, USACE NAO

Estes Kefauver Federal Building

110 9th Ave S A415

Nashville, TN 37203

Client Contact Phone: 757.201.7740

Client Contact Email: stephen.w.reed@usace.army.mil

Was the project completed on schedule? _____Yes _____No | N/A (Project is ongoing)

Total Amount of Change Orders: $ N/A

Reasons for Change Orders: N/A

Please attach photos of the finished project. – **CURRENT PROJECT STATUS PHOTOS ARE INCLUDED**

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CONSTRUCTION MANAGEMENT SERVICES, ATLANTIC INTRACOASTAL WATERWAY (AIWW) BRIDGE REPLACEMENT AT DEEP CREEK, CHESAPEAKE, VA



Photo Credit: https://www.nao.usace.army.mil/About/Projects/AIWW-Deep-Creek-Bridge/



Photo Credit: https://www.nao.usace.army.mil/About/Projects/AIWW-Deep-Creek-Bridge/

Project #4:

Contract Date: April 1, 2015 – July 31, 2018

Contract Amount: $20M

Project Name: St. Elizabeths Stream Restoration and Wetland Mitigation Project

Project Location: Washington, DC

General Scope of Work: Procon prepared the St. Elizabeths Campus Stormwater Master Plan designed to comply with EPA regulation 438. This Stormwater Masterplan was the first such document to be jointly approved by both DC Water and DDOE and was later used by the same team to be granted 650,000 SRCs by the DC DOEE for the outstanding campus stormwater reduction program. SRCs are offsite stormwater credits that are awarded if a project site achieves stormwater reduction above the local District of Columbia regulations. This level of runoff reduction was achieved by complying with the federal regulations.

Client Name and Address: U.S. General Services Administration, Region 11

Jim Fortinksy, Project Manager

301 7th St SW

Washington, DC 20024

Client Contact Phone: 202.329.1545

Client Contact Email: james.fortinsky@gsa.gov

Was the project completed on schedule? ____Yes __X__No

Total Amount of Change Orders: $ N/A

Reasons for Change Orders: N/A

Please attach photos of the finished project. – **PROJECT PHOTOS ARE INCLUDED**

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ST. ELIZABETHS STREAM RESTORATION AND WETLAND MITIGATON PROJECT
WASHINGTON, DC





procon consulting

CONSTRUCTION MANAGER ADVISER

City of Flagler Beach, FL







Cost Proposal

City of Flagler Beach

P.O. Box 70 • 105 South Second Street
Flagler Beach, Florida 32136
Phone (386) 517-2000

ENGINEERING DEPARTMENT

CMA Contract for the Pier Construction
ADDENDUM NO. 1

1. Add this paragraph before Paragraph 5 in the RFQ:

BID FORM

The work write-up / bid form is a general outline of the work to be performed. The total price of this project shall include:

DATE: 01/13/2025

TOTAL FEE: $ 685,427.88

IN WORDS: Six hundred eighty-five thousand, four hundred twenty-seven dollars and eighty-eight cents

All work to be performed in a professional manner, in accordance with the Scope of Work as outlined in the Form Contract. The contractor shall be responsible for all of the services required from the date of Notice to Proceed until the Pier Construction project is officially closed out and 100% complete.

I hereby certify that I am licensed by the State of Florida, Department of Business and Professional Regulation.

CONTRACTOR'S SIGNATURE: See City's response regarding license requirement

CONTRACTOR'S PRINTED NAME: Procon Consulting LLC

CONTRACTOR'S BUSINESS ADDRESS: 113 King Street, Cocoa, FL 32922

Corporate: 1800 Tysons Boulevard, Suite 620, McLean, VA 22102

CONTRACTOR'S PHONE NUMBER: 954.444.6792

CONTRACTOR'S EMAIL ADDRESS: jlopez@proconconsulting.com

Receipt is acknowledged of the following addenda:

No. 1 Dated 01/07/2025

No. _____ Dated _____

No. _____ Dated _____

Bidder agrees that the Owner has the right to waive informalities in any bid; reject any or all proposals, in whole or in part; re-bid a project, in whole or in part; and to accept a proposal that in its judgment is the lowest responsive bid.

Respectfully submitted, By:

01/15/2025
(Date)

(Signature)

Senior Vice President
(Title)

(SEAL – IF BIDDER IS A CORPORATION)

HOURLY RATES

Schedule A (Discipline)	Hourly Rate ($)
Project Executive	$67.31
Project Manager	$55.29
Assistant Project Manager / Quality Inspector	$57.69
Project Scheduler	$62.50
Cost Estimator	$62.50
Administrative	$36.06

EMAIL RE: ENGINEERING LICENSE

Subject: RE: External - Re: External - Re: External - Re: External - Re: External - Construction Manager Adviser, Flagler Beach Fishing Pier - City Project No. 260

Christine Novak <cnovak@cityofflaglerbeach.com> 11:39 AM (2 hours ago)
to Penny Overstreet, Perdomo, Gabriel, Bill Freeman, Lee Richards

Penny,

Bill and I have discussed, and an engineering license would not be required. I also look up their company profile and firm is seasoned in their qualifications.

Chris Novak
Project Manager
City of Flagler Beach
PO Box 70
Flagler Beach, FL 32136
(386) 517-2000 ext. 242
(386) 986-8395 Cell
cnovak@cityofflaglerbeach.com

From: Penny Overstreet <POverstreet@CityofFlaglerBeach.com>
Sent: Friday, January 10, 2025 9:47 AM
To: Perdomo, Gabriel <GPerdomo@moffattnichol.com>; Bill Freeman <BFreeman@cityofflaglerbeach.com>; Lee Richards <LRichards@cityofflaglerbeach.com>; Christine Novak <cnovak@CityofFlaglerBeach.com>
Subject: FW: External - Re: External - Re: External - Re: External - Re: External - Construction Manager Adviser, Flagler Beach Fishing Pier - City Project No. 260

Hello,
Question below related to the Construction Manager for the Pier Project. Can someone provide me the answer so I can respond.
Thank you in advance,

Penny Overstreet, CMC
City Clerk
City of Flagler Beach
105 S. 2nd Street

procon consulting

CONSTRUCTION MANAGER ADVISER

City of Flagler Beach, FL







Attachments

Forms

SECTION 00 11 53
REQUEST FOR QUALIFICATION FORMS

Project Name: **FLAGLER BEACH FISHING PIER REPLACEMENT 2024-2026 City Project No.: 260**

Company Name: Procon Consulting LLC

Contact Name: Jason Lopez

E-mail Address: jlopez@proconconsulting.com

Mailing Address: 113 King Street, Cocoa, FL 32922
Corporate: 1800 Tysons Boulevard, Suite 620, McLean, VA 22102

Phone Number: 954.444.6792

Fax Number: 708.852.2733

Contractor License Number: N/A

The CITY will post addenda information at Onvia DemandStar, Inc., at the following web address: www.demandstar.com. For technical assistance with this website, please contact Onvia Services at 1-800-711-1712. All Bidders should check the Onvia DemandStar website at least seven (7) calendar days before the date fixed to verify information regarding Addenda. Failure to do so could result in rejection of the submittal as unresponsive. Bidders shall sign, date, and return all addenda with their bid. It is the sole responsibility of the Bidder to ensure he/she obtains information related to Addenda. Oral and other interpretations or clarifications will be without legal effect.

The following Addenda were received:

Addendum No. 1 Date Received 01/07/2025

Addendum No._____ Date Received_____

Addendum No._____ Date Received_____

Addendum No._____ Date Received_____

Addendum No._____ Date Received_____

Addendum No._____ Date Received_____

The Bidder acknowledges the receipt, execution, and return of the following attachments:

- Attachment A: Certificate of Corporation
- Attachment B: Contractor Questionnaire
- Attachment C: Required Disclosure
- Attachment D: Bidder Information
- Attachment E: Experience of Bidder
- Attachment F: Sworn Statement Under section 287.133(3) (a), Florida Statutes, on Public Entity Crimes
- Attachment G: Affidavit of Non-Collusion
- Attachment H: Certification of Non-Segregated Facilities
- Attachment I: Drug-Free Work Place
- Attachment J: Conflict of Interest Statement
- Attachment K: Compliance with Public Records Law
- Attachment L: Americans with Disabilities Act Affidavit
- Attachment M: List of Licenses and Certifications
- Attachment N: AIA Document C-132-2019 Form Contract

Name: Jason Lopez

Authorized Signature: [signature]

Date: 01/10/2025

Title: Senior Vice President

ACKNOWLEDGEMENT

STATE OF FLORIDA
COUNTY OF Brevard

[signature]
Signature of Notary Public
Print, Type or Stamp Commissioned Name of Notary Public below: Kitsie A Ferguson

Sworn to (or affirmed) and subscribed before me by means of
online notarization ☐ OR physical presence ☒ by Jason Lopez KF

this 13 day of January 2025

Personally Known ☐ OR Produced identification ☒

Type of Identification Produced Florida Driver License KF

KITSIE A FERGUSON
Notary Public - State of Florida
Commission # HH 136503
My Comm. Expires Jun 1, 2025
Bonded through National Notary Assn.

END OF SECTION

ATTACHMENT A
CERTIFICATE OF CORPORATION

Please include a copy of your Certificate of Corporation from the State of Florida with this attachment.

STATE OF FLORIDA

COUNTY OF Brevard

I HEREBY CERTIFY that a meeting of the Board of Directors of Procon Consulting LLC, a corporation under the laws of the State of Virginia, was held on , 20 24. The following resolution was duly passed and adopted:

"RESOLVED, that Jason Lopez as Senior Vice President of the corporation is hereby authorized to execute the Contract dated _____ 20___, between The City of Flagler Beach, a municipal corporation and this corporation, and that execution thereof, attested by the Secretary of the corporation and with corporate seal affixed, shall be the official act and deed of this corporation."

I further certify that said resolution is now in full force and effect.

IN WITNESS THEREOF, I have hereunto set my hand and affixed the official seal of the corporation

This _____ day of _____, 20____.

_____
Corporate Secretary

END OF ATTACHMENT A

State of Florida
Department of State

I certify from the records of this office that PROCON CONSULTING LLC is a Virginia limited liability company authorized to transact business in the State of Florida, qualified on February 13, 2019.

The document number of this limited liability company is M19000001881.

I further certify that said limited liability company has paid all fees due this office through December 31, 2024, that its most recent annual report was filed on February 22, 2024, and that its status is active.

I further certify that said limited liability company has not filed a Certificate of Withdrawal.

Given under my hand and the Great Seal of the State of Florida at Tallahassee, the Capital, this the Twenty-fifth day of November, 2024

Secretary of State

Tracking Number: 2318579016CU

To authenticate this certificate,visit the following site,enter this number, and then follow the instructions displayed.

https://services.sunbiz.org/Filings/CertificateOfStatus/CertificateAuthentication

SECTION 00 11 53
REQUEST FOR QUALIFICATION FORMS

ATTACHMENT B
CONTRACTOR QUESTIONNAIRE

DATE: 01/10/2025

NAME OF BIDDER: Procon Consulting LLC

BUSINESS ADDRESS: 113 King Street, Cocoa, FL 32922 | Corporate: 1800 Tysons Boulevard, Suite 620, McLean, VA 22102

PHONE NUMBER: 954.444.6792

CONTRACTOR'S FL LICENSE #: N/A

EXPIRATION DATE: N/A

The undersigned warrants the truth and accuracy of all statements and answers herein contained. Include additional sheets as necessary.

1. How many years has your organization been in business as a Construction Manager?

Procon has been providing construction, program and project management, and commissiong services for 25 years.

2. How many years has your organization been in business as a Construction Manager Adviser?

Procon has been providing Construction Manager Adviser services for 25 years.

3. Name of Project Manager and length of time with your company?

Casey Cloonan, 2 years

4. Describe in detail and give the date and owner, including phone numbers and contact person(s), of the last four (4) projects that you have completed similar in type, size, and nature as the project proposed?

See Attachment B Amendment with requested project information

5. Have you ever failed, or been alleged to have failed, to complete work awarded to you? If so, please list the project and explain the reasons why?

No.

6. Have you ever failed, or been alleged to have failed, to complete work within the Contract Time? If so, please list the project and explain the reasons why?

No.

7. Have you ever had a bond or letter of credit called by the owner of a project? If so, when?

No.

Bidder Name: Procon Consulting LLC

Signature: 

Title: Senior Project Manager

Attach the corporate information sheet from the Florida Department of State, Division of Corporation's,

web site.

ACKNOWLEDGEMENT

STATE OF FLORIDA

COUNTY OF Brevard

Signature of Notary Public
Print, Type or Stamp Commissioned Name of Notary Public below: Kitsie A Ferguson

Sworn to (or affirmed) and subscribed before me by means of

online notarization ☐ OR physical presence ☒ by Jason Lopez KF

this 13 day of January, 2025.

Personally Known ☐ OR Produced identification ☒

Type of Identification Produced: Florida Driver License KF

KITSIE A FERGUSON
Notary Public - State of Florida
Commission # HH 136503
My Comm. Expires Jun 1, 2025
Bonded through National Notary Assn.

END OF ATTATCHMENT B

PROCON ATTACHMENT B AMENDMENT

Construction Manager Adviser for the Construction of Flagler Beach Fishing Pier Replacement | City Project No. 260 | RFQ NO. FB-242911

PROJECT #1
Name: Tidal Pool adjacent to the Jefferson Memorial, Washington DC
Project Dates: 05/20/2024 - Ongoing
Owner: National Park Service, Denver Service Center
Contact: Marcello Arroiobebiannosimoes
Phone: 720.701.0146
Email: marcello_arroiobebiannosimoes@nps.gov

Description: Providing construction management services for the NPS NAMA Park for the Tidal Wall Project. This project phase includes a $168M design-build marine civil infrastructure improvement by Cianbro. Currently, this is the largest design-build project issued by the NPS Denver Service Center.

PROJECT #2
Name: Construction Management Services at Sector Field Office, Fort Macon, Beaufort, and Emerald Isle, NC
Project Dates: 08/15/2020 - 08/14/2023
Owner: U.S. Coast Guard
Contact: Clayton McBeth, Project Manager
Phone: 503.508.6344 (W) | 216.339.1783 (M)
Email: Clayton.P.McBeth@uscg.mil

Description: Provided construction inspection services that included conducting in-field construction site inspections of contractor-installed work, assessing project progress, and providing project reporting on a daily, weekly, and monthly basis. The Procon team also served as the communication liaison between contractors and government personnel.

PROJECT #3
Name: Construction Management Services, Atlantic Intracoastal Waterway (AIWW) Bridge Replacement at Deep Creek, Chesapeake, VA
Project Dates: 01/16/2024 – Ongoing (2026 anticipated completion)
Owner: U.S. Army Corps of Engineers, Norfolk District
Contact: Stephen Reed, USACE NAO
Phone: 757.201.7740
Email: stephen.w.reed@usace.army.mil

Description: Through the Hana-Procon 8(a) JV, Procon is delivering Construction Management (CMa) and Quality Assurance (QA) services for the replacement of the functionally obsolete Atlantic Intracoastal Waterway (AIWW) Deep Creek Bridge. These services will support USACE in ensuring compliance with contract plans, specifications, safety regulations (such as EM 385-1-1 and OSHA requirements), and industry best practices.

PROCON ATTACHMENT B AMENDMENT

Construction Manager Adviser for the Construction of Flagler Beach Fishing Pier Replacement | City Project No. 260 | RFQ NO. FB-242911

Complete with sidewalks on both sides, the new 144-foot long, 60-foot wide five-lane drawbridge bridge will include approach slabs, abutments, supporting piers, piles, pile caps, bulkheads, a fender system, mechanical and electrical systems, lighting, emergency power generation, controls, radio systems, signage, and an operator's control house equipped with HVAC, lighting, a restroom, and parking.

The new bridge will be constructed 100 feet south of the current structure and includes upgrades to surrounding roadways to enhance traffic flow and access. With an estimated cost of $59M, the project addresses growing traffic demands in the region. Traffic management plans are in place to minimize disruption throughout construction.

PROJECT #4

Name: St. Elizabeths Stream Restoration and Wetland Mitigation Project
Project Dates: 04/01/2015 – 07/31/2018
Owner: GSA Region 11
Contact: Jim Fortinksy, Project Manager
Phone: 202.329.1545
Email: james.fortinsky@gsa.gov

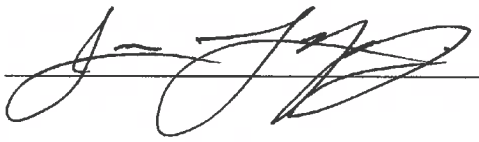
Description: Procon provided construction management services and prepared the St. Elizabeths Campus Stormwater Master Plan designed to comply with EPA regulation 438. This Stormwater Masterplan was the first such document to be jointly approved by both DC Water and DDOE and was later used by the same team to be granted 650,000 SRCs by the DC DOEE for the outstanding campus stormwater reduction program. SRCs are offsite stormwater credits that are awarded if a project site achieves stormwater reduction above the local District of Columbia regulations. This level of runoff reduction was achieved by complying with the federal regulations.

ATTACHMENT C
REQUIRED DISCLOSURE

The following disclosure is of all material facts pertaining to any felony conviction or any pending felony charges in the last three (3) years in this State or any other state of the United States against (1) the Bidder, any business entity related to or affiliated with the Bidder or (3) any present or former owner of the Bidder or of any such related or affiliated entity. This disclosure shall not apply to any person or entity which is only a stockholder, which person or entity owns twenty percent (20%) or less of the outstanding shares of the Bidder whose stock is publicly owned and traded:

N/A

Bidder Name: Procon Consulting LLC

Signature: 

Title: Senior Project Manager

Date: 01/10/2025

END OF ATTACHMENT C

NOTE: Ed Pogreba's name was inadvertently added to this list; therefore, no signature has been added for him.

ATTACHMENT D
BIDDER INFORMATION

List the full legal name of each officer of the Corporation.

President: Kyu Jung

Signature: DocuSigned by: Kyu Jung B29C2BF8F16540F... Date: 01/10/2025

Vice-President: Mark Ilich, Executive Vice President

Signature: Signed by: C07DDA03DC5A478... Date: 01/10/2025

Secretary: Ed Pogreba, Senior Vice President

In Process

Signature: _____ Date: 01/10/2025

Treasurer: Jason Lopez, Senior Vice President

Signature: DocuSigned by: Jason Lopez 26073590E0EA4B4... Date: 01/10/2025

List the Corporate Officer that will sign the contract: Kyu Jung

END OF ATTACHMENT D

ATTACHMENT E
EXPERIENCE OF BIDDER

Bidder Name: Procon Consulting LLC

Authorized Signature: _____ Date: 01/10/2025

Is your company currently involved in any active litigation? ____Yes ✓ No

If Yes, explain: _____

Has your company ever been sued? ____Yes ✓ No

If Yes, explain and/or submit court decision or judgment, as applicable: _____

The Bidder must demonstrate the successful completion of four (4) projects of similar complexity, nature, size, and dollar amount in the capacity of CMA. Any material misrepresentation, as determined by the City of Flagler Beach, shall result in disqualification.

On the following pages, provide the requested information regarding experience within the past ten (10) years on four (4) projects. These projects must be new or rehabilitation projects. Preferred projects should be for a coastal community on or near the beach. Additional credit will be awarded for Fishing Piers, either concrete or wood.

ATTACHMENT F
SWORN STATEMENT UNDER SECTION 287.133(3) (a), FLORIDA STATUTES, ON PUBLIC ENTITY CRIMES

THIS FORM MUST BE SIGNED IN THE PRESENCE OF A NOTARY PUBLIC OR OTHER OFFICER AUTHORIZED TO ADMINISTER OATHS.

This sworn statement is submitted to: **The City of Flagler Beach** (Public entity)

By: Jason Lopez, Senior Vice President
(Individual's name and title)

For: Procon Consulting LLC
(Name of entity submitting sworn statement)

Whose business address is: 113 King Street, Cocoa, FL 32922
Corporate: 1800 Tysons Boulevard, Suite 620, McLean, VA 22102

Federal Employer Identification Number (FEIN): 54-1981434

(If the entity has no FEIN, include the Social Security Number of the individual signing this sworn statement)

1. I understand that a "public entity crime" as defined in Section 287.133(1)(g), Florida Statutes, means a violation of any State or Federal law by a person with respect to and directly related to the transaction of business with any public entity or with an agency or political subdivision of any other state or with the United States, including, but not limited to, any bid or contract for goods or services to be provided to any public entity or an agency or political subdivision of any other state or of the United States and involving antitrust, fraud, theft, bribery, collusion, racketeering, conspiracy, or material misrepresentation.
2. I understand that "convicted" or "conviction" as defined in Paragraph 287.133(1) (b), Florida Statutes, means a finding of guilt or a conviction of a public entity crimes, with or without an adjudication of guilt, in any Federal or state trial court of record relating to charges brought by indictment or information after July 1, 1989, as a result of a jury verdict, non-jury trial, or entry of a plea of guilty or nolo contendere.

3. I understand that an "affiliate" as defined in Section 287.133(1)(a), Florida Statutes, means: A predecessor or successor of a person convicted of a public entity crime: or an entity under the control of any natural person who is active in the management of the entity and how has been convicted of a public entity crime. The term "affiliate" includes those officers, directors, executives, partners, shareholders, employees, members, and agents who are active in the management of an affiliate. The ownership by one (1) person of shares constituting a controlling interest in another person, or a pooling of equipment or income among persons when not for fair market value under an arm's length agreement, shall be a prima facie case that one person controls another person. A person who knowingly enters into a joint venture with a person who has been convicted of a public entity crime in Florida during the preceding thirty-six (36) months shall be considered an affiliate.

4. I understand that a "person" as defined in Section 287.133(1) (e), Florida Statutes, means any natural person or entity organized under the laws of any state or of the United States with the legal power to enter into a binding contract and which bids or applies to bid on contracts for the provision of goods or services let by a public entity, or which otherwise transacts or applies to transact business with a public entity. The term "person" includes those officers, directors, executives, partners, shareholders, employees, members, and agents who are active in management of an entity.

Based on information and belief, the statement which I have marked below is true in relation to the entity submitting this sworn statement. (Indicate which statement applies.)

Neither the entity submitting this sworn statement, nor any officers, directors, executives, partners, shareholders, employees, members, or agent who is active in management of the entity, nor the affiliate of the entity, has been charged with and convicted of a public entity crime subsequent to July 1, 1989.

The entity submitting this sworn statement, or one or more of the officers, directors, executives, partners, shareholders, employees, members or agent who are active in management of the entity, or an affiliate of the entity, has been charged with and convicted of a public entity crime subsequent to July 1, 1989.

The entity submitting this sworn statement, or one or more of the officers, directors, executives, partners, shareholders, employees, members or agents who are active in management of the entity, or an affiliate of the entity, has been charged with and convicted of a public entity crime subsequent to July 1, 1989.

However, there has been a subsequent proceeding before an Administrative Law Jury of the State of Florida, Division of Administrative Hearings and the Final Order entered by the Administrative Law Jury

determined that it was not in the public interest to place the entity submitting this sworn statement on the convicted vendor list. (Attach a copy of the final order.)

I UNDERSTAND THAT THE SUBMISSION OF THIS FORM TO THE CITY OF FLAGLER IS FOR THE CITY ONLY AND, THAT THIS FORM IS VALID THROUGH DECEMBER 31, OF THE CALENDAR YEAR IN WHICH IT IS FILED. I ALSO UNDERSTAND THAT I AM REQUIRED TO INFORM THE CITY PRIOR TO ENTERING IN TO A CONTRACT IN EXCESS OF THE THRESHOLD AMOUNT PROVIDED IN SECTION 287.017, FLORIDA STATUES, FOR CATEGORY TWO OF ANY CHANGE IN THE INFORMATION CONTAINED IN THIS FORM.

Signature: _____

Date: 01/10/2025

State of: Florida

County of: Brevard

PERSONALLY APPEARED BEFORE ME, the undersigned authority,

Jason Lopez
(Name of individual signing) who, after first being sworn by me,

affixed his/her signature in the space provided above on this 13 day of January, 20 25.

ACKNOWLEDGEMENT

STATE OF FLORIDA
COUNTY OF Brevard

Sworn to (or affirmed) and subscribed before me by means of

online notarization ☐ OR physical presence ☒ by Jason Lopez

this 13 day of January, 2025.

Personally Known ☐ OR Produced identification ☒

Type of Identification Produced: Florida Driver License

Signature of Notary Public
Print, Type or Stamp Commissioned Name of Notary Public below: Kitsie A. Ferguson

KITSIE A FERGUSON
Notary Public - State of Florida
Commission # HH 136503
My Comm. Expires Jun 1, 2025
Bonded through National Notary Assn.

END OF ATTACHMENT F

ATTACHMENT G
AFFIDAVIT OF NON-COLLUSION

The undersigned bidder or agent, being duly sworn on oath, says that he/she has not, nor has any other member, representative, or agent of the firm, company, corporation or partnership represented by him, entered into any combination, collusion or agreement with any person relative to the price to be bid by anyone at such letting nor to prevent any person from bidding nor to include anyone to refrain from bidding, and that this bid is made without reference to any other bid and without any agreement, understanding or combination with any other person in reference to such bidding. He/She further says that no person or persons, firms, or corporation has, have or will receive directly or indirectly, any rebate, fee gift, commission or thing of value on account of such sale.

OATH AND AFFIRMATION

I HEREBY AFFIRM UNDER THE PENALTIES FOR PERJURY THAT THE FACTS AND INFORMATION CONTAINED IN THE FOREGOING BID FOR PUBLIC WORKS ARE TRUE AND CORRECT.

Dated this 13 day of January, 2025.

Procon Consulting LLC
(Bidder Name)

Senior Vice President
(Title)

(Signature)

ACKNOWLEDGEMENT

STATE OF FLORIDA
COUNTY OF Brevard

Signature of Notary Public
Print, Type or Stamp Commissioned Name of Notary Public below: Kitsie A Ferguson

Sworn to (or affirmed) and subscribed before me by means of
online notarization ☐ OR physical presence ☑ by Jose Lopez KF

this 13 day of January, 2025.

Personally Known ☐ OR Produced identification ☑

Type of Identification Produced: Florida Driver License KF

KITSIE A FERGUSON
Notary Public - State of Florida
Commission # HH 136503
My Comm. Expires Jun 1, 2025
Bonded through National Notary Assn.

END OF ATTACHMENT G

ATTACHMENT H
CERTIFICATION OF NON-SEGREGATED FACILITIES

The Bidder certifies that they do not maintain or provide for their employees any segregated facilities at any of his establishments, and that they do not permit their employees to perform their services at any location, under their control, where segregated facilities are maintained. The Bidder certifies further that they will not maintain or provide for their employees any segregated facilities at any location under their control where segregated facilities are maintained. The Bidder agrees that a breach of this certification will be a violation of the Equal Opportunity clause in any contract resulting from acceptance of this Bid. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, time clocks, locker rooms and other storage and dressing areas, parking lots, drinking fountains, recreation or entertainment area, transportation and housing facilities provided for employees which are segregated by explicit directive, or are in fact segregated on the basis of race, color, religious disability or national origin, because of habit, local custom, or otherwise. The Bidder agrees that (except where they have obtained identical certifications from proposed subcontractors for specific time periods) they will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity clause, and that he will retain such certifications in his files.

The nondiscriminatory guidelines as promulgated in Section 202, Executive Order 11246, and as amended by Executive Order 11375 and as amended, relative to Equal Opportunity for all persons and implementations of rules and regulations prescribed by the United States Secretary of Labor are incorporated herein.

Name: Jason Lopez, Senior Vice President

Signature: 

Date: 01/10/2025

Title: Senior Vice President

Official Address: 113 King Street, Cocoa, FL 32922

Corporate: 1800 Tysons Boulevard, Suite 620, McLean, VA 22102

END OF ATTACHMENT H

ATTACHMENT I
DRUG-FREE WORKPLACE

The undersigned vendor in accordance with Florida Statute 287.087 hereby certifies that

Procon Consulting LLC does hereby: (Name of Business)

1. Publish a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the workplace and specifying the actions that will be taken against employees for violations of such prohibition.

2. Inform employees about the dangers of drug abuse in the workplace, the business's policy of maintaining a drug-free workplace, any available drug counseling, rehabilitation, and employee assistance programs, and the penalties that may be imposed upon employees for drug abuse violations.

3. Give each employee engaged in providing the commodities or contractual services that are proposed a copy of the statement specified in subsection (1).

4. In the statement specified in subsection (1), notify the employees that, as a condition of working on the commodities or contractual services that are under proposal, the employee will propose by the terms of the statement and will notify the employer of any conviction of, or plea of guilty or nolo contender to, any violation of Chapter 893, Florida Statutes, or of any controlled substance law of the United States or any state, for a violation occurring in the workplace no later than five (5) days after such conviction.

5. Impose a sanction on, or require the satisfactory participation in a drug abuse assistance or rehabilitation program if such is available in the employee's community, by any employee who is so convicted.

6. Make a good faith effort to continue to maintain a drug-free workplace through implementation of the matters set forth above.

As the person authorized to sign the statement, I certify that this firm complies fully with the above requirements.

Name: Jason Lopez

Signature:

Date: 01/10/2025

Title: Senior Vice President

END OF ATTACHMENT I

ATTACHMENT J
CONFLICT OF INTEREST STATEMENT

Before me, the undersigned authority, personally appeared ,
who was duly sworn, deposes, and states:

1. I am the Senior Vice President of Procon Consulting LLC with a local office in Cocoa, FL and principal office in McLean, VA.
2. The above-named entity is submitting an Expression of Interest for the City of Flagler Beach project described as bid number RFQ NO. FB-242911 ,
3. The Affiant has made diligent inquiry and provides the information contained in this Affidavit based upon his own knowledge.
4. The Affiant states that only one submittal for the above project is being submitted and that the above-named entity has no financial interest in other entities submitting proposals for the same project.
5. Neither the Affiant nor the above-named entity has directly or indirectly entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive pricing in connection with the entity's submittal for the above project. This statement restricts the discussion of pricing data until the completion of negotiations and execution of the Agreement for this project.
6. Neither the entity nor its affiliates, nor anyone associated with them, is presently suspended or otherwise ineligible from participating in contract lettings by any local, state, or federal agency.
7. Neither the entity, nor its affiliates, nor anyone associated with them have any potential conflict of interest due to any other clients, contracts, or property interests for this project.
8. I certify that no member of the entity's ownership, management, or staff has a vested interest in any aspect of or Department of the City of Flagler Beach.
9. I certify that no member of the entity's ownership or management is presently applying for an employee position or actively seeking an elected position with City of Flagler Beach.
10. In the event that a conflict of interest is identified in the provision of services, I, on behalf of the above-named entity, will immediately notify the City of Flagler Beach in writing.

Signature of Affiant

ACKNOWLEDGEMENT

STATE OF FLORIDA
COUNTY OF Brevard

Signature of Notary Public
Print, Type or Stamp Commissioned Name of Notary Public below: Kitsie A. Ferguson

Sworn to (or affirmed) and subscribed before me by means of
online notarization ☐ *OR* physical presence ☒ by Jason Lopez KF
this 13 day of January, 2025.
Personally Known ☐ *OR* Produced identification ☒
Type of Identification Produced: Florida Driver License JF

KITSIE A FERGUSON
Notary Public - State of Florida
Commission # HH 136503
My Comm. Expires Jun 1, 2025
Bonded through National Notary Assn.

END OF ATTACHMENT J

REMAINDER OF PAGE INTENTIONALLY LEFT BLANK

ATTACHMENT K
COMPLIANCE WITH THE PUBLIC RECORDS LAW

Upon award recommendation or thirty (30) days after receiving submittals, they become "public records" and shall be subject to public disclosure consistent with Chapter 119, Florida Statutes. Proposers must invoke the exemptions to disclosure provided by law in the response to the solicitation and must identify the data or other materials to be protected, and must state the reasons why such exclusion from public disclosure is necessary.

If the company submits information exempt from public disclosure, the company must identify with specificity which pages/paragraphs of their bid/proposal package are exempt from the Public Records Act, identifying the specific exemption section that applies to each. The protected information must be submitted to the City of Flagler Beach in a separate envelope marked accordingly.

Company Name: Procon Consulting LLC

Authorized representative Printed Name: Jason Lopez

Authorized Representative Signature: 

Date: 01/10/2025

END OF ATTACHMENT K

ATTACHMENT L
AMERICANS WITH DISABILITIES ACT AFFIDAVIT

The undersigned CONTRACTOR swears that the information herein contained is true and correct and that none of the information supplied was for the purpose of defrauding the CITY.

The CONTRACTOR will not discriminate against any employee or applicant for employment because of physical or mental handicap in regard to any position for which the employee or applicant for employment is qualified. The CONTRACTOR agrees to comply with the rules, regulations and relevant orders issued pursuant to the Americans with Disabilities Act (ADA), 42 USC s. 12101 et seq. It is understood that in no event shall the CITY be held liable for the actions or omissions of the CONTRACTOR or any other party or parties to the Agreement for failure to comply with the ADA. The CONTRACTOR agrees to hold harmless and indemnify the CITY, its agents, officers or employees from any and all claims, demands, debts, liabilities or causes of action of every kind or character, whether in law or equity, resulting from the CONTRACTOR's acts or omissions in connection with the ADA.

Name: Jason Lopez

Authorized Signature: _____

Date: 01/10/2025

Title: Senior Vice President

Affix Corporate Seal:

ACKNOWLEDGEMENT

STATE OF FLORIDA

COUNTY OF Brevard

Signature of Notary Public

Print, Type or Stamp Commissioned Name of Notary Public below: Kitsie A. Ferguson

Sworn to (or affirmed) and subscribed before me by means of

online notarization ☐ OR physical presence ☒ by Jason Lopez KF

this 13 day of January, 2025.

Personally Known ☐ OR Produced identification ☒

Type of Identification Produced: Florida Driver License. KF

KITSIE A FERGUSON
Notary Public - State of Florida
Commission # HH 136503
My Comm. Expires Jun 1, 2025
Bonded through National Notary Assn.

END OF ATTACHMENT L

ATTACHMENT M
LIST OF LICENSES and CERTIFICATIONS

License/Cert. Name	Number	Issuing Authority	Expiration Date
Sean Person	N/A	Project Management Institute	N/A
	N/A	U.S. Green Building Council LEED Accredited Professional	-
Casey Cloonan	N/A	U.S. Green Building Council LEED Green Associate	-
	3712723	Project Management Institute CAPM Certification	12/2026
	N/A	Cryogenics Single Walled Stainless Steel & Vacuum Jacketed Piping Inspection Certification	-
Charles Plumb, II	N/A	U.S. Army Corpos of Engineers CQM Certified	N/A
Olufemi Gbolagun	1.4-0000016-0819	American Society of Professional Estimators Certified Professional Estimator	12/31/2025

END OF ATTACHMENT M

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY) 05/13/2024

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER	CONTACT NAME: Automatic Data Processing Insurance Agency, Inc.
Automatic Data Processing Insurance Agency, Inc. 1 Adp Boulevard Roseland NJ 07068	PHONE (A/C, No, Ext): 1-800-524-7024 FAX (A/C, No): E-MAIL ADDRESS:
INSURED Procon Consulting, LLC 1800 Tysons Blvd Suite 620 Mc Lean VA 22102	INSURER(S) AFFORDING COVERAGE — NAIC # INSURER A : Wesco Insurance Company — 25011 INSURER B : INSURER C : INSURER D : INSURER E : INSURER F :

COVERAGES **CERTIFICATE NUMBER:** 3629525 **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
	COMMERCIAL GENERAL LIABILITY						EACH OCCURRENCE	$
	☐ CLAIMS-MADE ☐ OCCUR						DAMAGE TO RENTED PREMISES (Ea occurrence)	$
							MED EXP (Any one person)	$
							PERSONAL & ADV INJURY	$
	GEN'L AGGREGATE LIMIT APPLIES PER:						GENERAL AGGREGATE	$
	☐ POLICY ☐ PRO-JECT ☐ LOC						PRODUCTS - COMP/OP AGG	$
	☐ OTHER:							$
	AUTOMOBILE LIABILITY						COMBINED SINGLE LIMIT (Ea accident)	$
	☐ ANY AUTO						BODILY INJURY (Per person)	$
	☐ OWNED AUTOS ONLY ☐ SCHEDULED AUTOS						BODILY INJURY (Per accident)	$
	☐ HIRED AUTOS ONLY ☐ NON-OWNED AUTOS ONLY						PROPERTY DAMAGE (Per accident)	$
								$
	UMBRELLA LIAB ☐ OCCUR						EACH OCCURRENCE	$
	EXCESS LIAB ☐ CLAIMS-MADE						AGGREGATE	$
	☐ DED ☐ RETENTION $							$
A	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) Y / N: Y If yes, describe under DESCRIPTION OF OPERATIONS below	N / A	Y	WWC3702300	03/29/2024	03/29/2025	☒ PER STATUTE ☐ OTH-ER	
							E.L. EACH ACCIDENT	$ 1,000,000
							E.L. DISEASE - EA EMPLOYEE	$ 1,000,000
							E.L. DISEASE - POLICY LIMIT	$ 1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

CERTIFICATE HOLDER

SAMPLE

4

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

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ACORD 25 (2016/03) **The ACORD name and logo are registered marks of ACORD**

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consulting!

RFQ

SUBMITTED TO: CITY OF FLAGLER BEACH

Request For Qualifications • Construction Manager Adviser

City Project No: 260 • Attention: Ms. Penny Overstreet



WHITING-TURNER

Submitted By: THE WHITING-TURNER CONTRACTING COMPANY

Address: 10407 Centurion Parkway N., Suite 110, Jacksonville, Florida 32256

Contact: Jeff McPhaul, Vice President **Email:** jeff.mcphaul@whiting-turner.com

Office: 904.456.6226 **Mobile:** 813.477.9632 **Due:** 01.15.2025 @ 2PM

SECTION 00 11 53
REQUEST FOR QUALIFICATION FORMS

Project Name: **FLAGLER BEACH FISHING PIER REPLACEMENT 2024-2026 City Project No.: 260**

Company Name: The Whiting-Turner Contracting Company

Contact Name: Jeff McPhaul, Vice President

E-mail Address: jeff.mcphaul@whiting-turner.com

Mailing Address: 10407 Centurion Parkway N., Suite 110, Jacksonville, Florida 32256

Phone Number: Office: 904.456.6226 Mobile:813.477.9632

Fax Number: N/A

Contractor License Number: CGC1533955

The CITY will post addenda information at Onvia DemandStar, Inc., at the following web address: www.demandstar.com. For technical assistance with this website, please contact Onvia Services at 1-800-711-1712. All Bidders should check the Onvia DemandStar website at least seven (7) calendar days before the date fixed to verify information regarding Addenda. Failure to do so could result in rejection of the submittal as unresponsive. Bidders shall sign, date, and return all addenda with their bid. It is the sole responsibility of the Bidder to ensure he/she obtains information related to Addenda. Oral and other interpretations or clarifications will be without legal effect.

The following Addenda were received:

No date given for addendum online or on the form. Whiting-Turner downloaded it on 1.08.25

Addendum No. 1 Date Received

Addendum No. Date Received

Addendum No. Date Received

Addendum No. Date Received

Addendum No. Date Received

Addendum No. Date Received

The Bidder acknowledges the receipt, execution, and return of the following attachments:

- Attachment A: Certificate of Corporation
- Attachment B: Contractor Questionnaire
- Attachment C: Required Disclosure
- Attachment D: Bidder Information
- Attachment E: Experience of Bidder
- Attachment F: Sworn Statement Under section 287.133(3) (a), Florida Statutes, on Public Entity Crimes
- Attachment G: Affidavit of Non-Collusion
- Attachment H: Certification of Non-Segregated Facilities
- Attachment I: Drug-Free Work Place
- Attachment J: Conflict of Interest Statement
- Attachment K: Compliance with Public Records Law
- Attachment L: Americans with Disabilities Act Affidavit
- Attachment M: List of Licenses and Certifications
- Attachment N: AIA Document C-132-2019 Form Contract

Name: Brent Voyles

Authorized Signature: 

Date: 01.15.25

Title: Senior Vice President

ACKNOWLEDGEMENT

STATE OF FLORIDA

COUNTY OF Duval

Sworn to (or affirmed) and subscribed before me by means of

online notarization ☒ *OR* physical presence ☐

this 15th day of January, 20 25.

Personally Known ☒ *OR* Produced identification ☐

Type of Identification Produced: _____

Signature of Notary Public

Print, Type or Stamp Commissioned Name of Notary Public below:



END OF SECTION

table of contents

TOC

1. Cover Letter

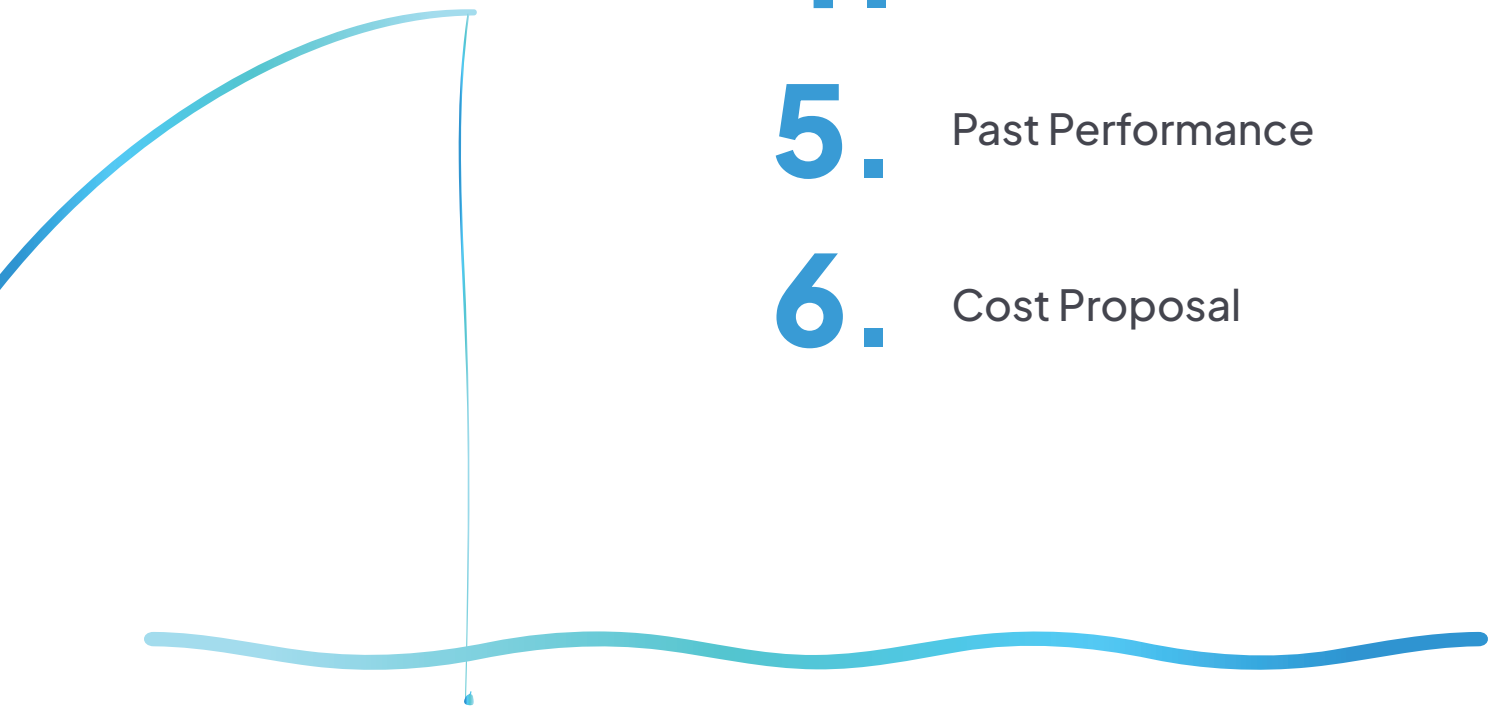
2. Forms / Attachment

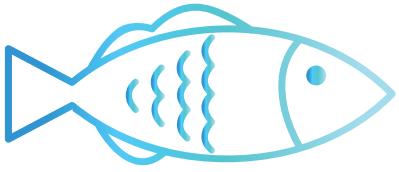
3. Company Profile

4. Project Approach

5. Past Performance

6. Cost Proposal





THIS TOC IS INTERACTIVE!

*Click on any **number** to dive into that section and click the*  *at the bottom of any page to come back here!*



One

COVER LETTER



G. W. C. WHITING
(1883-1974)

WILLARD HACKERMAN
(1918-2014)

TIMOTHY J. REGAN
PRESIDENT AND CEO

FOUNDED 1909

THE WHITING-TURNER CONTRACTING COMPANY

ENGINEERS AND CONTRACTORS

CONSTRUCTION MANAGEMENT
GENERAL CONTRACTING
DESIGN-BUILD
SPECIALTY CONTRACTING
PRECONSTRUCTION
BUILDING INFORMATION MODELING
INTEGRATED PROJECT DELIVERY

10407 CENTURION PARKWAY NORTH, SUITE110
JACKSONVILLE, FLORIDA 32256
904-456-6226

INSTITUTIONAL
COMMERCIAL
CORPORATE
TECHNOLOGY
INDUSTRIAL/PROCESS
INFRASTRUCTURE
SUSTAINABILITY

January 15, 2025

Ms. Penny Overstreet
City Clerk, City of Flagler Beach
105 S. 2nd Street
Flagler Beach, FL 32136

Re: RFQ Response, City Project No: 260, Flagler Beach Fishing Pier

Dear Selection Committee,

We are grateful for the opportunity to partner with you on the Flagler Beach Fishing Pier project. We recently completed a very similar project - The Pompano Beach Fishing Pier which won the Construction Management Association of American 2021 award for Florida municipal projects. We are excited to bring that expertise to your project.

We have a long history of Construction Manager Adviser experience. Our team understands the importance of this project to The City of Flagler Beach and appreciates your need for a true partner in the planning and execution of the work. My promise to you is that Whiting-Turner will be that partner. We will roll up our sleeves and become an active, trustworthy, and capable team member with you, the general contractor and the design team.

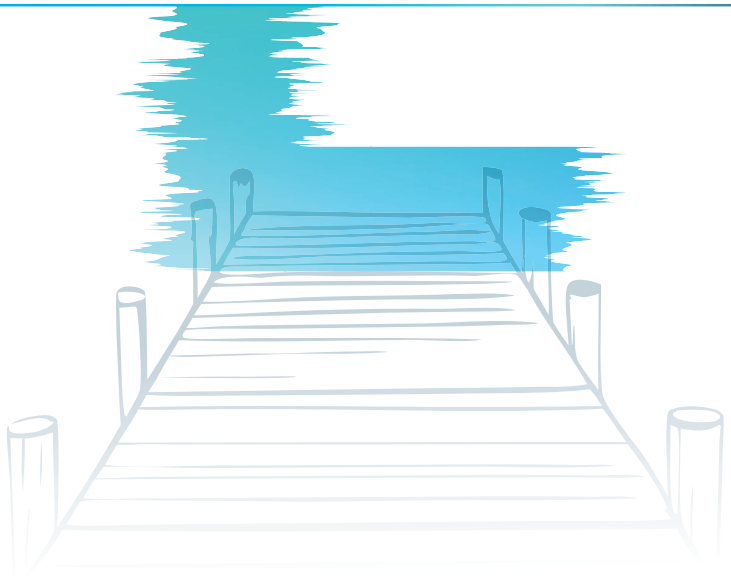
Thank you for your consideration, and we look forward to our partnership on this project.

Very Truly Yours,
THE WHITING-TURNER CONTRACTING COMPANY

JEFF MCPHAUL
Vice President

Two

ATTACHMENTS / FORMS



ATTACHMENT A
CERTIFICATE OF CORPORATION

Please include a copy of your Certificate of Corporation from the State of Florida with this attachment.

STATE OF FLORIDA

COUNTY OF Duval

I HEREBY CERTIFY that a meeting of the Board of Directors of The Whiting-Turner Contracting Company, a corporation under the laws of the State of Maryland, was held on 4/30, 20 24. The following resolution was duly passed and adopted:

"RESOLVED, that Brent Voyles as Senior Vice President of the corporation is hereby authorized to execute the Contract dated tbd 20 _____, between The City of Flagler Beach, a municipal corporation and this corporation, and that execution thereof, attested by the Secretary of the corporation and with corporate seal affixed, shall be the official act and deed of this corporation."

I further certify that said resolution is now in full force and effect.

IN WITNESS THEREOF, I have hereunto set my hand and affixed the official seal of the corporation

This 15th day of January, 20 25.

THE WHITING TURNER CONTRACTING COMPANY SEAL 1934 MARYLAND

See attached Unanimous Consent of the Board of Directors dates April 30, 2024

Corporate Secretary

END OF ATTACHMENT A

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THE WHITING-TURNER CONTRACTING COMPANY

UNANIMOUS CONSENT OF THE BOARD OF DIRECTORS IN LIEU OF A MEETING

April 30, 2024

The undersigned, being all of the Directors of THE WHITING-TURNER CONTRACTING COMPANY, a Maryland corporation (the "Company"), do hereby unanimously consent, by the adoption of the following resolution pursuant to Section 2-408(c) of the Corporations and Associations Article of the Annotated Code of Maryland, to the actions set forth herein, waive any rights which the undersigned may have to dissent from any such actions and waive any requirements of a meeting or notice thereof:

Election of Officers

IT IS RESOLVED that, effective as of the date hereof, the following persons are elected as officers of the Company, to the offices set forth opposite their respective names, each to serve at the pleasure of the Board of Directors:

Name	Title
Regan, Timothy J.	President & CEO
Moag, Anthony G.	Senior Exec Vice President, COO, Treasurer & CFO
Bauer, Daniel M.	Executive Vice President
Breig, J. Scott	Executive Vice President
Caldwell, Troy M.	Executive Vice President
Douglas, Keith A.	Executive Vice President
Ernst, Michael F.	Executive Vice President & Secretary
Hess, Jonathan	Executive Vice President
Minutoli, Robert, Jr.	Executive Vice President
Steinbeck, Daryl C.	Executive Vice President
Abutaleb, Sam G.	Senior Vice President
Carlson, John C.	Senior Vice President
Carper, Patricia	Senior Vice President
China, Daniel W.	Senior Vice President
DaSilva, Joaquim M.	Senior Vice President
Davis, Cyrena F.	Senior Vice President
Duffy, Patrick F.	Senior Vice President
Eisenberg, Ronald M.	Senior Vice President
Ellis, Damon D.	Senior Vice President
Eshelbrenner, Adam	Senior Vice President
Fanelli, Joshua	Senior Vice President
Faul, Mark W.	Senior Vice President

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Giovannone, John G.	Senior Vice President
Hahner, David	Senior Vice President
Haile, Kempton C.	Senior Vice President
Huang, Albert C.	Senior Vice President
Kerber, Philip J.	Senior Vice President
Likins, Steven J.	Senior Vice President
Mallik, David W.	Senior Vice President
Martini, James J.	Senior Vice President
Moore, Robert W.	Senior Vice President
Ott, Brian R.	Senior Vice President
Owens, James G.	Senior Vice President
Schlotterback, Edward	Senior Vice President
Schmitt, Paul N.	Senior Vice President
Seicke, Kevin J.	Senior Vice President
Tomlinson, Robert W.	Senior Vice President
Valianatos, Pete T.	Senior Vice President
Voyles, Brent A.	Senior Vice President
Warhall, Richard	Senior Vice President
Wells, Samuel R., III	Senior Vice President
Bastian, Garth J.	Division Vice President
Beam, Jesse L.	Division Vice President
Beavers, Nancy C.	Division Vice President, Projects
Bender, Charles E.	Division Vice President, Field Operations
Berotti, John F.	Division Vice President
Betts, Jeffrey D.	Division Vice President, Field Operations
Border, Theodore F.	Division Vice President
Botteon, Gregory A.	Division Vice President
Brickley, David P.	Division Vice President
Browning, Michael P.	Division Vice President
Cargile, Bryant K.	Division Vice President
Carper, Michael A.	Division Vice President
Christensen, Cale L.	Division Vice President
Clem, Dennis M.	Division Vice President
Cochran, Jeffery S.	Division Vice President, Projects
Cooper, Jeffrey S.	Division Vice President
Crane, Zachary A.	Division Vice President
DeWitt, Brian	Division Vice President, Projects
Evans, Karen L.	Division Vice President
Frank, Charles C.	Division Vice President
Glover, Aaron T.	Division Vice President
Grizzard, Maynard W.	Division Vice President
Gurtel, Steven T.	Division Vice President
Healy, Erik C.	Division Vice President, Projects
Henry, David W.	Division Vice President
Jenkins, Jeffrey A.	Division Vice President
Joffe, Edward M.	Division Vice President

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Kehoe, Robert E.	Division Vice President
Kennedy, Adrian J.	Division Vice President
Kersey, Michael	Division Vice President
Knight, Philip C., Jr.	Division Vice President, Field Operations
Lambertson, John S.	Division Vice President
Linden, Andrew B.	Division Vice President
MacKeen, Raymond J.	Division Vice President
Maeder, Jeffrey C.	Division Vice President
Masciantonio, Vince	Division Vice President, Projects
Mayoryk, Stephen C.	Division Vice President
Messina, Anthony	Division Vice President
O'Dell, Scott C.	Division Vice President, Projects
Palotas, Michael G.	Division Vice President
Pitt, Trevor S.	Division Vice President
Pomeroy, Dana A.	Division Vice President
Potts, David A.	Division Vice President
Powell, Terry S.	Division Vice President
Ramsey, Daniel S.	Division Vice President
Rayner, Craig	Division Vice President
Roberts, Andrew W.	Division Vice President
Ruth, Douglas M., Jr	Division Vice President
Saxman, Robert S.	Division Vice President
Schweitzer, Scott E.	Division Vice President
Southers, Catherine M.	Division Vice President
Spicer, Jason W.	Division Vice President
St. John, Daniel M.	Division Vice President
Stackalis, John A.	Division Vice President
Sullwold, Eric S.	Division Vice President
Thatcher, Eric N.	Division Vice President, Field Operations
Thomas, Stephen A.	Division Vice President
Wahl, William J., Jr.	Division Vice President, Projects
Whiteneck, John D.	Division Vice President
Whitney, Sharon E.	Division Vice President
Wilson, Matthew D.	Division Vice President
Wooden, Thomas R.	Division Vice President
Woods, Christopher J.	Division Vice President
Adams, Michael J.	Vice President
Adams, Patrick F.	Vice President
Allen, Joseph R.	Vice President
Anderson, Michael H.	Vice President
Andres, Matthew E.	Vice President
Bagley, Charles M.	Vice President
Bailey, Andrew W., Jr.	Vice President, Special Projects
Baloh, Brendan R.	Vice President
Banta, John T.	Vice President, Field Operations
Bennett, Lauren N.	Vice President, and Assistant Secretary

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Berkowitz, Bradford W.	Vice President
Bleakley, Matthew T.	Vice President
Borrett, Alan H.	Vice President
Brady, Matthew R.	Vice President
Breuer, John W.	Vice President
Briselden, Michael J.	Vice President
Briseno-Rivera, Nancy M.	Vice President
Castellan, Susan M.	Vice President
Cinamella III, Charles F.	Vice President
Ciotola, Gino A.	Vice President
Cisneros, Carlos	Vice President
Cleckner, Robert F. Jr.	Vice President
Cochran, Jay	Vice President
Compton, Sean D.	Vice President
Conroy, Michael W.	Vice President
Cooper, Shawn	Vice President
Cougnet, Jay E.	Vice President
D'archangelo, Tavio J.	Vice President
D'Ascanio, Mary	Vice President, Projects
Deupree, Randell L.	Vice President
Dias, Joel	Vice President
Dolan, Christopher C.	Vice President, Projects
Dyer, Jacob H.	Vice President, Projects
Edwards, Kate C.M.	Vice President
Ehrgott, Henry S.	Vice President
Engel, Brennan K.	Vice President
Engel, Joshua B.	Vice President, Projects
Ernst, Kristen A.	Vice President
Espinoza, Ruben M.	Vice President
Feinman, Westley G.	Vice President, Projects
Fioretti, Joseph M.	Vice President, Projects
Flynn, Erin P.	Vice President and Assistant Secretary
Flynn, Kevin T.	Vice President, Projects
Franko, Mark I.	Vice President
Fuller, Stephen B.	Vice President, Field Operations
George, Joshua R.	Vice President
Groff, James T.	Vice President
Hale, Brian J.	Vice President
Hannah, Jason P.	Vice President
Harding, Anthony F.	Vice President
Haubert, Adam L.	Vice President, Projects
Herbert, Scott A.	Vice President
Hicks, Brian E.	Vice President
Holter, Todd A.	Vice President, Field Operations
Hoots, Ronald C.	Vice President, Field Operations
Hossfeld, Jeffrey K.	Vice President

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Huntzinger, Thomas E	Vice President
Ilardi, Kimberlee A.	Vice President
Jernigan, Joshua D.	Vice President
Kachnowski, Shawn M.	Vice President
Keith, John W.	Vice President
Kilpeck, Mark A.	Vice President, Projects
King, Robert W.	Vice President, Projects
Knott, Irene D.	Vice President
Koeneke, Charles H. III	Vice President
KonKolics, Charles J.	Vice President
Kostuk, Timothy J.	Vice President
LaMontagne, Jacob S.	Vice President
Lane, Cathy A.	Vice President
Layo, Raymond N.	Vice President
Light, Andrew M.	Vice President, Projects
Lylo, Andrew M.	Vice President, Projects
Martinson, Christopher	Vice President
Mason, David F.	Vice President
Maxwell, William T.	Vice President
McFadden, Christopher M.	Vice President
McGinnis, David M.	Vice President
McKee, Robert E.	Vice President
McPhaul, Jeffrey C.	Vice President
Mercurio, Marc	Vice President
Meyhoefer, John M.	Vice President,
Michalski, Paul D.	Vice President
Minda, Bogdan	Vice President, Projects
Mitchell, J. Chris	Vice President, Field Operations
Mitchell, Thomas J.	Vice President
Mock, John M.	Vice President
Montgomery, Kellie D.	Vice President
Monticup, Thomas A.	Vice President
Moore, Christopher S.	Vice President
Moore-Jarrell, Courtney E.	Vice President
Mudd, Jeffrey	Vice President
Murphy, Eric S.	Vice President
Nash, L Dean	Vice President, Projects
Noonan, Sean P.	Vice President
Norman, Jayson H.	Vice President
Norris, Corey S	Vice President
Ozlin, Bryan R.	Vice President
Percoski, Stacy J.	Vice President
Petrovic, Jovan	Vice President
Polana, Andrew W.	Vice President
Popp, Joel R.	Vice President
Prowse, Drake D.	Vice President

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Putnam, Gregory J.	Vice President
Pye, David W.	Vice President
Rayburn, Michael L.	Vice President
Reed, Robert J.	Vice President
Riesner, Randall H.	Vice President
Rodriguez, Arturo Jr.	Vice President
Santamont, Jonathon	Vice President
Satterfield, Kris	Vice President, Projects
Scherer, Andrew L.	Vice President
Schimmer, Joel R.	Vice President
Shawah, Henry L.	Vice President
Shelton, Daniel B.	Vice President
Shiflett, E. Loyd	Vice President, Projects
Shuman, Philip J.	Vice President
Smiley, Trenton H.	Vice President, Field Operations
Smith, Audra L.	Vice President
Solderitch, Stephen J. III	Vice President
Suggett, Dale A.	Vice President, Field Operations
Swanson, Joseph L.	Vice President
Tadd, Gregory C.	Vice President
Taylor, Heath A.	Vice President
Terilli, Anthony	Vice President
Tull, Patricia	Vice President, Projects
Vadas, Christopher M.	Vice President, Projects
Van Swol, Christopher E.	Vice President
Vasco, Peter J.	Vice President
Williams, Gabriel L.	Vice President
Winters, Elizabeth L.	Vice President
Wolfe, Timothy R.	Vice President
Zeh, Justin E.	Vice President, Field Operations
Zgonc, Chad A.	Vice President, Field Operations

Officers Authorized to Sign and Submit Proposals and Contracts

IT IS FURTHER RESOLVED, that the following listed officers are authorized and empowered to sign and submit proposals and contracts on behalf of the Company.

NAME	TITLE
Regan, Timothy J.	President & CEO
Moag, Anthony G.	Senior Exec Vice President, COO, Treasurer & CFO
Bauer, Daniel M.	Executive Vice President
Breig, J. Scott	Executive Vice President
Caldwell, Troy M.	Executive Vice President
Douglas, Keith A.	Executive Vice President

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Ernst, Michael F.	Executive Vice President & Secretary
Hess, Jonathan	Executive Vice President
Minutoli, Robert, Jr.	Executive Vice President
Steinbeck, Daryl C.	Executive Vice President
Abutaleb, Sam G.	Senior Vice President
Carlson, John C.	Senior Vice President
Carper, Patricia	Senior Vice President
China, Daniel W.	Senior Vice President
DaSilva, Joaquim M.	Senior Vice President
Davis, Cyrena F.	Senior Vice President
Duffy, Patrick F.	Senior Vice President
Eisenberg, Ronald M.	Senior Vice President
Ellis, Damon D.	Senior Vice President
Eshelbrenner, Adam	Senior Vice President
Fanelli, Joshua	Senior Vice President
Faul, Mark W.	Senior Vice President
Giovannone, John G.	Senior Vice President
Hahner, David	Senior Vice President
Haile, Kempton C.	Senior Vice President
Huang, Albert C.	Senior Vice President
Kerber, Philip J.	Senior Vice President
Likins, Steven J.	Senior Vice President
Mallik, David W.	Senior Vice President
Martini, James J.	Senior Vice President
Moore, Robert W.	Senior Vice President
Ott, Brian R.	Senior Vice President
Owens, James G.	Senior Vice President
Schlotterback, Edward	Senior Vice President
Schmitt, Paul N.	Senior Vice President
Seicke, Kevin J.	Senior Vice President
Tomlinson, Robert W.	Senior Vice President
Valianatos, Pete T.	Senior Vice President
Voyles, Brent A.	Senior Vice President
Warhall, Richard	Senior Vice President
Wells, Samuel R., III	Senior Vice President

IT IS FURTHER RESOLVED that this consent shall be filed in the Corporate Minute Book of the Company.

IN WITNESS WHEREOF, the undersigned, being all of the members of the Board of Directors of the Company, have executed this consent to take action without a meeting as of the day and year first above written.

4894-1115-6655

DocuSign Envelope ID: 21B50EF6-CB5D-47FE-9B68-0459043F283D

DocuSigned by:
Timothy J. Regan

DocuSigned by:
Anthony G. Moag

DocuSigned by:
Daniel M. Bauer

DocuSigned by:
J. Scott Breig

DocuSigned by:
Troy M. Caldwell

DocuSigned by:
Keith A. Douglas

DocuSigned by:
Michael F. Ernst

DocuSigned by:
Jonathan S. Hess

DocuSigned by:
Robert Minutoli, Jr.

DocuSigned by:
Daryl C. Steinbeck

DocuSigned by:
Sam G. Abutaleb

DocuSigned by:
John C. Carlson

DocuSigned by:
Patricia Carper

DocuSigned by:
Daniel W. China

DocuSigned by:
Joaquim M. DaSilva

DocuSigned by:
Cyrena F. Davis

DocuSigned by:
Patrick F. Duffy

DocuSigned by:
Mark W. Faul

DocuSigned by:
John G. Giovannone

DocuSigned by:
David M. Hahner

DocuSigned by:
Kempton C. Haile

DocuSigned by:
Albert C. Huang

DocuSigned by:
Philip J. Kerber

DocuSigned by:
Steven J. Likins

DocuSigned by:
David W. Mallik

DocuSigned by:
James J. Martini

DocuSigned by:
Robert W. Moore

DocuSigned by:
Brian R. Ott

DocuSigned by:
James G. Owens

DocuSigned by:
Edward Schlotterback

DocuSigned by:
Paul N. Schmitt

DocuSigned by:
Kevin J. Seicke

DocuSigned by:
Robert W. Tomlinson

DocuSigned by:
Pete T. Valianatos

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4894-1115-6655

DocuSign Envelope ID: 24B50EF6-CB5D-47FE-9B68-0459043F283D

DocuSigned by:
Ron Eisenberg
Ronald M. Eisenberg

DocuSigned by:
Damon D. Ellis

DocuSigned by:
Adam Eshelbrenner
Adam Eshelbrenner

DocuSigned by:
Joshua Fanelli
Joshua Fanelli

DocuSigned by:
Brent A. Voyles
Brent A. Voyles

DocuSigned by:
Richard Warhall
Richard Warhall

DocuSigned by:
Samuel R. Wells
Samuel R. Wells, III

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4894-1115-6655

SECTION 00 11 53
REQUEST FOR QUALIFICATION FORMS

ATTACHMENT B
CONTRACTOR QUESTIONNAIRE

DATE: 01.15.2024

NAME OF BIDDER: The Whiting-Turner Contracting Company

BUSINESS ADDRESS: 10407 Centurion Parkway N., Suite 110, Jacksonville, Florida 32256

PHONE NUMBER: Phone: 904-456-6226 • Mobile: 813-477-9632

CONTRACTOR'S FL LICENSE #: CGC1533955

EXPIRATION DATE: August 31, 2026

The undersigned warrants the truth and accuracy of all statements and answers herein contained. Include additional sheets as necessary.

1. How many years has your organization been in business as a Construction Manager?

Since 1909; 116 Years

2. How many years has your organization been in business as a Construction Manager Adviser?

Since 1983

3. Name of Project Manager and length of time with your company?

Lindsey Griffin; 9 Years

4. Describe in detail and give the date and owner, including phone numbers and contact person(s), of the last four (4) projects that you have completed similar in type, size, and nature as the project proposed?

Please see Form E in Tab 6.

5. Have you ever failed, or been alleged to have failed, to complete work awarded to you? If so, please list the project and explain the reasons why?

No

6. Have you ever failed, or been alleged to have failed, to complete work within the Contract Time? If so, please list the project and explain the reasons why?

No

7. Have you ever had a bond or letter of credit called by the owner of a project? If so, when?

No

Bidder Name: Brent Voyles

Signature: BA Voyles

Title: Senior Vice President

Attach the corporate information sheet from the Florida Department of State, Division of Corporation's, web site.

ACKNOWLEDGEMENT

STATE OF FLORIDA

COUNTY OF Duval

Sworn to (or affirmed) and subscribed before me by means of

online notarization ☒ *OR* physical presence ☐

this 15th day of January, 2025.

Personally Known ☒ *OR* Produced identification ☐

Type of Identification Produced:_____

Signature of Notary Public

Print, Type or Stamp Commissioned Name of Notary Public below:

JANETTE RUTH BECKWITH
Commission # HH 447547
Expires September 25, 2027

END OF ATTATCHMENT B

State of Florida
Department of State

I certify from the records of this office that WHITING-TURNER CONTRACTING COMPANY THE is a Maryland corporation authorized to transact business in the State of Florida, qualified on May 8, 1961.

The document number of this corporation is 815261.

I further certify that said corporation has paid all fees due this office through December 31, 2025, that its most recent annual report/uniform business report was filed on January 15, 2025, and that its status is active.

I further certify that said corporation has not filed a Certificate of Withdrawal.

Given under my hand and the Great Seal of the State of Florida at Tallahassee, the Capital, this the Fifteenth day of January, 2025

Secretary of State

Tracking Number: 2184202752CC

To authenticate this certificate,visit the following site,enter this number, and then follow the instructions displayed.

https://services.sunbiz.org/Filings/CertificateOfStatus/CertificateAuthentication

ATTACHMENT C
REQUIRED DISCLOSURE

The following disclosure is of all material facts pertaining to any felony conviction or any pending felony charges in the last three (3) years in this State or any other state of the United States against (1) the Bidder, any business entity related to or affiliated with the Bidder or (3) any present or former owner of the Bidder or of any such related or affiliated entity. This disclosure shall not apply to any person or entity which is only a stockholder, which person or entity owns twenty percent (20%) or less of the outstanding shares of the Bidder whose stock is publicly owned and traded:

N/A

Bidder Name: Brent Voyles

Signature: BAVoyles

Title: Senior Vice President

Date: 01.15.25

END OF ATTACHMENT C

ATTACHMENT D
BIDDER INFORMATION

List the full legal name of each officer of the Corporation.

President: Please see Unanimous Consent of the Board of Directors. Dated 4/30/24.

Signature: _____ Date: _____

Vice-President: _____

Signature: _____ Date: _____

Secretary: _____

Signature: _____ Date: _____

Treasurer: _____

Signature: _____ Date: _____

List the Corporate Officer that will sign the contract: BA Voyles

END OF ATTACHMENT D

Please see Tab 5 for the requested past performance information.

ATTACHMENT F
SWORN STATEMENT UNDER SECTION 287.133(3) (a),
FLORIDA STATUTES, ON PUBLIC ENTITY CRIMES

THIS FORM MUST BE SIGNED IN THE PRESENCE OF A NOTARY PUBLIC OR OTHER OFFICER AUTHORIZED TO ADMINISTER OATHS.

This sworn statement is submitted to: **The City of Flagler Beach** (Public entity)

By: Brent Voyles, Senior Vice President
(Individual's name and title)

For: The Whiting-Turner Contracting Company
(Name of entity submitting sworn statement)

Whose business address is: 10407 Centurion Parkway N., Suite 110
Jacksonville, Florida 32256

Federal Employer Identification Number (FEIN): 52-0529450

(If the entity has no FEIN, include the Social Security Number of the individual signing this sworn statement)

1. I understand that a "public entity crime" as defined in Section 287.133(1)(g), Florida Statutes, means a violation of any State or Federal law by a person with respect to and directly related to the transaction of business with any public entity or with an agency or political subdivision of any other state or with the United States, including, but not limited to, any bid or contract for goods or services to be provided to any public entity or an agency or political subdivision of any other state or of the United States and involving antitrust, fraud, theft, bribery, collusion, racketeering, conspiracy, or material misrepresentation.
2. I understand that "convicted" or "conviction" as defined in Paragraph 287.133(1) (b), Florida Statutes, means a finding of guilt or a conviction of a public entity crimes, with or without an adjudication of guilt, in any Federal or state trial court of record relating to charges brought by indictment or information after July 1, 1989, as a result of a jury verdict, non-jury trial, or entry of a plea of guilty or nolo contendere.

3. I understand that an "affiliate" as defined in Section 287.133(1)(a), Florida Statutes, means: A predecessor or successor of a person convicted of a public entity crime: or an entity under the control of any natural person who is active in the management of the entity and how has been convicted of a public entity crime. The term "affiliate" includes those officers, directors, executives, partners, shareholders, employees, members, and agents who are active in the management of an affiliate. The ownership by one (1) person of shares constituting a controlling interest in another person, or a pooling of equipment or income among persons when not for fair market value under an arm's length agreement, shall be a prima facie case that one person controls another person. A person who knowingly enters into a joint venture with a person who has been convicted of a public entity crime in Florida during the preceding thirty-six (36) months shall be considered an affiliate.

4. I understand that a "person" as defined in Section 287.133(1) (e), Florida Statutes, means any natural person or entity organized under the laws of any state or of the United States with the legal power to enter into a binding contract and which bids or applies to bid on contracts for the provision of goods or services let by a public entity, or which otherwise transacts or applies to transact business with a public entity. The term "person" includes those officers, directors, executives, partners, shareholders, employees, members, and agents who are active in management of an entity.

Based on information and belief, the statement which I have marked below is true in relation to the entity submitting this sworn statement. (Indicate which statement applies.)

____X____ Neither the entity submitting this sworn statement, nor any officers, directors, executives, partners, shareholders, employees, members, or agent who is active in management of the entity, nor the affiliate of the entity, has been charged with and convicted of a public entity crime subsequent to July 1, 1989.

_____ The entity submitting this sworn statement, or one or more of the officers, directors, executives, partners, shareholders, employees, members or agent who are active in management of the entity, or an affiliate of the entity, has been charged with and convicted of a public entity crime subsequent to July 1, 1989.

_____ The entity submitting this sworn statement, or one or more of the officers, directors, executives, partners, shareholders, employees, members or agents who are active in management of the entity, or an affiliate of the entity, has been charged with and convicted of a public entity crime subsequent to July 1, 1989.

However, there has been a subsequent proceeding before an Administrative Law Jury of the State of Florida, Division of Administrative Hearings and the Final Order entered by the Administrative Law Jury

determined that it was not in the public interest to place the entity submitting this sworn statement on the convicted vendor list. (Attach a copy of the final order.)

I UNDERSTAND THAT THE SUBMISSION OF THIS FORM TO THE CITY OF FLAGLER IS FOR THE CITY ONLY AND, THAT THIS FORM IS VALID THROUGH DECEMBER 31, OF THE CALENDAR YEAR IN WHICH IT IS FILED. I ALSO UNDERSTAND THAT I AM REQUIRED TO INFORM THE CITY PRIOR TO ENTERING IN TO A CONTRACT IN EXCESS OF THE THRESHOLD AMOUNT PROVIDED IN SECTION 287.017, FLORIDA STATUES, FOR CATEGORY TWO OF ANY CHANGE IN THE INFORMATION CONTAINED IN THIS FORM.

Signature: BAVoyles

Date: 01.15.2025

State of: Florida

County of: Duval

Personally known by me,

~~PERSONALLY APPEARED BEFORE ME~~, the undersigned authority,

Brent Voyles who, after first being sworn by me,

(Name of individual signing)

affixed his/her signature in the space provided above on this 15th day of January, 20 25.

ACKNOWLEDGEMENT

STATE OF FLORIDA

COUNTY OF Duval

Sworn to (or affirmed) and subscribed before me by means of

online notarization ☒ *OR* physical presence ☐

this 15th day of January, 20 25.

Personally Known ☒ *OR* Produced identification ☐

Type of Identification Produced:_____

Signature of Notary Public

Print, Type or Stamp Commissioned Name of Notary Public below:

JANETTE RUTH BECKWITH
Commission # HH 447547
Expires September 25, 2027

ATTACHMENT G
AFFIDAVIT OF NON-COLLUSION

The undersigned bidder or agent, being duly sworn on oath, says that he/she has not, nor has any other member, representative, or agent of the firm, company, corporation or partnership represented by him, entered into any combination, collusion or agreement with any person relative to the price to be bid by anyone at such letting nor to prevent any person from bidding nor to include anyone to refrain from bidding, and that this bid is made without reference to any other bid and without any agreement, understanding or combination with any other person in reference to such bidding. He/She further says that no person or persons, firms, or corporation has, have or will receive directly or indirectly, any rebate, fee gift, commission or thing of value on account of such sale.

OATH AND AFFIRMATION

I HEREBY AFFIRM UNDER THE PENALTIES FOR PERJURY THAT THE FACTS AND INFORMATION CONTAINED IN THE FOREGOING BID FOR PUBLIC WORKS ARE TRUE AND CORRECT.

Dated this Fifteenth day of January, 20 25.

Brent Voyles (The Whiting-Turner Contracting Company)
(Bidder Name)

Senior Vice President
(Title)

(Signature)

ACKNOWLEDGEMENT

STATE OF FLORIDA

COUNTY OF Duval

Sworn to (or affirmed) and subscribed before me by means of

online notarization [X] *OR* physical presence [ ]

this 15th day of January, 20 25.

Personally Known [X] *OR* Produced identification [ ]

Type of Identification Produced: _____

Signature of Notary Public
Print, Type or Stamp Commissioned Name of Notary Public below:

JANETTE RUTH BECKWITH
Commission # HH 447547
Expires September 25, 2027

END OF ATTACHMENT G

ATTACHMENT H
CERTIFICATION OF NON-SEGREGATED FACILITIES

The Bidder certifies that they do not maintain or provide for their employees any segregated facilities at any of his establishments, and that they do not permit their employees to perform their services at any location, under their control, where segregated facilities are maintained. The Bidder certifies further that they will not maintain or provide for their employees any segregated facilities at any location under their control where segregated facilities are maintained. The Bidder agrees that a breach of this certification will be a violation of the Equal Opportunity clause in any contract resulting from acceptance of this Bid. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, time clocks, locker rooms and other storage and dressing areas, parking lots, drinking fountains, recreation or entertainment area, transportation and housing facilities provided for employees which are segregated by explicit directive, or are in fact segregated on the basis of race, color, religious disability or national origin, because of habit, local custom, or otherwise. The Bidder agrees that (except where they have obtained identical certifications from proposed subcontractors for specific time periods) they will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity clause, and that he will retain such certifications in his files.

The nondiscriminatory guidelines as promulgated in Section 202, Executive Order 11246, and as amended by Executive Order 11375 and as amended, relative to Equal Opportunity for all persons and implementations of rules and regulations prescribed by the United States Secretary of Labor are incorporated herein.

Name: Brent Voyles (The Whiting-Turner Contracting Company)

Signature: BAVoyles

Date: 01.15.25

Title: Senior Vice President

Official Address: 10407 Centurion Parkway N., Suite 110
Jacksonville, Florida 32256

END OF ATTACHMENT H

ATTACHMENT I
DRUG-FREE WORKPLACE

The undersigned vendor in accordance with Florida Statute 287.087 hereby certifies that

The Whiting-Turner Contracting Company does hereby: (Name of Business)

1. Publish a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the workplace and specifying the actions that will be taken against employees for violations of such prohibition.
2. Inform employees about the dangers of drug abuse in the workplace, the business's policy of maintaining a drug-free workplace, any available drug counseling, rehabilitation, and employee assistance programs, and the penalties that may be imposed upon employees for drug abuse violations.
3. Give each employee engaged in providing the commodities or contractual services that are proposed a copy of the statement specified in subsection (1).
4. In the statement specified in subsection (1), notify the employees that, as a condition of working on the commodities or contractual services that are under proposal, the employee will propose by the terms of the statement and will notify the employer of any conviction of, or plea of guilty or nolo contender to, any violation of Chapter 893, Florida Statutes, or of any controlled substance law of the United States or any state, for a violation occurring in the workplace no later than five (5) days after such conviction.
5. Impose a sanction on, or require the satisfactory participation in a drug abuse assistance or rehabilitation program if such is available in the employee's community, by any employee who is so convicted.
6. Make a good faith effort to continue to maintain a drug-free workplace through implementation of the matters set forth above.

As the person authorized to sign the statement, I certify that this firm complies fully with the above requirements.

Name: Brent Voyles

Signature: BAVoyles

Date: 01.15.25

Title: Senior Vice President

END OF ATTACHMENT I

ATTACHMENT J
CONFLICT OF INTEREST STATEMENT

Before me, the undersigned authority, ~~personally appeared~~ personally known by me Brent Voyles, who was duly sworn, deposes, and states:

1. I am the Senior Vice President of Whiting-Turner Contracting Co. with a local office in Jacksonville, FL and principal office in Baltimore, MD.
2. The above-named entity is submitting an Expression of Interest for the City of Flagler Beach project described as bid number 260.
3. The Affiant has made diligent inquiry and provides the information contained in this Affidavit based upon his own knowledge.
4. The Affiant states that only one submittal for the above project is being submitted and that the above-named entity has no financial interest in other entities submitting proposals for the same project.
5. Neither the Affiant nor the above-named entity has directly or indirectly entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive pricing in connection with the entity's submittal for the above project. This statement restricts the discussion of pricing data until the completion of negotiations and execution of the Agreement for this project.
6. Neither the entity nor its affiliates, nor anyone associated with them, is presently suspended or otherwise ineligible from participating in contract lettings by any local, state, or federal agency.
7. Neither the entity, nor its affiliates, nor anyone associated with them have any potential conflict of interest due to any other clients, contracts, or property interests for this project.
8. I certify that no member of the entity's ownership, management, or staff has a vested interest in any aspect of or Department of the City of Flagler Beach.
9. I certify that no member of the entity's ownership or management is presently applying for an employee position or actively seeking an elected position with City of Flagler Beach.
10. In the event that a conflict of interest is identified in the provision of services, I, on behalf of the above-named entity, will immediately notify the City of Flagler Beach in writing.

BAVoyles

Signature of Affiant

ACKNOWLEDGEMENT

STATE OF FLORIDA

COUNTY OF Duval

Sworn to (or affirmed) and subscribed before me by means of

online notarization ☒ *OR* physical presence ☐

this 15th day of January, 20 25.

Personally Known ☒ *OR* Produced identification ☐

Type of Identification Produced:_____

Signature of Notary Public

Print, Type or Stamp Commissioned Name of Notary Public below:

JANETTE RUTH BECKWITH
Commission # HH 447547
Expires September 25, 2027

END OF ATTACHMENT J

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ATTACHMENT K
COMPLIANCE WITH THE PUBLIC RECORDS LAW

Upon award recommendation or thirty (30) days after receiving submittals, they become "public records" and shall be subject to public disclosure consistent with Chapter 119, Florida Statutes. Proposers must invoke the exemptions to disclosure provided by law in the response to the solicitation and must identify the data or other materials to be protected, and must state the reasons why such exclusion from public disclosure is necessary.

If the company submits information exempt from public disclosure, the company must identify with specificity which pages/paragraphs of their bid/proposal package are exempt from the Public Records Act, identifying the specific exemption section that applies to each. The protected information must be submitted to the City of Flagler Beach in a separate envelope marked accordingly.

Company Name: The Whiting-Turner Contracting Company

Authorized representative Printed Name: Brent Voyles

Authorized Representative Signature: 

Date: 01.15.2025

END OF ATTACHMENT K

ATTACHMENT L
AMERICANS WITH DISABILITIES ACT AFFIDAVIT

The undersigned CONTRACTOR swears that the information herein contained is true and correct and that none of the information supplied was for the purpose of defrauding the CITY.

The CONTRACTOR will not discriminate against any employee or applicant for employment because of physical or mental handicap in regard to any position for which the employee or applicant for employment is qualified. The CONTRACTOR agrees to comply with the rules, regulations and relevant orders issued pursuant to the Americans with Disabilities Act (ADA), 42 USC s. 12101 et seq. It is understood that in no event shall the CITY be held liable for the actions or omissions of the CONTRACTOR or any other party or parties to the Agreement for failure to comply with the ADA. The CONTRACTOR agrees to hold harmless and indemnify the CITY, its agents, officers or employees from any and all claims, demands, debts, liabilities or causes of action of every kind or character, whether in law or equity, resulting from the CONTRACTOR's acts or omissions in connection with the ADA.

Name: Brent Voyles

Authorized Signature: BAVoyles

Date: 01.15.2025

Title: Senior Vice President

Affix Corporate Seal:

THE WHITING TURNER CONTRACTING COMPANY SEAL 1934 MARYLAND

ACKNOWLEDGEMENT

STATE OF FLORIDA

COUNTY OF Duval

Sworn to (or affirmed) and subscribed before me by means of

online notarization [X] *OR* physical presence [ ]

this 15th day of January, 20 25.

Personally Known [X] *OR* Produced identification [ ]

Type of Identification Produced: _____

Janette Ruth Beckwith

Signature of Notary Public

Print, Type or Stamp Commissioned Name of Notary Public below:

NOTARY PUBLIC STATE OF FLORIDA

JANETTE RUTH BECKWITH
Commission # HH 447547
Expires September 25, 2027

END OF ATTACHMENT L

ATTACHMENT M
LIST OF LICENSES and CERTIFICATIONS

License/Cert. Name	Number	Issuing Authority	Expiration Date
General Contractor License	CGC1533955	State Of Florida Department of Business and Professional Regulation Construction Industry Licensing Board	08.31.2026

END OF ATTACHMENT M

ATTACHMENT N
AIA DOCUMENT A133-2009
STANDARD FORM OF AGREEMENT
BETWEEN OWNER AND CONSTRUCTION MANAGER AS ADVISER

CM Agency Addendum:

Our addendum to A133 are on the following pages.

AIA A232 Comments:

Whiting-Turner will need to review this document prior to award

June 4, 2020

CM AGENCY ADDENDUM

Notwithstanding any other provision in the Contract, the following provisions supersede all provisions in the Contract and shall govern in the event of any inconsistent or contrary language in the Contract with respect to liability, insurance coverage and/or indemnification obligations of the Construction Manager.

Notwithstanding anything to the contrary contained in this Agreement, to the fullest extent permitted by law, the Owner, the Owner's separate contractors, the Owner's General Contractor, if any, and any Trade Contractors or Subcontractors whether employed directly by the Owner or through a General Contractor, and/or Tenants of the Owner and their respective General Contractors, Trade Contractors or Subcontractors (hereinafter "Indemnifying Parties") shall indemnify, defend, and hold harmless the Construction Manager and Construction Manager's consultants, and their respective agents and employees from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting in whole or in part from performance of the Work, and from any other work being performed at or near the Project by any of the Indemnifying Parties, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself). Nothing contained herein is intended to nor shall be construed to seek indemnity for a claim, damage, loss, or expense arising from the sole negligence of the Construction Manager or Construction Manager's consultants. In claims against any person or entity indemnified under this Section by an employee of any of the Indemnifying Parties, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, the indemnification obligation shall not be limited by a limitation on amount or type of damages, compensation or benefits payable by or for any of them under workers' compensation acts, disability benefit acts or other employee benefit acts.

The Indemnifying Parties shall cause any commercial liability coverage required by the Contract Documents (and/or shall otherwise separately obtain commercial liability insurance with limits similar to those required by the Contract Documents) to: 1) include the Construction Manager and the Construction Manager's consultants, as additional insureds on a primary and non-contributory basis as to any insurance carried by Construction Manager or Construction Manager's consultants and for claims caused in whole or in part by the negligent acts or omissions during the operations or completed operations of any of the Indemnifying Parties, and 2) provide waivers of subrogation for such insurance coverage in favor of Construction Manager and Construction Manager's consultants. Owner shall provide endorsements and insurance certificates from all Indemnifying Parties, confirming same within 10 days of execution of this Agreement, such obligation being a material term of this Contract.

Owner shall require that the above indemnity and insurance requirements be included in all contracts entered into for or about the Project with the Indemnifying Parties. Owner shall also include the following language in all contracts entered into for or about the Project with the Indemnifying Parties:

> It is hereby agreed and understood that any Contract Documents that are included in or part of any contracts between the Owner and the Contractor [This term should be modified as appropriate to reference the specific Indemnifying Party with whom Contractor is contracting everywhere it appears] with respect to this project are being provided by the Owner and that nothing included therein shall constitute a warranty or representation to the Contractor by the Construction Manager, or its consultants, employees or representatives. Any such Contract Documents or information supplied in connection with this Project, including any deficiency, inconsistency or misrepresentation therein, shall not create any direct cause of action in favor of Contractor against Construction Manager, or any of its consultants, employees or representatives, whether such action may be for breach of contract, breach of warranty, negligence, misrepresentation or other tort, and specifically including but not limited to those claims otherwise permitted by applicable law. Contractor further agrees that it shall file no claims or legal action of any kind against the Construction Manager or any of its consultants, employees, or representatives, including but not limited to those claims otherwise permitted by any applicable law Contractor agrees that this Subparagraph shall survive termination of this Contract. Contractor also agrees that this Subparagraph shall be binding whether or not Contractor claims prior breach of this Contract and that this Subparagraph shall apply to any and all claims including breach of contract, breach of warranty, negligence, misrepresentation or other tort, or otherwise.

Notwithstanding any provision in this Agreement to the contrary, Owner acknowledges and agrees that in consideration for the above protections being granted to Construction Manager, Owner is not being charged the Construction Manager's normal fixed rate for commercial liability insurance on the cost of work performed by other Contractors and/or Subcontractors not under a direct contract with the Construction Manager on the condition that Owner complies fully with the above obligations and on the condition that the Owner guarantees compliance with these obligations by all of the Indemnifying Parties. In the event that any of the Indemnifying Parties fail to comply fully with their obligations under the Contract, in addition to the recovery of all damages, losses, and legal fees incurred by Construction Manager, Construction Manager shall be entitled to immediate payment of all reasonable attorneys' fees incurred in the enforcement of these provisions and shall be entitled to payment by Owner of a fixed rate of _____% of the total Cost of the Work performed by other Contractors and/or Subcontractors not under direct contract with the Construction Manager, which represents the insurance rate normally charged for work performed on a Construction Management at Risk basis.

Notwithstanding anything to the contrary contained in this Agreement, to the fullest extent permitted by law, the Owner shall indemnify, defend, and hold harmless the Construction Manager and Construction Manager's consultants, and their respective agents and employees from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting in whole or in part from any losses, disputes, claims, legal proceedings or lawsuits arising out of or related to the performance of the Work by Owner's General Contractors, Trade Contractors Subcontractors and/or Consultants, provided that such loss, dispute, claim, legal proceeding or lawsuit does not arise or result solely from Construction Manager's negligence or solely from Construction Manager's failure to perform its obligations under this Contract. Owner hereby further agrees to reimburse Construction Manager for any and all costs incurred by Construction Manager in connection with any loss, dispute, claim, legal proceeding or lawsuit between or among Owner Owner's General Contractors, Trade Contractors Subcontractors and/or Consultants, in connection with performance of the Work, including but not limited to time expended at rates set forth in the Contract Documents, or as otherwise mutually agreed, and costs incurred by Construction Manager in its support of and assistance to Owner in the defense and/or prosecution of any claims, legal proceedings and/or lawsuits, provided that such claim, legal proceeding or lawsuit does not arise or result solely from Construction Manager's negligence or solely from Construction Manager's failure to perform its obligations under this Contract.

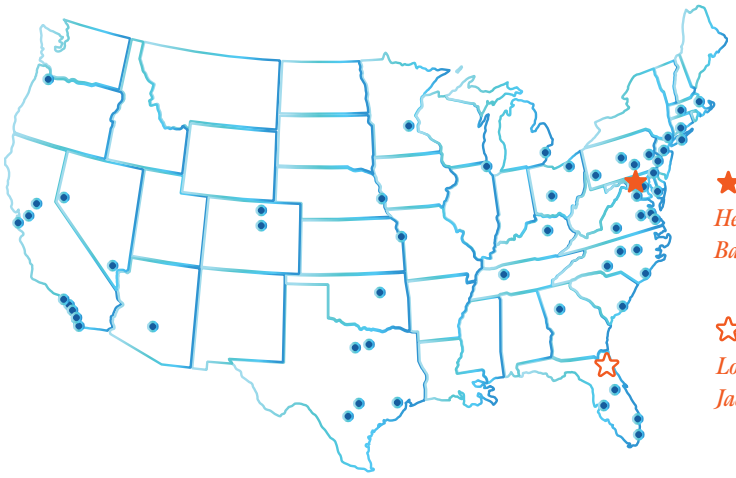
Three

COMPANY PROFILE



CORE VALUES

integrity.
excellence.
experience.
leadership.



Headquarters
Baltimore, MD

Local Office
Jacksonville, FL

116 years in business

5000+ full time employees

60+ locations nationwide

0 debt -no loans since 1938

$4B bonding capacity

.52 experience modification rate

5A-1 dun & bradstreet rating - highest possible

Typical Volume of Work: Historically, our revenue (billions) trends upward with no set average. 2024 revenue totaled $13+ Billion.

BRIEF HISTORY TIMELINE

1909
GWC Whiting and LeBaron Turner, MIT classmates, founded the firm

1934
Whiting-Turner is incorporated April 12, 1934 in Baltimore, MD

1938
Whiting hires Willard Hackerman, 19-year-old civil engineering graduate of Johns Hopkins University.

1955
Hackerman is named as company's second president.

2009
Whiting-Turner celebrates **100** Years.

2014
Timothy Regan is named as company's 3rd president

General Statement of Services

The Whiting-Turner Contracting Company provides construction management, general contracting, design-build and integrated project delivery services on projects small and large for a diverse group of customers.

Within these delivery options is a broad range of services including: Design Assistance, Budgeting, Estimating, Value Engineering, Constructibility Review, Scheduling, Procurement, Environmental, Health & Safety, Site Logistics Planning, Cost Control, Quality, Schedule Control and Information Control.

Below is a sampling of the Markets we work in and we welcome you to explore, at your leisure, the links provided for a more in-depth look at our capabilities.



EDUCATION



INDUSTRIAL PROCESSING AND MANUFACTURING



MISSION CRITICAL



MIXED-USE



OFFICE



ENERGY



RETAIL



SCIENCE + TECHNOLOGY



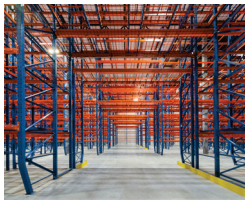
SENIOR LIVING



SPORTS AND FITNESS



ENTERTAINMENT



WAREHOUSE AND DISTRIBUTION



HEALTHCARE



HOSPITALITY

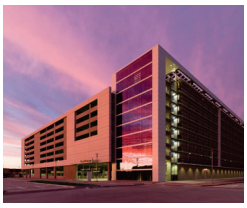


RESIDENTIAL

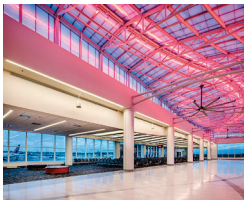
WHITING-TURNER



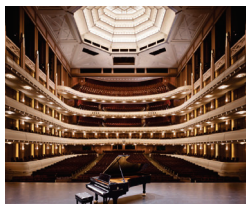
PHARMA



PARKING



TRANSPORTATION



CULTURAL



Just click on whatever industry you are interested in and you will be redirected to our portfolio page! ***OR*** *click on the WT and be taken directly to our website for more information.*

The Whiting-Turner Advantage

The new Flagler Beach Fishing Pier will be an iconic symbol and a destination point, constructed to withstand the extreme forces of nature – from the inevitable hurricane force winds to the more subtle forces of saltwater corrosiveness and the Florida sun. Whiting-Turner is excited about the possibility of participating in this iconic element. Within this RFQ response, we have thoughtfully presented a detailed plan to manage the construction of the Flagler Beach Fishing Pier project. We would be honored to be selected as your CMA; some of our particular expertise, experience and/or techniques that will be an advantage to Flagler Beach in assuring the success of your project are our:

Overall Approach, Methodology.

Whiting-Turner is founded on the core values of integrity, excellence, experience, and leadership. With Whiting-Turner performing a majority of our work for repeat clientele, it is clear that we have succeeded in providing qualified and experienced managers to run our projects, providing a true teaming environment with the Owner and design team, and ultimately providing our client with a high-quality project. Whiting-Turner is recognized as a national leader in Construction, and as such, we are familiar with the latest scheduling, cost control and project management software and techniques. Section 4 of this response explains our approach to construction management and highlights the key factors for consideration in managing this project.

Experience & Personnel Qualifications.

Whiting-Turner is celebrating 116 years of construction excellence and employs nearly 5,000 construction professionals working out of over 30 regional offices.

The core staff that we have proposed for this project work out of our Jacksonville office; our team includes long time employees who have fishing pier experience.

Financial Capability.

Whiting-Turner proudly enjoys a 5A-1 Dun & Bradstreet Rating – the only top 25 Engineering News Record domestic builder with this highest rating –as well as a $4 billion bonding capacity. We have not borrowed any working capital since 1938. You can be confident in the longevity and dependability of our firm.

Safety.

The elimination of accidents on our projects is among our greatest responsibilities. It is our policy that every reasonable effort be taken to eliminate recognized hazards from our operations; we will assist the Contractor to develop a project specific safety program that addresses the hazards and risks Inherent in fishing pier construction. The safety program will include a project hazard assessment with considerations such as: working within the narrow boundaries of a pier, crane critical load lift plans, height exposure, pile driving over water, surf precautions, and the weather.

Understanding & Commitment.

The City of Flagler Beach's Fishing Pier will serve as the centerpiece to the development of surrounding restaurants and retail establishments. The professionalism of the team that you select for this important phase of the development will influence the overall outcome of the project.

With the selection of Whiting-Turner, you can be assured that our qualified team will be dedicated to completing your vision for the Flagler Beach Fishing Pier.

four

PROJECT APPROACH





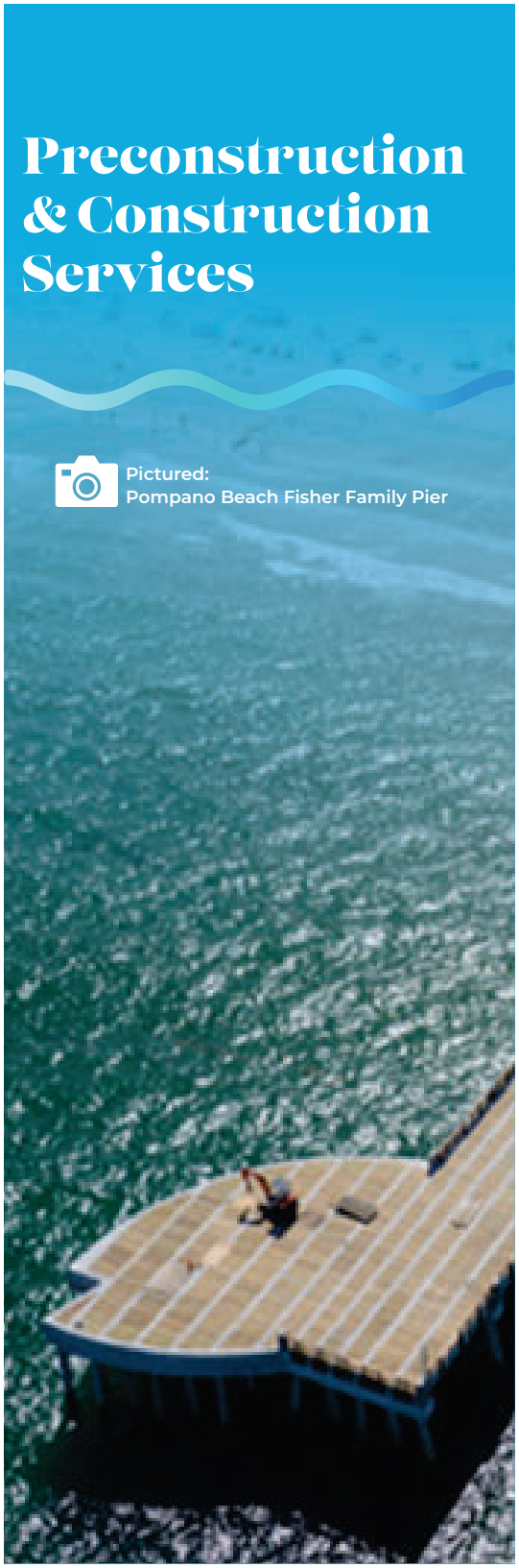
Pictured:
Pompano Beach
Fisher Family Pier

Project Approach

The Whiting-Turner approach to managing this project will be the same, proven approach, that we have successfully utilized both locally and nationally:

- The project will be staffed with a dedicated Project Manager and Superintendent.
- The most current management tools such as CMiC and Primavera (P6) will be utilized to track the project.
- We will immediately address any concerns that the City or Community may have throughout the CMA process.

Preconstruction & Construction Services



Pictured:
Pompano Beach Fisher Family Pier

Although “Preconstruction” Services are not included in our scope of work for this project, many of the steps for organization and planning that generally take place during “preconstruction” will need to be reviewed and discussed to make sure that the project is following agreed upon protocols and that there is good communication among all parties.

Our approach to providing leadership to facilitate teamwork and communications among all parties involved in the project is as follows:

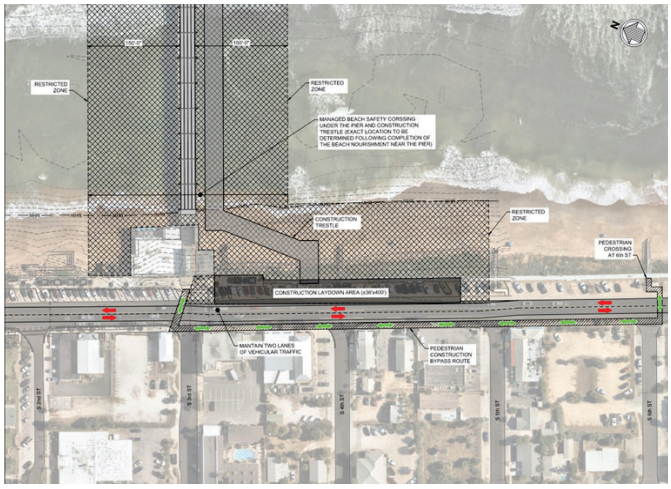
1. Assembly of Project Documents, and Kickoff Meeting with Flagler Beach, the Design Team, the Contractor & Whiting-Turner

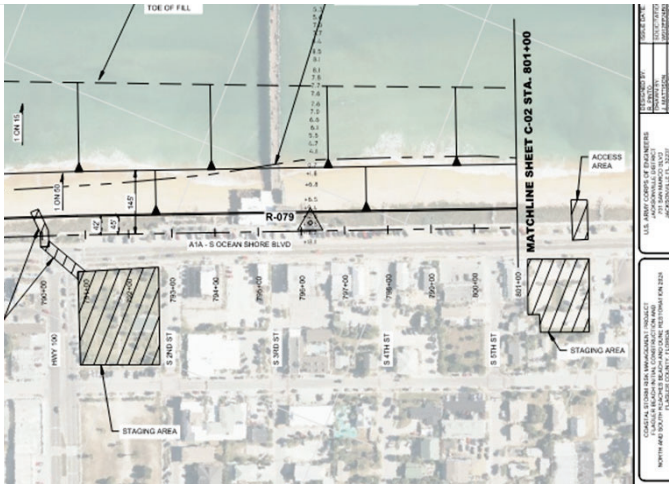
As soon as practical, after having selected Whiting-Turner as the CMA, provide us with all applicable documents including items such as the Contractor’s bid response, the Contractor’s drawings, all permits and permit applications, requirements from the funding source, specifications and other bid documents issued to the Contractor, any documentation of public outreach meetings and commitments, etc. An opportunity to review this information at least briefly will assist us in preparing for our project responsibilities.

2. Creating a Plan of Attack

Key to the success of the project is regularly scheduled progress meetings. To be effective, the decision makers representing the City, the Design Team, the General Contractor, and Whiting-Turner will be in attendance. The meetings are critical in identifying key issues and alternatives. The minutes that we issue after each meeting are formatted so that all team members are clear as to their immediate and long- term responsibilities. These minutes are a valuable tool for maintaining the project’s direction and focus.

Approvals to design alternatives are often provided immediately, in this arena, thereby keeping the CMA process running efficiently to meet the strict time constraints of a project. Whiting-Turner’s consistent use of this process has allowed this process to develop to an elevated level, so that the project will enjoy the benefits of efficient coordination.





3. Staging / Sequencing Plans

To expand upon the documents provided in their bid package, the Contractor will prepare detailed phasing and sequencing plans for review; the phasing plans will depict the flow of traffic, pedestrian access, staging areas, work areas, and available/unavailable parking.

There will be many variable factors to consider and discuss to arrive at staging and sequencing plans that best suit the project.

Some of the factors to consider include:

a. Safety: Safety is always the first consideration. As an example, the suggested staging/ MOT plan provided to the Contractor in their bid documents shows routing the pedestrians from the east side of A1A to the west side, to safely guide them around the work zone that will include the sidewalk and parking on the east side of A1A.

b. Impact: What is the impact to the community and what have they been promised?

c. Season: There may be some factors related to the season that impact our planning, for example, how might the traffic vary from season to season, and how might our efforts affect visitors to Flagler Beach?

d. Community Coordination: Through whom does the team communicate with to understand the concerns of the local businesses, residents, and visitors?

e. Deliveries: There will be piles as long as 110 foot long delivered to the project, concrete trucks, and other heavy equipment. We will evaluate the Contractor's plan for deliveries within the tight confines of available space. It is challenging to envision how the Contractor will safely offload deliveries as long as 110' in the shaded parking area provided for as staging in their bid document, and then transport them along the conceptual configuration of the temporary construction trestle also shown on their bid document.

f. Planning: With laydown area at such a premium, careful planning and near "Just-in-Time" delivery of material will be crucial.

g. Staging: Are nearby undeveloped properties available for pier construction purposes? The bid documents provided to the Contractor show two staging areas to be used for beach re-nourishment, just off A1A to the north and south side of the pier. When are these properties needed for the Beach Fill? Are they available otherwise for use by the Pier Project? Are these areas available for us to setup a construction trailer?

h. Parking: Where is the best location for construction worker parking?

4. Permits

a. Building Department Permit

Ideally, the current pier plans have been reviewed and conditionally approved by the Flagler Beach Building Department, so that when the General Contractor submits to the building department for a permit, the permit is approved in an expedited way. If the building department is not already adequately familiar with the project so that a building department permit can be issued timely to the General Contractor, the building department may consider issuing partial permits to start the structural work (reinforcing the existing structure to remain, the new piles/ bent assembly, and construct the working platform (Trestle) – possibly separating the electrical, fire, plumbing and any landscaping for later approval.

b. Remaining Applicable Permits

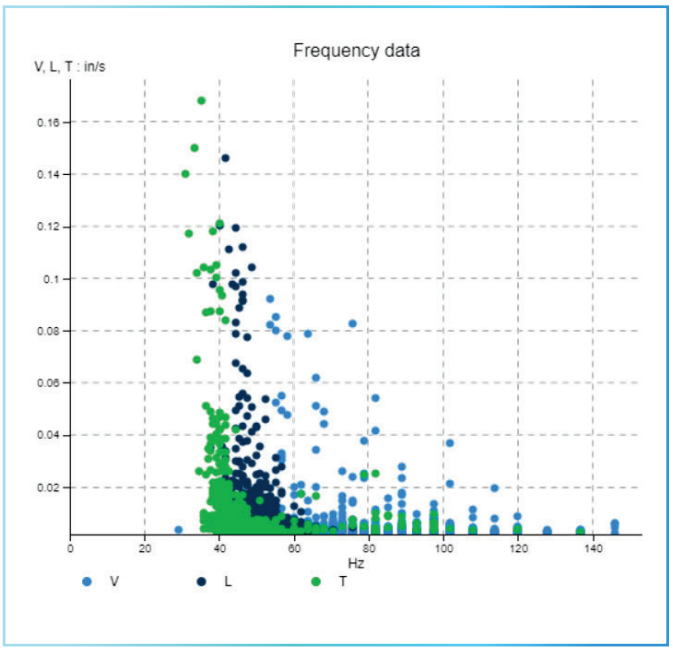
Aside from the Building Department Permit, there are no doubt multiple permits that should be tracked and accounted for; these might include permits from: the Army Corp of Engineers, U.S. Coast Guard, Florida Department of Environmental Protection, Florida Wildlife Conservation, and possibly a County surface water management permit, among others.

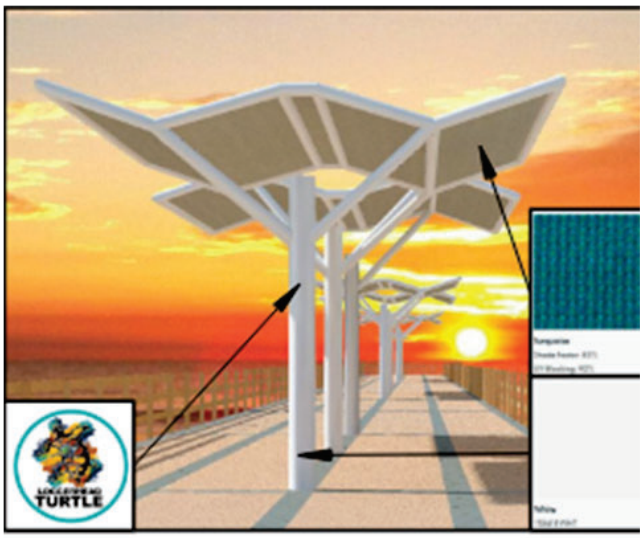
5. Vibration Monitoring

With the pile driving operation beginning very close to the existing structures, the opinion of a structural engineer might be necessary as to what a safe level of vibration might be for the structures, and it might be prudent to then monitor the initial pile driving operation to confirm compliance with the established safe level.

On the Pompano Beach Pier, the first few bents were constructed using auger cast piles to avoid the possibility of damaging the existing nearby restaurant.

Sample Report





6. Lightening Protection

Covered structures will provide both an important functional capability to the pier as well as an atheistic one.

After substantial completion of the Pompano Beach Fishing Pier, in an abundance of caution, lightening protection was added to the shade structures and metal handrail – has lightening protection for the proposed shade structures been evaluated?

Environmental Considerations

Fishing pier construction and operation must not harm or damage protected wildlife or important marine resources, such as coral or marine turtles.

Pollution

During preconstruction, our team will monitor procedures to be used for discarding and controlling trash and debris from construction activities to ensure that our project does not negatively impact the environment.

When the new pier is open to the public, the major debris issue becomes the inadvertent discarding of trash, fishing tackle, and fishing line into the ocean by the public. Trash receptacles, fishing line disposal bins, and signage encouraging their use will be installed.

Turbidity

It is likely that during all pile driving operations, water samples will be required to be taken by a third-party testing company, and should the turbidity exceed the allowable tolerances, work will be stopped.

Sea Turtle Protection

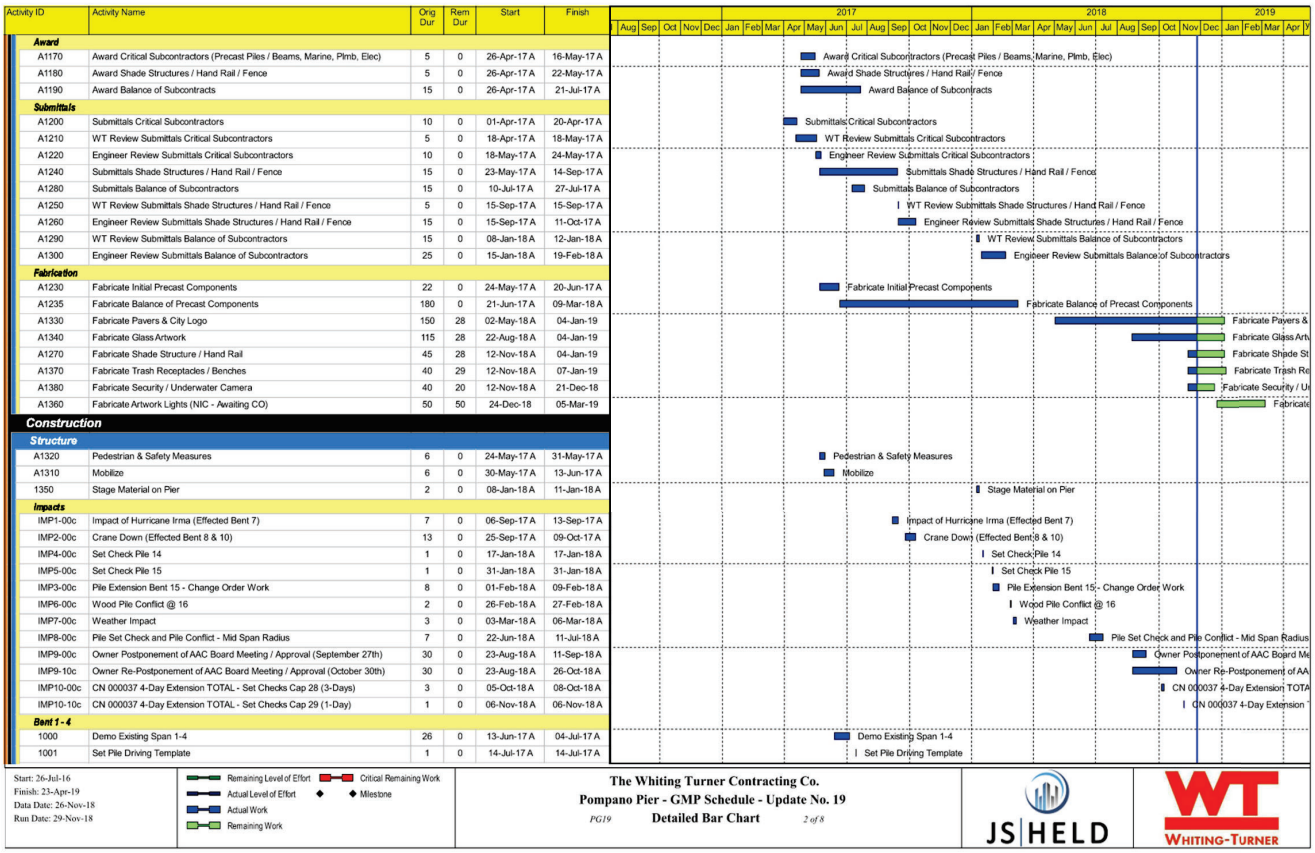
During Sea Turtle nesting season, the permit requirements may require that the nearby beach be evaluated for new sea turtle nests before pile driving operations begin each day, and if a nest should be discovered within a specified distance from construction, then that nest(s) may need to be relocated prior to resuming work.

After construction, signage will be provided to the public providing the public with the proper procedures for both avoiding interaction with sea turtles, and also, including procedures to follow in the event that sea turtles are hooked or otherwise disturbed.

Sea Turtle Friendly Lighting

During construction, the pier and work area will be illuminated only to the minimum as required by the authorities for safety and navigation requirements. After construction is complete, the walking surface of the fishing pier will be illuminated at night for the security and safety of its patrons and as required for navigation purposes; however, deck lighting will be limited to that which is deemed safe for nearby sea turtles. Careful consideration of the pier lighting is necessary so that turtles do not mistake the fishing pier's lighting for the illumination of the moon, which the adult turtles use in navigating, and new hatchlings use to orient themselves when emerging from their nests. The deck lighting will be shielded from spilling off of the deck platform, and will conform to other permit specifications regarding type and brightness of the light.

Sample Schedule from Pompano Pier Project



Activity ID	Activity Name	Orig Dur	Rem Dur	Start	Finish
Award					
A1170	Award Critical Subcontractors (Precast Piles / Beams, Marine, Plmb, Elec)	5	0	26-Apr-17 A	16-May-17 A
A1180	Award Shade Structures / Hand Rail / Fence	5	0	26-Apr-17 A	22-May-17 A
A1190	Award Balance of Subcontracts	15	0	26-Apr-17 A	21-Jul-17 A
Submittals					
A1200	Submittals Critical Subcontractors	10	0	01-Apr-17 A	20-Apr-17 A
A1210	WT Review Submittals Critical Subcontractors	5	0	18-Apr-17 A	18-May-17 A
A1220	Engineer Review Submittals Critical Subcontractors	10	0	18-May-17 A	24-May-17 A
A1240	Submittals Shade Structures / Hand Rail / Fence	15	0	23-May-17 A	14-Sep-17 A
A1280	Submittals Balance of Subcontractors	15	0	10-Jul-17 A	27-Jul-17 A
A1250	WT Review Submittals Shade Structures / Hand Rail / Fence	5	0	15-Sep-17 A	15-Sep-17 A
A1260	Engineer Review Submittals Shade Structures / Hand Rail / Fence	15	0	15-Sep-17 A	11-Oct-17 A
A1290	WT Review Submittals Balance of Subcontractors	15	0	08-Jan-18 A	12-Jan-18 A
A1300	Engineer Review Submittals Balance of Subcontractors	25	0	15-Jan-18 A	19-Feb-18 A
Fabrication					
A1230	Fabricate Initial Precast Components	22	0	24-May-17 A	20-Jun-17 A
A1235	Fabricate Balance of Precast Components	180	0	21-Jun-17 A	09-Mar-18 A
A1330	Fabricate Pavers & City Logo	150	28	02-May-18 A	04-Jan-19
A1340	Fabricate Glass Artwork	115	28	22-Aug-18 A	04-Jan-19
A1270	Fabricate Shade Structure / Hand Rail	45	28	12-Nov-18 A	04-Jan-19
A1370	Fabricate Trash Receptacles / Benches	40	29	12-Nov-18 A	07-Jan-19
A1380	Fabricate Security / Underwater Camera	40	20	12-Nov-18 A	21-Dec-18
A1360	Fabricate Artwork Lights (NIC - Awaiting CO)	50	50	24-Dec-18	05-Mar-19
Construction					
Structure					
A1320	Pedestrian & Safety Measures	6	0	24-May-17 A	31-May-17 A
A1310	Mobilize	6	0	30-May-17 A	13-Jun-17 A
1350	Stage Material on Pier	2	0	08-Jan-18 A	11-Jan-18 A
Impacts					
IMP1-00c	Impact of Hurricane Irma (Effected Bent 7)	7	0	06-Sep-17 A	13-Sep-17 A
IMP2-00c	Crane Down (Effected Bent 8 & 10)	13	0	25-Sep-17 A	09-Oct-17 A
IMP4-00c	Set Check Pile 14	1	0	17-Jan-18 A	17-Jan-18 A
IMP5-00c	Set Check Pile 15	1	0	31-Jan-18 A	31-Jan-18 A
IMP3-00c	Pile Extension Bent 15 - Change Order Work	8	0	01-Feb-18 A	09-Feb-18 A
IMP6-00c	Wood Pile Conflict @ 16	2	0	26-Feb-18 A	27-Feb-18 A
IMP7-00c	Weather Impact	3	0	03-Mar-18 A	06-Mar-18 A
IMP8-00c	Pile Set Check and Pile Conflict - Mid Span Radius	7	0	22-Jun-18 A	11-Jul-18 A
IMP9-00c	Owner Postponement of AAC Board Meeting / Approval (September 27th)	30	0	23-Aug-18 A	11-Sep-18 A
IMP9-10c	Owner Re-Postponement of AAC Board Meeting / Approval (October 30th)	30	0	23-Aug-18 A	26-Oct-18 A
IMP10-00c	CN 000037 4-Day Extension TOTAL - Set Checks Cap 28 (3-Days)	3	0	05-Oct-18 A	08-Oct-18 A
IMP10-10c	CN 000037 4-Day Extension TOTAL - Set Checks Cap 29 (1-Day)	1	0	06-Nov-18 A	06-Nov-18 A
Bent 1 - 4					
1000	Demo Existing Span 1-4	26	0	13-Jun-17 A	04-Jul-17 A
1001	Set Pile Driving Template	1	0	14-Jul-17 A	14-Jul-17 A

7. Schedule

The expectations for schedule development and monitoring need to be clarified; Paragraph 3.3.5 which reads, “The Construction Manager Adviser shall review and analyze the construction schedules provided by the General Contractor to update the Project schedule, incorporating the activities of the Owner, Engineer, and General Contractor on the Project, including activity sequences and durations, allocation of labor and materials, processing of Shop Drawings, Product Data and Samples, and delivery and procurement of products, including those that must be ordered in advance of construction. The Project schedule shall include the Owner’s occupancy requirements showing portions of the Project having occupancy priority. The Construction Manager Adviser shall update and reissue the Project schedule as required to show current conditions.

If an update indicates that the previously approved Project schedule may not be met, the Construction Manager Adviser shall recommend corrective action to the Owner and Engineer.”

This indicates the CMA will both review the General Contractor’s schedule and maintain a separate schedule that perhaps includes some information not required in the Contractor’s schedule. If the General Contractor is not capable of, or refuses to adhere to schedule development and protocol, maintaining two separate schedules may be necessary; however, if the contractor is cooperative and competent in scheduling, two separate schedules seem unnecessary, and having our scheduling department assist our onsite team in evaluating the contractor’s initial schedule setup and then performing monthly “Schedule Health Checks” might be the best approach.



8. Procurement

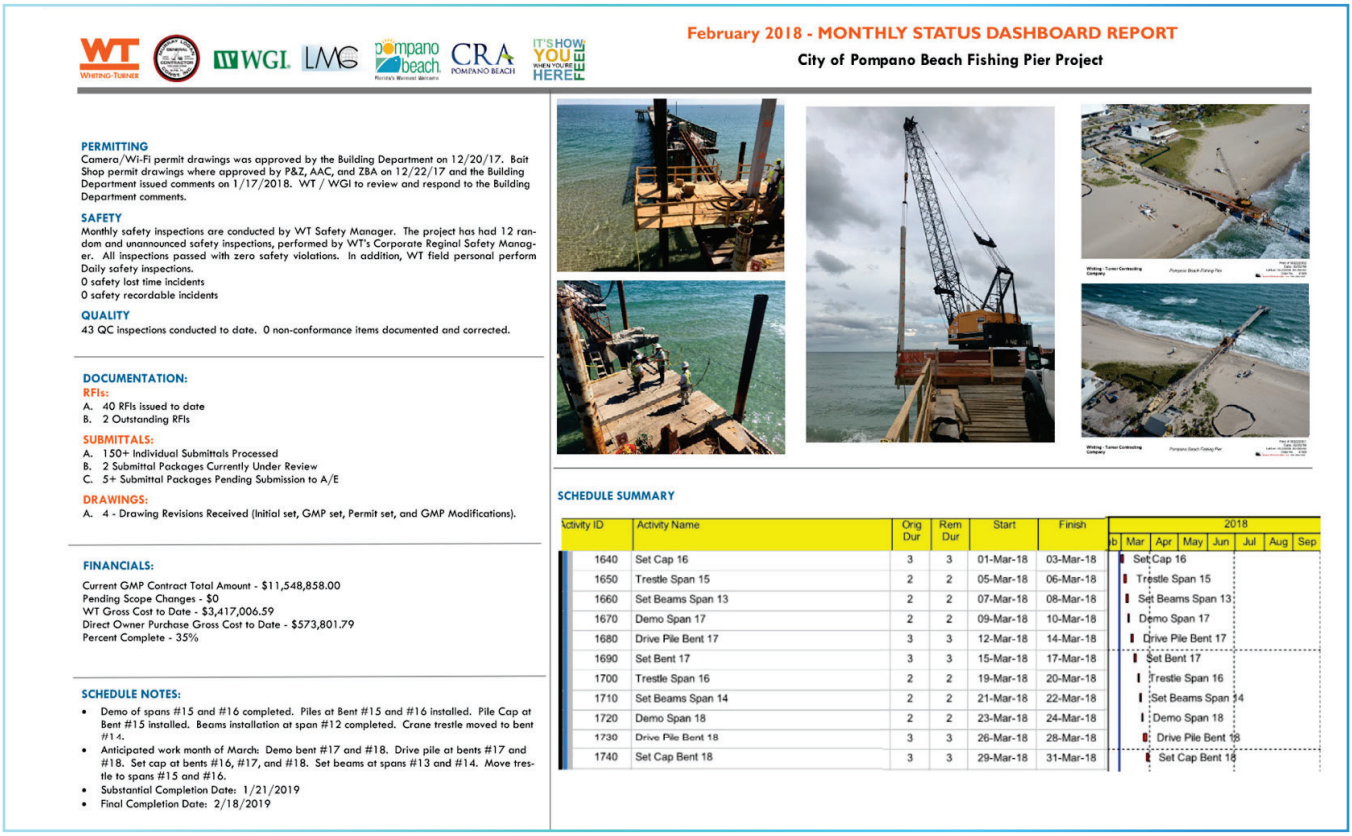
Delivery of long lead time items such as piles, beams, pile caps shade structures and light fixtures will be incorporated into the schedule. The delivery of these materials will be tracked by the Contractor's procurement log and reviewed regularly by our staff.

Pile fabrication may be released in segmented groups, sequential with construction. In this way, pile lengths will be manufactured based on actual field conditions being encountered. This will reduce the possibility of cost or schedule delay due to subsurface variations.

9. Borings

Only one boring was provided to the Contractor in the bid documents. As the construction of the pier progresses, the Contractor will make provisions for the testing company to take additional borings. The project team should discuss the possibility of the boring result impacting pile length, and its ramifications if pile length is affected.

Sample Report from Pompano Pier Project



February 2018 - MONTHLY STATUS DASHBOARD REPORT

City of Pompano Beach Fishing Pier Project

PERMITTING
Camera/Wi-Fi permit drawings was approved by the Building Department on 12/20/17. Bait Shop permit drawings where approved by P&Z, AAC, and ZBA on 12/22/17 and the Building Department issued comments on 1/17/2018. WT / WGI to review and respond to the Building Department comments.

SAFETY
Monthly safety inspections are conducted by WT Safety Manager. The project has had 12 random and unannounced safety inspections, performed by WT's Corporate Reginal Safety Manager. All inspections passed with zero safety violations. In addition, WT field personal perform Daily safety inspections.
0 safety lost time incidents
0 safety recordable incidents

QUALITY
43 QC inspections conducted to date. 0 non-conformance items documented and corrected.

DOCUMENTATION:
RFIs:
A. 40 RFIs issued to date
B. 2 Outstanding RFIs

SUBMITTALS:
A. 150+ Individual Submittals Processed
B. 2 Submittal Packages Currently Under Review
C. 5+ Submittal Packages Pending Submission to A/E

DRAWINGS:
A. 4 - Drawing Revisions Received (Initial set, GMP set, Permit set, and GMP Modifications).

FINANCIALS:
Current GMP Contract Total Amount - $11,548,858.00
Pending Scope Changes - $0
WT Gross Cost to Date - $3,417,006.59
Direct Owner Purchase Gross Cost to Date - $573,801.79
Percent Complete - 35%

SCHEDULE NOTES:
- Demo of spans #15 and #16 completed. Piles at Bent #15 and #16 installed. Pile Cap at Bent #15 installed. Beams installation at span #12 completed. Crane trestle moved to bent #14.
- Anticipated work month of March: Demo bent #17 and #18. Drive pile at bents #17 and #18. Set cap at bents #16, #17, and #18. Set beams at spans #13 and #14. Move trestle to spans #15 and #16.
- Substantial Completion Date: 1/21/2019
- Final Completion Date: 2/18/2019

SCHEDULE SUMMARY

Activity ID	Activity Name	Orig Dur	Rem Dur	Start	Finish
1640	Set Cap 16	3	3	01-Mar-18	03-Mar-18
1650	Trestle Span 15	2	2	05-Mar-18	06-Mar-18
1660	Set Beams Span 13	2	2	07-Mar-18	08-Mar-18
1670	Demo Span 17	2	2	09-Mar-18	10-Mar-18
1680	Drive Pile Bent 17	3	3	12-Mar-18	14-Mar-18
1690	Set Bent 17	3	3	15-Mar-18	17-Mar-18
1700	Trestle Span 16	2	2	19-Mar-18	20-Mar-18
1710	Set Beams Span 14	2	2	21-Mar-18	22-Mar-18
1720	Demo Span 18	2	2	23-Mar-18	24-Mar-18
1730	Drive Pile Bent 18	3	3	26-Mar-18	28-Mar-18
1740	Set Cap Bent 18	3	3	29-Mar-18	31-Mar-18

2018: Mar | Apr | May | Jun | Jul | Aug | Sep

Set Cap 16
Trestle Span 15
Set Beams Span 13
Demo Span 17
Drive Pile Bent 17
Set Bent 17
Trestle Span 16
Set Beams Span 14
Demo Span 18
Drive Pile Bent 18
Set Cap Bent 18

10. Monthly Status Report

As summarized in paragraph 3.3.21.2 of the proposed contract, Whiting-Turner will record the progress of the Project. On a monthly basis, we will submit written progress reports showing percentages of completion and other information identified below:

1. Work completed for the period;
2. Project schedule status;
3. Submittal schedule and status report, including a summary of remaining and outstanding submittals;
4. Request for information, Change Order, and Construction Change Directive status reports;
5. Tests and inspection reports;
6. Status report of nonconforming and rejected Work;
7. Daily logs;
8. Summary of all General Contractor' Applications for Payment;
9. Cumulative total of the Cost of the Work to date including the Construction Manager Adviser's compensation and reimbursable expenses at the job site, if any;
10. Cash-flow and forecast reports;
11. Photographs to document the progress of the Project;
12. Status reports on permits and approvals of authorities having jurisdiction; and
13. Any other items the Owner may require

Maintenance of Traffic (M.O.T.)

The Contractor will detour traffic only as per an agency approved M.O.T plan. Variable Message Boards will be strategically positioned in advance of the M.O.T. installation, to inform vehicular traffic of the forthcoming closures. Residents, business owners, and customers affected by the road closure in these areas will be notified ahead of time. Pedestrians will be informed by means of construction signs indicating sidewalk closure and the alternate routes to be used. Two-way traffic on A1A will be maintained at all times.

Surveying

How will layout for the base line of the new pier be planned? on the deck of the existing pier, since the new fishing pier will generally occupy the same footprint as the existing fishing pier? We will request that drafts of as-builts be submitted with monthly pay requests to ensure that they are being prepared in a format acceptable to the authorities, and as a quality control procedure to avoid any unnecessary surprises at project completion, although we are uncertain as to whether the Contractor is required to do so in their Contract with Flagler Beach.

Testing and Inspection

During the initial Kickoff meetings, all testing and inspection procedures will be reviewed and summarized. The testing agency and inspectors will be involved during driving of the piles, prior to any back fill operation, during the pressure testing of water lines, and while pouring/ pumping concrete caps.

Quality Control

The quality of the project will result in great part from Whiting- Turner's proven leadership. Our team will instill a positive attitude in the work force and establish an atmosphere where individuals make quality performance a personal goal.

Our superintendents and subcontractors have the experience necessary to avoid quality deficiencies by looking ahead.

The focus will be to avoid deficiencies caused by scheduling conflicts, unanticipated field conditions, tolerance or materials incompatibilities, improper installation methods, etc. As materials arrive at the jobsite, they will be inspected for compliance and logged. Work-in-place will be inspected daily.

We understand and encourage your involvement throughout the process to assure that all completed work meets your standards. It is, therefore, important to our team to review your expectations, to add to our process any procedures not already included, and to coordinate the total quality assurance effort.

Community Outreach and Involvement

We did not see any mention of how the project will interact with the Community, or whose responsibility it will be to do so; however, it is a given that the project success will rely on providing nearby businesses and the people who use the surrounding facilities with clear, reliable project information.
We look forward to better understanding your expectation for community involvement of the project should we be selected as your CMA.

Public Safety & Community Coordinator

Luke Budorick will be assigned full time as the Whiting-Turner Superintendent. Luke will monitor the General Contractor's coordination efforts in terms of resident and local business concerns, access, and safety. Luke's daily routine will include confirming that deliveries are made in the locations and time slots as agreed with the community, sidewalks are open, work hours begin and complete as agreed upon with the neighborhood, the parking plan is being followed, all fences, barricades and proper protection is in place, and that any community concern is either: (1) immediately addressed or that (2) the concern is immediately logged in and forwarded to Flagler Beach with a copy to the General Contractor for their prompt review and discussion of the specific challenge.

Hurricane Preparedness

Whiting-Turner will review the Contractor's Hurricane Preparedness Manual which will be relied upon as a guide in those critical hours just prior to, and immediately following, a hurricane.

The essence of this plan should be comprised of four stages: planning, initiation, final preparations completion, and post- storm procedures. The planning takes place prior to the commencement of the hurricane season on June 1st. During the planning stage the Contractor must have assigned individuals responsibilities by name to ensure sufficient manpower and equipment are available to safeguard lives and property should a tropical storm/ hurricane be predicted for the area. The initiation stage typically requires release of emergency personnel to prepare their personal homes and families for the predicted storm while work on site is adjusted to prepare for the storm.

During the final preparation stage, the emergency personnel typically return to the site to make the final storm preparations as the other personnel evacuate the site until the storm passes and it is safe to return to work. Upon the return of personnel to the jobsite, the final post-storm procedure phase begins. This phase describes responsibilities and guidelines for the safe return of all employees to the jobsite. The emergency personnel should complete their tasks to secure loose materials and equipment within eight hours and they also evacuate the site.

The timing of these four phases for the Project will follow the timing decisions of the National Hurricane Center.

We have included in this section a sample checklist for this plan.

TROPICAL STORM/HURRICANE PREPAREDNESS INSPECTION REPORT
(To be completed by all Safety Representatives)

No.	Inspection Checklist	Yes	No
1.	Have all storm preparation requirements been identified in coordination with the General Contractor and the Owner?		
2.	Do you have necessary materials and equipment on site?		
3.	Is the equipment fueled or will it be refueled at completion of preparations?		
4.	Are the workers on the emergency final preparation team correctly skilled?		
5.	Are there adequate numbers of workers on the emergency final preparation team?		
6.	Do the workers know that they will be given time for personal preparation of their homes?		
7.	Are the trailers secure with cables and the windows/openings boarded?		
8.	Have you removed all debris and loose lumber from the area and secured and protected all building materials stored on site?		
9.	Have you moved any materials stored in low areas that are subject to flooding to higher elevations?		
10.	Have you photographed the entire job site inside and outside? Are they dated and annotated?		
11.	Have you inspected all fire protection devices for proper storage?		
12.	Have you ensured that all drainage areas are cleaned out?		
13.	Has the job been electrically saved?		
14.	Are you prepared for post storm period with backup lights stored offsite and emergency generators?		
15.	Have you boomed down and/or freewheeled all cranes? If operating a tower crane, have you disconnected power?		



A CULTURE OF SAFETY

The elimination of accidents related to Whiting-Turner operations is one of our greatest responsibilities and should be treated in the same manner as our productive business procedures. It is our policy that every reasonable effort be taken to eliminate recognized hazards from our operations."

TIM REGAN
President and CEO

Safety

Preplanning for safety will ensure everyone's well-being, help to maximize productivity, and reduce cost associated with risk. At the onset of the project, our team will encourage the Contractor to conduct a project hazard assessment. They will identify the normal and extraordinary risks at each stage of the fishing pier construction process, and will develop a Project Safety Program that addresses the identified hazards and risks.

They will consider:

- The narrow work environment of a fishing pier
- Crane critical load lift plans
- Height exposure
- Pile driving over water
- Surf precautions
- Weather – procedures for rain, wind, lightening, etc.
- Flagler Beach's safety requirements and concerns
- Insurer involvements
- Third party liabilities
- Procedures for working near occupied areas
- Site access, environmental, security, posting
- Project Safety Team organization
- Incident investigation and reporting approach
- Safety measurements (e.g., RIR, LTAIR)
- OSHA

Safety Program Goals

Whiting-Turner's corporate and project goals are very simple – zero accidents. Regardless of our project role, this is our goal and we will not stop trying to get there. Other safety and loss prevention goals include:

- Zero fatalities
- Zero permanent injuries
- Zero impact on public personnel or property
- Prevention of any incident that would adversely impact the City, cost, schedule or quality

All accidents are preventable and avoidable, and we will never stop trying to eliminate them.



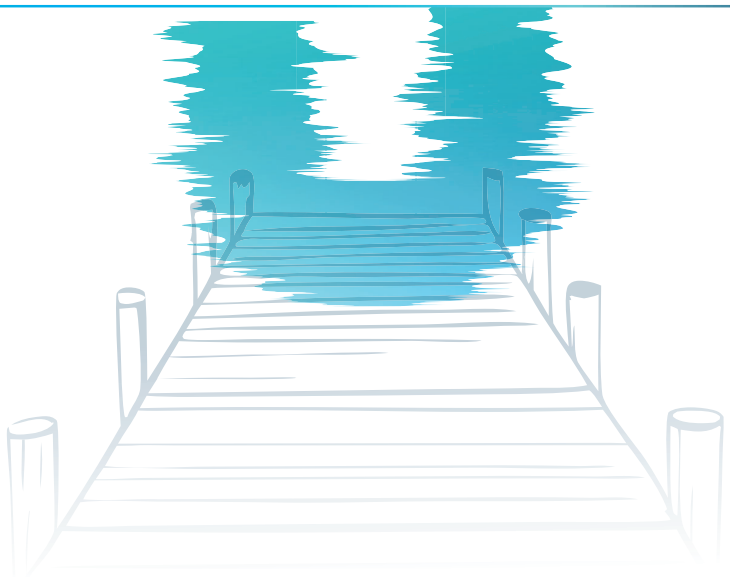


Cut Walk Jetty at Bal Harbour Village
Project Location: Bal Harbour, FL
Client: Village of Bal Harbour

Whiting-Turner is currently working with Moffat Nichol on the Bal Harbor Cut Walk Jetty. The project is in preconstruction.

Five

PAST PERFORMANCE



Proposed Team

Management Support

JEFF MCPHAUL
Vice President
Project Executive

FRANK ZAREMBA
Senior Project Manager
Subject Matter Expert

moffatt & nichol

Technical Support

CHRIS STUTZ
Quality Manager

CHRIS DEZSI
Scheduler

TERRY TUFFIE
EH&S Manager

Lindsey Griffin
Project Manager

Luke Budorick
Superintendent

Management Support

INVOLVEMENT & ROLES



JEFF MCPHAUL, VICE PRESIDENT

Role On This Project: ***Project Executive:*** Jeff has led the Jacksonville office for 9 of his 21 years with Whiting-Turner. Jeff will support Project Manager Lindsey Griffin and Superintendent Luke Budorick by providing any additional corporate and/or project resources necessary to ensure our commitments to the City are met. Additionally, Jeff will provide oversight and guidance to the team and be the escalation point for the City as needed.



FRANK ZAREMBA, SENIOR PROJECT MANAGER

Role On This Project: ***Subject Matter Expert:*** For almost 40 years, Frank has worked on numerous Florida infrastructure projects that include roadwork, water main's, undergrounding of overhead utilities, along with bridge and pier work. Frank was the lead manager on 2 of the highlighted projects in Tab 5, one of which, the Pompano Beach Fisher Family Pier, was awarded the CMAA project of the year for the Local Government category. Frank will lend his expertise to the proposed team to ensure Flagler Beach Pier is constructed properly and efficiently, making this a go-to while visiting the City.



Lindsey Griffin
Project Manager

09

years of experience

Bachelor of Science
Civil Engineering
Florida State University

OSHA-30
First-Aid / CPR
USACE Construction Quality Management Certified
US Army of Engineers Certified

RESTORATION HARDWARE

Restoration Hardware
West Palm Beach, FL // $33.4M

The Restoration Hardware West Palm Beach project is a four-story, 60,000 SF new construction retail project located in West Palm Beach, FL. The high-end furniture gallery will include a roof top Restaurant and Kitchen with pyramidal skylight courtyard and vaulted ceiling wine rooms, roof-top paver system, grand staircase with radius stingers and railing system, balcony and awning structures at all elevations, exterior ground-level courtyards with vertical and radius water features, interior and exterior staged furniture displays and showrooms, and polished concrete floors.

UNITED THERAPEUTICS

Discovery and Innovation Building
Jacksonville, FL // $52.7M

The Discovery and Innovation Building is a 75,000 SF, net-zero, three-story facility that includes shared spaces for United Therapeutics and Mayo Clinic. This building includes support spaces for the ex vivo process; open offices for support personnel; back of house MEP; shelled space for future cGMP laboratories; Mayo's Life Sciences Incubator; wet laboratory space; office and co-located spaces; café and lounge; conference rooms; shelled space for future Mayo cGMP laboratories.

Cell Therapy Production Facility at Mayo Clinic
Jacksonville, FL // $13.5M

A 24,000 SF interior renovation of the Discovery & Innovation building on Mayo Clinic's campus. It included cGMP laboratories, offices and support spaces and were constructed for two clients (United Therapeutics & Mayo Clinic). The building was fully occupied during construction so work was phased to accommodate the needs of multiple tenants.

VLP & Administration Renovation
Jacksonville, FL // $13M

This project included phased construction. Phase 1 was demolition of the existing second floor cGMP laboratories and construction of new offices. After the offices were completed Phase 2 commenced. Phase 2 included moving the first floor employees to the new offices on the second floor and constructing new lung suites adjacent to existing suites. The entire building was occupied and the existing lung suites were fully functional during construction



Luke Budorick
Superintendent

05

years of experience

Bachelor of Science
Mechanical Engineering
Purdue University

OSHA-30
First-Aid / CPR

ANNE ARUNDEL COMMUNITY COLLEGE

Health and Life Sciences Building • Arnold, MD // $96 M

This 170,000 SF building supports all departments within the School of Health Sciences and Biology. The building contains 19 biology laboratories, 20 health science laboratories, laboratory support spaces, a greenhouse, computer laboratories, simulation laboratories, classrooms and study and meeting rooms.

Student Union Bridge Repairs • Arnold, MD // $386k

This project consisted of a demolition and replacement of the deck on the existing pedestrian bridge that spanned 110 LF between Student Services Center (SSVC) and Student Union (SUN) located on the Arnold Campus of Anne Arundel Community College. To ensure the entrances remained open in a safe manner, a pedestrian tunnel was constructed beneath the bridge that allowed workers to complete work underneath the bridge and protected pedestrians from falling debris while walking beneath.

Careers Center Pedestrian Bridge Repair • Arnold, MD // $790k

This project consisted of repairs to the deteriorated structure of the Anne Arundel Community College - Careers Center bridge and concrete stairs, located on the Arnold Campus.

JOHNS HOPKINS APPLIED PHYSICS LABORATORY

Applied Physics Lab - AEF Facility Renewal • Laurel, MD // $3.2M

The Johns Hopkins University Applied Physics Laboratory Advanced Electrical Fabrication Facility is operated by the Research and Exploratory Development Department to provide capabilities in the fabrication and assembly of circuit boards and microelectronics. The AEF Facility is located in Building 13 on the Laurel Campus.

SEASONS HOSPICE & PALLIATIVE CARE OF SOUTHERN FLORIDA

Seasons Hospice at Harbor Hospital • Baltimore, MD // $96 million

This project was a renovation of the 3rd floor wing of the Med Star Harbor Hospital Seasons Hospice Suite. Renovations will include minor demolition, upgrade of patient rooms and nurses station. Upgrades included flooring, lighting, plumbing fixtures and select doors.

ATTACHMENT E
EXPERIENCE OF BIDDER

Bidder Name: The Whiting-Turner Contracting Company

Authorized Signature: _____ Date: _____

Is your company currently involved in any active litigation? X Yes ____ No

If Yes, explain: Please reference the following page.

Has your company ever been sued? X Yes ____ No

If Yes, explain and/or submit court decision or judgment, as applicable: Please reference the following page.

The Bidder must demonstrate the successful completion of four (4) projects of similar complexity, nature, size, and dollar amount in the capacity of CMA. Any material misrepresentation, as determined by the City of Flagler Beach, shall result in disqualification.

On the following pages, provide the requested information regarding experience within the past ten (10) years on four (4) projects. These projects must be new or rehabilitation projects. Preferred projects should be for a coastal community on or near the beach. Additional credit will be awarded for Fishing Piers, either concrete or wood.



Disputes, Claims, Criminal Matters & Related Civil Suits

25K
Active Owner & Subcontractor Contracts at any given time

28
Applicable Owner & Subcontractor Claims

.112%
of Contracts Result in Litigation Claims

Whiting-Turner is rarely involved in litigation. However, since the Company is typically engaged in approximately 800 to over 1000 projects at any given time, and is party to well over 15,000 subcontracts in any given year, there are obviously bound to be some disagreements which reach the litigation stage.

Also, there are occasional accidents and claims of injuries, principally by employees of subcontractors, which result in litigation. These matters are typically defended by the various insurance carriers involved.
Please note that many recent cases involving both project owners and subcontractors are related to the fluctuation in the real estate and construction markets and its effect on an owner's ability to pay amounts owed to Whiting-Turner.

The submitting office has not been a party to any litigation or claims.

LITIGATION Last 5 Years *(Owners)*

Plaintiff (P) & Defendant (D)	Court where filed	Case #	Date Filed	Nature of Case	Current Status
Loft Downtown II Condominium Association, Inc. etc. (P) v. Whiting-Turner, etc. and Weathertrol Maintenance Corp., etc. (D)	Miami-Dade County Circuit Court, Florida	Case #1236112CA32	Served 9/17/12 Closed 1/9/22	Claim for breach of warranty regarding alleged defect in pipe installed by Subcontractor	Settled
Manganaro v. FRIT; Whiting-Turner (P) v. Manganaro (D); Baltimore Steel, et al.	Circuit Court for Montgomery County, Maryland	Case #413072-V	March, 2016 Closed 10/4/21	Claim against Owner for extra work in connection with masonry repairs related to alleged design defects and counter-claims	Settled
The United Illuminating Company (P) v. Whiting-Turner, et al. (D)	District Court for the District of Connecticut	Case # 3:18-CV--00327-AWT	Served 2/26/18 Closed July 1, 2023	Claim for alleged construction issues	Settled
Loft Downtown II Condominium Association, Inc. etc. (P) v. Whiting-Turner and Century Fire Protection, Inc. (D)	Circuit Court of the Eleventh Circuit in and for Miami-Dade County, Florida	Case #2018-005428-CA 01	Served 3/15/18, Closed 1/9/2020	Claim for alleged faulty sprinkler heads installed by Subcontractor	Settled
Delaware State University (P) v. Whiting-Turner, et al (D)	United States District Court for the District of Delaware	Case # 15-1144-LPS-CJB	Served 5/1/18 Closed 11/19/20	Claim for alleged defective panel wall system against contractor and designer. WT in suit as CM agent only.	Summary Judgment in Favor of Whiting-Turner
Whiting-Turner (P) v. Stonewall Station Investments and Mayfair (D)	State of North Carolina, Mechlenberg County	Case # 20 CVS 9914	Served 7/29/2020 Closed 9/8/21	Claim for Payment against Owner and Owner's Agent	Settled
Whiting-Turner (P) v. SLX Grand Atlanta (D)	In the Superior Court of Dekalb County, State of Georgia	Case #202CV511722	Served 7/20/2020 Closed 7/30/21	Claim for Payment against Owner	Settled
Whiting-Turner (P) v. Compass Datacenters (D)	State of North Carolina, County of Durham	Case # 20-CV-1491	Served 10/13/2020 Closed 9/28/22	Claim for Payment against Owner	Settled
La Jolla Commons (P) v. Whiting-Turner, et al. (D)	Superior Court of the State of California County of San Diego	Case #37-2020-000048268 -CU-CT-CDL	Served 1/4/2021 Closed 11/15/23	Claim in Connection with Window Manufacturer	Settled
Shadelands Park, LLC (P) v. Whiting-Turner, et al (D)	Superior Court for the State of California, County of Contra Costa	C22-00052	Served 1/28/22	Dispute Regarding Building Envelope Leak	Discovery
Cactus Villas (P) v. Whiting-Turner and DriTech (D)	Clark County, Nevada	A-221-830492-B	Served 3/11/21	Dispute in Connection with Roofing Subcontractor	Settled
Federal Realty Investment Trust (P) v. Whiting-Turner (D)	Circuit Court for Montgomery County	487219V	Served 9/24/21	Claim in Connection with alleged leaks in curtainwall system supplied and installed by Subcontractor	Settled
Buckner Senior Living dba Ventana By Buckner (P) v. Whiting-Turner, et al.	District Court of 14th Judicial District, Dallas County, Texas	DC-22-04605	Served 6/17/2022	Claim for design/ installation of heating and cooling system	Judgment Entered in Favor of Whiting-Turner on 4/29/24
Whiting-Turner (P) v. JetBlue Airways (P)	In the Circuit Court of the Seventeenth Judicial Circuit in and for Broward County, Florida, Civil Division	CACE-22-012038	Served 1/26/24	Pass Through Claim for Payment	Discovery
Whiting-Turner (P) v. Fisker, et al. (D)	United States Bankruptcy Court for the District of Delaware	24-11390	Served 7/9/24	Bankruptcy Matter	Initial Pleadings

TAB 5 PAST PERFORMANCE

LITIGATION Last 5 Years *(Subcontractors)*

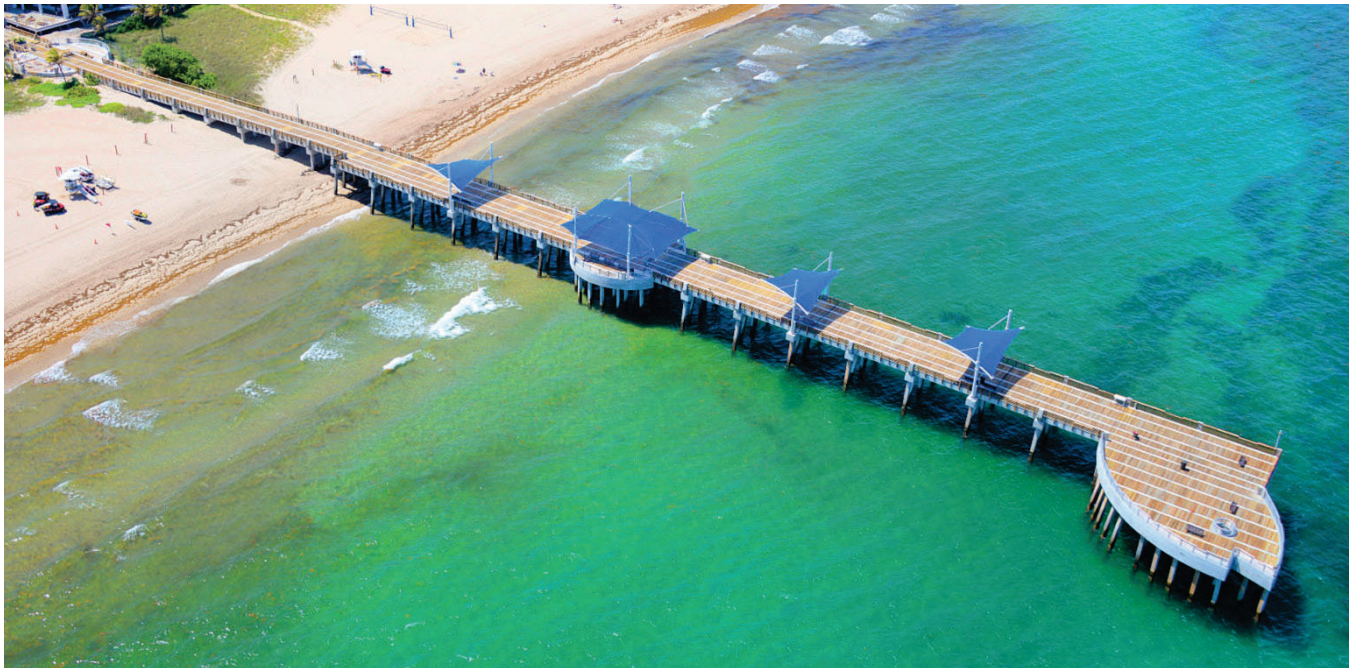
Plaintiff (P) & Defendant (D)	Court where filed	Case #	Date Filed	Nature of Case	Current Status
Whiting-Turner (P) v. Manganaro (D); Baltimore Steel, et al.	Circuit Court for Montgomery County	#413072-V	December 28, 2015	Claim against Subcontractor for defective work; cost overruns	Case tried; post trial filings; oral verdict in WT's favor; awaiting written verdict
Bunting Graphics, Inc. dba Bunting Architectural Metals (P) v. Whiting-Turner (D)	United States District Court for the District of Maryland	#1:19-cv-2323	August 13, 2019	Claim for Disputed Payment and Delay Claims by defaulted Subcontractor	Case tried; awaiting Trial verdict
Optimum Building Systems LLC (P) v. The Jackson Laboratory and Whiting-Turner (D)	State of Maine, Hancock SS, Superior Court	CV21-7	February 9, 2021	Claim for Disputed Payment, Breach of Contract and Mechanic's Lien	Discovery
John Egan (P) v. Jackson Lab, Optimum Building Systems and Whiting-Turner (D)	Hancock Superior Court, State of Maine	ELSCV21-CV-21	July 1, 2021	Claim for Disputed Payment	Discovery
DP Development (P) v. Whiting-Turner, et al (D)	Circuit Court of the Seventeenth Judicial Circuit in and for Broward County, Florida	CACE22005360	April 18, 2022	Claim for Disputed Payment	Discovery
Hart Mechanical (P) v. Whiting-Turner, Zurich, Fidelity and Liberty (D)	Circuit Court of the Seventeenth Judicial District in and for Broward County, Florida	CACE-22-012038	September 8, 2022	Subcontractor Claim for Disputed Payment	Discovery
Whiting-Turner (P) v. Quinco Electrical, Inc., Philadelphia Indemnity Ins., J.R. Clancy, Inc., Travelers, Barton Myers Assoc., Inc. and HKS Architects, Inc. (D)	Circuit Court of the Ninth Judicial Circuit in and for Orange County, Florida Civil Division	2022-CA-007732-0	November 29.2022	Claims Against Subcontractor for Costs Incurred Due to Subcontractors Performance	Discovery
Broadway Electric and Engert LLC (P) v. Whiting-Turner (D)	United States District Court Eastern District of Tennessee Knoxville Division (In Arbitration)	3:23-CV-365	October 17, 2023	Subcontractor Claim for Disputed Payment	Discovery and Mediation
Core & Maine (P) v. Flatiron Hotel, et al., including Whiting-Turner (D)	Superior Court Division, State of North Carolina, Buncombe County	24-CV-02481	June 20, 2024	Subcontract Breach of Contract Claim and to Enforce Mechanic's Lien	Initial Pleadings
GD Concrete Construction (P) v. Whiting-Turner and Museum of Nebraska Art (D)	District Court of Buffalo County, Nebraska	CI 24-00270 (8:24-cv-00287)	June 20, 2024	Subcontractor Claim for Disputed Payment	Initial Pleadings
Keller North America FKA Haywood Baker, Inc. (P) v. Osburn Contractors, et al. including Whiting-Turner (D)	In the District Court 101st Judicial District, Dallas County, Texas	DC-24-08773	July 18, 2024	Disputed Subcontractor Claim for Payment	Initial Pleadings
United Steel (P) v. Whiting-Turner (D)	U.S. District Court for the District of Maryland	1:24-CV-1847-MJM	July 19, 2024	Disputed Subcontractor Claim for Payment	Initial Pleadings
United Steel (P) v. Whiting-Turner (D)	U.S. District Court for the District of Maine	2:24-CV-00232-NT	July 24, 2024	Disputed Subcontractor Claim for Payment Against Surety Bonds	Initial Pleadings

PROJECT 1

City of Pompano Beach
Fisher Family Fishing Pier

This project won the
PROJECT ACHIEVEMENT AWARD
Government - Local Category

CMAA
Florida Chapter

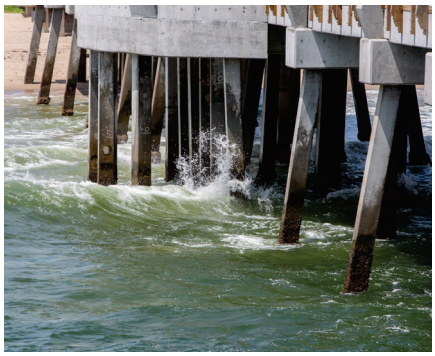














Project #1:

Contract Date: 04.26.2016 - 7.31.2020

Contract Amount: $ $9,964,551 *(Excluding the precast concrete PO that was deleted from our contract so the Owner could purchase directly for tax savings)*

Project Name: Fisher Family Pier

Project Location: 222 North Pompano Beach Blvd. Pompano Beach, FL 33062

General Scope of Work: Please see following page for scope.

Client Name and Address: City of Pompano Beach
100 West Atlantic Blvd.
Pompano Beach, FL 33060

Client Contact Phone: (954) 786-7834 (O)/ (954) 980-2208

Client Contact Email: Horacio.danovich@copbfl.com

Was the project completed on schedule? X Yes ____ No

Total Amount of Change Orders: $ 0

Reasons for Change Orders: *Project was completed under budget with savings returned to the Owner.*

Please attach photos of the finished project.

Please see previous page.

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City of Pompano Beach
Fisher Family Fishing Pier

General Scope of Work: Originally built in 1963 and opened to the public in early 1964, the City's Fishing Pier stood to be an iconic feature. Unfortunately, damage sustained during Hurricane Sandy in 2012 forced closure of the easternmost end.

The team adopted a top-down construction methodology to demolish and replace one span section at a time, working from the west to the east. It took approximately 15 days to replace each span. The design was based on building an 896-feet long pier (same length as the original pier).

The City's vision for the "Fisher Family Pier," was to build a structure that would be able to withstand the impacts and pressures of Florida's harsh weather and local environment. The pier was raised four feet higher than the old one to withstand sea level rise and storm surges. In addition, the new pier is wider than the old one to provide extra space between fishermen and visitors. This helps reduce the risk of people being hooked by fishermen casting their lines.

The width expands from 18' to 30' about 300' east of the Bait and Tackle Shop. And, the pier added four (4) shaded areas with shade structures similar to those installed at the adjacent playground as well as benches and trash receptacles strategically placed throughout the facility.

Art was a very important element as well. The team installed 30 interchangeable marine-related artwork panels lit from behind depicting local species. The panels are being used as educational components to children and adults alike. Moreover, a wall panel featuring local seashells specimens was placed on one of the Bait and Tackle shop walls.

The pier features Wi-Fi service throughout and a sophisticated security camera system was installed to help monitor activity while the pier is open to the public. Lastly, the end of the new pier features a shape like the head of a pompano fish with an "eye" for people to look down into the ocean and see marine life underneath. To support fishermen, the team constructed a Bait and Tackle Shop.

PROJECT 2

City of West Palm Beach

City Commons Waterfront Docks











Project #2:

Contract Date: 06.01.2008 - 03.11.2009

Contract Amount: $ $8,274,255 *(Excluding the purchase of the floating dock material, which was deleted from our scope of work so that the Owner could realize the tax)*

Project Name: West Palm Beach Waterfront Commons Dock Project

Project Location: 150 S Flagler Dr. West Palm Beach, FL 33401

General Scope of Work: See scope on following page.

Client Name and Address: City of West Palm Beach
401 Clematis St
West Palm Beach, FL 33401

Client Contact Phone: Joan Goldberg (561) 319-0285

Client Contact Email: fjgoldberg@bellsouth.net

Was the project completed on schedule? X Yes ____ No

Total Amount of Change Orders: $ 0

Reasons for Change Orders:

Completed within the GMP budget with savings returned to the Owner.

Please attach photos of the finished project.

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City of West Palm Beach
City Commons Waterfront Docks

General Scope of Work: The Work consisted of value engineering, permitting, site preparation, and construction necessary to construct a municipal floating dock system in the intercoastal waterways in downtown West Palm Beach, Florida.

The project consisted of floating docks, marina utilities, steel pilings, land connection structures, and aluminum gangways. The project included three dock structures totaling 26,000sqft: North Clematis Dock, South Clematis Dock, and Evernia Street Dock. The project was designed by CH2MHill, project Architect, Michael Singer Studios, Conceptual Architect, and Taylor Engineering, Engineer of record.

The project had a 12-month schedule. We were successful in completing the project on time with savings returned to the City upon project completion. The project was profitable and a positive experience for the Owner, Architects, Subcontractors, Vendors, and Whiting-Turner. West Palm Beach Marine Industry Project of the Year (2009).

Relevant Pier Work: 20"x.500 Round Steel Pipe 60' length each – combined total of 2,400 feet for the project, docks total combined length 1,278 feet and 10' – 30' wide, docks structure marine aluminum alloy 6061-T6, Floating dock IPE Hardwood grooved decking 1-1/4" x 6", floating docks designed for 93 mph wind "sustained 1 min average", 3.5 feet wave, unoccupied (no vessel loading).

Relevant Pier Utilities: Utilities installed on the floating dock system: 3" HDPE Wet fire line, 1" HDPE Potable water line and hose bibbs, Irrigation system for planter beds, Fiberglass fire dept. hose connection pedestals, Fire extinguishers and cabinets, LED lighted handrail, Pedestrian light poles and bollard lighting, Emergency Float Step Ladder. Relevant Seawall / Bulkhead: ADA compliant 10'width x 76'long aluminum gangway, ADA compliant 18" square concrete piles, pile cap, and concrete decking.

Relevant Building / Facility: Decorative stainless steel cable handrail, decorative IPE wood benches, Tucci Umbrellas, Floating Oyster bed incorporated into the floating dock system, Floating Mangrove beds incorporated into the floating docks.

Relevant Sitework / Utilities: Landside ADA ramp include concrete footings, Landscaping, Water main tap and connection.

Relevant Environmental / Permitting: Army Corp of Engineers, FDEP.

Relevant Sustainability: As noted in GreenSource Magazine, The Magazine of Sustainable Design, the project features "... the historic ecology of the Florida Shoreline and a contemporary view to sustainability... a living dock in which native mangroves, spartina grass, and oysters thrive."

PROJECT 3

Park Hotels & Resorts
Signia by Hilton & Waldorf Astoria Bonnet Creek









Project #3:

Contract Date: 02.04.2019 - 02.06.2024

Contract Amount: $ $91,211,256

Project Name: Signia by Hilton & Waldorf Astoria Bonnet Creek

Project Location: 14100 Bonnet Creek Resort Ln., Orlando, FL 32821

General Scope of Work: See scope on following page.

Client Name and Address: Park Hotels and Resorts
1775 Tysons Blvd., 7th Floor
Tysons Corner, VA 22102

Client Contact Phone: Carl Mayfield, 571-302-5760

Client Contact Email: cmayfield@pkhotelsandresorts.com

Was the project completed on schedule? X Yes ____ No

Total Amount of Change Orders: $ $7,291,129

Reasons for Change Orders:

Change orders were primarily from Owner added scope and design changes for brand standards, unforeseen conditions in the field such as extended pile depths for the Hilton Ballroom, extended time on the project due to the pile issue, schedule acceleration and code interpretation changes due to the authority having jurisdiction.

Please attach photos of the finished project.

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Park Hotels & Resorts
Signia by Hilton & Waldorf Astoria Bonnet Creek

General Scope of Work: This project is distinctive because the ballroom is being built over a pond. A pre-mobilization plan was critical for the early work to get the deck level on the second floor finished which eliminated several safety hazards. Sheet piles, pipe piles, concrete pile caps, steel pile caps, steel erection, scaffold installation, fireproofing and exterior skin trade partners had to work over and around the water hazards on both sides of the project. The trades were creative in their approach to the work, including the use of crane mats to create floating walkways to access some of these areas.

The team also used a suspended scaffolding system over the water to install fireproofing, thermal insulation and MEP work under the building. The suspended scaffold deck on the underside of the structure was used to cantilever out and support the vertical scaffold to complete the exterior skin installation, both occurring over water. In addition, the team built two temporary timber bridges at the start of the project for logistics access to the golf course side of the site, two new fireman's walkway bridges for pedestrian egress and firefighter access at completion, a connector bridge connecting the new building to the existing building and a recently added enhancement bridge to access existing areas.

PROJECT 4

Schussler Creative / Creative Attractions, LLC

The Boat House Restaurant









Project #4:

Contract Date: 11.01.2013 - 03.20.2015

Contract Amount: $16,799,190

Project Name: The Boat House Restaurant

Project Location: 1620 E. Buena Vista Drive Lake Buena Vista, FL 32830

General Scope of Work: See scope on following page.

Client Name and Address: Schussler Creative
858 Decatur Ave North
Golden Valley MN 55427

Client Contact Phone: Steve Schussler, 612-751-3600

Client Contact Email: steven@schusslercreative.com

Was the project completed on schedule? X Yes ____ No

Total Amount of Change Orders: $ $100,000

Reasons for Change Orders:
Scope changes were owner additions dealing with final theming and jurisdictional required modifications

Please attach photos of the finished project.

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END OF ATTACHMENT E

Schussler Creative / Creative Attractions, LLC

The Boat House Restaurant

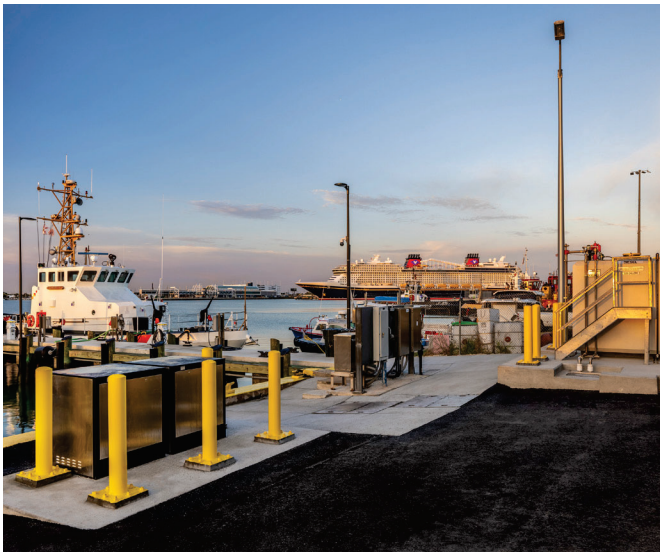
General Scope of Work: The Boathouse is an 18,000 SF, themed restaurant at Disney Springs that includes a 5,000 SF kitchen and 1,000 SF of retail space. The facility can seat over 400 people in six themed dining rooms, and an additional 200 exterior seats are located on the boardwalk and floating docks.

There are three bars, including a raw bar, a more intimate library bar, and an exterior dock bar overlooking marina. The Boathouse also features a $2 million inventory of dream boats from the 30s, 40s and 50s on display, along with amphicar and Italian water taxi rides.

PROJECT 5

United States Coast Guard
Rebuild Station Port Canaveral & Waterfront









Project #~~5~~4:

Contract Date: 04.15.2021 - 03.13.2024

Contract Amount: $ $26,837,623

Project Name: Rebuild Station Port Canaveral and Waterfront

Project Location: 9235 Grouper Rd. Cape Canaveral, FL 32920

General Scope of Work: See scope on following page.

Client Name and Address: USCG - FDCC Norfolk
5505 Robin Hood Rd. Suite K
Norfolk, VA 2353

Client Contact Phone: LCDR Meghan Lynster, 757-641-4261

Client Contact Email: _____

Was the project completed on schedule? X Yes ____ No Per agreed upon owner change order dates.

Total Amount of Change Orders: $ $2,163,814

Reasons for Change Orders: _____
Unforeseen Conditions which resulted in schedule delays. Owner Added Scope of Work

Please attach photos of the finished project.

REMAINDER OF PAGE INTENTIONALLY LEFT BLANK

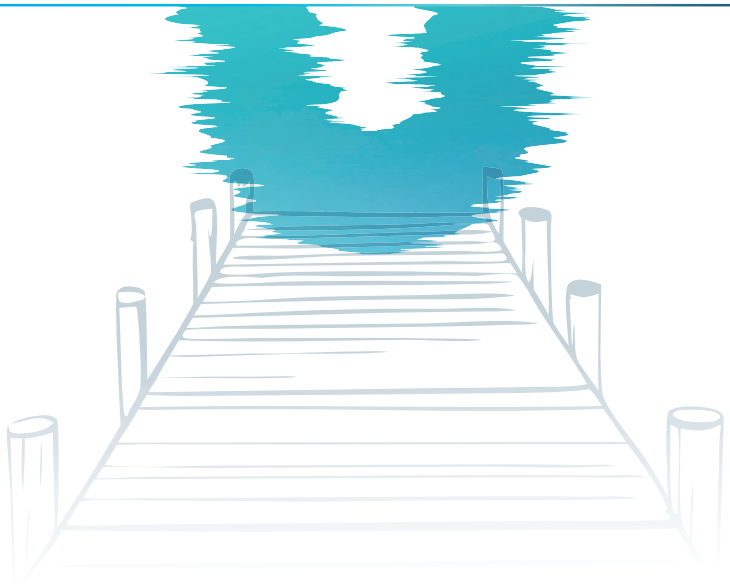
END OF ATTACHMENT E

United States Coast Guard
Rebuild Station Port Canaveral & Waterfront

General Scope of Work: This phased, design-build project rebuilt the U.S. Coast Guard Station Port Canaveral. A focal point of the project is the Mission Building, a 28,000 SF, two-story facility consisting of a command center, administration space, a kitchen, boat maintenance bays and sleeping quarters.

The scope also included a pier, phased site development throughout an active military base, a retail exchange building and the renovation of marine elements. The base was occupied during construction; safety and minimal disruptions were a main focus. The Mission Building is Green Building Initiative certified.

COST PROPOSAL



City of Flagler Beach
P.O. Box 70 • 105 South Second Street
Flagler Beach, Florida 32136
Phone (386) 517-2000

ENGINEERING DEPARTMENT

CMA Contract for the Pier Construction
ADDENDUM NO. 1

1. Add this paragraph before Paragraph 5 in the RFQ:

BID FORM

The work write-up / bid form is a general outline of the work to be performed. The total price of this project shall include:

DATE: 1.15.2025

TOTAL FEE: $ 1,866,244.00

IN WORDS: One Million Eight Hundred Sixty Six Thousand Two Hundred Forty Four Dollars

All work to be performed in a professional manner, in accordance with the Scope of Work as outlined in the Form Contract. The contractor shall be responsible for all of the services required from the date of Notice to Proceed until the Pier Construction project is officially closed out and 100% complete.

I hereby certify that I am licensed by the State of Florida, Department of Business and Professional Regulation.

CONTRACTOR'S SIGNATURE: BAVoyles

CONTRACTOR'S PRINTED NAME: Brent Voyles

CONTRACTOR'S BUSINESS ADDRESS: 10407 Centurion Pkwy N., Ste. 110
Jacksonville, FL 32256

CONTRACTOR'S PHONE NUMBER: brent.voyles@whiting-turner.com

CONTRACTOR'S EMAIL ADDRESS: brent.voyles@whiting-turner.com

Pricing Notes:
1 - Includes General Liability Insurance on our costs only. CMA Addendum needs to be included in the contractors' agreement. If not included, GLI will be charged on the entire project amount. Estimated add of $156,837 on $18,000,000 project. Reference pages 34-35 for Addendum.

2 - Includes full time staff onsite during construction duration of 18-months and reasonable general requirement assumptions. We are open to discussions to help firm up these assumptions and potentially reduce project costs for The City of Flagler Beach.

Receipt is acknowledged of the following addenda:

No. 1 Dated No date given for addendum online or on the form.

No. _____ Dated Whiting-Turner downloaded it on 1.08.25

No. _____ Dated _____

Bidder agrees that the Owner has the right to waive informalities in any bid; reject any or all proposals, in whole or in part; re-bid a project, in whole or in part; and to accept a proposal that in its judgment is the lowest responsive bid.

Respectfully submitted, By:

1.15.2025
(Date)

BA Voyles
(Signature)

Senior Vice President
(Title)

THE WHITING TURNER CONTRACTING COMPANY SEAL 1934 MARYLAND

(SEAL – IF BIDDER IS A CORPORATION)

2. Replace paragraph 5 in the RFQ with the following:

5. RESPONSE, FORMAT, CONTENT, AND EVALUATION CRITERIA

Responses must include the following information in this sequence. Respondents are invited to include innovative methods and/or procedures, which they can provide to assist in ensuring successful completion of the project. Unique qualities and/or capabilities and cost efficiencies may be identified. For each of the specific areas listed below, your responses should include a description of responders' qualification to service as a CMA.

Written Requirements for Responses to Request for Qualifications	Possible Points For Each Section of Proposal
1. Cover Letter (limit to one page)	0 points
2. Complete the Forms as provided on Attachments A through D	5 points
3. COMPANY PROFILE. Describe your firm's history, size, resources, philosophy of service, typical volume of work, financial stability, and basic construction management techniques and methods. Describe how your particular expertise, experience and/or techniques can be an advantage to the District in completing the projects.	15 points
4. PROJECT APPROACH. Describe your approach to Providing CMA Services described in the Form Contract. a. Preconstruction Services, b. Construction Services as CM/A. Discuss how you would provide leadership to facilitate teamwork and communications among all parties involved in the project. c. Proposed Team: Identify personnel to whom construction management responsibilities will be assigned by names, titles, roles, qualifications, and experience.	30 points
5. PAST PERFORMANCE. Per Attachment E, list four (4) recent and relevant projects where your firm provided CMA services, demonstrating your firm's ability to serve as the City's representative for project construction oversight and performing all of the duties listed in the Form Contract. Additional points will be awarded for direct experience constructing concrete and/or wood fishing piers.	35 points
6. COST PROPOSAL. Provide a lump sum price to perform all of the services provided in the RFQ/Form Contract	15 points maximum as calculated: $\frac{Lowest\ Bid}{Bidder's\ Bid} \times 15 = Score$
TOTAL POSSIBLE SCORE	**100 POINTS**

Disclaimer: It is the sole responsibility of bidder to confirm that all addenda have been received prior to submitting bid and acknowledge such in bid documents

END OF ADDENDUM 1

RFQ – Construction Manager Adviser Flagler Fishing Pier	
Written Requirements for Responses to Request for Qualifications	**Possible Points**
1. Cover Letter	**0**
2. Complete the Forms as provided on Attachments A through D	**5**
3. COMPANY PROFILE. Describe your firm's history, size, resources, philosophy of service, typical volume ofwork, financial stability, and basic construction management techniques and methods. Describe how your particular expertise, experience and/or techniques can be an advantage to the District in completing the projects.	**15**
4. PROJECT APPROACH. Describe your approach to Providing CMA Services described in the Form Contract. a. Preconstruction Services, b. Construction Services as CM/A. Discuss how you would provide leadership to facilitate teamwork and communications among all parties involved in the project. c. Proposed Team: Identify personnel to whom construction management responsibilities will be assigned by names, titles, roles, qualifications, and experience.	**30**
5. PAST PERFORMANCE. Per Attachment E, list four (4) recent and relevant projects where your firm provided CMA services, demonstrating your firm's ability to serve as the City's representative for project construction oversight and performing all of the duties listed in the Form Contract. Additional points will be awarded for direct experience constructing concrete and/or wood fishing piers.	**35**
6. COST PROPOSAL. Provide a lump sum price to perform all of the services provided in the RFQ/Form Contract	**15**
TOTAL SCORE	**100**

RFQ – Construction Manager Adviser Flagler Fishing Pier		
Applicant: Whiting-Turner		
Written Requirements for Responses to Request for Qualifications	**Possible Points**	**Score**
1. Cover Letter	**0**	**0**
2. Complete the Forms as provided on Attachments A through D	**5**	**5.00**
3. COMPANY PROFILE. Describe your firm's history, size, resources, philosophy of service, typical volume ofwork, financial stability, and basic construction management techniques and methods. Describe how your particular expertise, experience and/or techniques can be an advantage to the District in completing the projects.	**15**	**15.00**
4. PROJECT APPROACH. Describe your approach to Providing CMA Services described in the Form Contract. a. Preconstruction Services, b. Construction Services as CM/A. Discuss how you would provide leadership to facilitate teamwork and communications among all parties involved in the project. c. Proposed Team: Identify personnel to whom construction management responsibilities will be assigned by names, titles, roles, qualifications, and experience.	**30**	**30.00**
5. PAST PERFORMANCE. Per Attachment E, list four (4) recent and relevant projects where your firm provided CMA services, demonstrating your firm's ability to serve as the City's representative for project construction oversight and performing all of the duties listed in the Form Contract. Additional points will be awarded for direct experience constructing concrete and/or wood fishing piers.	**35**	**33.00**
6. COST PROPOSAL. Provide a lump sum price to perform all of the services provided in the RFQ/Form Contract	**15**	**5.51**
TOTAL SCORE	**100**	**88.51**

Evaluator: Lee Richards

RFQ – Construction Manager Adviser Flagler Fishing Pier		
Applicant: Procon Consulting		
Written Requirements for Responses to Request for Qualifications	**Possible Points**	**Score**
1. Cover Letter	**0**	**0**
2. Complete the Forms as provided on Attachments A through D	**5**	**5.00**
3. COMPANY PROFILE. Describe your firm's history, size, resources, philosophy of service, typical volume ofwork, financial stability, and basic construction management techniques and methods. Describe how your particular expertise, experience and/or techniques can be an advantage to the District in completing the projects.	**15**	**13.00**
4. PROJECT APPROACH. Describe your approach to Providing CMA Services described in the Form Contract. a. Preconstruction Services, b. Construction Services as CM/A. Discuss how you would provide leadership to facilitate teamwork and communications among all parties involved in the project. c. Proposed Team: Identify personnel to whom construction management responsibilities will be assigned by names, titles, roles, qualifications, and experience.	**30**	**20.00**
5. PAST PERFORMANCE. Per Attachment E, list four (4) recent and relevant projects where your firm provided CMA services, demonstrating your firm's ability to serve as the City's representative for project construction oversight and performing all of the duties listed in the Form Contract. Additional points will be awarded for direct experience constructing concrete and/or wood fishing piers.	**35**	**30.00**
6. COST PROPOSAL. Provide a lump sum price to perform all of the services provided in the RFQ/Form Contract	**15**	**15.00**
TOTAL SCORE	**100**	**83**

Evaluator: Lee Richards

RFQ – Construction Manager Adviser Flagler Fishing Pier		
Applicant: England-Thims & Miller, Inc.		
Written Requirements for Responses to Request for Qualifications	**Possible Points**	**Score**
1. Cover Letter	**0**	**0**
2. Complete the Forms as provided on Attachments A through D	**5**	**5.00**
3. COMPANY PROFILE. Describe your firm's history, size, resources, philosophy of service, typical volume ofwork, financial stability, and basic construction management techniques and methods. Describe how your particular expertise, experience and/or techniques can be an advantage to the District in completing the projects.	**15**	**13.00**
4. PROJECT APPROACH. Describe your approach to Providing CMA Services described in the Form Contract. a. Preconstruction Services, b. Construction Services as CM/A. Discuss how you would provide leadership to facilitate teamwork and communications among all parties involved in the project. c. Proposed Team: Identify personnel to whom construction management responsibilities will be assigned by names, titles, roles, qualifications, and experience.	**30**	**28.00**
5. PAST PERFORMANCE. Per Attachment E, list four (4) recent and relevant projects where your firm provided CMA services, demonstrating your firm's ability to serve as the City's representative for project construction oversight and performing all of the duties listed in the Form Contract. Additional points will be awarded for direct experience constructing concrete and/or wood fishing piers.	**35**	**33.00**
6. COST PROPOSAL. Provide a lump sum price to perform all of the services provided in the RFQ/Form Contract	**15**	**12.46**
TOTAL SCORE	**100**	**91.46**

Evaluator: Lee Richards

RFQ – Construction Manager Adviser Flagler Fishing Pier		
Applicant: Whiting-Turner		
Written Requirements for Responses to Request for Qualifications	**Possible Points**	**Score**
1. Cover Letter	**0**	**0**
2. Complete the Forms as provided on Attachments A through D	**5**	**5.00**
3. COMPANY PROFILE. Describe your firm's history, size, resources, philosophy of service, typical volume ofwork, financial stability, and basic construction management techniques and methods. Describe how your particular expertise, experience and/or techniques can be an advantage to the District in completing the projects.	**15**	**12.00**
4. PROJECT APPROACH. Describe your approach to Providing CMA Services described in the Form Contract. a. Preconstruction Services, b. Construction Services as CM/A. Discuss how you would provide leadership to facilitate teamwork and communications among all parties involved in the project. c. Proposed Team: Identify personnel to whom construction management responsibilities will be assigned by names, titles, roles, qualifications, and experience.	**30**	**24.00**
5. PAST PERFORMANCE. Per Attachment E, list four (4) recent and relevant projects where your firm provided CMA services, demonstrating your firm's ability to serve as the City's representative for project construction oversight and performing all of the duties listed in the Form Contract. Additional points will be awarded for direct experience constructing concrete and/or wood fishing piers.	**35**	**30.00**
6. COST PROPOSAL. Provide a lump sum price to perform all of the services provided in the RFQ/Form Contract	**15**	**5.51**
TOTAL SCORE	**100**	**76.51**

Evaluator: Bill Freeman

RFQ – Construction Manager Adviser Flagler Fishing Pier		
Applicant: Procon Consulting		
Written Requirements for Responses to Request for Qualifications	**Possible Points**	**Score**
1. Cover Letter	**0**	**0**
2. Complete the Forms as provided on Attachments A through D	**5**	**4**
3. COMPANY PROFILE. Describe your firm's history, size, resources, philosophy of service, typical volume ofwork, financial stability, and basic construction management techniques and methods. Describe how your particular expertise, experience and/or techniques can be an advantage to the District in completing the projects.	**15**	**12**
4. PROJECT APPROACH. Describe your approach to Providing CMA Services described in the Form Contract. a. Preconstruction Services, b. Construction Services as CM/A. Discuss how you would provide leadership to facilitate teamwork and communications among all parties involved in the project. c. Proposed Team: Identify personnel to whom construction management responsibilities will be assigned by names, titles, roles, qualifications, and experience.	**30**	**24**
5. PAST PERFORMANCE. Per Attachment E, list four (4) recent and relevant projects where your firm provided CMA services, demonstrating your firm's ability to serve as the City's representative for project construction oversight and performing all of the duties listed in the Form Contract. Additional points will be awarded for direct experience constructing concrete and/or wood fishing piers.	**35**	**24**
6. COST PROPOSAL. Provide a lump sum price to perform all of the services provided in the RFQ/Form Contract	**15**	**15**
TOTAL SCORE	**100**	**79**

Evaluator: _____

RFQ – Construction Manager Adviser Flagler Fishing Pier		
Applicant: Thims & Miller, Inc.		
Written Requirements for Responses to Request for Qualifications	**Possible Points**	**Score**
1. Cover Letter	**0**	**0.00**
2. Complete the Forms as provided on Attachments A through D	**5**	**5.00**
3. COMPANY PROFILE. Describe your firm's history, size, resources, philosophy of service, typical volume ofwork, financial stability, and basic construction management techniques and methods. Describe how your particular expertise, experience and/or techniques can be an advantage to the District in completing the projects.	**15**	**14.00**
4. PROJECT APPROACH. Describe your approach to Providing CMA Services described in the Form Contract. a. Preconstruction Services, b. Construction Services as CM/A. Discuss how you would provide leadership to facilitate teamwork and communications among all parties involved in the project. c. Proposed Team: Identify personnel to whom construction management responsibilities will be assigned by names, titles, roles, qualifications, and experience.	**30**	**28.00**
5. PAST PERFORMANCE. Per Attachment E, list four (4) recent and relevant projects where your firm provided CMA services, demonstrating your firm's ability to serve as the City's representative for project construction oversight and performing all of the duties listed in the Form Contract. Additional points will be awarded for direct experience constructing concrete and/or wood fishing piers.	**35**	**30.00**
6. COST PROPOSAL. Provide a lump sum price to perform all of the services provided in the RFQ/Form Contract	**15**	**12.46**
TOTAL SCORE	**100**	**89.46**

Evaluator: Bill Freeman

RFQ – Construction Manager Adviser Flagler Fishing Pier		
Applicant: Whiting-Turner		
Written Requirements for Responses to Request for Qualifications	**Possible Points**	**Score**
1. Cover Letter	**0**	**0**
2. Complete the Forms as provided on Attachments A through D	**5**	**4**
3. COMPANY PROFILE. Describe your firm's history, size, resources, philosophy of service, typical volume ofwork, financial stability, and basic construction management techniques and methods. Describe how your particular expertise, experience and/or techniques can be an advantage to the District in completing the projects.	**15**	**13**
4. PROJECT APPROACH. Describe your approach to Providing CMA Services described in the Form Contract. a. Preconstruction Services, b. Construction Services as CM/A. Discuss how you would provide leadership to facilitate teamwork and communications among all parties involved in the project. c. Proposed Team: Identify personnel to whom construction management responsibilities will be assigned by names, titles, roles, qualifications, and experience.	**30**	**27**
5. PAST PERFORMANCE. Per Attachment E, list four (4) recent and relevant projects where your firm provided CMA services, demonstrating your firm's ability to serve as the City's representative for project construction oversight and performing all of the duties listed in the Form Contract. Additional points will be awarded for direct experience constructing concrete and/or wood fishing piers.	**35**	**35**
6. COST PROPOSAL. Provide a lump sum price to perform all of the services provided in the RFQ/Form Contract	**15**	**5.51**
TOTAL SCORE	**100**	**84.51**

Evaluator: ___Chris Novak _____

RFQ – Construction Manager Adviser Flagler Fishing Pier		
Applicant: Procon Consulting		
Written Requirements for Responses to Request for Qualifications	**Possible Points**	**Score**
1. Cover Letter	**0**	**0**
2. Complete the Forms as provided on Attachments A through D	**5**	**5**
3. COMPANY PROFILE. Describe your firm's history, size, resources, philosophy of service, typical volume ofwork, financial stability, and basic construction management techniques and methods. Describe how your particular expertise, experience and/or techniques can be an advantage to the District in completing the projects.	**15**	**15**
4. PROJECT APPROACH. Describe your approach to Providing CMA Services described in the Form Contract. a. Preconstruction Services, b. Construction Services as CM/A. Discuss how you would provide leadership to facilitate teamwork and communications among all parties involved in the project. c. Proposed Team: Identify personnel to whom construction management responsibilities will be assigned by names, titles, roles, qualifications, and experience.	**30**	**28**
5. PAST PERFORMANCE. Per Attachment E, list four (4) recent and relevant projects where your firm provided CMA services, demonstrating your firm's ability to serve as the City's representative for project construction oversight and performing all of the duties listed in the Form Contract. Additional points will be awarded for direct experience constructing concrete and/or wood fishing piers.	**35**	**32**
6. COST PROPOSAL. Provide a lump sum price to perform all of the services provided in the RFQ/Form Contract	**15**	**15**
TOTAL SCORE	**100**	**95**

Evaluator: _Chris Novak _____

RFQ – Construction Manager Adviser Flagler Fishing Pier		
Applicant: Thims & Miller, Inc.		
Written Requirements for Responses to Request for Qualifications	**Possible Points**	**Score**
1. Cover Letter	**0**	**0**
2. Complete the Forms as provided on Attachments A through D	**5**	**4**
3. COMPANY PROFILE. Describe your firm's history, size, resources, philosophy of service, typical volume ofwork, financial stability, and basic construction management techniques and methods. Describe how your particular expertise, experience and/or techniques can be an advantage to the District in completing the projects.	**15**	**15**
4. PROJECT APPROACH. Describe your approach to Providing CMA Services described in the Form Contract. a. Preconstruction Services, b. Construction Services as CM/A. Discuss how you would provide leadership to facilitate teamwork and communications among all parties involved in the project. c. Proposed Team: Identify personnel to whom construction management responsibilities will be assigned by names, titles, roles, qualifications, and experience.	**30**	**30**
5. PAST PERFORMANCE. Per Attachment E, list four (4) recent and relevant projects where your firm provided CMA services, demonstrating your firm's ability to serve as the City's representative for project construction oversight and performing all of the duties listed in the Form Contract. Additional points will be awarded for direct experience constructing concrete and/or wood fishing piers.	**35**	**34**
6. COST PROPOSAL. Provide a lump sum price to perform all of the services provided in the RFQ/Form Contract	**15**	**12.46**
TOTAL SCORE	**100**	**95.46**

Evaluator: Chris Novak

SCOPE OF CONSTRUCTION MANAGER'S BASIC SERVICES

§ 3.3 Construction Phase

§ 3.3.1 The Construction Manager shall provide on-site administration of the Contracts for Construction in cooperation with the Architect as set forth below and in AIA Document A232™–2019, General Conditions of the Contract for Construction, Construction Manager as Adviser Edition. If the Owner and Contractor modify AIA Document A232–2019, those modifications shall not affect the Construction Manager's services under this Agreement unless the Owner and the Construction Manager amend this Agreement.

§ 3.3.2 Subject to Section 4.2 and except as provided in Section 3.3.30, the Construction Manager's responsibility to provide Construction Phase Services commences with the award of the initial Contract for Construction and terminates on the date the Architect issues the final Certificate for Payment.

§ 3.3.3 The Construction Manager shall provide a staffing plan to include one or more representatives who shall be in attendance at the Project site whenever the Work is being performed.

§ 3.3.4 The Construction Manager shall provide administrative, management and related services to coordinate scheduled activities and responsibilities of the Contractors with each other and with those of the Construction Manager, the Owner and the Architect. The Construction Manager shall coordinate the activities of the Contractors in accordance with the latest approved Project schedule and the Contract Documents.

§ 3.3.5 The Construction Manager shall review and analyze the construction schedules provided by the Contractors to update the Project schedule, incorporating the activities of the Owner, Architect, and Contractors on the Project, including activity sequences and durations, allocation of labor and materials, processing of Shop Drawings, Product Data and Samples, and delivery and procurement of products, including those that must be ordered in advance of construction. The Project schedule shall include the Owner's occupancy requirements showing portions of the Project having occupancy priority. The Construction Manager shall update and reissue the Project schedule as required to show current conditions. If an update indicates that the previously approved Project schedule may not be met, the Construction Manager shall recommend corrective action to the Owner and Architect.

§ 3.3.6 The Construction Manager shall schedule and conduct meetings to discuss matters such as procedures, progress, coordination, and scheduling of the Work, and to develop solutions to issues identified. The Construction Manager shall prepare and promptly distribute minutes to the Owner, Architect and Contractors.

§ 3.3.7 In accordance with the Contract Documents and the latest approved Project schedule, and utilizing information from the Contractors, the Construction Manager shall review, analyze, schedule and coordinate the overall sequence of construction and assignment of space in areas where the Contractors are performing Work.

§ 3.3.8 The Construction Manager shall coordinate all tests and inspections required by the Contract Documents or governmental authorities, observe the on-site testing and inspections, and arrange for the delivery of test and inspection reports to the Owner and Architect.

§ 3.3.9 The Construction Manager shall endeavor to obtain satisfactory performance from each of the Contractors. The Construction Manager shall recommend courses of action to the Owner when requirements of a Contract are not being fulfilled.

§ 3.3.10 The Construction Manager shall monitor and evaluate actual costs for activities in progress and estimates for uncompleted tasks and advise the Owner and Architect as to variances between actual costs and budgeted or estimated costs. If a Contractor is required to submit a Control Estimate, the Construction Manager shall meet with the Owner and Contractor to review the Control Estimate. The Construction Manager shall promptly notify the Contractor if there are any inconsistencies or inaccuracies in the information presented. The Construction Manager shall also report the Contractor's cost control information to the Owner.

§ 3.3.11 The Construction Manager shall develop cash flow reports and forecasts for the Project and include them in the Construction Manager's progress reports.

§ 3.3.12 The Construction Manager shall maintain accounting records on authorized Work performed under unit costs, additional Work performed on the basis of actual costs of labor and materials, and other Work requiring accounting records.

§ 3.3.12.1 The Construction Manager shall develop and implement procedures for the review and processing of Applications for Payment by Contractors for progress and final payments.

§ 3.3.12.2 Not more frequently than monthly, the Construction Manager shall review and certify the amounts due the respective Contractors as follows:

.1 Where there is only one Contractor responsible for performing the Work, the Construction Manager shall, within seven days after the Construction Manager receives the Contractor's Application for Payment, review the Application, certify the amount the Construction Manager determines is due the Contractor, and forward the Contractor's Application and Certificate for Payment to the Architect.

.2 Where there is more than one Contractor responsible for performing different portions of the Project, the Construction Manager shall, within seven days after the Construction Manager receives each Contractor's Application for Payment: (1) review the Applications and certify the amount the Construction Manager determines is due each Contractor; (2) prepare a Summary of Contractors' Applications for Payment by summarizing information from each Contractor's Application for Payment; (3) prepare a Project Application and Certificate for Payment; (4) certify the total amount the Construction Manager determines is due all Contractors collectively; and (5) forward the Summary of Contractors' Applications for Payment and Project Application and Certificate for Payment to the Architect.

§ 3.3.12.3 The Construction Manager's certification for payment shall constitute a representation to the Owner, based on the Construction Manager's evaluations of the Work and on the data comprising the Contractors' Applications for Payment, that, to the best of the Construction Manager's knowledge, information and belief, the Work has progressed to the point indicated, the quality of the Work is in accordance with the Contract Documents, and the Contractors are entitled to payment in the amount certified. The foregoing representations are subject to (1) an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion; (2) results of subsequent tests and inspections; (3) correction of minor deviations from the Contract Documents prior to completion; and (4) specific qualifications expressed by the Construction Manager. The issuance of a Certificate for Payment shall further constitute a recommendation to the Architect and Owner that the Contractor be paid the amount certified.

§ 3.3.12.4 The certification of an Application for Payment or a Project Application for Payment by the Construction Manager shall not be a representation that the Construction Manager has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work; (2) reviewed construction means, methods, techniques, procedures, or sequences for a Contractor's own Work; (3) reviewed copies of requisitions received from Subcontractors and suppliers and other data requested by the Owner to substantiate each Contractor's right to payment; or (4) ascertained how or for what purpose that Contractor has used money previously paid on account of the Contract Sum.

§ 3.3.13 The Construction Manager shall obtain and review the safety programs developed by each Contractor solely and exclusively for purposes of coordinating the safety programs with those of the other Contractors and for making recommendations for any additional safety measures to be considered in the Work of the Contractors. The Construction Manager's responsibilities for coordination of safety programs shall not extend to direct control over or charge of the acts or omissions of the Contractors, Subcontractors, agents or employees of the Contractors or Subcontractors, or any other persons performing portions of the Work and not directly employed by the Construction Manager.

§ 3.3.14 The Construction Manager shall determine in general that the Work of each Contractor is being performed in accordance with the requirements of the Contract Documents and notify the Owner, Contractor and Architect of defects and deficiencies in the Work. The Construction Manager shall have the authority to reject Work that does not conform to the Contract Documents and shall notify the Architect about the rejection. The failure of the Construction Manager to reject Work shall not constitute acceptance of the Work. The Construction Manager shall record any rejection of Work in its daily log and include information regarding the rejected Work in its progress reports to the Architect and Owner pursuant to Section 3.3.22.1. Upon written authorization from the Owner, the Construction Manager may require and make arrangements for additional inspection or testing of the Work in accordance with the provisions of the Contract Documents, whether or not the Work is fabricated, installed or completed, and the Construction Manager shall give timely notice to the Architect of when and where the tests and inspections are to be made so that the Architect may be present for such procedures.

§ 3.3.15 The Construction Manager shall advise and consult with the Owner and Architect during the performance of its Construction Phase Services. The Construction Manager shall have authority to act on behalf of the Owner only to the extent provided in this Agreement. The Construction Manager shall not have control over, charge of, or responsibility for the construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the Work of each of the Contractors, since these are solely the Contractor's rights and responsibilities under the Contract Documents. The Construction Manager shall not be responsible for a Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Construction Manager shall be responsible for the Construction Manager's negligent acts or omissions, but shall not have control over or charge of, and shall not be responsible for, acts or omissions of the Contractors, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

§ 3.3.16 The Construction Manager shall transmit to the Architect requests for interpretations, and requests for information of the meaning and intent of the Drawings and Specifications, and provide its written recommendation. The Construction Manager shall assist in the resolution of questions that may arise.

§ 3.3.17 The Construction Manager shall review requests for changes, assist in negotiating Contractors' proposals, submit recommendations to the Architect and Owner, and, if the proposed changes are accepted or required by the Owner, prepare Change Orders or Construction Change Directives that incorporate the Architect's modifications to the Contract Documents.

§ 3.3.18 The Construction Manager shall assist the Initial Decision Maker in the review, evaluation and documentation of Claims, subject to Section 4.2.2.7.

§ 3.3.19 Utilizing the submittal schedules provided by each Contractor, the Construction Manager shall prepare, and revise as necessary, a Project submittal schedule incorporating information from the Owner, Owner's consultants, Owner's Separate Contractors and vendors, governmental agencies, and participants in the Project under the management of the Construction Manager. The Project submittal schedule and any revisions shall be submitted to the Architect for approval.

§ 3.3.20 The Construction Manager shall promptly review all Shop Drawings, Product Data, Samples, and other submittals from the Contractors for compliance with the submittal requirements of the Contract, coordinate submittals with information contained in related documents, and transmit to the Architect those that the Construction Manager recommends for approval. The Construction Manager's actions shall be taken in accordance with the Project submittal schedule approved by the Architect, or in the absence of an approved Project submittal schedule, with such reasonable promptness as to cause no delay in the Work or in the activities of the Contractors, the Owner, or the Architect.

§ 3.3.20.1 If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of the Contractors by the Contract Documents, the Construction Manager shall review those submittals for sequencing, constructability, and coordination

impacts on the other Contractors. The Construction Manager shall discuss its findings with the Owner and the Architect, and coordinate resolution, as necessary, of any such impacts.

§ 3.3.21 The Construction Manager shall keep a daily log containing a record of weather, each Contractor's Work on the site, number of workers, identification of equipment, Work accomplished, problems encountered, and other similar relevant data as the Owner may require.

§ 3.3.21.1 The Construction Manager shall collect, review for accuracy, and compile the Contractors' daily logs; and include them in the Construction Manager's reports prepared and submitted in accordance with section 3.3.21.2.

§ 3.3.21.2 The Construction Manager shall record the progress of the Project. On a monthly basis, or otherwise as agreed to by the Owner, the Construction Manager shall submit written progress reports to the Owner and Architect, showing percentages of completion and other information identified below:

.1 Work completed for the period;
.2 Project schedule status;
.3 Submittal schedule and status report, including a summary of remaining and outstanding submittals;
.4 Request for information, Change Order, and Construction Change Directive status reports;
.5 Tests and inspection reports;
.6 Status report of nonconforming and rejected Work;
.7 Daily logs;
.8 Summary of all Contractors' Applications for Payment;
.9 Cumulative total of the Cost of the Work to date including the Construction Manager's compensation and reimbursable expenses at the job site, if any;
.10 Cash-flow and forecast reports;
.11 Photographs to document the progress of the Project;
.12 Status reports on permits and approvals of authorities having jurisdiction; and
.13 Any other items the Owner may require.

§ 3.3.21.3 In addition, for Projects constructed on the basis of the Cost of the Work, the Construction Manager shall include the following additional information in its progress reports:

.1 Contractors' work force reports;
.2 Equipment utilization report;
.3 Cost summary, comparing actual costs to updated cost estimates; and
.4 Any other items as the Owner may require.

§ 3.3.22 Utilizing the documents provided by the Contractors, the Construction Manager shall make available, at the Project site, the Contract Documents, including Change Orders, Construction Change Directives, and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and the approved Shop Drawings, Product Data, Samples, and similar required submittals. These shall be in electronic form or paper copy, available to the Owner, Architect, and Contractors. Upon completion of the Project, the Construction Manager shall deliver them to the Owner.

§ 3.3.23 The Construction Manager shall arrange for the delivery, storage, protection and security of Owner-purchased materials, systems and equipment that are a part of the Project until such items are incorporated into the Work.

§ 3.3.24 With the Owner's maintenance personnel, the Construction Manager shall observe the Contractors' final testing and start-up of utilities, operational systems and equipment and observe any commissioning as the Contract Documents may require.

§ 3.3.25 When the Construction Manager considers each Contractor's Work or a designated portion thereof substantially complete, the Construction Manager shall, jointly with that Contractor, prepare for the Architect a list of incomplete or unsatisfactory items and a schedule for their completion. The Construction Manager shall assist the Architect in conducting inspections to determine whether the Work or designated portion thereof is substantially complete.

§ 3.3.26 When the Work of all of the Contractors, or designated portion thereof, is substantially complete, the Construction Manager shall prepare, and the Construction Manager and Architect shall execute, a Certificate of Substantial Completion. The Construction Manager shall submit the executed Certificate to the Owner and Contractors. The Construction Manager shall coordinate the correction and completion of the Work. Following issuance of a Certificate of Substantial Completion of the Work or a designated portion thereof, the Construction Manager shall perform an inspection to confirm the completion of the Work of the Contractors and make recommendations to the Architect when the Work of all of the Contractors is ready for final inspection. The Construction Manager shall assist the Architect in conducting the final inspection.

§ 3.3.27 The Construction Manager shall forward to the Owner, with a copy to the Architect, the following information received from the Contractors: (1) certificates of insurance ; (2) consent of surety or sureties, if any, to reduction in or partial release of retainage or the making of final payment; (3) affidavits, receipts, releases and waivers of liens or bonds indemnifying the Owner against liens; and (4) any other documentation required of the Contractors under the Contract Documents, including warranties and similar submittals.

§ 3.3.28 The Construction Manager shall coordinate receipt, and delivery to the Owner, of other items provided by the Contractors, such as keys, manuals, and record drawings. The Construction Manager shall forward to the Architect a final Project Application for Payment and Project Certificate for Payment, or a final Application for Payment and final Certificate for Payment, upon the Contractors' compliance with the requirements of the Contract Documents.

§ 3.3.29 Duties, responsibilities and limitations of authority of the Construction Manager as set forth in the Contract Documents shall not be restricted, modified or extended without written consent of the Owner, Construction Manager, Architect, and Contractors. Consent shall not be unreasonably withheld.

§ 3.3.30 Upon request of the Owner, and prior to the expiration of one year from the date of Substantial Completion, the Construction Manager shall, without additional compensation, conduct a meeting with the Owner and Architect to review the facility operations and performance.

THE DAYTONA BEACH
NEWS-JOURNAL PO Box 631244 Cincinnati, OH 45263-1244

AFFIDAVIT OF PUBLICATION

Penny Overstreet
City Of Flagler - Legal
Po Box 70
Flagler Beach FL 32136-0070

STATE OF WISCONSIN, COUNTY OF BROWN

Before the undersigned authority personally appeared, who on oath says that he or she is the Legal Coordinator of The News-Journal, published in Volusia and Flagler Counties, Florida; that the attached copy of advertisement, being a Govt Bids & Proposals, was published on the publicly accessible website of Volusia and Flagler Counties, Florida, or in a newspaper by print in the issues of, on:

12/17/2024

Affiant further says that the website or newspaper complies with all legal requirements for publication in chapter 50, Florida Statutes.
Subscribed and sworn to before me, by the legal clerk, who is personally known to me, on 12/17/2024

Keegan Moran
Legal Clerk

Notary, State of WI, County of Brown

3·7·27
My commission expires

Publication Cost:	$345.52
Tax Amount:	$0.00
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Order No:	10852962
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PO #:	
# of Copies:	1

THIS IS NOT AN INVOICE!

Please do not use this form for payment remittance.

KAITLYN FELTY
Notary Public
State of Wisconsin

City of Flagler Beach
RFQ NO. FB-251501
CONSTRUCTION MANAGER ADVISER
FOR THE CONSTRUCTION OF FLAGLER BEACH FISHING PIER REPLACEMENT
City Project No. 260

NOTICE IS HEREBY GIVEN THAT THE CITY OF FLAGER BEACH IS ISSUING THIS INVITATION TO SOLICIT A REQUEST FOR QUALIFICATIONS (RFQ) FROM LICENSED AND INSURED CONSTRUCTION MANAGERS FOR THE CONSTRUCTION OF CITY OF FLAGLER BEACH PIER REMOVAL AND REPLACEMENT 2024 - 2026 PROJECT ACCORDING TO THE SCOPE OF WORK OF THE PLANS AND SPECIFICATIONS. RFQs WILL BE RECEIVED FOR A SINGLE, LUMP SUM CONTRACT AS INDICATED IN THIS SOLICITATION.
IT IS THE INTENT AND PURPOSE OF THE CITY OF FLAGER BEACH THAT THIS RFQ PROMOTES COMPETITIVE SELECTION. IT IS THE BIDDER'S RESPONSIBILITY TO ADVISE THE FINANCE DIRECTOR IF ANY LANGUAGE, REQUIREMENTS, ETC., OR ANY COMBINATION THEREOF, INADVERTENTLY RESTRICTS OR LIMITS THE REQUIREMENTS STATED IN THIS ITB
All applicants must be properly licensed in the State of Florida and include proof of insurance, licenses, and certificates as required by all local, State of Florida, and Federal agencies.
Interested CMAs may secure the, construction documents, specifications and other pertinent information by visiting the city website bid page: http://www.cityofflaglerbeach.com/Bids.aspx.or the website www.demandstar.com. These documents may also be obtained by contacting the City Clerk, Penny Overstreet at 386-517-2000 ext. 233 or poverstreet@cityofflaglerbeach.com
Sealed RFQ packages must be addressed to the attention of Penny Overstreet, City Clerk. They must be received on or before 2:00 PM, Wednesday January 15, 2025.

No submissions will be accepted after this deadline.

All questions regarding this RFQ must be directed to the City Clerk's office For further information, contact: Penny Overstreet, City Clerk. Preferred method of contact email: poverstreet@cityofflaglerbeach.com Phone Contact: (386) 517-2000, ext. 233.

L#10852962 12/17/24 1t

STAFF REPORT

City Commission Regular Meeting

February 13, 2025

To: Elected Officials

From: Dale L. Martin, City Manager

Date: February 7, 2025

Item Name: Resolution 2025-11. A Resolution by the City Commission of the City of Flagler Beach, to award a contract to Lads Construction Services, LLC for an amount not to exceed $34,440.00 to repair damages incurred to the Flagler Beach Public Library during Hurricane Milton; providing for conflict and an effective date

Background: Hurricane Milton reached the east coast of Florida on Wednesday, October 9, 2024. The Flagler Beach Library sustained damages due to wind and rain penetration. These damages included wet drywall and baseboard, rain penetration around the entry doors, laminated flooring warping due to standing water, and fascia damages to the east side of the building.

This project, if approved, will repair all of the aforementioned hurricane-related damage. The Request for Proposals (RFP) for the project was published on January 6, 2025, in accordance with the City's Procurement Policy. The City received two bids which were publicly opened on January 20, 2025. The bidder with the higher bid was disqualified because they did not attend the mandatory pre-bid meeting. The bid by the lowest responsive bidder was Lads Construction Services, LLC.

The City requested a bid additive for additional preventative measures to avoid any future roof damage and leakage through the skylights – remove the skylights, repair the roof deck, and replace both roofing systems. Staff is seeking Federal Emergency Management Agency (FEMA) assistance for additional funding for this mitigation effort. If FEMA approves the scope of work, the City Commission will be presented with a Change Order for consideration.

Fiscal Impact: Funding for this project will be drawn from the City's Unrestricted Reserves and then reimbursed (75% Federal, 12.5% State).

Staff Recommendation: Staff recommends approval of Resolution 2025-09.

Attachment:

Resolution 2025-11

RESOLUTION 2025-11

A RESOLUTION BY THE CITY COMMISSION OF THE CITY OF FLAGLER BEACH, TO AWARD A CONTRACT TO LADS CONSTRUCTION SERVICES, LLC FOR THE FEE OF $34,440.00 TO REPAIR DAMAGES INCURRED TO THE FLAGLER BEACH PUBLIC LIBRARY DURING HURRICANE MILTON; PROVIDING FOR CONFLICT AND AN EFFECTIVE DATE.

WHEREAS, the City owns and operates the Flagler Beach Public Library; and,

WHEREAS, the Library incurred wind and water intrusion damages as a result of Major Hurricane Milton as it reached the east coast of Florida on Wednesday, October 9, 2024; and,

WHEREAS, City staff developed construction documents and a bid package to repair the damages; and,

WHEREAS, the project was publicly bid and the City received two bids, of which only one was fully responsive; and,

WHEREAS the project is eligible for reimbursement funding (Federal and State) due to Hurricane Milton;

NOW THEREFORE BE IT RESOLVED BY THE CITY COMMISSION OF THE CITY OF FLAGLER BEACH, AS FOLLOWS:

SECTION 1. The City of Flagler Beach City Commission approves the base bid submitted by Lad Construction Services, LLC in an amount not to exceed $34,440 for construction services related to the library damages.

SECTION 2. The City Commission authorizes City Staff to issue a Notice to Proceed.

SECTION 3. All resolutions or parts of resolutions in conflict herewith be and the same are hereby repealed.

SECTION 4. This Resolution shall become effective immediately upon passage as provided by law.

PASSED AND ADOPTED THIS 13th DAY OF FEBRUARY, 2025.

CITY OF FLAGLER BEACH, FLORIDA
CITY COMMISSION

ATTEST:

_____
Patti King, Mayor

_____
Penny Overstreet, City Clerk

Attachments:
Exhibit A- Scope of Services
Exhibit B- Bid Tabulation
Exhibit C- Bid submission (portion), Lads Construction Services

EXHIBIT A

Hurricane Milton Repairs to the FB Public Library

Summary of Work

The building sustained extensive water damages due to Hurricane Milton. The Project consists of miscellaneous interior and exterior repairs to the City of Flagler Beach Public Library building located at 315 South 7th Street in Flagler Beach, Florida. These include:

A. PRE-CONSTRUCTION WORK:

1. Contractor shall field verify all conditions and dimensions prior to performing demolition. Contractor is required to do demolition of all items required to accomplish the new work, whether or not shown or noted;
2. The Contractor shall be responsible for the removal and proper disposal of all materials as called for in the contract documents. The placement and access to waste receptacles for demolition/construction debris shall be coordinated with the Owner. Contractor to coordinate the demolition of all utilities with Owner prior to commencing demolition. Contractor is responsible for providing the name, address, and GPS coordinates of final disposal site of all debris in accordance with FEMA requirements;
3. The Owner has the first right of refusal on all salvaged equipment;
4. The Contractor shall notify and await approval from the owner before interruption of any utilities;
5. Facilities or portions of facilities shall not be occupied during construction, unless exits, fire detection, early warning systems and any safety barriers are continuously maintained and clearly marked at all times.
6. Prior to the issuance of the notice to proceed, a safety plan shall be provided by the Contractor which clearly delineates area(s) for construction, safety barriers, construction traffic during all phases, and conditions of construction.

B. INTERIOR WORK – INCLUDED IN BASE BID:

1. Replace all drywall on surfaces where previously removed – match thickness of existing;
2. Tape and mud all drywall joints and sand to a smooth finish – match texture of existing;
3. Replace all baseboard with new wood to match existing in species and profile;

EXHIBIT A

4. Remove automatic door operator, push button, and all associated conduit/wiring – to be reinstalled after entry wall construction;
5. Remove exit sign and conduit – to be reinstalled after entry wall construction;
6. Remove doors and reinstall after new framing is constructed;
7. Remove framed wall from slab to underside of roof (approximately 10'-0" high) and from masonry wall to masonry wall (approximately 10'-8" wide);
8. Reconstruct removed framed wall as shown on Details 2 and 4 on Sheet A-2. Add R-19 batt insulation;
9. Remove existing laminate flooring at the entry doors and install new, owner-supplied ceramic tile (approximately 50 SF);
10. Paint all new surfaces to match existing;
11. Caulk all interior surfaces around windows and main entry doors.

C. EXTERIOR WORK – INCLUDED IN BASE BID:

1. On east wall only, completely remove the aluminum fascia covering and drip edge and the pressure-treated 2" x 6" wood fascia board along gable rake.
2. Rebuild the fascia as shown on Detail 5, Sheet A-2.
3. Remove push button for door opener and all conduit/wiring – to be reinstalled after entry wall construction;
4. Remove or secure existing camera located at northeast underside of canopy so as to be safeguarded from demolition/new construction while still remaining operational at all times – reinstall after exterior work is completed in the entrance area;
5. Remove existing outdoor carpeting, including metal edge-strips, located directly outside the double entry doors as shown on Detail 1, Sheet A-2. Remove any adhesive residue, thoroughly clean substrate concrete;
6. Caulk exterior surfaces around all windows and double entry doors;
7. Remove excess built-up soil above the slab level along the east and north walls. Regrade and provide new sod per Detail 6, Sheet A-2.

D. EXTERIOR WORK – ADD ALTERNATE – 1:

1. Remove completely the existing modified bitumen roof on entire building.

EXHIBIT A

2. Remove all skylights on flat roof. Install new decking and insulation to match existing. These openings, once properly installed and inspected, will be covered by new roof.
3. Remove all skylights on elevated structure at the west end of the Library. Close with new deck material and insulation to match surrounding area. These openings, once properly installed and inspected, will be covered by new roof.

EXHIBIT B

Member Name
Bid Number
Bid Name

4 Document(s) found for this bid

20 Planholder(s) found

SupplierName	Base Bid	Alternate Bid	Email	Address1	City	State	PostalCode
BJD Construction Management			Blaze@BJDConstruction.com	15480 Sonoma Dr.	Fort Myers	FL	33908
C.C. Borden Construction, Inc.			camille@ccborden.com	1019 Rosselle Street	Jacksonville	FL	32204
Childers Roofing & Sheet Metal			bchilders@tectaamerica.com	1645 Jessie Street	Jacksonville	FL	32206
ConstructConnect			content@constructconnect.com	3825 Edwards Rd	Cincinnati	OH	45209
D.E. Scorpio Corporation			bids@scorpioco.com	3911 W Newberry Rd	Gainesville	FL	32607
Dekora LLC			dekorallc@gmail.com	12011 SW 129TH CT	miami	FL	33186
Dodge Data			dodge.docs@construction.com	4300 Beltway Place, Ste 150	Arlington	TX	76018
errc construction inc			errcconstruction@gmail.com	5220 HELM AVE	Jacksonville	FL	32244
H.A. CONTRACTING CORP.			HENRY@HACONTRACTING.COM	9500 N.W. 12 ST., BAY 1	Miami	FL	33172
Lads Constrction Services LLC	$34,440.00	$92,375.00	jeffrey@ladsconstructionllc.com	6 MAPLE STREET	Flagler Beach	FL	32136
Onvia, Inc. - Content Department			sourcingsupport@deltek.com	509 Olive Way, Suite 400	Seattle	WA	98101
Paul Culver Construction, Inc.			paul@paulculverconstruction.com	201 Osceola Avenue	Daytona Beach	FL	32114
Paul Culver Construction, Inc.			paul@paulculverconstruction.com	201 Osceola Ave	Daytona Beach	FL	32114
PLUS POINT CONSTRUCTION			info@pluspointconstruction.com	4600 touchton rd	Jacksonville	FL	32246
PuroClean Emergency Restoration Services			mrowe@puroclean.com	155 International Golf Pkwy	St Augustine	FL	32095
Recovery Roofing			mlewis@recoveryroofinginc.com	441 Lane Ave N	Jacksonville	FL	32254
Royal Plus, Inc.			rpbidlist@royalplus.com	1150 Bell Ave	Winter Springs	FL	32708
Saboungi Construction			mike@saboungiconstruction.com	290A North US-1	Ormond Beach	FL	32174
SERVPRO of Jacksonville South			Evan@spjax.com	1716 Harper Street	Jacksonville	FL	32204
TC Metal Roofing LLC			tj@tcmetalroofing.com	1000 Charles St	Longwood	FL	32750
Recovery Roofing							
Renovo Services Inc.	$60,585.79	$127,272.73					

3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels; and

4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the e execution of the Contract.

ARTICLE 5 – BASIS OF BID

5.01 **BASE BID:** Bidder will complete the Base Bid Work in accordance with the Contract Documents for the following price(s):

Base Bid Lump Sum Bid Price	$ 34,440.00

5.02 **ALTERNATE 1:** Replace Roof.

A. See Drawings Sheet A-2, Remediation Work for details.

B. See Section 01110, Summary of Work for the full scope.

Alternate #1 Remove Skylights & Replace Roofs	$ 92,375.00

Total of Lump Sum + Alternate #1 = Total Bid $ 126,815.00

ARTICLE 6 – TIME OF COMPLETION

6.01 The Project shall be substantially completed within Ninety (90) days from the Notice to Proceed. An additional Thirty (30) days shall be used to complete any outstanding issues or punch-list items. Final Completion shall be One Hundred Twenty (120) days from Notice to Proceed.

6.02 Bidder agrees that the Work will be substantially complete and will be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before the dates or within the number of calendar days indicated.

6.03 Bidder accepts the provisions of the Agreement as to liquidated damages established as Five Hundred ($500) per day beyond the 120 days of total project time.

ARTICLE 7 – ATTACHMENTS TO THIS BID

7.01 The following documents are submitted with and made a condition of this Bid:

A. Required Performance security;

B. List of Proposed Subcontractors;

C. List of Proposed Suppliers;

D. List of Project References;

E. Evidence of authority to do business in the state of the Project; or a written covenant to obtain such license within the time for acceptance of Bids;

F. Required Bidder Qualification Statement with supporting Attachments A through O; and

G. Submit sealed bids including one (1) original copy and one (1) electronic copy in pdf format on USB thumb drive.

ARTICLE 8 – DEFINED TERMS

8.01 The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions.

ARTICLE 9 – BID SUBMITTAL

BIDDER: *[Indicate correct name of bidding entity]*

Lads construction Services LLC

By:
[Signature] Jeffrey Lademann

[Printed name] Jeffrey Lademann

(If Bidder is a corporation, a limited liability company, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest:
[Signature] _____

[Printed name] _____

Title: _____

Submittal Date: _____

Address for giving notices:
1312 S central Ave Flagler Beach, FL 32136

Telephone Number: (386)-793-4342

Fax Number: _____

Contact Name: Jeffrey Lademann

CONTRACT DOCUMENTS FOR

CITY OF FLAGLER BEACH

HURRICANE MILTON DAMAGE REPAIRS TO FLAGLER BEACH PUBLIC LIBRARY

315 SOUTH SEVENTH STREET FLAGLER BEACH, FLORIDA 32136

CITY PROJECT NO: 285

CITY INVITATION TO BID NO: FB-250102

JANUARY 2, 2025

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SECTION 00 01 01

CONTRACT DOCUMENTS FOR

HURRICANE MILTON DAMAGE REPAIRS
TO
FLAGLER BEACH PUBLIC LIBRARY

315 SOUTH SEVENTH STREET
FLAGLER BEACH, FLORIDA 32136

CITY INVITATION TO BID NO: FB-250102

JANUARY 2, 2025

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DIVISION 00

BIDDING REQUIREMENTS, CONTRACT DOCUMENTS, AND FORMS
HURRICANE MILTON DAMAGE REPAIRS
FLAGLER BEACH PUBLIC LIBRARY
CITY PROJECT NO: 285

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ATTACHMENTS

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END OF SECTION

CITY OF FLAGLER BEACH

ADVERTISEMENT FOR BID NO. FB-250102

HURRICANE MILTON DAMAGE REPAIRS
TO
FLAGLER BEACH PUBLIC LIBRARY

CITY OF FLAGLER BEACH
City Project No. 285

NOTICE IS HEREBY GIVEN THAT THE CITY OF FLAGER BEACH IS ISSUING THIS INVITATION TO BID (ITB) TO SOLICIT COMPETITIVE SEALED BIDS FROM LICENSED AND INSURED CONTRACTORS FOR THE CITY OF FLAGLER BEACH PUBLIC LIBRARY HURRICANE MILTON DAMAGE REPAIRS ACCORDING TO THE SCOPE OF WORK SEPCIFICATIONS. BIDS WILL BE RECEIVED FOR A SINGLE PRIME CONTRACT. BIDS SHALL BE ON A LUMP SUM AS INDICATED IN THE BID FORM.

IT IS THE INTENT AND PURPOSE OF THE CITY OF FLAGER BEACH THAT THIS INVITATION TO BID (ITB) PROMOTES COMPETITIVE SELECTION. IT IS THE BIDDER'S RESPONSIBILITY TO ADVISE THE FINANCE DIRECTOR IF ANY LANGUAGE, REQUIREMENTS, ETC., OR ANY COMBINATION THEREOF, INADVERTENTLY RESTRICTS OR LIMITS THE REQUIREMENTS STATED IN THIS ITB

All applicants must be properly licensed and show proof of insurance, licenses, and certificates as required by all local, State of Florida, and Federal agencies. Successful applicants will obtain all required permitting as previously stated.

Interested contractors may secure the, bid forms and other pertinent information by visiting the city website bid page: http://www.cityofflaglerbeach.com/Bids.aspx.or the website www.demandstar.com Bid packages also may be obtained by contacting the City Clerk, Penny Overstreet at 386-517-2000 ext. 233 or poverstreet@cityofflaglerbeach.com

For further information, contact: Penny Overstreet, City Clerk
Preferred method of contact email: poverstreet@cityofflaglerbeach.com (386) 517-2000, ext. 233

A Mandatory pre-bid meeting will be held at the Library on the date and time indicated below. No bids will be accepted by contractors who do not have representation at this meeting.

Sealed Bids must be addressed to the attention of **Penny Overstreet, City Clerk**. Sealed Bids must be received on or before ~~**2:00 PM, Monday January 20, 2025.**~~

Sealed Bids must have the project title and bid number on outside of package. The City of Flagler Beach reserves the right to reject any and all Bids, to award all or segments of the project, and to waive any informality in Bids received, as may be in the best interest of the City.

MAILING ADDRESS:
105 S 2nd Street
Flagler Beach, FL
32136

WALK-IN DELIVERY ADDRESS:
105 S 2nd Street
Flagler Beach, FL 32136

Date of Distribution:	**JANUARY 3, 2025**
Mandatory Pre-Bid Meeting:	**THURSDAY JANUARY 9, 2025 at 10:00 AM EST**
Last Date for Questions:	**MONDAY JANUARY 13, 2025 at 5:00 PM EST**
Last Date for Addenda if Needed:	**WEDNESDAY JANUARY 15, 2025 at 5:00 PM EST**
BIDS DUE BY:	**MONDAY JANUARY 20, 2025 at 2:00 PM EST** after which time they will be publicly opened and read aloud.
COMMISSION MEETING:	• **THURSDAY FEBRUARY 13, 2025 at 5:30 PM EST**

END INVITATION TO BID

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SECTION 00 11 53
REQUEST FOR QUALIFICATION FORMS

Project Name: **CITY OF FLAGLER BEACH PUBLIC LIBRARY HURRICANE MILTON DAMAGE REPAIRS**

CITY PROJECT NO: 285

Company Name: _____

Contact Name: _____

E-mail Address: _____

Mailing Address: _____

_____

Phone Number: _____

Fax Number: _____

Contractor License Number:_____

The CITY will post addenda information at Onvia DemandStar, Inc., at the following web address: www.demandstar.com. For technical assistance with this website, please contact Onvia Services at 1-800-711-1712. All Bidders should check the Onvia DemandStar website at least seven (7) calendar days before the date fixed to verify information regarding Addenda. Failure to do so could result in rejection of the submittal as unresponsive. Bidders shall sign, date, and return all addenda with their bid. It is the sole responsibility of the Bidder to ensure he/she obtains information related to Addenda. Oral and other interpretations or clarifications will be without legal effect.

The following Addenda were received:

Addendum No._____ Date Received_____

Addendum No._____ Date Received_____

Addendum No._____ Date Received_____

Addendum No._____ Date Received_____

The Bidder acknowledges the receipt, execution, and return of the following attachments:

- Attachment A: Certificate of Corporation
- Attachment B: Contractor Questionnaire
- Attachment C: Required Disclosure
- Attachment D: Bidder Information
- Attachment E: Experience of Bidder
- Attachment F: Sworn Statement Under section 287.133(3) (a), Florida Statutes, on Public Entity Crimes
- Attachment G: Affidavit of Non-Collusion
- Attachment H: Certification of Non-Segregated Facilities
- Attachment I: Drug-Free Work Place
- Attachment J: Conflict of Interest Statement
- Attachment K: Compliance with Public Records Law
- Attachment L: Americans with Disabilities Act Affidavit
- Attachment M: Additional Procurement Clauses for FEMA Work
- Attachment N: List of Proposed Subcontractors/Suppliers
- Attachment O: List of Licenses and Certifications

Name: _____

Authorized Signature: _____

Date: _____

Title: _____

ACKNOWLEDGEMENT

STATE OF FLORIDA

COUNTY OF _____

_____

Signature of Notary Public

Print, Type or Stamp Commissioned Name of Notary Public below:

Sworn to (or affirmed) and subscribed before me by means of

online notarization ☐ *OR* physical presence ☐

this _____ day of _____, 20____.

Personally Known ☐ *OR* Produced identification ☐

Type of Identification Produced:_____

END OF SECTION

REQUEST FOR QUALIFICATION FORMS

ATTACHMENT A

CERTIFICATE OF CORPORATION

Please include a copy of your Certificate of Corporation from the State of Florida with this attachment.

STATE OF FLORIDA

COUNTY OF_____

I HEREBY CERTIFY that a meeting of the Board of Directors of _____ , a corporation under the laws of the State of _____ , was held on _____ , 20_____. The following resolution was duly passed and adopted:

"RESOLVED, that _____as _____President of the corporation is hereby authorized to execute the Contract dated _____ , 20 _____, between The City of Flagler Beach, a municipal corporation and this corporation, and that execution thereof, attested by the Secretary of the corporation and with corporate seal affixed, shall be the official act and deed of this corporation."

I further certify that said resolution is now in full force and effect.

IN WITNESS THEREOF, I have hereunto set my hand and affixed the official seal of the corporation

This _____ day of _____, 20____ .

_____

Corporate Secretary

END OF ATTACHMENT A

SECTION 00 11 53
REQUEST FOR QUALIFICATION FORMS

ATTACHMENT B

CONTRACTOR QUESTIONNAIRE

DATE: _____

NAME OF BIDDER: _____

BUSINESS ADDRESS: _____

PHONE NUMBER: _____

CONTRACTOR'S FL LICENSE #: _____

EXPIRATION DATE: _____

The undersigned warrants the truth and accuracy of all statements and answers herein contained. Include additional sheets as necessary.

1. How many years has your organization been in business as a General Contractor?

_____

_____

_____

2. How many years has your organization been in business as a Subcontractor?

_____

_____

_____

3. Name of Superintendent and length of time with your company?

_____

_____

_____

4. Describe in detail and give the date and owner, including phone numbers and contact person(s), of the last five (5) projects that you have completed similar in type, size, and nature as the project proposed?

5. Have you ever failed, or been alleged to have failed, to complete work awarded to you? If so, please list the project and explain the reasons why?

6. Have you ever failed, or been alleged to have failed, to complete work within the Contract Time? If so, please list the project and explain the reasons why?

7. Have you ever been assessed liquidated damages, or had liquidated damages assessed against you? If so, please list the project and explain the reasons why?

8. Have you ever had a bond or letter of credit called by the owner of a project? If so, when?

9. Have you personally inspected the site of the proposed Work? Describe, in full, any anticipated problems with the site and your proposed solutions?

_____

_____

_____

Bidder Name: _____

Signature: _____

Title: _____

Attach the corporate information sheet from the Florida Department of State, Division of Corporation's, web site.

ACKNOWLEDGEMENT

STATE OF FLORIDA

COUNTY OF _____

_____
Signature of Notary Public
Print, Type or Stamp Commissioned Name of Notary Public below:

Sworn to (or affirmed) and subscribed before me by means of

online notarization ☐ *OR* physical presence ☐

this _____ day of _____, 20____.

Personally Known ☐ *OR* Produced identification ☐

Type of Identification Produced:_____

END OF ATTATCHMENT B

SECTION 00 11 53
REQUEST FOR QUALIFICATION FORMS

ATTACHMENT C

REQUIRED DISCLOSURE

The following disclosure is of all material facts pertaining to any felony conviction or any pending felony charges in the last three (3) years in this State or any other state of the United States against (1) the Bidder,
(2) any business entity related to or affiliated with the Bidder or (3) any present or former owner of the Bidder or of any such related or affiliated entity. This disclosure shall not apply to any person or entity which is only a stockholder, which person or entity owns twenty percent (20%) or less of the outstanding shares of the Bidder whose stock is publicly owned and traded:

Bidder Name: _____

Signature: _____

Title: _____

Date: _____

END OF ATTACHMENT C

SECTION 00 11 53
REQUEST FOR QUALIFICATION FORMS

ATTACHMENT D BIDDER INFORMATION

List the full legal name of each officer of the Corporation.

President: _____

Signature: _____Date: _____

Vice-President: _____

Signature: _____Date: _____

Secretary: _____

Signature: _____Date: _____

Treasurer: _____

Signature: _____Date: _____

List the Corporate Officer that will sign the contract: _____

END OF ATTACHMENT D

SECTION 00 11 53
REQUEST FOR QUALIFICATION FORMS

ATTACHMENT E
EXPERIENCE OF BIDDER

Bidder Name: _____

Authorized Signature: _____Date: _____

Is your company currently involved in any active litigation? _____Yes _____No

If Yes, explain: _____

_____

_____

_____

Has your company ever been sued? _____Yes _____No

If Yes, explain and/or submit court decision or judgment, as applicable: _____

_____

_____

_____

The Bidder must demonstrate the successful completion of three (3) projects of similar complexity, nature, size, and dollar amount of lift stations rehabilitations or new installations. Any material misrepresentation, as determined by the City of Flagler Beach, shall result in disqualification.

On the following pages, provide the requested information regarding experience within the past five (5) years on three (3) projects as listed above. These projects must be new or rehabilitation lift/pump station projects with submersible pumps, above ground piping and include an electrical control panel.

Project #1:

Contract Date: _____

Contract Amount: $ _____

Project Name: _____

Project Location: _____

General Scope of Work: _____

_____

Client Name and Address: _____

_____

_____

Client Contact Phone: _____

Client Contact Email: _____

Was the project completed on schedule? _____Yes _____No

Total Amount of Change Orders: $_____

Reasons for Change Orders: _____

_____

_____

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Project #2:

Contract Date: _____

Contract Amount: $ _____

Project Name: _____

Project Location: _____

General Scope of Work: _____

_____

Client Name and Address: _____

_____

_____

Client Contact Phone: _____

Client Contact Email: _____

Was the project completed on schedule? _____Yes _____No

Total Amount of Change Orders: $_____

Reasons for Change Orders: _____

_____

_____

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Project #3:

Contract Date: _____

Contract Amount: $ _____

Project Name: _____

Project Location: _____

General Scope of Work: _____

_____

Client Name and Address: _____

_____

_____

Client Contact Phone: _____

Client Contact Email: _____

Was the project completed on schedule? _____Yes _____No

Total Amount of Change Orders: $_____

Reasons for Change Orders: _____

END OF ATTACHMENT E

ATTACHMENT F

SWORN STATEMENT UNDER SECTION 287.133(3) (a), FLORIDA STATUTES, ON PUBLIC ENTITY CRIMES

THIS FORM MUST BE SIGNED IN THE PRESENCE OF A NOTARY PUBLIC OR OTHER OFFICER AUTHORIZED TO ADMINISTER OATHS.

This sworn statement is submitted to: **The City of Flagler Beach** (Public entity)

By: _____
(Individual's name and title)

For: _____
(Name of entity submitting sworn statement)

Whose business address is: _____

_____

Federal Employer Identification Number (FEIN): _____

(If the entity has no FEIN, include the Social Security Number of the individual signing this sworn statement)

1. I understand that a "public entity crime" as defined in Section 287.133(1)(g), Florida Statutes, means a violation of any State or Federal law by a person with respect to and directly related to the transaction of business with any public entity or with an agency or political subdivision of any other state or with the United States, including, but not limited to, any bid or contract for goods or services to be provided to any public entity or an agency or political subdivision of any other state or of the United States and involving antitrust, fraud, theft, bribery, collusion, racketeering, conspiracy, or material misrepresentation.
2. I understand that "convicted" or "conviction" as defined in Paragraph 287.133(1) (b), Florida Statutes, means a finding of guilt or a conviction of a public entity crimes, with or without an adjudication of guilt, in any Federal or state trial court of record relating to charges brought by indictment or information after July 1, 1989, as a result of a jury verdict, non-jury trial, or entry of a plea of guilty or nolo contendere.

3. I understand that an "affiliate" as defined in Section 287.133(1)(a), Florida Statutes, means: A predecessor or successor of a person convicted of a public entity crime: or an entity under the control of any natural person who is active in the management of the entity and how has been convicted of a public entity crime. The term "affiliate" includes those officers, directors, executives, partners, shareholders, employees, members, and agents who are active in the management of an affiliate. The ownership by one (1) person of shares constituting a controlling interest in another person, or a pooling of equipment or income among persons when not for fair market value under an arm's length agreement, shall be a prima facie case that one person controls another person. A person who knowingly enters into a joint venture with a person who has been convicted of a public entity crime in Florida during the preceding thirty-six (36) months shall be considered an affiliate.
4. I understand that a "person" as defined in Section 287.133(1) (e), Florida Statutes, means any natural person or entity organized under the laws of any state or of the United States with the legal power to enter into a binding contract and which bids or applies to bid on contracts for the provision of goods or services let by a public entity, or which otherwise transacts or applies to transact business with a public entity. The term "person" includes those officers, directors, executives, partners, shareholders, employees, members, and agents who are active in management of an entity.

Based on information and belief, the statement which I have marked below is true in relation to the entity submitting this sworn statement. (Indicate which statement applies.)

_____Neither the entity submitting this sworn statement, nor any officers, directors, executives, partners, shareholders, employees, members, or agent who is active in management of the entity, nor the affiliate of the entity, has been charged with and convicted of a public entity crime subsequent to July 1, 1989.

_____The entity submitting this sworn statement, or one or more of the officers, directors, executives, partners, shareholders, employees, members or agent who are active in management of the entity, or an affiliate of the entity, has been charged with and convicted of a public entity crime subsequent to July 1, 1989.

_____The entity submitting this sworn statement, or one or more of the officers, directors, executives, partners, shareholders, employees, members or agents who are active in management of the entity, or an affiliate of the entity, has been charged with and convicted of a public entity crime subsequent to July 1, 1989.

However, there has been a subsequent proceeding before an Administrative Law Jury of the State of Florida, Division of Administrative Hearings and the Final Order entered by the Administrative Law Jury

determined that it was not in the public interest to place the entity submitting this sworn statement on the convicted vendor list. (Attach a copy of the final order.)

I UNDERSTAND THAT THE SUBMISSION OF THIS FORM TO THE CITY OF FLAGLER IS FOR THE CITY ONLY AND, THAT THIS FORM IS VALID THROUGH DECEMBER 31, OF THE CALENDAR YEAR IN WHICH IT IS FILED. I ALSO UNDERSTAND THAT I AM REQUIRED TO INFORM THE CITY PRIOR TO ENTERING IN TO A CONTRACT IN EXCESS OF THE THRESHOLD AMOUNT PROVIDED IN SECTION 287.017, FLORIDA STATUES, FOR CATEGORY TWO OF ANY CHANGE IN THE INFORMATION CONTAINED IN THIS FORM.

Signature: _____

Date: _____

State of: _____

County of: _____

ACKNOWLEDGEMENT

STATE OF FLORIDA

COUNTY OF _____

_____

Signature of Notary Public

Print, Type or Stamp Commissioned Name of Notary Public below:

Sworn to (or affirmed) and subscribed before me by means of

online notarization ☐ *OR* physical presence ☐

this _____ day of _____, 20____.

Personally Known ☐ *OR* Produced identification ☐

Type of Identification Produced:_____

END OF ATTACHMENT F

ATTACHMENT G AFFIDAVIT OF NON-COLLUSION

SECTION 00 11 53
REQUEST FOR QUALIFICATION FORMS

The undersigned bidder or agent, being duly sworn on oath, says that he/she has not, nor has any other member, representative, or agent of the firm, company, corporation or partnership represented by him, entered into any combination, collusion or agreement with any person relative to the price to be bid by anyone at such letting nor to prevent any person from bidding nor to include anyone to refrain from bidding, and that this bid is made without reference to any other bid and without any agreement, understanding or combination with any other person in reference to such bidding. He/She further says that no person or persons, firms, or corporation has, have or will receive directly or indirectly, any rebate, fee gift, commission or thing of value on account of such sale.

OATH AND AFFIRMATION

I HEREBY AFFIRM UNDER THE PENALTIES FOR PERJURY THAT THE FACTS AND INFORMATION CONTAINED IN THE FOREGOING BID FOR PUBLIC WORKS ARE TRUE AND CORRECT.

Dated this _____day of _____, 20 ____.

_____
(Bidder Name)

_____
(Title)

_____
(Signature)

ACKNOWLEDGEMENT

STATE OF FLORIDA

COUNTY OF _____

_____
Signature of Notary Public
Print, Type or Stamp Commissioned Name of Notary Public below:

Sworn to (or affirmed) and subscribed before me by means of

online notarization ☐ *OR* physical presence ☐

this _____ day of _____, 20____.

Personally Known ☐ *OR* Produced identification ☐

Type of Identification Produced:_____

END OF ATTACHMENT G

ATTACHMENT H
CERTIFICATION OF NON-SEGREGATED FACILITIES

SECTION 00 11 53
REQUEST FOR QUALIFICATION FORMS

The Bidder certifies that they do not maintain or provide for their employees any segregated facilities at any of his establishments, and that they do not permit their employees to perform their services at any location, under their control, where segregated facilities are maintained. The Bidder certifies further that they will not maintain or provide for their employees any segregated facilities at any location under their control where segregated facilities are maintained. The Bidder agrees that a breach of this certification will be a violation of the Equal Opportunity clause in any contract resulting from acceptance of this Bid. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, time clocks, locker rooms and other storage and dressing areas, parking lots, drinking fountains, recreation or entertainment area, transportation and housing facilities provided for employees which are segregated by explicit directive, or are in fact segregated on the basis of race, color, religious disability or national origin, because of habit, local custom, or otherwise. The Bidder agrees that (except where they have obtained identical certifications from proposed subcontractors for specific time periods) they will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity clause, and that he will retain such certifications in his files.

The nondiscriminatory guidelines as promulgated in Section 202, Executive Order 11246, and as amended by Executive Order 11375 and as amended, relative to Equal Opportunity for all persons and implementations of rules and regulations prescribed by the United States Secretary of Labor are incorporated herein.

Name: _____

Signature: _____

Date: _____

Title: _____

Official Address: _____

_____

END OF ATTACHMENT H

ATTACHMENT I DRUG-FREE WORK PLACE

SECTION 00 11 53

REQUEST FOR QUALIFICATION FORMS

The undersigned vendor in accordance with Florida Statute 287.087 hereby certifies that

_____does hereby: (Name of Business)

1. Publish a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the workplace and specifying the actions that will be taken against employees for violations of such prohibition.

2. Inform employees about the dangers of drug abuse in the workplace, the business's policy of maintaining a drug-free workplace, any available drug counseling, rehabilitation, and employee assistance programs, and the penalties that may be imposed upon employees for drug abuse violations.

3. Give each employee engaged in providing the commodities or contractual services that are proposed a copy of the statement specified in subsection (1).

4. In the statement specified in subsection (1), notify the employees that, as a condition of working on the commodities or contractual services that are under proposal, the employee will propose by the terms of the statement and will notify the employer of any conviction of, or plea of guilty or nolo contender to, any violation of Chapter 893, Florida Statutes, or of any controlled substance law of the United States or any state, for a violation occurring in the workplace no later than five (5) days after such conviction.

5. Impose a sanction on, or require the satisfactory participation in a drug abuse assistance or rehabilitation program if such is available in the employee's community, by any employee who is so convicted.

6. Make a good faith effort to continue to maintain a drug-free workplace through implementation of the matters set forth above.

As the person authorized to sign the statement, I certify that this firm complies fully with the above requirements.

Name: _____

Signature: _____

Date: _____

Title: _____

END OF ATTACHMENT I

ATTACHMENT J CONFLICT OF INTEREST STATEMENT

SECTION 00 11 53

REQUEST FOR QUALIFICATION FORMS

Before me, the undersigned authority, personally appeared _____, who was duly sworn, deposes, and states:

1. I am the _____of _____with a local office in _____and principal office in _____ .
2. The above-named entity is submitting an Expression of Interest for the City of Flagler Beach project described as bid number _____.
3. The Affiant has made diligent inquiry and provides the information contained in this Affidavit based upon his own knowledge.
4. The Affiant states that only one submittal for the above project is being submitted and that the above-named entity has no financial interest in other entities submitting proposals for the same project.
5. Neither the Affiant nor the above-named entity has directly or indirectly entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive pricing in connection with the entity's submittal for the above project. This statement restricts the discussion of pricing data until the completion of negotiations and execution of the Agreement for this project.
6. Neither the entity nor its affiliates, nor any one associated with them, is presently suspended or otherwise ineligible from participating in contract lettings by any local, state, or federal agency.
7. Neither the entity, nor its affiliates, nor any one associated with them have any potential conflict of interest due to any other clients, contracts, or property interests for this project.
8. I certify that no member of the entity's ownership, management, or staff has a vested interest in any aspect of or Department of the City of Flagler Beach.
9. I certify that no member of the entity's ownership or management is presently applying for an employee position or actively seeking an elected position with City of Flagler Beach.
10. In the event that a conflict of interest is identified in the provision of services, I, on behalf of the above-named entity, will immediately notify the City of Flagler Beach in writing.

_____

Signature of Affiant

ACKNOWLEDGEMENT

STATE OF FLORIDA

COUNTY OF _____

_____

Signature of Notary Public

Print, Type or Stamp Commissioned Name of Notary Public below:

Sworn to (or affirmed) and subscribed before me by means of

online notarization ☐ *OR* physical presence ☐

this _____ day of _____, 20____.

Personally Known ☐ *OR* Produced identification ☐

Type of Identification Produced:_____

END OF ATTACHMENT J

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ATTACHMENT K
COMPLIANCE WITH THE PUBLIC RECORDS LAW

SECTION 00 11 53
REQUEST FOR QUALIFICATION FORMS

Upon award recommendation or thirty (30) days after receiving submittals, they become "public records" and shall be subject to public disclosure consistent with Chapter 119, Florida Statutes. Proposers must invoke the exemptions to disclosure provided by law in the response to the solicitation, and must identify the data or other materials to be protected, and must state the reasons why such exclusion from public disclosure is necessary.

If the company submits information exempt from public disclosure, the company must identify with specificity which pages/paragraphs of their bid/proposal package are exempt from the Public Records Act, identifying the specific exemption section that applies to each. The protected information must be submitted to the City of Flagler Beach in a separate envelope marked accordingly.

Company Name: _____

Authorized representative Printed Name: _____

Authorized Representative Signature: _____

Date: _____

END OF ATTACHMENT K

ATTACHMENT L
AMERICANS WITH DISABILITIES ACT AFFIDAVIT
SECTION 00 11 53
REQUEST FOR QUALIFICATION FORMS

The undersigned CONTRACTOR swears that the information herein contained is true and correct and that none of the information supplied was for the purpose of defrauding the CITY.

The CONTRACTOR will not discriminate against any employee or applicant for employment because of physical or mental handicap in regard to any position for which the employee or applicant for employment is qualified. The CONTRACTOR agrees to comply with the rules, regulations and relevant orders issued pursuant to the Americans with Disabilities Act (ADA), 42 USC s. 12101 et seq. It is understood that in no event shall the CITY be held liable for the actions or omissions of the CONTRACTOR or any other party or parties to the Agreement for failure to comply with the ADA. The CONTRACTOR agrees to hold harmless and indemnify the CITY, its agents, officers or employees from any and all claims, demands, debts, liabilities or causes of action of every kind or character, whether in law or equity, resulting from the CONTRACTOR's acts or omissions in connection with the ADA.

Name: _____

Authorized Signature: _____

Date: _____

Title: _____

Affix Corporate Seal:

ACKNOWLEDGEMENT

STATE OF FLORIDA

COUNTY OF _____

_____
Signature of Notary Public
Print, Type or Stamp Commissioned Name of Notary Public below:

Sworn to (or affirmed) and subscribed before me by means of

online notarization ☐ *OR* physical presence ☐

this _____ day of _____, 20____.

Personally Known ☐ *OR* Produced identification ☐

Type of Identification Produced:_____

END OF ATTACHMENT L

ATTACHMENT M
ADDITIONAL PROCUREMENT CLAUSES FOR FEMA-RELATED PROJECTS

REQUEST FOR QUALIFICATION FORMS

TERMINATION FOR CAUSE AND CONVENIENCE

1. Contractor shall be considered in material default of the Agreement and such default shall be considered cause for the City to terminate the Agreement, in whole or in part, as further set forth in this Section 17, if Contractor: (i) fails to begin the Work under the Contract Documents within the time specified herein; (ii) fails to properly and timely perform the Work as directed by the City or as provided for in the approved Progress Schedule; (iii) performs the Work unsuitably or neglects or refuses to remove materials or to correct or replace such Work as may be rejected as unacceptable or unsuitable; (iv) discontinues the prosecution of the Work; (v) fails to resume Work which has been suspended within a reasonable time after being notified to resume Work; (vi) becomes insolvent or is declared bankrupt, or commits any act of bankruptcy; (vii) allows any final judgment to stand against it unsatisfied for more than ten (10) days; (viii) makes an assignment for the benefit of creditors; (ix) fails to obey any applicable codes, laws, ordinances, rules or regulations with respect to the Work; and/or (x) materially breaches any other provision of the Contract Documents.

2. City shall notify Contractor in writing of Contractor's default(s). If the City determines that Contractor has not remedied and cured the default(s) within seven (7) calendar days following receipt by Contractor of said written notice, then the City, at its option, without releasing or waiving its rights and remedies against the Contractor's sureties and without prejudice to any other right or remedy it may be entitled to hereunder or by law, may terminate all or any portion of the Work and any materials, tools, equipment, and appliances of Contractor, take assignments of any of Contractor's subcontracts and purchase orders, and complete all or any portion of Contractor's Work by whatever means, method or agency which the City, in its sole discretion, may choose.

3. If the City deems any of the foregoing remedies necessary, Contractor agrees that it shall not be entitled to receive any further payments hereunder until after the Project is completed. All monies expended and all of the costs, losses, damages, and extra expenses, including all management, administrative and other overhead and other direct and indirect expenses (including attorneys' fees) or damages incurred by the City incident to such completion, shall be deducted from the Contract Amount, and if such expenditures exceed the unpaid balance of the Contract Amount, Contractor agrees to pay promptly to City, on demand, the full amount of such excess, including costs of collection, attorneys' fee (including appeals) and interest thereon at the maximum legal rate of interest until paid. If the unpaid balance of the Contract Amount exceeds all such costs, expenditures and damages incurred by the City to complete the Work, such excess shall be paid to the Contractor. The amount to be paid to the Contractor or the City, as the case may be, and this obligation for payment shall survive termination of the Agreement.

4. The liability of Contractor hereunder shall extend to and include the full amount of any and all sums paid, expenses and losses incurred, damages sustained, and obligations assumed by the City in good faith under the belief that such payments or assumptions were necessary or required, in completing the Work and providing labor, materials, equipment, supplies, and other items therefore or re-letting the Work, in settlement, discharge or compromise of any claims, demands, suits and judgments pertaining to or arising out of the Work hereunder.

5. If, after notice of termination of Contractor's right to proceed pursuant to this Section 17, it is determined for any reason that Contractor was not in default, or that its default was excusable, or that the City is not entitled to the remedies against Contractor provided herein, then Contractor's remedies against the City shall be the same as and

limited to those afforded Contractor below under Subsection 18.1, below, regarding termination of the Agreement for convenience.

BUILD AMERICA BUY AMERICA ACT (BABAA)

The Office of Management and Budget (OMB) has revised its guidance in Title 2 of the Code of Federal Regulations (2 CFR) to add a new part 184 and revise 2 CFR § 200.322. The new part 184 provides guidance to federal agencies on how to apply the domestic content procurement preference as set forth in the Build America, Buy America Act (BABAA) to federal financial assistance for infrastructure projects.

The revised provision in 2 CFR § 200.322 specifies that federal agencies providing federal financial assistance for infrastructure projects must implement the BABAA requirements set forth in 2 CFR part 184. This link's URL is https://www.ecfr.gov/current/title-2/subtitle-A/chapter-I/part-184.

DEBARMENT AND SUSPENSION

1. The City shall have the right to terminate the Agreement without cause upon seven (7) calendar days written notice to Contractor. In the event of such termination for convenience, Contractor's recovery against City shall be limited to (i) that portion of the Contract Amount earned through the date of termination; (ii) any retainage withheld up to the date of termination, and (iii) actual out-of-pocket costs arising directly and solely from termination of this Agreement not to exceed under any circumstance five percent (5%) of that portion of the Contract Amount earned through the date of termination. Contractor shall not be entitled to any other or further recovery against the City, including, but not limited to, damages or any anticipated profit on portions of the Work not performed.

2. The City shall have the right to suspend all or any portions of the Work upon giving Contractor two (2) calendar days' prior written notice of such suspension. If all or any portion of the Work is so suspended, Contractor's sole and exclusive remedy shall be to seek an extension of time to its schedule in accordance with the procedures set forth in the Contract Documents. In no event shall the Contractor be entitled to any additional compensation or damages. Provided, however, if the ordered suspension exceeds three (3) months, the Contractor shall have the right to terminate the Agreement with respect to that portion of the Work which is subject to the ordered suspension.

BYRD ANTI-LOBBYING AMENDMENT

Contractors who apply or bid for an award of more than $100,000 shall file the required certification. Each tier certifies to the tier above that it will not and has not used federally appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, officer or employee of Congress, or an employee of a Member of Congress in connection with obtaining any federal contract, grant, or any other award covered by 31 U.S.C. § 1352. Each tier shall also disclose any lobbying with non-federal funds that takes place in connection with obtaining any federal award. Such disclosures are forwarded from tier to tier up to the recipient who in turn will forward the certification(s) to the federal awarding agency."

DAVIS-BACON ACT

As amended (40 U.S.C. 3141-3148). When required by Federal program legislation, all prime construction contracts in excess of $2,000 awarded by non-Federal entities must include a provision for compliance with the Davis-Bacon Act (40 U.S.C. 3141-3144, and 3146-3148) as supplemented by Department of Labor regulations (29 CFR Part 5, "Labor Standards Provisions Applicable to Contracts Covering Federally Financed and Assisted Construction"). In accordance with the statute, contractors must be required to pay wages to laborers and mechanics at a rate not less than the prevailing wages specified in a wage determination made by the Secretary of Labor. In addition, contractors must be required to pay wages not less than once a week. The non-Federal entity must place a copy of the current prevailing wage determination issued by the Department of Labor in each solicitation. The decision to award a contract or subcontract must be conditioned upon the acceptance of the wage determination. The non-Federal entity must report all suspected or reported violations to the Federal awarding agency. The contracts must also include a provision for compliance with the Copeland "Anti-Kickback" Act (40 U.S.C. 3145), as supplemented by Department of Labor regulations (29 CFR Part 3, "Contractors and Subcontractors on Public Building or Public Work Financed in Whole or in Part by Loans or Grants from the United States"). The Act provides that each contractor or sub recipient must be prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public work, to give up any part of the compensation to which he or she is otherwise entitled. The non-Federal entity must report all suspected or reported violations to the Federal awarding agency.

CERTIFICATION

The undersigned certifies, to the best of his or her knowledge and belief, that:
No federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any federal contract, the making of any federal grant, the making of any federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any federal contract, grant, loan, or cooperative agreement.

If any funds other than federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, Title 31, U.S.C. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure."

"The Contractor, CPH, LLC, certifies or affirms the truthfulness and accuracy of each statement of its certification and disclosure, if any. In addition, the Contractor understands and agrees that the provisions of 31 U.S.C. Chap. 38, Administrative Remedies for False Claims and Statements, apply to this certification and disclosure, if any.

Prohibition on Contracting for Covered Telecommunications Equipment or Services

(a) *Definitions.* As used in this clause, the terms backhaul; covered foreign country; covered telecommunications equipment or services; interconnection arrangements; roaming; substantial or essential component; and telecommunications equipment or services have the meaning as defined in FEMA Policy 405-143-1, Prohibitions on Expending FEMA Award Funds for Covered Telecommunications Equipment or Services (Interim), as used in this clause—

(b) *Prohibitions.*

(1) Section 889(b) of the John S. McCain National Defense Authorization Act for Fiscal Year 2019, Pub. L. No. 115-232, and 2 C.F.R. § 200.216 prohibit the head of an executive agency on or after Aug.13, 2020, from obligating or expending grant, cooperative agreement, loan, or loan guarantee funds on certain telecommunications products or from certain entities for national security reasons.

(2) Unless an exception in paragraph (c) of this clause applies, the contractor and its subcontractors may not use grant, cooperative agreement, loan, or loan guarantee funds from the Federal Emergency Management Agency to:

(i) Procure or obtain any equipment, system, or service that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology of any system;

(ii) Enter into, extend, or renew a contract to procure or obtain any equipment, system, or service that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology of any system;

(iii) Enter into, extend, or renew contracts with entities that use covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system; or

(iv) Provide, as part of its performance of this contract, subcontract, or other contractual instrument, any equipment, system, or service that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system.

(c) *Exceptions.*

(1) This clause does not prohibit contractors from providing—

(i) A service that connects to the facilities of a third-party, such as backhaul, roaming, or interconnection arrangements; or

(ii) Telecommunications equipment that cannot route or redirect user data traffic or permit visibility into any user data or packets that such equipment transmits or otherwise handles.

(2) By necessary implication and regulation, the prohibitions also do not apply to:
(i) Covered telecommunications equipment or services that: i. Are *not used* as a substantial or essential component of any system; *and*

(ii). Are *not used* as critical technology of any system.

(Iii) Other telecommunications equipment or services that are not considered covered telecommunications equipment or services.

(d) *Reporting requirement.*

(1) In the event the contractor identifies covered telecommunications equipment or services used as a substantial or essential component of any system, or as critical technology as part of any system, during contract performance, or the contractor is notified of such by a subcontractor at any tier or by any other source, the contractor shall report the information in paragraph (d)(2) of this clause to the recipient or subrecipient, unless elsewhere in this contract are established procedures for reporting the information.

(2) The Contractor shall report the following information pursuant to paragraph (d)(1) of this clause: (i) Within one business day from the date of such identification or notification: The contract number; the order number(s), if applicable; supplier name; supplier unique entity identifier (if known); supplier Commercial and Government Entity (CAGE) code (if known); brand; model number (original equipment manufacturer number, manufacturer part number, or wholesaler number); item description; and any readily available information about mitigation actions undertaken or recommended.

(ii) Within 10 business days of submitting the information in paragraph (d)(2)(i) of this clause: Any further available information about mitigation actions undertaken or recommended. In addition, the contractor shall describe the efforts it undertook to prevent use or submission of covered telecommunications equipment or services, and any additional efforts that will be incorporated to prevent future use or submission of covered telecommunications equipment or services.

(e) *Subcontracts.*
The Contractor shall insert the substance of this clause, including this paragraph (e), in all subcontracts and other contractual instruments."

Domestic Preferences for Procurements

As appropriate, and to the extent consistent with law, the contractor should, to the greatest extent practicable, provide a preference for the purchase, acquisition, or use of goods, products, or materials produced in the United States. This includes, but is not limited to iron, aluminum, steel, cement, and other manufactured products.

For purposes of this clause:
Produced in the United States means, for iron and steel products, that all manufacturing processes, from the initial melting stage through the application of coatings, occurred in the United States.

Manufactured products mean items and construction materials composed in whole or in part of non-ferrous metals such as aluminum; plastics and polymer-based products such as polyvinyl chloride pipe; aggregates such as concrete; glass, including optical fiber; and lumber."
Copyright and Data Rights

The Contractor grants to the City of Flagler Beach, a paid-up, royalty-free, nonexclusive, irrevocable, worldwide license in data first produced in the performance of this contract to reproduce, publish, or otherwise use, including prepare derivative works, distribute copies to the public, and perform publicly and display publicly such data. For data required by the contract but not first produced in the performance of this contract, the Contractor will identify such data and grant to the City of Flagler Beach or acquires on its behalf a license of the same scope as for data first produced in the performance of this contract. Data, as used herein, shall include any work subject to copyright under 17 U.S.C. § 102, for example, any written reports or literary works, software and/or source code, music, choreography, pictures or images, graphics, sculptures, videos, motion pictures or other audiovisual works, sound and/or video recordings, and architectural works. Upon or before the completion of this contract, the Contractor will deliver to the City of Flagler Beach data first produced in the performance of this contract and data required by the contract but not first produced in the performance of this contract in formats acceptable by the City of Flagler Beach.

END OF ATTACHMENT M

REQUEST FOR QUALIFICATION FORMS

ATTACHMENT N
LIST OF PROPOSED SUBCONTRACTORS/SUPPLIERS

All subcontractors and major materials suppliers are subject to approval of Owner. In the table below, list all subcontractors and manufacturers of materials and/or equipment that are proposed to be utilized by the Contractor in the performance of this work. Use additional sheets as necessary.

Company Name	Description	Contact Name, Phone, and Email

END OF ATTACHMENT N

SECTION 00 11 53

REQUEST FOR QUALIFICATION FORMS

ATTACHMENT O

LIST OF LICENSES and CERTIFICATIONS

License/Cert. Name	Number	Issuing Authority	Expiration Date

END OF ATTACHMENT O

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ARTICLE 1 – DEFINED TERMS

1.01 Terms used in these Instructions to Bidders have the meanings indicated in the General Conditions and Supplementary Conditions. Additional terms used in these Instructions to Bidders have the meanings indicated below:

A. *Issuing Office* – The office from which the Bidding Documents are to be issued.

NOTE(S) TO USER:

1. *In addition to terms specifically defined, terms with initial capital letters in the Bidding Requirements include references to identified articles and paragraphs, and the titles of other documents or forms.*
2. *Additional defined terms applicable to the Bidding Requirements should be included here and should be used uniformly throughout the Bidding Requirements with initial capitals. Additional defined terms applicable to the Contract Documents should be included in the Supplementary Conditions. Note the difference in the meanings of the terms "Bidding Requirements" and "Bidding Documents," as defined in the General Conditions, Paragraph 1.01.A.*
3. *It is strongly recommended that the Issuing Office be identified in the invitation to bid or advertisement. See EJCDC® C-111, Suggested Advertisement for Bids for Construction Contracts. If not, it should be identified in these Instructions.*

ARTICLE 2 – COPIES OF BIDDING DOCUMENTS

2.01 Complete sets of the Bidding Documents may be obtained from the Issuing Office as stated in the advertisement or invitation to bid.

2.02 Complete sets of Bidding Documents shall be used in preparing Bids; neither Owner nor Engineer assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.

2.03 Owner and Engineer, in making copies of Bidding Documents available on the above terms, do so only for the purpose of obtaining Bids for the Work and do not authorize or confer a license for any other use.

ARTICLE 3 – QUALIFICATIONS OF BIDDERS

3.01 To demonstrate Bidder's qualifications to perform the Work, Bidder shall submit all qualification forms listed below which are included in the bid documents:

A. Attachment A - Certificate of Corporation

B. Attachment B – Contractor Questionnaire

C. Attachment C - Required Disclosure

D. Attachment D - Bidder Information

E. Attachment E - Experience of Bidder

F. Attachment F – Sworn Statement Under Section 287.133(3) (A), Florida Statutes, on Public Entity Crimes

G. Attachment G - Affidavit of Non-Collusion

H. Attachment H - Certification of Non-Segregated Facilities

I. Attachment I - Drug-Free Workplace

J. Attachment J - Conflict of Interest Statement

K. Attachment K - Compliance with Public Records Law

L. Attachment L - Americans with Disabilities Act Affidavit

M. Attachment M - List of Licenses and Certifications

N. Attachment N - List of Proposed Subcontractors/Suppliers

O. Attachment O - List of Proposed Equipment

3.02 A Bidder's failure to submit required qualification information shall disqualify Bidder from receiving an award of the Contract.

3.03 No requirement in this Article 3 to submit information will prejudice the right of Owner to seek additional pertinent information regarding Bidder's qualifications.

3.04 Bidder is advised to carefully review those portions of the Bid Form requiring Bidder's representations and certifications.

ARTICLE 4 – SITE AND OTHER AREAS; EXISTING SITE CONDITIONS; EXAMINATION OF SITE; OWNER'S SAFETY PROGRAM; OTHER WORK AT THE SITE

4.01 *Site and Other Areas*

A. The Site is identified in the Bidding Documents. By definition, the Site includes rights-of-way, easements, and other lands furnished by Owner for the use of the Contractor. Any additional lands required for temporary construction facilities, construction equipment, or storage of materials and equipment, and any access needed for such additional lands, are to be obtained and paid for by Contractor.

4.02 *Existing Site Conditions*

A. Subsurface and Physical Conditions; Hazardous Environmental Conditions

1. The Supplementary Conditions identify:

a. those reports known to Owner of explorations and tests of subsurface conditions at or adjacent to the Site.

b. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities).

c. reports and drawings known to Owner relating to Hazardous Environmental

Conditions that have been identified at or adjacent to the Site.

d. Technical Data contained in such reports and drawings.

2. The Technical Data contained therein upon whose accuracy Bidder is entitled to rely, as provided in the General Conditions, has been identified and established in the Supplementary Conditions. Bidder is responsible for any interpretation or conclusion Bidder draws from any Technical Data or any other data, interpretations, opinions, or information contained in such reports or shown or indicated in such drawings. If the Supplementary Conditions do not identify Technical Data, the default definition Technical Data set forth in Article 1 of the General Conditions will apply.

3. Geotechnical Baseline Report: The Bidding Documents contain a Geotechnical Baseline Report (GBR). The GBR describes certain select subsurface conditions that are anticipated to be encountered by Contractor during construction in specified locations ("Baseline Conditions"). The GBR is a Contract Document.

The Baseline Conditions in the GBR are intended to reduce uncertainty and the degree of contingency in submitted Bids. However, Bidders cannot rely solely on the Baseline Conditions. Bids should be based on a comprehensive approach that includes an independent review and analysis of the GBR, all other Contract Documents, Technical Data, other available information, and observable surface conditions. Not all potential subsurface conditions are baselined.

Nothing in the GBR is intended to relieve Bidders of the responsibility to make their own determinations regarding construction costs, bidding strategies, and Bid prices, nor of the responsibility to select and be responsible for the means, methods, techniques, sequences, and procedures of construction, and for safety precautions and programs incident thereto.

B. Underground Facilities: Information and data shown or indicated in the Bidding Documents with respect to existing Underground Facilities at or adjacent to the Site are set forth in the Contract Documents and are based upon information and data furnished to Owner and Engineer by owners of such Underground Facilities, including Owner, or others.

C. Adequacy of Data: Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to subsurface conditions, other physical conditions, and Underground Facilities, and possible changes in the Bidding Documents due to differing or unanticipated subsurface or physical conditions appear in Paragraphs 5.03, 5.04, and 5.05 of the General Conditions. Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to a Hazardous Environmental Condition at the Site, if any, and possible changes in the Contract Documents due to any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work, appear in Paragraph 5.06 of the General Conditions.

4.03 *Site Visit and Testing by Bidders*

A. Bidder shall conduct the required Site visit during normal working hours, and shall not disturb any ongoing operations at the Site.

B. Bidder is not required to conduct any subsurface testing, or exhaustive investigations of Site conditions.

C. On request, and to the extent Owner has control over the Site, and schedule permitting, the Owner will provide Bidder access to the Site to conduct such additional examinations, investigations, explorations, tests, and studies as Bidder deems necessary for preparing and submitting a successful Bid. Owner will not have any obligation to grant such access if doing so is not practical because of existing operations, security or safety concerns, or restraints on Owner's authority regarding the Site.

D. Bidder shall comply with all applicable Laws and Regulations regarding excavation and location of utilities, obtain all permits, and comply with all terms and conditions established by Owner or by property owners or other entities controlling the Site with respect to schedule, access, existing operations, security, liability insurance, and applicable safety programs.

E. Bidder shall fill all holes and clean up and restore the Site to its former condition upon completion of such explorations, investigations, tests, and studies.

4.04 *Owner's Safety Program*

A. Site visits and work at the Site may be governed by an Owner safety program. As the General Conditions indicate, if an Owner safety program exists, it will be noted in the Supplementary Conditions.

4.05 *Other Work at the Site*

A. Reference is made to Article 8 of the Supplementary Conditions for the identification of the general nature of other work of which Owner is aware (if any) that is to be performed at the Site by Owner or others (such as utilities and other prime contractors) and relates to the Work contemplated by these Bidding Documents. If Owner is party to a written contract for such other work, then on request, Owner will provide to each Bidder access to examine such contracts (other than portions thereof related to price and other confidential matters), if any.

ARTICLE 5 – BIDDER'S REPRESENTATIONS

5.01 It is the responsibility of each Bidder before submitting a Bid to:

A. examine and carefully study the Bidding Documents, and any data and reference items identified in the Bidding Documents;

B. visit the Site, conduct a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfy itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work;

C. become familiar with and satisfy itself as to all Laws and Regulations that may affect cost, progress, and performance of the Work;

D. carefully study all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions,

especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings;

E. consider the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and the Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder; and (3) Bidder's safety precautions and programs;

agree, based on the information and observations referred to in the preceding paragraph, that at the time of submitting its Bid no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of its Bid for performance of the Work athe price bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents;

F. become aware of the general nature of the work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents;

G. promptly give Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder discovers in the Bidding Documents and confirm that the written resolution thereof by Engineer is acceptable to Bidder;

H. determine that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work; and

I. agree that the submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

ARTICLE 6 – PRE-BID CONFERENCE

6.01 There will be a **Mandatory** Pre-Bid Meeting on **Thursday January 9, 2025** at 10:00 am eastern standard time. Meeting to be held at Flagler Beach Library located at:

315 7th Street South
Flagler Beach, FL 32136

ARTICLE 7 – INTERPRETATIONS AND ADDENDA

7.01 All questions about the meaning or intent of the Bidding Documents are to be submitted to the City Clerk's office in writing (via email):

Penny Overstreet

Email: poverstreet@cityofflaglerbeach.com

Interpretations or clarifications considered necessary in response to such questions will be issued by Addenda delivered to all parties recorded as having received the Bidding Documents. The last day to submit questions is **Thursday January 4, 2024**. Questions received after that date and time may not be answered. Only questions answered by Addenda will be binding. Oral, emailed and other interpretations or clarifications will be without legal effect.

7.02 Addenda may be issued to clarify, correct, supplement, or change the Bidding Documents.

ARTICLE 8 – BID SECURITY

8.01 A Bid must be accompanied by Bid security made payable to Owner in an amount of five (5) percent of Bidder's maximum Bid price (determined by adding the base bid and all alternates) and in the form of a certified check, bank money order, or a Bid bond (on the form included in the Bidding Documents) issued by a surety meeting the requirements of Paragraphs 6.01 and 6.02 of the General Conditions.

8.02 The Bid security of the apparent Successful Bidder will be retained until Owner awards the contract to such Bidder, and such Bidder has executed the Contract Documents, furnished the required

contract security, and met the other conditions of the Notice of Award, whereupon the Bid security will be released. If the Successful Bidder fails to execute and deliver the Contract Documents and furnish the required contract security within 15 days after the Notice of Award, Owner may consider Bidder to be in default, annul the Notice of Award, and the Bid security of that Bidder will be forfeited. Such forfeiture shall be Owner's exclusive remedy if Bidder defaults.

8.03 The Bid security of other Bidders that Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earlier of seven days after the Effective Date of the Contract or 61 days after the Bid opening, whereupon Bid security furnished by such Bidders will be released.

8.04 Bid security of other Bidders that Owner believes do not have a reasonable chance of receiving the award will be released within seven days after the Bid opening.

ARTICLE 9 – CONTRACT TIMES

9.01 The number of days within which, or the dates by which the Work is to be substantially completed, and completed and ready for final payment, are set forth in the Agreement.

ARTICLE 10 – LIQUIDATED DAMAGES

10.01 Provisions for liquidated damages, if any, for failure to timely attain a Milestone, Substantial Completion, or completion of the Work in readiness for final payment, are set forth in the Agreement.

ARTICLE 11 – SUBSTITUTE AND "OR-EQUAL" ITEMS

11.01 The Contract for the Work, as awarded, will be on the basis of materials and equipment specified

or described in the Bidding Documents without consideration during the bidding and Contract award process of possible substitute or "or-equal" items. In cases in which the Contract allows the Contractor to request that Engineer authorize the use of a substitute or "or-equal" item of material or equipment, application for such acceptance may not be made to and will not be considered by Engineer until after the Effective Date of the Contract.

11.02 All prices that Bidder sets forth in its Bid shall be based on the presumption that the Contractor will furnish the materials and equipment specified or described in the Bidding Documents, as supplemented by Addenda. Any assumptions regarding the possibility of post-Bid approvals of "or- equal" or substitution requests are made at Bidder's sole risk.

ARTICLE 12 – SUBCONTRACTORS, SUPPLIERS, AND OTHERS

12.01 A Bidder shall be prepared to retain specific Subcontractors, Suppliers, or other individuals or entities for the performance of the Work if required by the Bidding Documents (most commonly in the Specifications) to do so. If a prospective Bidder objects to retaining any such Subcontractor, Supplier, or other individual or entity, and the concern is not relieved by an Addendum, then the prospective Bidder should refrain from submitting a Bid.

12.02 Subsequent to the submittal of the Bid, Owner may not require the Successful Bidder or Contractor to retain any Subcontractor, Supplier, or other individual or entity against which Contractor has reasonable objection.

12.03 The apparent Successful Bidder, and any other Bidder so requested, shall within five days after Bid opening, submit to Owner a list of the Subcontractors or Suppliers proposed. If requested by Owner, such list shall be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor, Supplier, or other individual or entity. If Owner or Engineer, after due investigation, has reasonable objection to any proposed Subcontractor, Supplier, individual, or entity, Owner may, before the Notice of Award is given, request apparent Successful Bidder to submit an acceptable substitute, in which case apparent Successful Bidder shall submit a substitute, Bidder's Bid price will be increased (or decreased) by the difference in cost occasioned by such substitution, and Owner may consider such price adjustment in evaluating Bids and making the Contract award.

12.04 If apparent Successful Bidder declines to make any such substitution, Owner may award the Contract to the next lowest Bidder that proposes to use acceptable Subcontractors, Suppliers, or other individuals or entities. Declining to make requested substitutions will constitute grounds for forfeiture of the Bid security of any Bidder. Any Subcontractor, Supplier, individual, or entity so listed and against which Owner or Engineer makes no written objection prior to the giving of the Notice of Award will be deemed acceptable to Owner and Engineer subject to subsequent revocation of such acceptance as provided in Paragraph 7.06 of the General Conditions.

ARTICLE 13 – PREPARATION OF BID

13.01 The Bid Form is included with the Bidding Documents.

A. All blanks on the Bid Form shall be completed in ink and the Bid Form signed in ink. Erasures or alterations shall be initialed in ink by the person signing the Bid Form. A Bid price shall be indicated for each section, Bid item, alternate, adjustment unit price item, and unit price item listed therein.

B. If the Bid Form expressly indicates that submitting pricing on a specific alternate item is optional, and Bidder elects to not furnish pricing for such optional alternate item, then Bidder may enter the words "No Bid" or "Not Applicable."

13.02 A Bid by a corporation shall be executed in the corporate name by a corporate officer (whose title must appear under the signature), accompanied by evidence of authority to sign. The corporate address and state of incorporation shall be shown.

13.03 A Bid by a partnership shall be executed in the partnership name and signed by a partner (whose title must appear under the signature), accompanied by evidence of authority to sign. The partnership's address for receiving notices shall be shown.

13.04 A Bid by a limited liability company shall be executed in the name of the firm by a member or other authorized person and accompanied by evidence of authority to sign. The state of formation of the firm and the firm's address for receiving notices shall be shown.

13.05 A Bid by an individual shall show the Bidder's name and address for receiving notices.

13.06 A Bid by a joint venture shall be executed by an authorized representative of each joint venturer in the manner indicated on the Bid Form. The joint venture's address for receiving notices shall be shown.

13.07 All names shall be printed in ink below the signatures.

13.08 The Bid shall contain an acknowledgment of receipt of all Addenda, the numbers of which shall be filled in on the Bid Form.

13.09 Postal and e-mail addresses and telephone number for communications regarding the Bid shall be shown.

13.10 The Bid shall contain evidence of Bidder's authority and qualification to do business in the state where the Project is located, or Bidder shall covenant in writing to obtain such authority and qualification prior to award of the Contract and attach such covenant to the Bid. Bidder's state contractor license number, if any, shall also be shown on the Bid Form.

ARTICLE 14 – BASIS OF BID

14.01 *Lump Sum*

A. Bidders shall submit a Bid on a lump sum Basis for both the Base Bid and Alternate #1.

14.02 *Unit Price (if used)*

A. Bidders shall submit a Bid on a unit price basis for each item of Work listed in the unit price section of the Bid Form.

B. The "Bid Price" (sometimes referred to as the extended price) for each unit price Bid item will be the product of the "Estimated Quantity" (which Owner or its representative has set forth in the Bid Form) for the item and the corresponding "Bid Unit Price" offered by the Bidder. The total of all unit price Bid items will be the sum of these "Bid Prices"; such total will be used by Owner for Bid comparison purposes. The final quantities and Contract Price will be determined in accordance with Paragraph 13.03 of the General Conditions.

C. Discrepancies between the multiplication of units of Work and unit prices will be resolved in

favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.

ARTICLE 15 – SUBMITTAL OF BID

15.01 A Bid shall be received no later than the date and time prescribed and at the place indicated in the advertisement or invitation to bid and shall be enclosed in a plainly marked package with the Project title (and, if applicable, the designated portion of the Project for which the Bid is submitted), the name and address of Bidder, and shall be accompanied by the Bid security and other required documents. If a Bid is sent by mail or other delivery system, the sealed envelope containing the Bid shall be enclosed in a separate package plainly marked on the outside with the notation "BID ENCLOSED."

15.02 Bids received after the date and time prescribed for the opening of bids, or not submitted at the correct location or in the designated manner, will not be accepted and will be returned to the Bidder unopened.

15.03 A Bid shall be received no later than the date and time prescribed and at the place indicated in the advertisement or invitation to bid and shall be enclosed in a plainly marked package with the Project title (and, if applicable, the designated portion of the Project for which the Bid is submitted), the name and address of Bidder, and shall be accompanied by the Bid security and other required documents. If a Bid is sent by mail or other delivery system, the sealed envelope containing the Bid shall be enclosed in a separate package plainly marked on the outside with the notation "BID ENCLOSED."

15.04 Bids received after the date and time prescribed for the opening of bids, or not submitted at the correct location or in the designated manner, will not be accepted and will be returned to the Bidder unopened.

ARTICLE 16 – MODIFICATION AND WITHDRAWAL OF BID

16.01 A Bid may be withdrawn by an appropriate document duly executed in the same manner that a Bid must be executed and delivered to the place where Bids are to be submitted prior to the date and time for the opening of Bids. Upon receipt of such notice, the unopened Bid will be returned to the Bidder

16.02 If a Bidder wishes to modify its Bid prior to Bid opening, Bidder must withdraw its initial Bid in the manner specified in Paragraph 16.01 and submit a new Bid prior to the date and time for the opening of Bids.

16.03 If within 24 hours after Bids are opened any Bidder files a duly signed written notice with Owner and promptly thereafter demonstrates to the reasonable satisfaction of Owner that there was a material and substantial mistake in the preparation of its Bid, that Bidder may withdraw its Bid, and the Bid security will be returned. Thereafter, if the Work is rebid, that Bidder will be disqualified from further bidding on the Work.

ARTICLE 17 – OPENING OF BIDS

17.01 Bids will be opened at the time and place indicated in the advertisement or invitation to bid and, unless obviously non-responsive, read aloud publicly. An abstract of the amounts of the base Bids

and major alternates, if any, will be made available to Bidders after the opening of Bids.

ARTICLE 18 – BIDS TO REMAIN SUBJECT TO ACCEPTANCE

18.01 All Bids will remain subject to acceptance for the period of time stated in the Bid Form, but Owner may, in its sole discretion, release any Bid and return the Bid security (if any) prior to the end of this period.

ARTICLE 19 – EVALUATION OF BIDS AND AWARD OF CONTRACT

19.01 Owner reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. Owner will reject the Bid of any Bidder that Owner finds, after reasonable inquiry and evaluation, to not be responsible. If Bidder purports to add terms or conditions to its Bid, takes exception to any provision of the Bidding Documents, or attempts to alter the contents of the Contract Documents for purposes of the Bid, then the Owner will reject the Bid as nonresponsive; provided that Owner also reserves the right to waive all minor informalities not involving price, time, or changes in the Work.

19.02 If Owner awards the contract for the Work, such award shall be to the responsible Bidder submitting the lowest responsive Bid.

19.03 Evaluation of Bids

A. In evaluating Bids, Owner will consider whether or not the Bids comply with the prescribed requirements, and such alternates, unit prices, and other data, as may be requested in the Bid Form or prior to the Notice of Award.

B. For the determination of the apparent low Bidder when unit price bids are submitted, Bids will be compared on the basis of the total of the products of the estimated quantity of each item and unit price Bid for that item, together with any lump sum items.

19.04 In evaluating whether a Bidder is responsible, Owner will consider the qualifications of the Bidder and may consider the qualifications and experience of Subcontractors and Suppliers proposed for those portions of the Work for which the identity of Subcontractors and Suppliers must be submitted as provided in the Bidding Documents.

19.05 Owner may conduct such investigations as Owner deems necessary to establish the responsibility, qualifications, and financial ability of Bidders and any proposed Subcontractors or Suppliers.

ARTICLE 20 – BONDS AND INSURANCE

20.01 Article 6 of the General Conditions, as may be modified by the Supplementary Conditions, sets forth Owner's requirements as to performance and payment bonds and insurance. When the Successful Bidder delivers the Agreement (executed by Successful Bidder) to Owner, it shall be accompanied by required bonds and insurance documentation.

ARTICLE 21 – SIGNING OF AGREEMENT

21.01 When Owner issues a Notice of Award to the Successful Bidder, it shall be accompanied by the unexecuted counterparts of the Agreement along with the other Contract Documents as identified in the Agreement. Within 15 days thereafter, Successful Bidder shall execute and deliver the required number of counterparts of the Agreement (and any bonds and insurance documentation required to be delivered by the Contract Documents) to Owner. Within ten days thereafter, Owner shall deliver one fully executed counterpart of the Agreement to Successful Bidder, together with printed and electronic copies of the Contract Documents as stated in Paragraph 2.02 of the General Conditions.

ARTICLE 22 – ALIEN WORKERS

22.01 The City of Flagler Beach does not award publicly funded Contracts to those who knowingly employ unauthorized alien workers in violation of section 274A of the Immigration and Naturalization Act. 8 United States Code §132a. Such employment deprives legal workers of job opportunities. Violation of section 274A shall be grounds for unilateral cancellation of the Contract, Agreement, Bid or Quote for purchase of services and goods by the City of Flagler Beach.

ARTICLE 23 – E-VERIFY

23.01 The Contractor shall utilize the U.S. Department of Homeland Security's E-Verify system, in accordance with the terms governing use of the system, to confirm the employment eligibility of all persons employed by the Contractor during the term of the Contract to perform employment duties within Florida and all persons, including subcontractors, assigned by the Contractor to perform work pursuant to the Contract with the Department.

END OF SECTION

SECTION 00 22 13
STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

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ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

A. Wherever used in the Bidding Requirements or Contract Documents, a term printed with initial capital letters, including the term's singular and plural forms, will have the meaning indicated in the definitions below. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.

1. *Addenda*—Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.

2. *Agreement*—The written instrument, executed by Owner and Contractor, that sets forth the Contract Price and Contract Times, identifies the parties and the Engineer, and designates the specific items that are Contract Documents.

3. *Application for Payment*—The form acceptable to Engineer which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.

4. *Bid*—The offer of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

5. *Bidder*—An individual or entity that submits a Bid to Owner.

6. *Bidding Documents*—The Bidding Requirements, the proposed Contract Documents, and all Addenda.

7. *Bidding Requirements*—The advertisement or invitation to bid, Instructions to Bidders, Bid Bond or other Bid security, if any, the Bid Form, and the Bid with any attachments.

8. *Change Order*—A document which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, or other revision to the Contract, issued on or after the Effective Date of the Contract.

9. *Change Proposal*—A written request by Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment in Contract Price or Contract Times, or both; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; challenging a set-off against payments due; or seeking other relief with respect to the terms of the Contract.

10. *Claim*—(a) A demand or assertion by Owner directly to Contractor, duly submitted in compliance with the procedural requirements set forth herein: seeking an adjustment of Contract Price or Contract Times, or both; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; contesting Engineer's decision regarding a Change Proposal; seeking resolution of a contractual issue that Engineer has declined to

11. address; or seeking other relief with respect to the terms of the Contract; or (b) a demand or assertion by Contractor directly to Owner, duly submitted in compliance with the procedural requirements set forth herein, contesting Engineer's decision regarding a Change Proposal; or seeking resolution of a contractual issue that Engineer has declined to address. A demand for money or services by a third party is not a Claim.

12. *Constituent of Concern*—Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to (a) the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. §§9601 et seq. ("CERCLA"); (b) the Hazardous Materials Transportation Act, 49 U.S.C. §§5101 et seq.; (c) the Resource Conservation and Recovery Act, 42 U.S.C. §§6901 et seq. ("RCRA"); (d) the Toxic Substances Control Act, 15 U.S.C. §§2601 et seq.; (e) the Clean Water Act, 33 U.S.C. §§1251 et seq.; (f) the Clean Air Act, 42 U.S.C. §§7401 et seq.; or (g) any other federal, state, or local statute, law, rule, regulation, ordinance, resolution, code, order, or decree regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.

13. *Contract*—The entire and integrated written contract between the Owner and Contractor concerning the Work.

14. *Contract Documents*—Those items so designated in the Agreement, and which together comprise the Contract.

15. *Contract Price*—The money that Owner has agreed to pay Contractor for completion of the Work in accordance with the Contract Documents.

16. *Contract Times*—The number of days or the dates by which Contractor shall: (a) achieve Milestones, if any; (b) achieve Substantial Completion; and (c) complete the Work.

17. *Contractor*—The individual or entity with which Owner has contracted for performance of the Work.

18. *Cost of the Work*—See Paragraph 13.01 for definition.

19. *Drawings*—The part of the Contract that graphically shows the scope, extent, and character of the Work to be performed by Contractor.

20. *Effective Date of the Contract*—The date, indicated in the Agreement, on which the Contract becomes effective.

21. *Engineer*—The individual or entity named as such in the Agreement.

22. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but does not change the Contract Price or the Contract Times.

23. *Hazardous Environmental Condition*—The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated in the Work, and that are

controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, does not establish a Hazardous Environmental Condition.

24. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
25. *Liens*—Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.
26. *Milestone*—A principal event in the performance of the Work that the Contract requires Contractor to achieve by an intermediate completion date or by a time prior to Substantial Completion of all the Work.
27. *Notice of Award*—The written notice by Owner to a Bidder of Owner's acceptance of the Bid.
28. *Notice to Proceed*—A written notice by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work.
29. *Owner*—The individual or entity with which Contractor has contracted regarding the Work, and which has agreed to pay Contractor for the performance of the Work, pursuant to the terms of the Contract.
30. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor's plan to accomplish the Work within the Contract Times.
31. *Project*—The total undertaking to be accomplished for Owner by engineers, contractors, and others, including planning, study, design, construction, testing, commissioning, and start-up, and of which the Work to be performed under the Contract Documents is a part.
32. *Project Manual*—The written documents prepared for, or made available for, procuring and constructing the Work, including but not limited to the Bidding Documents or other construction procurement documents, geotechnical and existing conditions information, the Agreement, bond forms, General Conditions, Supplementary Conditions, and Specifications. The contents of the Project Manual may be bound in one or more volumes.
33. *Resident Project Representative*—The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative or "RPR" includes any assistants or field staff of Resident Project Representative.
34. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and that establish the standards by which such portion of the Work will be judged.
35. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer's review of the submittals and the performance of related construction activities.
36. *Schedule of Values*—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

37. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information that are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work. Shop Drawings, whether approved or not, are not Drawings and are not Contract Documents.

38. *Site*—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements, and such other lands furnished by Owner which are designated for the use of Contractor.

39. *Specifications*—The part of the Contract that consists of written requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable to the Work.

40. *Subcontractor*—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work.

41. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion thereof.

42. *Successful Bidder*—The Bidder whose Bid the Owner accepts, and to which the Owner makes an award of contract, subject to stated conditions.

43. *Supplementary Conditions*—The part of the Contract that amends or supplements these General Conditions.

44. *Supplier*—A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or a Subcontractor.

45. *Technical Data*—Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (a) subsurface conditions at the Site, or physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities) or (b) Hazardous Environmental Conditions at the Site. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then the data contained in boring logs, recorded measurements of subsurface water levels, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical or environmental report prepared for the Project and made available to Contractor are hereby defined as Technical Data with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06.

46. *Underground Facilities*—All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including but not limited to those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, fiber optic transmissions, cable television, water, wastewater, storm

47. water, other liquids or chemicals, or traffic or other control systems.

48. *Unit Price Work*—Work to be paid for on the basis of unit prices.

49. *Work*—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction; furnishing, installing, and incorporating all materials and equipment into such construction; and may include related services such as testing, start-up, and commissioning, all as required by the Contract Documents.

50. *Work Change Directive*—A written directive to Contractor issued on or after the Effective Date of the Contract, signed by Owner and recommended by Engineer, ordering an addition, deletion, or revision in the Work.

1.02 *Terminology*

A. The words and terms discussed in the following paragraphs are not defined but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.

B. *Intent of Certain Terms or Adjectives*:

1. The Contract Documents include the terms “as allowed,” “as approved,” “as ordered,” “as directed” or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives “reasonable,” “suitable,” “acceptable,” “proper,” “satisfactory,” or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Article 10 or any other provision of the Contract Documents.

C. *Day*:

1. The word “day” means a calendar day of 24 hours measured from midnight to the next midnight.

D. *Defective*:

1. The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it:

a. does not conform to the Contract Documents; or

b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or

c. has been damaged prior to Engineer’s recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 15.03 or 15.04).

E. *Furnish*, *Install*, *Perform*, *Provide*:

1. The word "furnish," when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (orsome other specified location) ready for use or installation and in usable or operable condition.

2. The word "install," when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.

3. The words "perform" or "provide," when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.

4. If the Contract Documents establish an obligation of Contractor with respect to specific services, materials, or equipment, but do not expressly use any of the four words "furnish," "install," "perform," or "provide," then Contractor shall furnish and install said services, materials, or equipment complete and ready for intended use.

F. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2 – PRELIMINARY MATTERS

2.01 *Delivery of Bonds and Evidence of Insurance*

A. *Bonds*: When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.

B. *Evidence of Contractor's Insurance*: When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner, with copies to each named insured and additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract), the certificates and other evidence of insurance required to be provided by Contractor in accordance with Article 6.

C. *Evidence of Owner's Insurance*: After receipt of the executed counterparts of the Agreement and all required bonds and insurance documentation, Owner shall promptly deliver to Contractor, with copies to each named insured and additional insured (as identified in the Supplementary Conditions or otherwise), the certificates and other evidence of insurance required to be provided by Owner under Article 6.

2.02 *Copies of Documents*

A. Owner shall furnish to Contractor four printed copies of the Contract (including one fully executed counterpart of the Agreement), and one copy in electronic portable document format (PDF). Additional printed copies will be furnished upon request at the cost of reproduction.

B. Owner shall maintain and safeguard at least one original printed record version of the

C. Contract, including Drawings and Specifications signed and sealed by Engineer and other design professionals. Owner shall make such original printed record version of the Contract available to Contractor for review. Owner may delegate the responsibilities under this provision to Engineer.

2.03 *Before Starting Construction*

A. *Preliminary Schedules*: Within 10 days after the Effective Date of the Contract (or as otherwise specifically required by the Contract Documents), Contractor shall submit to Engineer for timely review:

1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract;

2. a preliminary Schedule of Submittals; and

3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.04 *Preconstruction Conference; Designation of Authorized Representatives*

A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in Paragraph 2.03.A, procedures for handling Shop Drawings, Samples, and other submittals, processing Applications for Payment, electronic or digital transmittals, and maintaining required records.

B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit and receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.05 *Initial Acceptance of Schedules*

A. At least 10 days before submission of the first Application for Payment a conference, attended by Contractor, Engineer, and others as appropriate, will be held to review for acceptability to Engineer as provided below the schedules submitted in accordance with Paragraph 2.03.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to Contractor until acceptable schedules are submitted to Engineer.

1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefor.

2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.

3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to the component parts of the Work.

2.06 *Electronic Transmittals*

A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may transmit, and shall accept, Project-related correspondence, text, data, documents, drawings, information, and graphics, including but not limited to Shop Drawings and other submittals, in electronic media or digital format, either directly, or through access to a secure Project website.

B. If the Contract does not establish protocols for electronic or digital transmittals, then Owner, Engineer, and Contractor shall jointly develop such protocols.

C. When transmitting items in electronic media or digital format, the transmitting party makes no representations as to long term compatibility, usability, or readability of the items resulting from the recipient's use of software application packages, operating systems, or computer hardware differing from those used in the drafting or transmittal of the items, or from those established in applicable transmittal protocols.

ARTICLE 3 – DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 *Intent*

A. The Contract Documents are complementary; what is required by one is as binding as if required by all.

B. It is the intent of the Contract Documents to describe a functionally complete project (or part thereof) to be constructed in accordance with the Contract Documents.

C. Unless otherwise stated in the Contract Documents, if there is a discrepancy between the electronic or digital versions of the Contract Documents (including any printed copies derived from such electronic or digital versions) and the printed record version, the printed record version shall govern.

D. The Contract supersedes prior negotiations, representations, and agreements, whether written or oral.

E. Engineer will issue clarifications and interpretations of the Contract Documents as provided herein.

3.02 *Reference Standards*

A. Standards Specifications, Codes, Laws and Regulations

1. Reference in the Contract Documents to standard specifications, manuals, reference standards, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the standard specification, manual, reference standard, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Contract if there

2. were no Bids), except as may be otherwise specifically stated in the Contract Documents.

3. No provision of any such standard specification, manual, reference standard, or code, or any instruction of a Supplier, shall be effective to change the duties or responsibilities of Owner, Contractor, or Engineer, or any of their subcontractors, consultants, agents, or employees, from those set forth in the part of the Contract Documents prepared by or for Engineer. No such provision or instruction shall be effective to assign to Owner, Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the part of the Contract Documents prepared by or for Engineer.

3.03 *Reporting and Resolving Discrepancies*

A. *Reporting Discrepancies*:

1. *Contractor's Verification of Figures and Field Measurements*: Before undertaking each part of the Work, Contractor shall carefully study the Contract Documents, and check and verify pertinent figures and dimensions therein, particularly with respect to applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy that Contractor discovers, or has actual knowledge of, and shall not proceed with any Work affected thereby until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract Documents issued pursuant to Paragraph 11.01.

2. *Contractor's Review of Contract Documents*: If, before or during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation, (b) actual field conditions, (c) any standard specification, manual, reference standard, or code, or (d) any instruction of any Supplier, then Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 7.15) until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract Documents issued pursuant to Paragraph 11.01.

3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof.

B. *Resolving Discrepancies*:

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the part of the Contract Documents prepared by or for Engineer shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between such provisions of the Contract Documents and:

a. the provisions of any standard specification, manual, reference standard, or code,

b. or the instruction of any Supplier (whether or not specifically incorporated by reference as a Contract Document); or

c. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 *Requirements of the Contract Documents*

A. During the performance of the Work and until final payment, Contractor and Owner shall submit to the Engineer all matters in question concerning the requirements of the Contract Documents (sometimes referred to as requests for information or interpretation—RFIs), or relating to the acceptability of the Work under the Contract Documents, as soon as possible after such matters arise. Engineer will be the initial interpreter of the requirements of the Contract Documents, and judge of the acceptability of the Work thereunder.

B. Engineer will, with reasonable promptness, render a written clarification, interpretation, or decision on the issue submitted, or initiate an amendment or supplement to the Contract Documents. Engineer's written clarification, interpretation, or decision will be final and binding on Contractor, unless it appeals by submitting a Change Proposal, and on Owner, unless it appeals by filing a Claim.

C. If a submitted matter in question concerns terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work under the Contract Documents, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, then Engineer will promptly give written notice to Owner and Contractor that Engineer is unable to provide a decision or interpretation. If Owner and Contractor are unable to agree on resolution of such a matter in question, either party may pursue resolution as provided in Article 12.

3.05 *Reuse of Documents*

A. Contractor and its Subcontractors and Suppliers shall not:

1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media editions, or reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer; or

2. have or acquire any title or ownership rights in any other Contract Documents, reuse any such Contract Documents for any purpose without Owner's express written consent, or violate any copyrights pertaining to such Contract Documents.

B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein shall preclude Contractor from retaining copies of the Contract Documents for record purposes.

ARTICLE 4 – COMMENCEMENT AND PROGRESS OF THE WORK

4.01 *Commencement of Contract Times; Notice to Proceed*

A. The Contract Times will commence to run on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Contract. In no event will the Contract Times commence to run later than the sixtieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Contract, whichever date is earlier.

4.02 *Starting the Work*

A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work shall be done at the Site prior to such date.

4.03 *Reference Points*

A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.04 *Progress Schedule*

A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.05 as it may be adjusted from time to time as provided below.

1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.05) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times.

2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 11.

B. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, or during any appeal process, except as permitted by Paragraph 16.04, or as Owner and Contractor may otherwise agree in writing.

4.05 *Delays in Contractor's Progress*

A. If Owner, Engineer, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Times and Contract Price. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.

B. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delay, disruption, or interference caused by or within the control of Contractor. Delay, disruption, and interference attributable to and within the control of a Subcontractor or Supplier shall be deemed to be within the control of Contractor.

C. If Contractor's performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of Owner, Contractor, and those for which they are responsible, then Contractor shall be entitled to an equitable adjustment in Contract Times. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays, disruption, and interference described in this paragraph. Causes of delay, disruption, or interference that may give rise to an adjustment in Contract Times under this paragraph include but are not limited to the following:

1. severe and unavoidable natural catastrophes such as fires, floods, epidemics, and earthquakes;
2. abnormal weather conditions;
3. acts or failures to act of utility owners (other than those performing other work at or adjacent to the Site by arrangement with the Owner, as contemplated in Article 8); and
4. acts of war or terrorism.

D. Delays, disruption, and interference to the performance or progress of the Work resulting from the existence of a differing subsurface or physical condition, an Underground Facility that was not shown or indicated by the Contract Documents, or not shown or indicated with reasonable accuracy, and those resulting from Hazardous Environmental Conditions, are governed by Article 5.

E. Paragraph 8.03 governs delays, disruption, and interference to the performance or progress of the Work resulting from the performance of certain other work at or adjacent to the Site.

F. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Contractor.

G. Contractor must submit any Change Proposal seeking an adjustment in Contract Price or Contract Times under this paragraph within 30 days of the commencement of the delaying, disrupting, or interfering event.

ARTICLE 5 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

5.01 *Availability of Lands*

A. Owner shall furnish the Site. Owner shall notify Contractor of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work.

B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which permanent improvements are to be made and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.

C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

5.02 *Use of Site and Other Areas*

A. *Limitation on Use of Site and Other Areas*:

1. Contractor shall confine construction equipment, temporary construction facilities, the storage of materials and equipment, and the operations of workers to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and such other adjacent areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for (a) damage to the Site; (b) damage to any such other adjacent areas used for Contractor's operations; (c) damage to any other adjacent land or areas; and (d) for injuries and losses sustained by the owners or occupants of any such land or areas; provided that such damage or injuries result from the performance of the Work or from other actions or conduct of the Contractor or those for which Contractor is responsible.

2. If a damage or injury claim is made by the owner or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible, Contractor shall (a) take immediate corrective or remedial action as required by Paragraph 7.12, or otherwise; (b) promptly attempt to settle the claim as to all parties through negotiations with such owner or occupant, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or at law; and (c) to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claim, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused directly or indirectly, in whole or in part by, or based upon, Contractor's performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible.

B. *Removal of Debris During Performance of the Work*: During the progress of the Work the Contractor shall keep the Site and other adjacent areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.

C. *Cleaning*: Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site and adjacent areas all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.

D. *Loading of Structures*: Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any

part
of the Work or adjacent structures or land to stresses or pressures that will endanger them.

5.03 *Subsurface and Physical Conditions*

A. *Reports and Drawings*: The Supplementary Conditions identify:

1. those reports known to Owner of explorations and tests of subsurface conditions at or adjacent to the Site;

2. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities); and

3. Technical Data contained in such reports and drawings.

B. *Reliance by Contractor on Technical Data Authorized*: Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely upon the accuracy of the Technical Data (as defined in Article 1) contained in any geotechnical or environmental report prepared for the Project and made available to Contractor. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto; or

2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or

3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions, or information.

5.04 *Differing Subsurface or Physical Conditions*

A. *Notice by Contractor*: If Contractor believes that any subsurface or physical condition that is uncovered or revealed at the Site either:

1. is of such a nature as to establish that any Technical Data on which Contractor is entitled to rely as provided in Paragraph 5.03 is materially inaccurate; or

2. is of such a nature as to require a change in the Drawings or Specifications; or

3. differs materially from that shown or indicated in the Contract Documents; or

4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and

Engineer in writing about such condition. Contractor shall not further disturb such condition or perform Work in connection therewith (except with respect to an emergency) until receipt of a written statement permitting Contractor to do so.

B. *Engineer's Review*: After receipt of written notice as required by the preceding paragraph, Engineer will promptly review the subsurface or physical condition in question; determine the necessity of Owner's obtaining additional exploration or tests with respect to the condition; conclude whether the condition falls within any one or more of the differing site condition categories in Paragraph 5.04.A above; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the subsurface or physical condition in question and the need for any change in the Drawings or Specifications; and advise Owner in writing of Engineer's findings, conclusions, and recommendations.

C. *Owner's Statement to Contractor Regarding Site Condition*: After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the subsurface or physical condition in question, addressing the resumption of Work in connection with such condition, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations, in whole or in part.

D. *Possible Price and Times Adjustments*:

1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, or both, to the extent that the existence of a differing subsurface or physical condition, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

    a. such condition must fall within any one or more of the categories described in Paragraph 5.04.A;

    b. with respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03; and,

    c. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.

2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times with respect to a subsurface or physical condition if:

    a. Contractor knew of the existence of such condition at the time Contractor made a commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract, or otherwise; or

    b. the existence of such condition reasonably could have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas expressly required by the Bidding Requirements or Contract

Documents to be conducted by or for Contractor prior to Contractor's making such commitment; or

c. Contractor failed to give the written notice as required by Paragraph 5.04.A.

3. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, or both, then any such adjustment shall be set forth in a Change Order.

4. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, or both, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the subsurface or physical condition in question.

5.05 *Underground Facilities*

A. *Contractor's Responsibilities*: The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or adjacent to the Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

1. Owner and Engineer do not warrant or guarantee the accuracy or completeness of any such information or data provided by others; and

2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:

a. reviewing and checking all information and data regarding existing Underground Facilities at the Site;

b. locating all Underground Facilities shown or indicated in the Contract Documents as being at the Site;

c. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and

d. the safety and protection of all existing Underground Facilities at the Site, and repairing any damage thereto resulting from the Work.

B. *Notice by Contractor*: If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy, then Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer.

C. *Engineer's Review*: Engineer will promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the Underground Facility in question; determine the extent, if any, to which a change is required in the Drawings or Specifications

to reflect and document the consequences of the existence or location of the Underground Facility; and advise Owner in writing of Engineer's findings, conclusions, and recommendations. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

D. *Owner's Statement to Contractor Regarding Underground Facility*: After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the Underground Facility in question, addressing the resumption of Work in connection with such Underground Facility, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations in whole or in part.

E. *Possible Price and Times Adjustments*:

1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, or both, to the extent that any existing Underground Facility at the Site that was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:
   a. Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated the existence or actual location of the Underground Facility in question;
   b. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03;
   c. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times; and
   d. Contractor gave the notice required in Paragraph 5.05.B.
2. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, or both, then any such adjustment shall be set forth in a Change Order.
3. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, or both, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the Underground Facility in question.

5.06 *Hazardous Environmental Conditions at Site*

A. *Reports and Drawings*: The Supplementary Conditions identify:

1. those reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site; and
2. Technical Data contained in such reports and drawings.

B. *Reliance by Contractor on Technical Data Authorized*: Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with

respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely on the accuracy of the Technical Data (as defined in Article 1) contained in any geotechnical or environmental report prepared for the Project and made available to Contractor. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor and safety precautions and programs incident thereto; or
2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or
3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions or information.

C. Contractor shall not be responsible for removing or remediating any Hazardous Environmental Condition encountered, uncovered, or revealed at the Site unless such removal or remediation is expressly identified in the Contract Documents to be within the scope of the Work. Contractor shall be responsible for controlling, containing, and duly removing all Constituents of Concern brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible, and for any associated costs; and for the costs of removing and remediating any Hazardous Environmental Condition created by the presence of any such Constituents of Concern.

D. If Contractor encounters, uncovers, or reveals a Hazardous Environmental Condition whose removal or remediation is not expressly identified in the Contract Documents as being within the scope of the Work, or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, then Contractor shall immediately: (1) secure or otherwise isolate such condition; (2) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 7.15); and (3) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 5.06.F. If Contractor or anyone for whom Contractor is responsible created the Hazardous Environmental Condition in question, then Owner may remove and remediate the Hazardous Environmental Condition, and impose a set-off against payments to account for the associated costs.

E. Contractor shall not resume Work in connection with such Hazardous Environmental Condition or in any affected area until after Owner has obtained any required permits related thereto, and delivered written notice to Contractor either (1) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work, or (2) specifying any special conditions under which such Work may be resumed safely.

F. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if

any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, then within 30 days of Owner's written notice regarding the resumption of Work, Contractor may submit a Change Proposal, or Owner may impose a set-off.

G. If after receipt of such written notice Contractor does not agree to resume such Work based on a reasonable belief it is unsafe or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work, following the contractual change procedures in Article 11. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 8.

H. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition (1) was not shown or indicated in the Drawings, Specifications, or other Contract Documents, identified as Technical Data entitled to limited reliance pursuant to Paragraph 5.06.B, or identified in the Contract Documents to be included within the scope of the Work, and (2) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.I shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

I. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the failure to control, contain, or remove a Constituent of Concern brought to the Site by Contractor or by anyone for whom Contractor is responsible, or to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.J shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

J. The provisions of Paragraphs 5.03, 5.04, and 5.05 do not apply to the presence of Constituents of Concern or to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 6 – BONDS AND INSURANCE

6.01 *Performance, Payment, and Other Bonds*

A. Contractor shall furnish a performance bond and a payment bond, each in an amount at least equal to the Contract Price, as security for the faithful performance and payment of all of Contractor's obligations under the Contract. These bonds shall remain in effect until one

year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 15.08, whichever is later, except as provided otherwise by Laws or Regulations, the Supplementary Conditions, or other specific provisions of the Contract. Contractor shall also furnish such other bonds as are required by the Supplementary Conditions or other specific provisions of the Contract.

B. All bonds shall be in the form prescribed by the Contract except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (as amended and supplemented) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. A bond signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority shall show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.

C. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds in the required amounts.

D. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or its right to do business is terminated in any state or jurisdiction where any part of the Project is located, or the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the bond and surety requirements above.

E. If Contractor has failed to obtain a required bond, Owner may exclude the Contractor from the Site and exercise Owner's termination rights under Article 16.

F. Upon request, Owner shall provide a copy of the payment bond to any Subcontractor, Supplier, or other person or entity claiming to have furnished labor or materials used in the performance of the Work.

6.02 *Insurance—General Provisions*

A. Owner and Contractor shall obtain and maintain insurance as required in this Article and in the Supplementary Conditions.

B. All insurance required by the Contract to be purchased and maintained by Owner or Contractor shall be obtained from insurance companies that are duly licensed or authorized, in the state or jurisdiction in which the Project is located, to issue insurance policies for the required limits and coverages. Unless a different standard is indicated in the Supplementary Conditions, all companies that provide insurance policies required under this Contract shall have an A.M. Best rating of A-VII or better.

C. Contractor shall deliver to Owner, with copies to each named insured and additional insured (as identified in this Article, in the Supplementary Conditions, or elsewhere in the Contract), certificates of insurance establishing that Contractor has obtained and is maintaining the policies, coverages, and endorsements required by the Contract. Upon request by Owner or any other insured, Contractor shall also furnish other evidence of such required insurance, including but not limited to copies of policies and endorsements, and

documentation of applicable self-insured retentions and deductibles. Contractor may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.

D. Owner shall deliver to Contractor, with copies to each named insured and additional insured (as identified in this Article, the Supplementary Conditions, or elsewhere in the Contract), certificates of insurance establishing that Owner has obtained and is maintaining the policies, coverages, and endorsements required of Owner by the Contract (if any). Upon request by Contractor or any other insured, Owner shall also provide other evidence of such required insurance (if any), including but not limited to copies of policies and endorsements, and documentation of applicable self-insured retentions and deductibles. Owner may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.

E. Failure of Owner or Contractor to demand such certificates or other evidence of the other party's full compliance with these insurance requirements, or failure of Owner or Contractor to identify a deficiency in compliance from the evidence provided, shall not be construed as a waiver of the other party's obligation to obtain and maintain such insurance.

F. If either party does not purchase or maintain all of the insurance required of such party by the Contract, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage.

G. If Contractor has failed to obtain and maintain required insurance, Owner may exclude the Contractor from the Site, impose an appropriate set-off against payment, and exercise Owner's termination rights under Article 16.

H. Without prejudice to any other right or remedy, if a party has failed to obtain required insurance, the other party may elect to obtain equivalent insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and the Contract Price shall be adjusted accordingly.

I. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests.

J. The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner and other individuals and entities in the Contract.

6.03 *Contractor's Insurance*

A. *Workers' Compensation*: Contractor shall purchase and maintain workers' compensation and employer's liability insurance for:

1. claims under workers' compensation, disability benefits, and other similar employee benefit acts.

2. United States Longshoreman and Harbor Workers' Compensation Act and Jones Act coverage (if applicable).

3. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees (by stop-gap endorsement in monopolist worker's compensation states).

4. Foreign voluntary worker compensation (if applicable).

B. *Commercial General Liability—Claims Covered*: Contractor shall purchase and maintain commercial general liability insurance, covering all operations by or on behalf of Contractor, on an occurrence basis, against:

1. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees.
2. claims for damages insured by reasonably available personal injury liability coverage.
3. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom.

C. *Commercial General Liability—Form and Content*: Contractor's commercial liability policy shall be written on a 1996 (or later) ISO commercial general liability form (occurrence form) and include the following coverages and endorsements:

1. Products and completed operations coverage:
   a. Such insurance shall be maintained for three years after final payment.
   b. Contractor shall furnish Owner and each other additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract) evidence of continuation of such insurance at final payment and three years thereafter.
2. Blanket contractual liability coverage, to the extent permitted by law, including but not limited to coverage of Contractor's contractual indemnity obligations in Paragraph 7.18.
3. Broad form property damage coverage.
4. Severability of interest.
5. Underground, explosion, and collapse coverage.
6. Personal injury coverage.
7. Additional insured endorsements that include both ongoing operations and products and completed operations coverage through ISO Endorsements CG 20 10 10 01 and CG 20 37 10 01 (together); or CG 20 10 07 04 and CG 20 37 07 04 (together); or their equivalent.
8. For design professional additional insureds, ISO Endorsement CG 20 32 07 04, "Additional Insured—Engineers, Architects or Surveyors Not Engaged by the Named Insured" or its equivalent.

D. *Automobile liability*: Contractor shall purchase and maintain automobile liability insurance against claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance, or use of any motor vehicle. The automobile liability policy shall be written on an occurrence basis.

E. *Umbrella or excess liability*: Contractor shall purchase and maintain umbrella or excess liability insurance written over the underlying employer's liability, commercial general liability, and automobile liability insurance described in the paragraphs above. Subject to industry-standard exclusions, the coverage afforded shall follow form as to each and every

one of the underlying policies.

F. *Contractor's pollution liability insurance*: Contractor shall purchase and maintain a policy covering third-party injury and property damage claims, including clean-up costs, as a result of pollution conditions arising from Contractor's operations and completed operations. This insurance shall be maintained for no less than three years after final completion.

G. *Additional insureds*: The Contractor's commercial general liability, automobile liability, umbrella or excess, and pollution liability policies shall include and list as additional insureds Owner and Engineer, and any individuals or entities identified in the Supplementary Conditions; include coverage for the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of all such additional insureds; and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby (including as applicable those arising from both ongoing and completed operations) on a non-contributory basis. Contractor shall obtain all necessary endorsements to support these requirements.

H. *Contractor's professional liability insurance*: If Contractor will provide or furnish professional services under this Contract, through a delegation of professional design services or otherwise, then Contractor shall be responsible for purchasing and maintaining applicable professional liability insurance. This insurance shall provide protection against claims arising out of performance of professional design or related services, and caused by a negligent error, omission, or act for which the insured party is legally liable. It shall be maintained throughout the duration of the Contract and for a minimum of two years after Substantial Completion. If such professional design services are performed by a Subcontractor, and not by Contractor itself, then the requirements of this paragraph may be satisfied through the purchasing and maintenance of such insurance by such Subcontractor.

I. *General provisions*: The policies of insurance required by this Paragraph 6.03 shall:

1. include at least the specific coverages provided in this Article.
2. be written for not less than the limits of liability provided in this Article and in the Supplementary Conditions, or required by Laws or Regulations, whichever is greater.
3. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed, or renewal refused until at least 10 days prior written notice has been given to Contractor. Within three days of receipt of any such written notice, Contractor shall provide a copy of the notice to Owner, Engineer, and each other insured under the policy.
4. remain in effect at least until final payment (and longer if expressly required in this Article) and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work as a warranty or correction obligation, or otherwise, or returning to the Site to conduct other tasks arising from the Contract Documents.
5. be appropriate for the Work being performed and provide protection from claims that may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts

any of them may be liable.

J. The coverage requirements for specific policies of insurance must be met by such policies, and not by reference to excess or umbrella insurance provided in other policies.

6.04 *Owner's Liability Insurance*

A. In addition to the insurance required to be provided by Contractor under Paragraph 6.03, Owner, at Owner's option, may purchase and maintain at Owner's expense Owner's own liability insurance as will protect Owner against claims which may arise from operations under the Contract Documents.

B. Owner's liability policies, if any, operate separately and independently from policies required to be provided by Contractor, and Contractor cannot rely upon Owner's liability policies for any of Contractor's obligations to the Owner, Engineer, or third parties.

6.05 *Property Insurance*

A. *Builder's Risk*: Unless otherwise provided in the Supplementary Conditions, Contractor shall purchase and maintain builder's risk insurance upon the Work on a completed value basis, in the amount of the full insurable replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:

1. include the Owner and Contractor as named insureds, and all Subcontractors, and any individuals or entities required by the Supplementary Conditions to be insured under such builder's risk policy, as insureds or named insureds. For purposes of the remainder of this Paragraph 6.05, Paragraphs 6.06 and 6.07, and any corresponding Supplementary Conditions, the parties required to be insured shall collectively be referred to as "insureds."

2. be written on a builder's risk "all risk" policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire; lightning; windstorm; riot; civil commotion; terrorism; vehicle impact; aircraft; smoke; theft; vandalism and malicious mischief; mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake; volcanic activity, and other earth movement; flood; collapse; explosion; debris removal; demolition occasioned by enforcement of Laws and Regulations; water damage (other than that caused by flood); and such other perils or causes of loss as may be specifically required by the Supplementary Conditions. If insurance against mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake; volcanic activity, and other earth movement; or flood, are not commercially available under builder's risk policies, by endorsement or otherwise, such insurance may be provided through other insurance policies acceptable to Owner and Contractor.

3. cover, as insured property, at least the following: (a) the Work and all materials, supplies, machinery, apparatus, equipment, fixtures, and other property of a similar nature that are to be incorporated into or used in the preparation, fabrication, construction, erection, or completion of the Work, including Owner-furnished or

assigned property; (b) spare parts inventory required within the scope of the Contract; and (c) temporary works which are not intended to form part of the permanent constructed Work but which are intended to provide working access to the Site, or to the Work under construction, or which are intended to provide temporary support for the Work under construction, including scaffolding, form work, fences, shoring, falsework, and temporary structures.

4. cover expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects).
5. extend to cover damage or loss to insured property while in temporary storage at the Site or in a storage location outside the Site (but not including property stored at the premises of a manufacturer or Supplier).
6. extend to cover damage or loss to insured property while in transit.
7. allow for partial occupation or use of the Work by Owner, such that those portions of the Work that are not yet occupied or used by Owner shall remain covered by the builder's risk insurance.
8. allow for the waiver of the insurer's subrogation rights, as set forth below.
9. provide primary coverage for all losses and damages caused by the perils or causes of loss covered.
10. not include a co-insurance clause.
11. include an exception for ensuing losses from physical damage or loss with respect to any defective workmanship, design, or materials exclusions.
12. include performance/hot testing and start-up.
13. be maintained in effect, subject to the provisions herein regarding Substantial Completion and partial occupancy or use of the Work by Owner, until the Work is complete.

B. *Notice of Cancellation or Change*: All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with this Paragraph 6.05 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 10 days prior written notice has been given to the purchasing policyholder. Within three days of receipt of any such written notice, the purchasing policyholder shall provide a copy of the notice to each other insured.

C. *Deductibles*: The purchaser of any required builder's risk or property insurance shall pay for costs not covered because of the application of a policy deductible.

D. *Partial Occupancy or Use by Owner*: If Owner will occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 15.04, then Owner (directly, if it is the purchaser of the builder's risk policy, or through Contractor) will provide notice of such occupancy or use to the builder's risk insurer. The builder's risk insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy; rather, those portions of the Work that are occupied or used by Owner may come off the builder's risk policy, while those portions of the Work not yet occupied or

used by Owner shall remain covered by the builder's risk insurance.

E. *Additional Insurance*: If Contractor elects to obtain other special insurance to be included in or supplement the builder's risk or property insurance policies provided under this Paragraph 6.05, it may do so at Contractor's expense.

F. *Insurance of Other Property*: If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, such as tools, construction equipment, or other personal property owned by Contractor, a Subcontractor, or an employee of Contractor or a Subcontractor, then the entity or individual owning such property item will be responsible for deciding whether to insure it, and if so in what amount.

6.06 *Waiver of Rights*

A. All policies purchased in accordance with Paragraph 6.05, expressly including the builder's risk policy, shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any insureds thereunder, or against Engineer or its consultants, or their officers, directors, members, partners, employees, agents, consultants, or subcontractors. Owner and Contractor waive all rights against each other and the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Engineer, its consultants, all Subcontractors, all individuals or entities identified in the Supplementary Conditions as insureds, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Owner or Contractor as trustee or fiduciary, or otherwise payable under any policy so issued.

B. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, for:

1. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other perils whether or not insured by Owner; and

2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by Owner during partial occupancy or use pursuant to Paragraph 15.04, after Substantial Completion pursuant to Paragraph 15.03, or after final payment pursuant to Paragraph 15.06.

C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 6.06.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against Contractor, Subcontractors, or Engineer, or the officers, directors,

members, partners, employees, agents, consultants, or subcontractors of each and any of them.

D. Contractor shall be responsible for assuring that the agreement under which a Subcontractor performs a portion of the Work contains provisions whereby the Subcontractor waives all rights against Owner, Contractor, all individuals or entities identified in the Supplementary Conditions as insureds, the Engineer and its consultants, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by builder's risk insurance and any other property insurance applicable to the Work.

6.07 *Receipt and Application of Property Insurance Proceeds*

A. Any insured loss under the builder's risk and other policies of insurance required by Paragraph 6.05 will be adjusted and settled with the named insured that purchased the policy. Such named insured shall act as fiduciary for the other insureds, and give notice to such other insureds that adjustment and settlement of a claim is in progress. Any other insured may state its position regarding a claim for insured loss in writing within 15 days after notice of such claim.

B. Proceeds for such insured losses may be made payable by the insurer either jointly to multiple insureds, or to the named insured that purchased the policy in its own right and as fiduciary for other insureds, subject to the requirements of any applicable mortgage clause. A named insured receiving insurance proceeds under the builder's risk and other policies of insurance required by Paragraph 6.05 shall distribute such proceeds in accordance with such agreement as the parties in interest may reach, or as otherwise required under the dispute resolution provisions of this Contract or applicable Laws and Regulations.

C. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the money so received applied on account thereof, and the Work and the cost thereof covered by Change Order, if needed.

ARTICLE 7 – CONTRACTOR'S RESPONSIBILITIES

7.01 *Supervision and Superintendence*

A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction.

B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

7.02 *Labor; Working Hours*

A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the Site.

B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site may be performed during the hours of 7:00 am to 10:00 pm, seven days a week.

7.03 *Services, Materials, and Equipment*

A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start up, and completion of the Work, whether or not such items are specifically called for in the Contract Documents.

B. All materials and equipment incorporated into the Work shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications shall expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.

C. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

7.04 *"Or Equals"*

A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the Contract Price has been based upon Contractor furnishing such item as specified. The specification or description of such an item is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or equal" item is permitted, Contractor may request that Engineer authorize the use of other items of material or equipment, or items from other proposed suppliers under the circumstances described below.

1. If Engineer in its sole discretion determines that an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Engineer shall deem it an "or equal" item. For the purposes of this paragraph, a proposed item of material or equipment will be considered functionally equal to an item so named if:

a. in the exercise of reasonable judgment Engineer determines that:

1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;

2) it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole;

3) it has a proven record of performance and availability of responsive service; and

4) it is not objectionable to Owner.

b. Contractor certifies that, if approved and incorporated into the Work:

1) there will be no increase in cost to the Owner or increase in Contract Times; and

2) it will conform substantially to the detailed requirements of the item named in the Contract Documents.

B. *Contractor's Expense*: Contractor shall provide all data in support of any proposed "or equal" item at Contractor's expense.

C. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each "or-equal" request. Engineer may require Contractor to furnish additional data about the proposed "or-equal" item. Engineer will be the sole judge of acceptability. No "or-equal" item will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an "or-equal", which will be evidenced by an approved Shop Drawing or other written communication. Engineer will advise Contractor in writing of any negative determination.

D. *Effect of Engineer's Determination*: Neither approval nor denial of an "or-equal" request shall result in any change in Contract Price. The Engineer's denial of an "or-equal" request shall be final and binding, and may not be reversed through an appeal under any provision of the Contract Documents.

E. *Treatment as a Substitution Request*: If Engineer determines that an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item, Contractor may request that Engineer considered the proposed item as a substitute pursuant to Paragraph 7.05.

7.05 *Substitutes*

A. Unless the specification or description of an item of material or equipment required to be furnished under the Contract Documents contains or is followed by words reading that no substitution is permitted, Contractor may request that Engineer authorize the use of other items of material or equipment under the circumstances described below. To the extent possible such requests shall be made before commencement of related construction at the Site.

1. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is functionally equivalent to that named and an acceptable substitute therefor. Engineer will not accept requests for review of proposed substitute items of material or equipment from anyone other than Contractor.

2. The requirements for review by Engineer will be as set forth in Paragraph 7.05.B, as supplemented by the Specifications, and as Engineer may decide is appropriate under the circumstances.

3. Contractor shall make written application to Engineer for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application:

a. hall certify that the proposed substitute item will:

1) perform adequately the functions and achieve the results called for by the general design,

2) be similar in substance to that specified, and

3) be suited to the same use as that specified.

b. will state:

1) the extent, if any, to which the use of the proposed substitute item will necessitate a change in Contract Times,

2) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item, and

3) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty.

c. will identify:

1) all variations of the proposed substitute item from that specified, and

2) available engineering, sales, maintenance, repair, and replacement services.

d. shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including but not limited to changes in Contract Price, shared savings, costs of redesign, and claims of other contractors affected by any resulting change.

B. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each substitute request, and to obtain comments and direction from Owner. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No substitute will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an acceptable substitute. Engineer's determination will be evidenced by a Field Order or a proposed Change Order accounting for the substitution itself and all related impacts, including changes in Contract Price or Contract Times. Engineer will advise Contractor in writing of any negative determination.

C. *Special Guarantee*: Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.

D. *Reimbursement of Engineer's Cost*: Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.

E. *Contractor's Expense*: Contractor shall provide all data in support of any proposed

substitute at Contractor's expense.

F. *Effect of Engineer's Determination*: If Engineer approves the substitution request, Contractor shall execute the proposed Change Order and proceed with the substitution. The Engineer's denial of a substitution request shall be final and binding, and may not be reversed through an appeal under any provision of the Contract Documents. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.05.D, by timely submittal of a Change Proposal.

7.06 *Concerning Subcontractors, Suppliers, and Others*

A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner.

B. Contractor shall retain specific Subcontractors, Suppliers, or other individuals or entities for the performance of designated parts of the Work if required by the Contract to do so.

C. Subsequent to the submittal of Contractor's Bid or final negotiation of the terms of the Contract, Owner may not require Contractor to retain any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against which Contractor has reasonable objection.

D. Prior to entry into any binding subcontract or purchase order, Contractor shall submit to Owner the identity of the proposed Subcontractor or Supplier (unless Owner has already deemed such proposed Subcontractor or Supplier acceptable, during the bidding process or otherwise). Such proposed Subcontractor or Supplier shall be deemed acceptable to Owner unless Owner raises a substantive, reasonable objection within five days.

E. Owner may require the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work. Owner also may require Contractor to retain specific replacements; provided, however, that Owner may not require a replacement to which Contractor has a reasonable objection. If Contractor has submitted the identity of certain Subcontractors, Suppliers, or other individuals or entities for acceptance by Owner, and Owner has accepted it (either in writing or by failing to make written objection thereto), then Owner may subsequently revoke the acceptance of any such Subcontractor, Supplier, or other individual or entity so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity.

F. If Owner requires the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, or both, with respect to the replacement; and Contractor shall initiate a Change Proposal for such adjustment within 30 days of Owner's requirement of replacement.

G. No acceptance by Owner of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of the right of Owner to the completion of the Work in accordance with the Contract Documents.

H. On a monthly basis Contractor shall submit to Engineer a complete list of all Subcontractors and Suppliers having a direct contract with Contractor, and of all other Subcontractors and

Suppliers known to Contractor at the time of submittal.

I. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions.

J. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors, Suppliers, and all other individuals or entities performing or furnishing any of the Work.

K. Contractor shall restrict all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed herein.

L. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.

M. All Work performed for Contractor by a Subcontractor or Supplier shall be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer.

N. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor on account of Work performed for Contractor by the particular Subcontractor or Supplier.

O. Nothing in the Contract Documents:

1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier, or other individual or entity; nor
2. shall create any obligation on the part of Owner or Engineer to pay or to see to the payment of any money due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.

7.07 *Patent Fees and Royalties*

A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Engineer, its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by Owner in the Contract Documents.

B. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising

out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.

C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

7.08 *Permits*

A. Unless otherwise provided in the Contract Documents, Contractor shall obtain and pay for all construction permits and licenses. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of the submission of Contractor's Bid (or when Contractor became bound under a negotiated contract). Owner shall pay all charges of utility owners for connections for providing permanent service to the Work

7.09 *Taxes*

A. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

7.10 *Laws and Regulations*

A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.

B. If Contractor performs any Work or takes any other action knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all resulting costs and losses, and shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work or other action. It shall not be Contractor's responsibility to make certain that the Work described in the Contract Documents is in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.

C. Owner or Contractor may give notice to the other party of any changes after the submission of Contractor's Bid (or after the date when Contractor became bound under a

negotiated contract) in Laws or Regulations having an effect on the cost or time of performance of the Work, including but not limited to changes in Laws or Regulations having an effect on procuring permits and on sales, use, value-added, consumption, and other similar taxes. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times resulting from such changes, then within 30 days of such notice Contractor may submit a Change Proposal, or Owner may initiate a Claim.

7.11 *Record Documents*

A. Contractor shall maintain in a safe place at the Site one printed record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, written interpretations and clarifications, and approved Shop Drawings. Contractor shall keep such record documents in good order and annotate them to show changes made during construction. These record documents, together with all approved Samples, will be available to Engineer for reference. Upon completion of the Work, Contractor shall deliver these record documents to Engineer.

7.12 *Safety and Protection*

A. Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:

1. all persons on the Site or who may be affected by the Work;
2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and
3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, other work in progress, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.

B. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify Owner; the owners of adjacent property, Underground Facilities, and other utilities; and other contractors and utility owners performing work at or adjacent to the Site, when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.

C. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. The Supplementary Conditions identify any Owner's safety programs that are applicable to the Work.

D. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's

safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.

E. All damage, injury, or loss to any property referred to in Paragraph 7.12.A.2 or 7.12.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor at its expense (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).

F. Contractor's duties and responsibilities for safety and protection shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 15.06.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

G. Contractor's duties and responsibilities for safety and protection shall resume whenever Contractor or any Subcontractor or Supplier returns to the Site to fulfill warranty or correction obligations, or to conduct other tasks arising from the Contract Documents.

7.13 *Safety Representative*

A. Contractor shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

7.14 *Hazard Communication Programs*

A. Contractor shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

7.15 *Emergencies*

A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent threatened damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If Engineer determines that a change in the Contract Documents is required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.

7.16 *Shop Drawings, Samples, and Other Submittals*

A. *Shop Drawing and Sample Submittal Requirements*:

1. Before submitting a Shop Drawing or Sample, Contractor shall have:

a. reviewed and coordinated the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract

Documents;

b. determined and verified all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;

c. determined and verified the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and

d. determined and verified all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.

2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review of that submittal, and that Contractor approves the submittal.

3. With each submittal, Contractor shall give Engineer specific written notice of any variations that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be set forth in a written communication separate from the Shop Drawings or Sample submittal; and, in addition, in the case of Shop Drawings by a specific notation made on each Shop Drawing submitted to Engineer for review and approval of each such variation.

B. *Submittal Procedures for Shop Drawings and Samples*: Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals. Each submittal will be identified as Engineer may require.

1. *Shop Drawings*:

a. Contractor shall submit the number of copies required in the Specifications.

b. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide and to enable Engineer to review the information for the limited purposes required by Paragraph 7.16.D.

2. *Samples*:

a. Contractor shall submit the number of Samples required in the Specifications.

b. Contractor shall clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the submittal for the limited purposes required by Paragraph 7.16.D.

3. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.

C. *Other Submittals*: Contractor shall submit other submittals to Engineer in accordance with the accepted Schedule of Submittals, and pursuant to the applicable terms of the

Specifications.

D. *Engineer's Review*:

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.

2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction or to safety precautions or programs incident thereto.

3. Engineer's review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

4. Engineer's review and approval of a Shop Drawing or Sample shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 7.16.A.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer will document any such approved variation from the requirements of the Contract Documents in a Field Order.

5. Engineer's review and approval of a Shop Drawing or Sample shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 7.16.A and B.

6. Engineer's review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, shall not, under any circumstances, change the Contract Times or Contract Price, unless such changes are included in a Change Order.

7. Neither Engineer's receipt, review, acceptance or approval of a Shop Drawing, Sample, or other submittal shall result in such item becoming a Contract Document.

8. Contractor shall perform the Work in compliance with the requirements and commitments set forth in approved Shop Drawings and Samples, subject to the provisions of Paragraph 7.16.D.4.

E. *Resubmittal Procedures*:

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals.

2. Contractor shall furnish required submittals with sufficient information and accuracy to obtain required approval of an item with no more than three submittals. Engineer will record Engineer's time for reviewing a fourth or subsequent submittal of a Shop Drawings, sample, or other item requiring approval, and Contractor shall be responsible for Engineer's charges to Owner for such time. Owner may impose a set-

off against payments due to Contractor to secure reimbursement for such charges.

3. If Contractor requests a change of a previously approved submittal item, Contractor shall be responsible for Engineer's charges to Owner for its review time, and Owner may impose a set-off against payments due to Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.

7.17 *Contractor's General Warranty and Guarantee*

A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective for a period of one year. The pump supplier shall provide a two-year warranty on the Pumps, Electrical Control Panel and any supplied appurtenances with the pump package that shall be transferred to the City. Engineer and its officers, directors, members, partners, employees, agents, consultants, and subcontractors shall be entitled to rely on Contractor's warranty and guarantee.

B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:

1. abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or

2. normal wear and tear under normal usage.

C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:

1. observations by Engineer;

2. recommendation by Engineer or payment by Owner of any progress or final payment;

3. the issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;

4. use or occupancy of the Work or any part thereof by Owner;

5. any review and approval of a Shop Drawing or Sample submittal;

6. the issuance of a notice of acceptability by Engineer;

7. any inspection, test, or approval by others; or

8. any correction of defective Work by Owner.

D. If the Contract requires the Contractor to accept the assignment of a contract entered into by Owner, then the specific warranties, guarantees, and correction obligations contained in the assigned contract shall govern with respect to Contractor's performance obligations to Owner for the Work described in the assigned contract.

7.18 *Indemnification*

A. To the fullest extent permitted by Laws and Regulations, and in addition to any other obligations of Contractor under the Contract or otherwise, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and

against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable.

B. In any and all claims against Owner or Engineer or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 7.18.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

C. The indemnification obligations of Contractor under Paragraph 7.18.A shall not extend to the liability of Engineer and Engineer's officers, directors, members, partners, employees, agents, consultants and subcontractors arising out of:

1. the preparation or approval of, or the failure to prepare or approve maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or

2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

7.19 *Delegation of Professional Design Services*

A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable Laws and Regulations.

B. If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.

C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance

and design criteria that such services must satisfy.

D. Pursuant to this paragraph, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 7.16.D.1.

E. Contractor shall not be responsible for the adequacy of the performance or design criteria specified by Owner or Engineer.

ARTICLE 8 – OTHER WORK AT THE SITE

8.01 *Other Work*

A. In addition to and apart from the Work under the Contract Documents, the Owner may perform other work at or adjacent to the Site. Such other work may be performed by Owner's employees, or through contracts between the Owner and third parties. Owner may also arrange to have third-party utility owners perform work on their utilities and facilities at or adjacent to the Site.

B. If Owner performs other work at or adjacent to the Site with Owner's employees, or through contracts for such other work, then Owner shall give Contractor written notice thereof prior to starting any such other work. If Owner has advance information regarding the start of any utility work at or adjacent to the Site, Owner shall provide such information to Contractor.

C. Contractor shall afford each other contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected.

D. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 8, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

8.02 *Coordination*

A. If Owner intends to contract with others for the performance of other work at or adjacent

to the Site, to perform other work at or adjacent to the Site with Owner's employees, or to arrange to have utility owners perform work at or adjacent to the Site, the following will be set forth in the Supplementary Conditions or provided to Contractor prior to the start of any such other work:

1. the identity of the individual or entity that will have authority and responsibility for coordination of the activities among the various contractors;
2. an itemization of the specific matters to be covered by such authority and responsibility; and
3. the extent of such authority and responsibilities.

B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

8.03 *Legal Relationships*

A. If, in the course of performing other work at or adjacent to the Site for Owner, the Owner's employees, any other contractor working for Owner, or any utility owner for whom the Owner is responsible causes damage to the Work or to the property of Contractor or its Subcontractors, or delays, disrupts, interferes with, or increases the scope or cost of the performance of the Work, through actions or inaction, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both. Contractor must submit any Change Proposal seeking an equitable adjustment in the Contract Price or the Contract Times under this paragraph within 30 days of the damaging, delaying, disrupting, or interfering event. The entitlement to, and extent of, any such equitable adjustment shall take into account information (if any) regarding such other work that was provided to Contractor in the Contract Documents prior to the submittal of the Bid or the final negotiation of the terms of the Contract. When applicable, any such equitable adjustment in Contract Price shall be conditioned on Contractor assigning to Owner all Contractor's rights against such other contractor or utility owner with respect to the damage, delay, disruption, or interference that is the subject of the adjustment. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.

B. Contractor shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of Owner, any other contractor, or any utility owner performing other work at or adjacent to the Site. If Contractor fails to take such measures and as a result damages, delays, disrupts, or interferes with the work of any such other contractor or utility owner, then Owner may impose a set-off against payments due to Contractor, and assign to such other contractor or utility owner the Owner's contractual rights against Contractor with respect to the breach of the obligations set forth in this paragraph.

C. When Owner is performing other work at or adjacent to the Site with Owner's employees, Contractor shall be liable to Owner for damage to such other work, and for the reasonable direct delay, disruption, and interference costs incurred by Owner as a result of Contractor's failure to take reasonable and customary measures with respect to Owner's other work. In response to such damage, delay, disruption, or interference, Owner may

impose a set-off against payments due to Contractor.

D. If Contractor damages, delays, disrupts, or interferes with the work of any other contractor, or any utility owner performing other work at or adjacent to the Site, through Contractor's failure to take reasonable and customary measures to avoid such impacts, or if any claim arising out of Contractor's actions, inactions, or negligence in performance of the Work at or adjacent to the Site is made by any such other contractor or utility owner against Contractor, Owner, or Engineer, then Contractor shall (1) promptly attempt to settle the claim as to all parties through negotiations with such other contractor or utility owner, or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law, and (2) indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claims, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such damage, delay, disruption, or interference.

ARTICLE 9 – OWNER'S RESPONSIBILITIES

9.01 *Communications to Contractor*

A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

9.02 *Replacement of Engineer*

A. Owner may at its discretion appoint an engineer to replace Engineer, provided Contractor makes no reasonable objection to the replacement engineer. The replacement engineer's status under the Contract Documents shall be that of the former Engineer.

9.03 *Furnish Data*

A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

9.04 *Pay When Due*

A. Owner shall make payments to Contractor when they are due as provided in the Agreement.

9.05 *Lands and Easements; Reports, Tests, and Drawings*

A. Owner's duties with respect to providing lands and easements are set forth in Paragraph 5.01.

B. Owner's duties with respect to providing engineering surveys to establish reference points are set forth in Paragraph 4.03.

C. Article 5 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of conditions at the Site, and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

9.06 *Insurance*

A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 6.

9.07 *Change Orders*

A. Owner's responsibilities with respect to Change Orders are set forth in Article 11.

9.08 *Inspections, Tests, and Approvals*

A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 14.02.B.

9.09 *Limitations on Owner's Responsibilities*

A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

9.10 *Undisclosed Hazardous Environmental Condition*

A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 5.06.

9.11 *Evidence of Financial Arrangements*

A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract Documents (including obligations under proposed changes in the Work).

9.12 *Safety Programs*

A. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed.

B. Owner shall furnish copies of any applicable Owner safety programs to Contractor.

ARTICLE 10 – ENGINEER'S STATUS DURING CONSTRUCTION

10.01 *Owner's Representative*

A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract.

10.02 *Visits to Site*

A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a

greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.

B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 10.08. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

10.03 *Project Representative*

A. This project was designed in-house by the City Engineer. The Project Representative will be the City-assigned Project Manager. This person will be assigned and present at the Mandatory Pre-Bid conference and will remain in that period for the duration of the project.

B. The RPR shall not:

1 Authorize any deviation from the Contract Documents or substitution of materials or equipment (including "or-equal" items).

2 Exceed limitations of Engineer's authority as set forth in the Contract Documents.

3 Undertake any of the responsibilities of Contractor, Subcontractors, or Suppliers.

4 Advise on, issue directions relative to, or assume control over any aspect of the means, methods, techniques, sequences or procedures of Contractor's work.

5 Advise on, issue directions regarding, or assume control over security or safety practices, precautions, and programs in connection with the activities or operations of Owner or Contractor.

6 Participate in specialized field or laboratory tests or inspections conducted off-site by others except as specifically authorized by City Project Manager.

7 Accept Shop Drawing or Sample submittals from anyone other than Contractor.

8 Authorize Owner to occupy the Project in whole or in part.

10.04 *Rejecting Defective Work*

B. Engineer has the authority to reject Work in accordance with Article 14.

10.05 *Shop Drawings, Change Orders and Payments*

B. Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, are set forth in Paragraph 7.16.

C. Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, are set forth in Paragraph 7.19.

D. Engineer's authority as to Change Orders is set forth in Article 11.

E. Engineer's authority as to Applications for Payment is set forth in Article 15.

10.06 *Determinations for Unit Price Work*

B. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor as set forth in Paragraph 13.03.

10.07 *Decisions on Requirements of Contract Documents and Acceptability of Work*

B. Engineer will render decisions regarding the requirements of the Contract Documents, and judge the acceptability of the Work, pursuant to the specific procedures set forth herein for initial interpretations, Change Proposals, and acceptance of the Work. In rendering such decisions and judgments, Engineer will not show partiality to Owner or Contractor, and will not be liable to Owner, Contractor, or others in connection with any proceedings, interpretations, decisions, or judgments conducted or rendered in good faith.

10.08 *Limitations on Engineer's Authority and Responsibilities*

B. Neither Engineer's authority or responsibility under this Article 10 or under any other provision of the Contract, nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer, shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

C. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

D. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.

E. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 15.06.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals, that the results certified indicate compliance with the Contract Documents.

F. The limitations upon authority and responsibility set forth in this Paragraph 10.08 shall also apply to the Resident Project Representative, if any.

10.09 *Compliance with Safety Program*

B. While at the Site, Engineer's employees and representatives will comply with the specific applicable requirements of Owner's and Contractor's safety programs (if any) of which Engineer has been informed.

ARTICLE 11 – AMENDING THE CONTRACT DOCUMENTS; CHANGES IN THE WORK

11.01 *Amending and Supplementing Contract Documents*

A. The Contract Documents may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.

1. *Change Orders*:

a. If an amendment or supplement to the Contract Documents includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order. A Change Order also may be used to establish amendments and supplements of the Contract Documents that do not affect the Contract Price or Contract Times.

b. Owner and Contractor may amend those terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work, **(2)** the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, without the recommendation of the Engineer. Such an amendment shall be set forth in a Change Order.

2. *Work Change Directives*: A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the modification ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order, following negotiations by the parties as to the Work Change Directive's effect, if any, on the Contract Price and Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Contract Documents governing adjustments, expressly including Paragraph 11.04 regarding change of Contract Price. Contractor must submit any Change Proposal seeking an adjustment of the Contract Price or the Contract Times, or both, no later than 30 days after the completion of the Work set out in the Work Change Directive. Owner must submit any Claim seeking an adjustment of the Contract Price or the Contract Times, or both, no later than 60 days after issuance of the Work Change Directive.

3. *Field Orders*: Engineer may authorize minor changes in the Work if the changes do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Such changes will be accomplished by a Field Order and will be binding on Owner and also on Contractor, which shall perform the Work involved promptly. If Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, then before proceeding with the Work at issue, Contractor shall submit a Change Proposal as provided herein.

11.02 *Owner-Authorized Changes in the Work*

A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work. Such changes shall be supported by Engineer's recommendation, to the extent the change involves the design (as set forth in the Drawings, Specifications, or otherwise), or other engineering or technical matters. Such changes may be accomplished by a Change Order, if Owner and Contractor have agreed as to the effect, if any, of the changes on Contract Times or Contract Price; or by a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved; or, in the case of a

deletion in the Work, promptly cease construction activities with respect to such deleted Work. Added or revised Work shall be performed under the applicable conditions of the Contract Documents. Nothing in this paragraph shall obligate Contractor to undertake work that Contractor reasonably concludes cannot be performed in a manner consistent with Contractor's safety obligations under the Contract Documents or Laws and Regulations.

11.03 *Unauthorized Changes in the Work*

A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents, as amended, modified, or supplemented, except in the case of an emergency as provided in Paragraph 7.15 or in the case of uncovering Work as provided in Paragraph 14.05.

11.04 *Change of Contract Price*

A. The Contract Price may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Price shall comply with the provisions of Paragraph 11.06. Any Claim for an adjustment of Contract Price shall comply with the provisions of Article 12.

B. An adjustment in the Contract Price will be determined as follows:

1. where the Work involved is covered by unit prices contained in the Contract Documents, then by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 13.03); or

2. where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.04.C.2); or

3. where the Work involved is not covered by unit prices contained in the Contract Documents and the parties do not reach mutual agreement to a lump sum, then on the basis of the Cost of the Work (determined as provided in Paragraph 13.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 11.04.C).

C. *Contractor's Fee*: When applicable, the Contractor's fee for overhead and profit shall be determined as follows:

1. a mutually acceptable fixed fee; or

2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:

a. for costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2, the Contractor's fee shall be 15 percent;

b. for costs incurred under Paragraph 13.01.B.3, the Contractor's fee shall be five percent;

c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 11.04.C.2.a and 11.04.C.2.b is that the Contractor's fee shall be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.A.1 and 13.01.A.2 by the Subcontractor that actually performs the Work, at whatever tier, and (2) with

respect to Contractor itself and to any Subcontractors of a tier higher than that of the Subcontractor that actually performs the Work, a fee of five percent of the amount (fee plus underlying costs incurred) attributable to the next lower tier Subcontractor; provided, however, that for any such subcontracted work the maximum total fee to be paid by Owner shall be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the work;

d. no fee shall be payable on the basis of costs itemized under Paragraphs 13.01.B.4, 13.01.B.5, and 13.01.C;

e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and

f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 11.04.C.2.a through 11.04.C.2.e, inclusive.

11.05 *Change of Contract Times*

A. The Contract Times may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Times shall comply with the provisions of Paragraph 11.06. Any Claim for an adjustment in the Contract Times shall comply with the provisions of Article 12.

B. An adjustment of the Contract Times shall be subject to the limitations set forth in Paragraph 4.05, concerning delays in Contractor's progress.

11.06 *Change Proposals*

A. Contractor shall submit a Change Proposal to Engineer to request an adjustment in the Contract Times or Contract Price; appeal an initial decision by Engineer concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; contest a set-off against payment due; or seek other relief under the Contract. The Change Proposal shall specify any proposed change in Contract Times or Contract Price, or both, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents.

1. *Procedures*: Contractor shall submit each Change Proposal to Engineer promptly (but in no event later than 30 days) after the start of the event giving rise thereto, or after such initial decision. The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the Engineer and Owner within 15 days after the submittal of the Change Proposal. The supporting data shall be accompanied by a written statement that the supporting data are accurate and complete, and that any requested time or price adjustment is the entire adjustment to which Contractor believes it is entitled as a result of said event. Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal.

2. *Engineer's Action*: Engineer will review each Change Proposal and, within 30 days after receipt of the Contractor's supporting data, either deny the Change Proposal in whole, approve it in whole, or deny it in part and approve it in part. Such actions shall be in

writing, with a copy provided to Owner and Contractor. If Engineer does not take action on the Change Proposal within 30 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of Engineer's inaction the Change Proposal is deemed denied, thereby commencing the time for appeal of the denial under Article 12.

3. *Binding Decision*: Engineer's decision will be final and binding upon Owner and Contractor, unless Owner or Contractor appeals the decision by filing a Claim under Article 12.

B. *Resolution of Certain Change Proposals*: If the Change Proposal does not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters, then Engineer will notify the parties that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice shall be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.

11.07 *Execution of Change Orders*

A. Owner and Contractor shall execute appropriate Change Orders covering:

1. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive;

2. changes in Contract Price resulting from an Owner set-off, unless Contractor has duly contested such set-off;

3. changes in the Work which are: (a) ordered by Owner pursuant to Paragraph 11.02, (b) required because of Owner's acceptance of defective Work under Paragraph 14.04 or Owner's correction of defective Work under Paragraph 14.07, or (c) agreed to by the parties, subject to the need for Engineer's recommendation if the change in the Work involves the design (as set forth in the Drawings, Specifications, or otherwise), or other engineering or technical matters; and

4. changes in the Contract Price or Contract Times, or other changes, which embody the substance of any final and binding results under Paragraph 11.06, or Article 12.

B. If Owner or Contractor refuses to execute a Change Order that is required to be executed under the terms of this Paragraph 11.07, it shall be deemed to be of full force and effect, as if fully executed.

11.08 *Notification to Surety*

A. If the provisions of any bond require notice to be given to a surety of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times), the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

ARTICLE 12 – CLAIMS

12.01 *Claims*

A. *Claims Process*: The following disputes between Owner and Contractor shall be submitted to the Claims process set forth in this Article:

1. Appeals by Owner or Contractor of Engineer's decisions regarding Change Proposals;
2. Owner demands for adjustments in the Contract Price or Contract Times, or other relief under the Contract Documents; and
3. Disputes that Engineer has been unable to address because they do not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters.

B. *Submittal of Claim*: The party submitting a Claim shall deliver it directly to the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto; in the case of appeals regarding Change Proposals within 30 days of the decision under appeal. The party submitting the Claim shall also furnish a copy to the Engineer, for its information only. The responsibility to substantiate a Claim shall rest with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, or both, Contractor shall certify that the Claim is made in good faith, that the supporting data are accurate and complete, and that to the best of Contractor's knowledge and belief the amount of time or money requested accurately reflects the full amount to which Contractor is entitled.

C. *Review and Resolution*: The party receiving a Claim shall review it thoroughly, giving full consideration to its merits. The two parties shall seek to resolve the Claim through the exchange of information and direct negotiations. The parties may extend the time for resolving the Claim by mutual agreement. All actions taken on a Claim shall be stated in writing and submitted to the other party, with a copy to Engineer.

D. *Mediation*:

1. At any time after initiation of a Claim, Owner and Contractor may mutually agree to mediation of the underlying dispute. The agreement to mediate shall stay the Claim submittal and response process.
2. If Owner and Contractor agree to mediation, then after 60 days from such agreement, either Owner or Contractor may unilaterally terminate the mediation process, and the Claim submittal and decision process shall resume as of the date of the termination. If the mediation proceeds but is unsuccessful in resolving the dispute, the Claim submittal and decision process shall resume as of the date of the conclusion of the mediation, as determined by the mediator.
3. Owner and Contractor shall each pay one-half of the mediator's fees and costs.

E. *Partial Approval*: If the party receiving a Claim approves the Claim in part and denies it in part, such action shall be final and binding unless within 30 days of such action the other party invokes the procedure set forth in Article 17 for final resolution of disputes.

F. *Denial of Claim*: If efforts to resolve a Claim are not successful, the party receiving the Claim may deny it by giving written notice of denial to the other party. If the receiving party does not take action on the Claim within 90 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of the inaction, the Claim is deemed denied, thereby commencing the time for appeal of the denial. A

denial of the Claim shall be final and binding unless within 30 days of the denial the other party invokes the procedure set forth in Article 17 for the final resolution of disputes.

G. *Final and Binding Results*: If the parties reach a mutual agreement regarding a Claim, whether through approval of the Claim, direct negotiations, mediation, or otherwise; or if a Claim is approved in part and denied in part, or denied in full, and such actions become final and binding; then the results of the agreement or action on the Claim shall be incorporated in a Change Order to the extent they affect the Contract, including the Work, the Contract Times, or the Contract Price.

ARTICLE 13 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

13.01 *Cost of the Work*

A. *Purposes for Determination of Cost of the Work*: The term Cost of the Work means the sum of all costs necessary for the proper performance of the Work at issue, as further defined below. The provisions of this Paragraph 13.01 are used for two distinct purposes:

1. To determine Cost of the Work when Cost of the Work is a component of the Contract Price, under cost-plus-fee, time-and-materials, or other cost-based terms; or

2. To determine the value of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price. When the value of any such adjustment is determined on the basis of Cost of the Work, Contractor is entitled only to those additional or incremental costs required because of the change in the Work or because of the event giving rise to the adjustment.

B. *Costs Included*: Except as otherwise may be agreed to in writing by Owner, costs included in the Cost of the Work shall be in amounts no higher than those prevailing in the locality of the Project, shall not include any of the costs itemized in Paragraph 13.01.C, and shall include only the following items:

1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, and vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by Owner.

2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates, and refunds and returns from sale of surplus materials and equipment shall accrue to Owner, and Contractor

shall make provisions so that they may be obtained.

3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 13.01.

4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.

5. Supplemental costs including the following:
   a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.

   b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.

   c. Rentals of all construction equipment and machinery, and the parts thereof, whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.

   d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.

   e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

   f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with Paragraph 6.05), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee.

g. The cost of utilities, fuel, and sanitary facilities at the Site.

h. Minor expenses such as communication service at the Site, express and courier services, and similar petty cash items in connection with the Work.

i. The costs of premiums for all bonds and insurance that Contractor is required by the Contract Documents to purchase and maintain.

C. *Costs Excluded*: The term Cost of the Work shall not include any of the following items:

1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expediters, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 13.01.B.1 or specifically covered by Paragraph 13.01.B.4. The payroll costs and other compensation excluded here are to be considered administrative costs covered by the Contractor's fee.

2. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.

3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.

4. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.

5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraph 13.01.B.

D. *Contractor's Fee*: When the Work as a whole is performed on the basis of cost-plus, Contractor's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 11.04.C.

E. *Documentation*: Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

13.02 *Allowances*

A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.

B. *Cash Allowances*: Contractor agrees that:

1. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at

the Site, and all applicable taxes; and

2. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.

C. *Contingency Allowance*: Contractor agrees that a contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.

D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

13.03 *Unit Price Work (if used)*

A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.

B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Payments to Contractor for Unit Price Work will be based on actual quantities.

C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.

D. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, subject to the provisions of the following paragraph.

E. Within 30 days of Engineer's written decision under the preceding paragraph, Contractor may submit a Change Proposal, or Owner may file a Claim, seeking an adjustment in the Contract Price if:

1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement;

2. there is no corresponding adjustment with respect to any other item of Work; and

3. Contractor believes that it is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price, and the parties are unable to agree as to the amount of any such increase or decrease.

ARTICLE 14 – TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

14.01 *Access to Work*

A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and authorities having jurisdiction will have access to the Site and the Work at reasonable times for their observation, inspection, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's safety procedures and programs so that they may comply therewith as applicable.

14.02 *Tests, Inspections, and Approvals*

A. Contractor shall give Engineer timely notice of readiness of the Work (or specific parts thereof) for all required inspections and tests, and shall cooperate with inspection and testing personnel to facilitate required inspections and tests.

B. Owner shall retain and pay for the services of an independent inspector, testing laboratory, or other qualified individual or entity to perform all inspections and tests expressly required by the Contract Documents to be furnished and paid for by Owner, except that costs incurred in connection with tests or inspections of covered Work shall be governed by the provisions of Paragraph 14.05.

C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.

D. Contractor shall be responsible for arranging, obtaining, and paying for all inspections and tests required:

1. by the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to Owner;

2. to attain Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work;

3. by manufacturers of equipment furnished under the Contract Documents;

4. for testing, adjusting, and balancing of mechanical, electrical, and other equipment to be incorporated into the Work; and

5. for acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work.

Such inspections and tests shall be performed by independent inspectors, testing laboratories, or other qualified individuals or entities acceptable to Owner and Engineer.

E. If the Contract Documents require the Work (or part thereof) to be approved by Owner, Engineer, or another designated individual or entity, then Contractor shall assume full responsibility for arranging and obtaining such approvals.

F. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation. Such uncovering shall be at Contractor's expense unless Contractor had given Engineer timely notice of Contractor's intention to cover the same and Engineer had not acted with reasonable promptness in response to

such notice.

14.03 *Defective Work*

A. *Contractor's Obligation*: It is Contractor's obligation to assure that the Work is not defective for a period of one year. The pump supplier shall provide a two-year warranty on the Pumps, Electrical Control Panel and any supplied appurtenances with the pump package that shall be transferred to the City.

B. *Engineer's Authority*: Engineer has the authority to determine whether Work is defective, and to reject defective Work.

C. *Notice of Defects*: Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor.

D. *Correction, or Removal and Replacement*: Promptly after receipt of written notice of defective Work, Contractor shall correct all such defective Work, whether or not fabricated, installed, or completed, or, if Engineer has rejected the defective Work, remove it from the Project and replace it with Work that is not defective.

E. *Preservation of Warranties*: When correcting defective Work, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

F. *Costs and Damages*: In addition to its correction, removal, and replacement obligations with respect to defective Work, Contractor shall pay all claims, costs, losses, and damages arising out of or relating to defective Work, including but not limited to the cost of the inspection, testing, correction, removal, replacement, or reconstruction of such defective Work, fines levied against Owner by governmental authorities because the Work is defective, and the costs of repair or replacement of work of others resulting from defective Work. Prior to final payment, if Owner and Contractor are unable to agree as to the measure of such claims, costs, losses, and damages resulting from defective Work, then Owner may impose a reasonable set-off against payments due under Article 15.

14.04 *Acceptance of Defective Work*

A. If, instead of requiring correction or removal and replacement of defective Work, Owner prefers to accept it, Owner may do so (subject, if such acceptance occurs prior to final payment, to Engineer's confirmation that such acceptance is in general accord with the design intent and applicable engineering principles, and will not endanger public safety). Contractor shall pay all claims, costs, losses, and damages attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness), and for the diminished value of the Work to the extent not otherwise paid by Contractor. If any such acceptance occurs prior to final payment, the necessary revisions in the Contract Documents with respect to the Work shall be incorporated in a Change Order. If the parties are unable to agree as to the decrease in the Contract Price, reflecting the diminished value of Work so accepted, then Owner may impose a reasonable set-off against payments due under Article 15. If the acceptance of defective Work occurs after final payment, Contractor shall pay an appropriate amount to Owner.

14.05 *Uncovering Work*

A. Engineer has the authority to require additional inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed.

B. If any Work is covered contrary to the written request of Engineer, then Contractor shall, if requested by Engineer, uncover such Work for Engineer's observation, and then replace the covering, all at Contractor's expense.

C. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, then Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, and provide all necessary labor, material, and equipment.

1. If it is found that the uncovered Work is defective, Contractor shall be responsible for all claims, costs, losses, and damages arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and pending Contractor's full discharge of this responsibility the Owner shall be entitled to impose a reasonable set-off against payments due under Article 15.

2. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, then Contractor may submit a Change Proposal within 30 days of the determination that the Work is not defective.

14.06 *Owner May Stop the Work*

A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, then Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work shall not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

14.07 *Owner May Correct Defective Work*

A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace rejected Work as required by Engineer, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, then Owner may, after seven days written notice to Contractor, correct or remedy any such deficiency.

B. In exercising the rights and remedies under this Paragraph 14.07, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and

employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this paragraph.

C. All claims, costs, losses, and damages incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 14.07 will be charged against Contractor as set-offs against payments due under Article 15. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.

D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 14.07.

ARTICLE 15 – PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD

15.01 *Progress Payments*

A. *Basis for Progress Payments*: The Schedule of Values established as provided in Article 2 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed during the pay period, as determined under the provisions of Paragraph 13.03. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period.

B. *Applications for Payments*:

1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens, and evidence that the materials and equipment are covered by appropriate property insurance, a warehouse bond, or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.

2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.

3. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

C. *Review of Applications*:

1. Engineer will, within 10 business days after receipt of each Application for Payment, including each resubmittal, either indicate in writing a recommendation of payment

and present the Application to Owner, or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.

2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:

    a. the Work has progressed to the point indicated;

    b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 13.03, and any other qualifications stated in the recommendation); and

    c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.

3. By recommending any such payment Engineer will not thereby be deemed to have represented that:

    a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract; or

    b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.

4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:

    a. to supervise, direct, or control the Work, or

    b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or

    c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or

    d. to make any examination to ascertain how or for what purposes Contractor has used the money paid on account of the Contract Price, or

    e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.

5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 15.01.C.2.

6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer's opinion to protect Owner from loss because:

   a. the Work is defective, requiring correction or replacement;

   b. the Contract Price has been reduced by Change Orders;

   c. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;

   d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible; or

   e. Engineer has actual knowledge of the occurrence of any of the events that would constitute a default by Contractor and therefore justify termination for cause under the Contract Documents.

D. *Payment Becomes Due*:

1. Thirty (30) days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended (subject to any Owner set-offs) will become due, and when due will be paid by Owner to Contractor.

E. *Reductions in Payment by Owner*:

1. In addition to any reductions in payment (set-offs) recommended by Engineer, Owner is entitled to impose a set-off against payment based on any of the following:

   a. claims have been made against Owner on account of Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages on account of Contractor's conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;

   b. Contractor has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Site;

   c. Contractor has failed to provide and maintain required bonds or insurance;

   d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible;

   e. Owner has incurred extra charges or engineering costs related to submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to manufacturing or assembly facilities;

   f. the Work is defective, requiring correction or replacement;

   g. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;

h. the Contract Price has been reduced by Change Orders;

i. an event that would constitute a default by Contractor and therefore justify a termination for cause has occurred;

j. liquidated damages have accrued as a result of Contractor's failure to achieve Milestones, Substantial Completion, or final completion of the Work;

k. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;

l. there are other items entitling Owner to a set off against the amount recommended.

2. If Owner imposes any set-off against payment, whether based on its own knowledge or on the written recommendations of Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and the specific amount of the reduction, and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, if Contractor remedies the reasons for such action. The reduction imposed shall be binding on Contractor unless it duly submits a Change Proposal contesting the reduction.

3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 15.01.C.1 and subject to interest as provided in the Agreement.

15.02 *Contractor's Warranty of Title*

A. Contractor warrants and guarantees that title to all Work, materials, and equipment furnished under the Contract will pass to Owner free and clear of (1) all Liens and other title defects, and (2) all patent, licensing, copyright, or royalty obligations, no later than seven days after the time of payment by Owner.

15.03 *Substantial Completion*

A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete and request that Engineer issue a certificate of Substantial Completion. Contractor shall at the same time submit to Owner and Engineer an initial draft of punch list items to be completed or corrected before final payment.

B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.

C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a preliminary certificate of Substantial Completion which shall fix the date of Substantial Completion. Engineer shall attach to the certificate a punch list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the

preliminary certificate during which to make written objection to Engineer as to any provisions of the certificate or attached punch list. If, after considering the objections to the provisions of the preliminary certificate, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the preliminary certificate to Owner, notify Contractor in writing that the Work is not substantially complete, stating the reasons therefor. If Owner does not object to the provisions of the certificate, or if despite consideration of Owner's objections Engineer concludes that the Work is substantially complete, then Engineer will, within said 14 days, execute and deliver to Owner and Contractor a final certificate of Substantial Completion (with a revised punch list of items to be completed or corrected) reflecting such changes from the preliminary certificate as Engineer believes justified after consideration of any objections from Owner.

D. At the time of receipt of the preliminary certificate of Substantial Completion, Owner and Contractor will confer regarding Owner's use or occupancy of the Work following Substantial Completion, review the builder's risk insurance policy with respect to the end of the builder's risk coverage, and confirm the transition to coverage of the Work under a permanent
property insurance policy held by Owner. Unless Owner and Contractor agree otherwise in writing, Owner shall bear responsibility for security, operation, protection of the Work, property insurance, maintenance, heat, and utilities upon Owner's use or occupancy of the Work.

E. After Substantial Completion the Contractor shall promptly begin work on the punch list of items to be completed or corrected prior to final payment. In appropriate cases Contractor may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.

F. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the punch list.

15.04 *Partial Use or Occupancy*

A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:

1. At any time Owner may request in writing that Contractor permit Owner to use or occupy any such part of the Work that Owner believes to be substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 15.03.A through E for that part of the Work.

2. At any time Contractor may notify Owner and Engineer in writing that Contractor considers any such part of the Work substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.

3. Within a reasonable time after either such request, Owner, Contractor, and Engineer

shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 15.03 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 6.05 regarding builder's risk or other property insurance.

15.05 *Final Inspection*

A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work, or agreed portion thereof, is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

15.06 *Final Payment*

A. *Application for Payment*:

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, annotated record documents (as provided in Paragraph 7.11), and other documents, Contractor may make application for final payment.

2. The final Application for Payment shall be accompanied (except as previously delivered) by:

a. all documentation called for in the Contract Documents;

b. consent of the surety, if any, to final payment;

c. satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to Owner free and clear of any Liens or other title defects, or will so pass upon final payment.

d. a list of all disputes that Contractor believes are unsettled; and

e. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of the Work, and of Liens filed in connection with the Work.

3. In lieu of the releases or waivers of Liens specified in Paragraph 15.06.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (a) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (b) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other

burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien, or Owner at its option may issue joint checks payable to Contractor and specified Subcontractors and Suppliers.

B. *Engineer's Review of Application and Acceptance*:

1. If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of final payment and present the Application for Payment to Owner for payment. Such recommendation shall account for any set-offs against payment that are necessary in Engineer's opinion to protect Owner from loss for the reasons stated above with respect to progress payments. At the same time Engineer will also give written notice to Owner and Contractor that the Work is acceptable, subject to the provisions of Paragraph 15.07. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

C. *Completion of Work*: The Work is complete (subject to surviving obligations) when it is ready for final payment as established by the Engineer's written recommendation of final payment.

D. *Payment Becomes Due*: Thirty days after the presentation to Owner of the final Application for Payment and accompanying documentation, the amount recommended by Engineer (less any further sum Owner is entitled to set off against Engineer's recommendation, including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions above with respect to progress payments) will become due and shall be paid by Owner to Contractor.

15.07 *Waiver of Claims*

A. The making of final payment will not constitute a waiver by Owner of claims or rights against Contractor. Owner expressly reserves claims and rights arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 15.05, from Contractor's failure to comply with the Contract Documents or the terms of any special guarantees specified therein, from outstanding Claims by Owner, or from Contractor's continuing obligations under the Contract Documents.

B. The acceptance of final payment by Contractor will constitute a waiver by Contractor of all claims and rights against Owner other than those pending matters that have been duly submitted or appealed under the provisions of Article 17.

15.08 *Correction Period*

A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the

Contract Documents, or by any specific provision of the Contract Documents), any Work is found to be defective, or if the repair of any damages to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas used by Contractor as permitted by Laws and Regulations, is found to be defective, then Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:

1. correct the defective repairs to the Site or such other adjacent areas;
2. correct such defective Work;
3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and
4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others, or to other land or areas resulting therefrom.

B. If Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others).

C. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.

D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

E. Contractor's obligations under this paragraph are in addition to all other obligations and warranties. The provisions of this paragraph shall not be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

ARTICLE 16 – SUSPENSION OF WORK AND TERMINATION

16.01 *Owner May Suspend Work*

A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by written notice to Contractor and Engineer. Such notice will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be entitled to an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension. Any Change Proposal seeking such adjustments shall be submitted no later than 30 days after the date fixed for resumption of Work.

16.02 *Owner May Terminate for Cause*

A. The occurrence of any one or more of the following events will constitute a default by Contractor and justify termination for cause:

1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the Progress Schedule);
2. Failure of Contractor to perform or otherwise to comply with a material term of the Contract Documents;
3. Contractor's disregard of Laws or Regulations of any public body having jurisdiction; or
4. Contractor's repeated disregard of the authority of Owner or Engineer.

B. If one or more of the events identified in Paragraph 16.02.A occurs, then after giving Contractor (and any surety) ten days written notice that Owner is considering a declaration that Contractor is in default and termination of the contract, Owner may proceed to:

1. declare Contractor to be in default, and give Contractor (and any surety) notice that the Contract is terminated; and
2. enforce the rights available to Owner under any applicable performance bond.

C. Subject to the terms and operation of any applicable performance bond, if Owner has terminated the Contract for cause, Owner may exclude Contractor from the Site, take possession of the Work, incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and complete the Work as Owner may deem expedient.

D. Owner may not proceed with termination of the Contract under Paragraph 16.02.B if Contractor within seven days of receipt of notice of intent to terminate begins to correct its failure to perform and proceeds diligently to cure such failure.

E. If Owner proceeds as provided in Paragraph 16.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds the cost to complete the Work, including all related claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals) sustained by Owner, such excess will be paid to Contractor. If the cost to complete the Work including such related claims, costs, losses, and damages exceeds such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this paragraph, Owner shall not be required to obtain the lowest price for the Work performed.

F. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue, or any rights or remedies of Owner against Contractor or any surety under any payment bond or performance bond. Any retention or payment of money due Contractor by Owner will not release Contractor from liability.

G. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 6.01.A, the provisions of that bond shall govern over any inconsistent

provisions of Paragraphs 16.02.B and 16.02.D.

16.03 *Owner May Terminate For Convenience*

A. Upon seven days written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):

1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;

2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses; and

3. other reasonable expenses directly attributable to termination, including costs incurred to prepare a termination for convenience cost proposal.

B. Contractor shall not be paid on account of loss of anticipated overhead, profits, or revenue, or other economic loss arising out of or resulting from such termination.

16.04 *Contractor May Stop Work or Terminate*

A. If, through no act or fault of Contractor, (1) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (2) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or **(3)** Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven days written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the contract and recover from Owner payment on the same terms as provided in Paragraph 16.03.

B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, seven days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this paragraph are not intended to preclude Contractor from submitting a Change Proposal for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this paragraph.

ARTICLE 17 – FINAL RESOLUTION OF DISPUTES

17.01 *Methods and Procedures*

A. *Disputes Subject to Final Resolution*: The following disputed matters are subject to final resolution under the provisions of this Article:

1. A timely appeal of an approval in part and denial in part of a Claim, or of a denial in full; and

2. Disputes between Owner and Contractor concerning the Work or obligations under the Contract Documents, and arising after final payment has been made.

B. *Final Resolution of Disputes*: For any dispute subject to resolution under this Article, Owner or Contractor may:

1. elect in writing to invoke the dispute resolution process provided for in the Supplementary Conditions; or

2. agree with the other party to submit the dispute to another dispute resolution process; or

3. if no dispute resolution process is provided for in the Supplementary Conditions or mutually agreed to, give written notice to the other party of the intent to submit the dispute to a court of competent jurisdiction.

ARTICLE 18 – MISCELLANEOUS

18.01 *Giving Notice*

A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if: delivered in person, by a commercial courier service or otherwise, to the individual or to a member of the firm or to an officer of the corporation for which it is intended; or

1. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the sender of the notice.

B. When any period of time is referred to in the Contract by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

18.02 *Cumulative Remedies*

A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract. The provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

18.03 *Limitation of Damages*

A. With respect to any and all Change Proposals, Claims, disputes subject to final resolution, and other matters at issue, neither Owner nor Engineer, nor any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, shall be liable to Contractor for any claims, costs, losses, or damages sustained by Contractor on or in connection with any other project or anticipated project.

18.04 *No Waiver*

A. A party's non-enforcement of any provision shall not constitute a waiver of that provision, nor shall it affect the enforceability of that provision or of the remainder of this Contract.

18.05 *Survival of Obligations*

A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract, as well as all continuing obligations indicated in the Contract, will survive final payment, completion, and acceptance of the Work or termination or completion of the Contract or termination of the services of Contractor.

18.06 *Controlling Law*

A. This Contract is to be governed by the law of the state in which the Project is located.

18.07 *Headings*

A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

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SECTION 00 22 15

SUPPLEMENTARY CONDITIONS

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract, EJCDC® C-700 (2013 Edition). All provisions that are not so amended or supplemented remain in full force and effect.

The terms used in these Supplementary Conditions have the meanings stated in the General Conditions. Additional terms used in these Supplementary Conditions have the meanings stated below, which are applicable to both the singular and plural thereof.

The address system used in these Supplementary Conditions is the same as the address system used in the General Conditions, with the prefix "SC" added thereto.

ARTICLE 5 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

SC-5.06 Hazardous Environmental Conditions

SC 5.06 Delete Paragraphs 5.06.A and 5.06.B in their entirety and insert the following:

A. No reports or drawings related to Hazardous Environmental Conditions at the Site are known to Owner.

ARTICLE 6 – BONDS AND INSURANCE

SC-6.02 Insurance—General Provisions

SC-6.02 Add the following paragraph immediately after Paragraph 6.02.B:

1. Contractor may obtain worker's compensation insurance from an insurance company that has not been rated by A.M. Best, provided that such company (a) is domiciled in the state in which the project is located, (b) is certified or authorized as a worker's compensation insurance provider by the appropriate state agency, and (c) has been accepted to provide worker's compensation insurance for similar projects by the state within the last 12 months.

SC-6.03 Contractor's Liability Insurance

SC 6.03 Add the following new paragraph immediately after Paragraph 6.03.J:

K. The limits of liability for the insurance required by Paragraph 6.03 of the General Conditions shall provide coverage for not less than the following amounts or greater where required by Laws and Regulations:

1. Workers' Compensation, and related coverages under Paragraphs 6.03.A.1 and A.2 of the General Conditions:

State:	Statutory
Federal, if applicable (e.g., Longshoreman's):	Statutory
Jones Act coverage, if applicable:	
Bodily injury by accident, each accident	$ NA
Bodily injury by disease, aggregate	$ NA
Employer's Liability:	
Bodily injury, each accident	$ 500,000.00
Bodily injury by disease, each employee	$ 500,000.00
Bodily injury/disease aggregate	$ 1,000,000.00
Foreign voluntary worker compensation	Statutory

2. Contractor's Commercial General Liability under Paragraphs 6.03.B and 6.03.C of the General Conditions:

General Aggregate	$ 2,000,000.00
Products - Completed Operations Aggregate	$ 1,000,000.00
Personal and Advertising Injury	$ 1,000,000.00
Each Occurrence (Bodily Injury and Property Damage)	$ 1,000,000.00

3. Automobile Liability under Paragraph 6.03.D. of the General Conditions:

Bodily Injury:	
Each person	$ 500,000.00
Each accident	$ 1,000,000.00
Property Damage:	
Combined Single Limit of	$ 1,000,000.00

4. Excess or Umbrella Liability:

General Aggregate	**$**	**1,000,000.00**

5. Contractor's Professional Liability:

Each Claim	**$**	**1,000,000.00**
Annual Aggregate	**$**	**2,000,000.00**

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ARTICLE 7 – CONTRACTOR'S RESPONSIBILITIES

A. If the Owner has no objections to the Contractor working multiple shifts, weekends, and legal holidays, use the following:

SC-7.02.B. Delete Paragraph 7.02 B. in its entirety, and insert the following:

B. In the absence of any Laws or Regulations to the contrary, Contractor may perform the Work on holidays, during any or all hours of the day, and on any or all days of the week, at Contractor's sole discretion.

SC-7.02.C. Add the following new paragraph immediately after Paragraph 7.02.B:

Contractor shall be responsible for the cost of any overtime pay or other expense incurred by the Owner for Engineer's services (including those of the Resident Project Representative, if any), Owner's representative, and construction observation services, occasioned by the performance of Work on Saturday or as overtime on any regular work day. If Contractor is responsible but does not pay, or if the parties are unable to agree as to the amount owed, then Owner may impose a reasonable set-off against payments due under Article 15.

ARTICLE 15 – PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD

SC-15.03 Substantial Completion

SC 15.03.B Add the following new subparagraph to Paragraph 15.03.B:

1. If some or all of the Work has been determined not to be at a point of Substantial Completion and will require re-inspection or re-testing by Engineer, the cost of such re-inspection or re-testing, including the cost of time, travel and living expenses, shall be paid by Contractor to Owner. If Contractor does not pay, or the parties are unable to agree as to the amount owed, then Owner may impose a reasonable set-off against payments due under Article 15.

ARTICLE 17 – FINAL RESOLUTION OF DISPUTES

SC-17.02 Add the following new paragraph immediately after Paragraph 17.01.

SC-17.02 Arbitration

A. All matters subject to final resolution under this Article will be decided by arbitration in accordance with the Florida Rules of Civil Procedure, subject to the conditions and limitations of this paragraph. This agreement to arbitrate and any other agreement or consent to arbitrate entered into will be specifically enforceable under the prevailing law of any court having jurisdiction.

B. The demand for arbitration will be filed in writing with the other party to the Contract and with the selected arbitrator or arbitration provider, and a copy will be sent to Engineer for information. The demand for arbitration will be made within the specific time required in this Article, or if no specified time is applicable within a reasonable time after the matter in question has arisen, and in no event shall any such demand be made after the date when institution of

legal or

equitable proceedings based on such matter in question would be barred by the applicable statute of limitations. The demand for arbitration should include specific reference to Paragraph SC-17.02.D below.

C. No arbitration arising out of or relating to the Contract shall include by consolidation, joinder, or in any other manner any other individual or entity (including Engineer, and Engineer's consultants and the officers, directors, partners, agents, employees or consultants of any of them) who is not a party to this Contract unless:

1. the inclusion of such other individual or entity is necessary if complete relief is to be afforded among those who are already parties to the arbitration; and

2. such other individual or entity is substantially involved in a question of law or fact which is common to those who are already parties to the arbitration and which will arise in such proceedings.

D. The award rendered by the arbitrator(s) shall be consistent with the agreement of the parties, in writing, and include a concise breakdown of the award, and a written explanation of the award specifically citing the Contract provisions deemed applicable and relied on in making the award.

E. The award will be final. Judgment may be entered upon it in any court having jurisdiction thereof, and it will not be subject to modification or appeal, subject to provisions of the Laws and Regulations relating to vacating or modifying an arbitral award.

F. The fees and expenses of the arbitrators and any arbitration service shall be shared equally by Owner and Contractor.

END OF SECTION

SECTION 00 26 00 AGREEMENT BETWEEN OWNER AND CONTRACTOR FOR CONSTRUCTION CONTRACT

THIS AGREEMENT is by and between **The City of Flagler Beach** ("Owner") and _____ ("Contractor").

Owner and Contractor hereby agree as follows:

ARTICLE 1 – WORK

1.01 Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows: Hurricane Milton Damage Repairs to Flagler Beach Public Library.

ARTICLE 2 – THE PROJECT

2.01 The Project, of which the Work under the Contract Documents is a part, is generally described as follows: Hurricane Milton Damage Repairs to Flagler Beach Public Library.

ARTICLE 3 – ENGINEER

3.01 The part of the Project that pertains to the Work has been designed by the City of Flagler Beach.

ARTICLE 4 – CONTRACT TIMES

4.01 *Time of the Essence*

A. All time limits for Substantial Completion, and Final Completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.

4.02 *Contract Times: Days*

A. The Work will be substantially completed within Ninety (90) days after the date when the Contract Times commence to run as provided in Paragraph 4.01 of the General Conditions, and completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions within One Hundred Twenty (120) days after the date when the Contract Times commence to run.

4.03 *Liquidated Damages*

A. Contractor and Owner recognize that time is of the essence as stated in Paragraph 4.01 above and that Owner will suffer financial and other losses if the Work is not completed and Milestones not achieved within the times specified in Paragraph 4.02 above, plus any extensions thereof allowed in accordance with the Contract. The parties also recognize the delays, expense, and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty):

1. Substantial Completion: Contractor shall pay Owner $500.00 for each day that expires after the time (as duly adjusted pursuant to the Contract) specified in Paragraph 4.02.A above for Substantial Completion until the Work is substantially complete.
2. Completion of Remaining Work: After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Times (as duly adjusted pursuant to the Contract) for completion and readiness for final payment, Contractor shall pay Owner $1,000.00 for each day that expires after such time until the Work is completed and ready for final payment.
3. Liquidated damages for failing to timely attain Substantial Completion and final completion are not additive and will not be imposed concurrently.

ARTICLE 5 – CONTRACT PRICE

5.01 Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents the amounts that follow, subject to adjustment under the Contract:

ARTICLE 6 – PAYMENT PROCEDURES

6.01 *Submittal and Processing of Payments*

A. Contractor shall submit Applications for Payment in accordance with Article 15 of the General Conditions. Applications for Payment will be processed by Engineer as provided in the General Conditions.

6.02 *Progress Payments; Retainage*

A. Owner shall make progress payments on account of the Contract Price on the basis of Contractor's Applications for Payment on or about the 15th day of each month during performance of the Work as provided in Paragraph 6.02.A.1 below, provided that such Applications for Payment have been submitted in a timely manner and otherwise meet the requirements of the Contract. All such payments will be measured by the Schedule of Values established as provided in the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no Schedule of Values, as provided elsewhere in the Contract.

1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such amounts as Owner may withhold, including but not limited to liquidated damages, in accordance with the Contract

a. 95 percent of Work completed (with the balance being retainage). If the Work has been 50 percent completed as determined by Engineer, and if the character and progress of the Work have been satisfactory to Owner and Engineer, then as long as the character and progress of the Work remain satisfactory to Owner and Engineer, there will be no additional retainage; and

B. Upon Substantial Completion, Owner shall pay an amount sufficient to increase total payments to Contractor to 100 percent of the Work completed, less such amounts set off by Owner pursuant to Paragraph 15.01.E of the General Conditions, and less 200 percent of

Engineer's estimate of the value of Work to be completed or corrected as shown on the punch list of items to be completed or corrected prior to final payment.

6.03 *Final Payment*

A. Upon final completion and acceptance of the Work in accordance with Paragraph 15.06 of the General Conditions, Owner shall pay the remainder of the Contract Price as recommended by Engineer as provided in said Paragraph 15.06.

ARTICLE 7 – INTEREST

7.01 All amounts not paid when due shall bear interest at the rate of 3 percent per annum.

ARTICLE 8 – CONTRACTOR'S REPRESENTATIONS

8.01 In order to induce Owner to enter into this Contract, Contractor makes the following representations:

A. Contractor has examined and carefully studied the Contract Documents, and any data and reference items identified in the Contract Documents.

B. Contractor has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

C. Contractor is familiar with and is satisfied as to all Laws and Regulations that may affect cost, progress, and performance of the Work.

D. Contractor has carefully studied all reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings.

E. Contractor has considered the information known to Contractor itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and the Site-related reports and drawings identified in the Contract Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor; and (3) Contractor's safety precautions and programs.

F. Based on the information and observations referred to in the preceding paragraph, Contractor agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.

G. Contractor is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Contract Documents.

H. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.

I. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

J. Contractor's entry into this Contract constitutes an incontrovertible representation by Contractor that without exception all prices in the Agreement are premised upon performing and furnishing the Work required by the Contract Documents.

ARTICLE 9 – CONTRACT DOCUMENTS

9.01 *Contents*

A. The Contract Documents consist of the following:

1. This Agreement (pages 132 to 137, inclusive).
2. The Drawings (Sheets A1 – A2, attached separately).
3. Performance bond (pages 144 to 146, inclusive).
4. General Conditions (pages *i* to *v* and pages 59 to 125, inclusive).
5. Supplementary Conditions (pages 127 to 131, inclusive).
6. Specifications as listed in the table of contents of the Project Manual.
7. Issued Addenda
8. Exhibits to this Agreement (enumerated as follows):
   a. Contractor's Bid Form (pages *i* to *ii* and pages 138 to 143, inclusive).
9. The following which may be delivered or issued on or after the Effective Date of the Contract and are not attached hereto:
   a. Notice to Proceed.
   b. Work Change Directives.
   c. Change Orders.
   d. Field Orders.

B. The documents listed in Paragraph 9.01.A are attached to this Agreement (except as expressly noted otherwise above).

C. There are no Contract Documents other than those listed above in this Article 9.

D. The Contract Documents may only be amended, modified, or supplemented as provided in the General Conditions.

ARTICLE 10 – MISCELLANEOUS

10.01 *Terms*

A. Terms used in this Agreement will have the meanings stated in the General Conditions and the Supplementary Conditions. *Assignment of Contract*

B. Unless expressly agreed to elsewhere in the Contract, no assignment by a party hereto of any rights under or interests in the Contract will be binding on another party hereto without the written consent of the party sought to be bound; and, specifically but without limitation, money that may become due and money that is due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

10.02 *Successors and Assigns*

A. Owner and Contractor each binds itself, its successors, assigns, and legal representatives to the other party hereto, its successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

10.03 *Severability*

A. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon Owner and Contractor, who agree that the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

10.04 *Contractor's Certifications*

A. Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 10.05:

1. "corrupt practice" means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the bidding process or in the Contract execution;

2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner, (b) to establish Bid or Contract prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;

3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, non-competitive levels; and

4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

OWNER:	CONTRACTOR:
_____	_____
By: _____	By: _____
Title: _____	Title: _____
	(If Contractor is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)
Attest: _____	Attest: _____
Title: _____	Title: _____
Address for giving notices:	Address for giving notices:
_____	_____
_____	_____
_____	_____
	License No.: _____

(If Owner is a corporation, attach evidence of authority to sign. If Owner is a public body, attach evidence of authority to sign and resolution or other documents authorizing execution of this Agreement.)

END OF SECTION

SECTION 00 41 13 BID FORM

HURRICANE MILTON DAMAGE REPAIRS
TO
FLAGLER BEACH PUBLIC LIBRARY

315 SOUTH SEVENTH STREET
FLAGLER BEACH, FLORIDA 32136

CITY PROJECT NO: 285

CITY INVITATION TO BID NO: FB-250102

JANUARY 2025

INVITATION TO BID
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ARTICLE 1 – BID RECIPIENT

1.01 This Bid is submitted to:

City of Flagler Beach
105 S 2nd Street
Flagler Beach, FL 32136

1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

ARTICLE 2 – BIDDER'S ACKNOWLEDGEMENTS

2.01 Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for 60 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

ARTICLE 3 – BIDDER'S REPRESENTATIONS

3.01 In submitting this Bid, Bidder represents that:

A. Bidder has examined and carefully studied the Bidding Documents, and any data and reference items identified in the Bidding Documents, and hereby acknowledges receipt of the following Addenda:

Addendum No.	Addendum, Date
_____	_____
_____	_____
_____	_____
_____	_____

B. Bidder (or authorized representative) has attended the Mandatory Pre-Bid Conference.

C. Bidder has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfied itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

D. Bidder is familiar with and has satisfied itself as to all Laws and Regulations that may affect cost, progress, and performance of the Work.

E. Bidder has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings.

F. Bidder has considered the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations

obtained from visits to the Site; the Bidding Documents; and any Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder; and (3) Bidder's safety precautions and programs.

G. Bidder agrees, based on the information and observations referred to in the preceding paragraph, that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents.

H. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.

I. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and confirms that the written resolution thereof by Engineer is acceptable to Bidder.

J. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work.

K. The submission of this Bid constitutes an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, and that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

ARTICLE 4 – BIDDER'S CERTIFICATION

4.01 Bidder certifies that:

A. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation;

B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;

C. Bidder has not solicited or induced any individual or entity to refrain from bidding; and

D. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 4.01.D:

1. "corrupt practice" means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the bidding process;

2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;

3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels; and

4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the e execution of the Contract.

ARTICLE 5 – BASIS OF BID

5.01 **BASE BID:** Bidder will complete the Base Bid Work in accordance with the Contract Documents for the following price(s):

Base Bid Lump Sum Bid Price	$

5.02 **ALTERNATE 1:** Replace Roof.

A. See Drawings Sheet A-2, Remediation Work for details.

B. See Section 01110, Summary of Work for the full scope.

Alternate #1 Remove Skylights & Replace Roofs	$

Total of Lump Sum + Alternate #1 = Total Bid **$**

ARTICLE 6 – TIME OF COMPLETION

6.01 The Project shall be substantially completed within Ninety (90) days from the Notice to Proceed. An additional Thirty (30) days shall be used to complete any outstanding issues or punch-list items. Final Completion shall be One Hundred Twenty (120) days from Notice to Proceed.

6.02 Bidder agrees that the Work will be substantially complete and will be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before the dates or within the number of calendar days indicated.

6.03 Bidder accepts the provisions of the Agreement as to liquidated damages established as Five Hundred ($500) per day beyond the 120 days of total project time.

ARTICLE 7 – ATTACHMENTS TO THIS BID

7.01 The following documents are submitted with and made a condition of this Bid:

A. Required Performance security;

B. List of Proposed Subcontractors;

C. List of Proposed Suppliers;

D. List of Project References;

E. Evidence of authority to do business in the state of the Project; or a written covenant to obtain such license within the time for acceptance of Bids;

F. Required Bidder Qualification Statement with supporting Attachments A through O; and

G. Submit sealed bids including one (1) original copy and one (1) electronic copy in pdf format on USB thumb drive.

ARTICLE 8 – DEFINED TERMS

8.01 The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions.

ARTICLE 9 – BID SUBMITTAL

BIDDER: *[Indicate correct name of bidding entity]*

_____

By:
[Signature] _____

[Printed name] _____
(If Bidder is a corporation, a limited liability company, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest:
[Signature] _____

[Printed name] _____

Title: _____

Submittal Date: _____

Address for giving notices:

_____

_____

Telephone Number: _____

Fax Number: _____

Contact Name: _____

Contact e-mail address: _____

Bidder's License No.: _____

END OF SECTION

SECTION 00 43 25
PERFORMANCE BOND

CONTRACTOR *(name and address)*: SURETY *(name and address of principal place of business)*:

_____

OWNER
City of Flagler Beach 105 S 2nd Street
Flagler Beach, FL 32137

CONSTRUCTION CONTRACT
Effective Date of the Agreement:
Amount:
Description: City of Flagler Beach Bid Number FB-250102 Public Library Hurricane Milton Damage Repairs, Flagler Beach, FL 32136

BOND
Bond Number:
Date *(not earlier than the Effective Date of the Agreement of the Construction Contract)*:
Amount:
Modifications to this Bond Form: ☐ None ☐ See Paragraph 16

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL	**SURETY**
_____ *(seal)*	_____ *(seal)*
Contractor's Name and Corporate Seal	Surety's Name and Corporate Seal
By: _____	**By:** _____
Signature	Signature *(attach power of attorney)*
_____	_____
Print Name	Print Name
_____	_____
Title	Title
Attest: _____	**Attest:** _____
Signature	Signature
_____	_____
Title	Title

Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

2. If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Paragraph 3.

3. If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond shall arise after:

3.1 The Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice shall indicate whether the Owner is requesting a conference among the Owner, Contractor, and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Paragraph 3.1 shall be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor, and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default;

3.2 The Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and

3.3 The Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

4. Failure on the part of the Owner to comply with the notice requirement in Paragraph 3.1 shall not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

5. When the Owner has satisfied the conditions of Paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

5.1 Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;

5.2 Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;

5.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owners concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

5.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor, and with reasonable promptness under the circumstances:

5.4.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or

5.4.2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

6. If the Surety does not proceed as provided in Paragraph 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Paragraph 5.4, and the Owner refuses the payment or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

7. If the Surety elects to act under Paragraph 5.1, 5.2, or 5.3, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication for:

7.1 the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;

7.2 additional legal, design professional, and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 5; and

7.3 liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

8. If the Surety elects to act under Paragraph 5.1, 5.3, or 5.4, the Surety's liability is limited to the amount of this Bond.

9. The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced

or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors, and assigns.

10. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.

11. Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum periods of limitations available to sureties as a defense in the jurisdiction of the suit shall be applicable.

12. Notice to the Surety, the Owner, or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears.

13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted here from and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

14. Definitions

14.1 Balance of the Contract Price: The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made including allowance for the Contractor for any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

14.2 Construction Contract: The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

14.3 Contractor Default: Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

14.4 Owner Default: Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

14.5 Contract Documents: All the documents that comprise the agreement between the Owner and Contractor.

15. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

END OF SECTION

SECTION 00 51 00

NOTICE OF AWARD

Date of Issuance: _____ ___, 20_____

Owner: City of Flagler Beach | Owner's Project No.:

Engineer: | Engineer's Project No.:

Project: City of Flagler Beach Bid Number FB-250102 Public Library Hurricane Milton Damage Repairs, Flagler Beach, FL 32136

TO BIDDER:

You are notified that Owner has accepted your Bid dated _____ __, 20_____ for the above Contract, and that you are the Successful Bidder and are awarded a Contract for: City of Flagler Beach Bid Number FB-250102 Public Library Hurricane Milton Damage Repairs, Flagler Beach, FL 32136

The Contract Price of the awarded Contract is: **$**_____

One (1) unexecuted counterparts of the Agreement accompany this Notice of Award and one copy of the Contract Documents has been made available to Bidder electronically.

☐ a set of the Drawings will be delivered separately from the other Contract Documents.

You must comply with the following conditions precedent within ten (10) days of the date of this Notice of Award:

1. Deliver to Owner Three (3) counterparts of the Agreement, fully executed by Bidder.
2. Deliver with the executed Agreement(s) the Contract security *[e.g., performance bond]* and insurance documentation as specified in the Instructions to Bidders and General Conditions, Articles 2 and 6.
3. Other conditions precedent (if any): *None*

Failure to comply with these conditions within the time specified will entitle Owner to consider you in default, annul this Notice of Award, and declare your Bid security forfeited.

Within ten days after you comply with the above conditions, Owner will return to you one fully executed counterpart of the Agreement, together with any additional copies of the Contract Documents as indicated in Paragraph 2.02 of the General Conditions.

Owner**:** City of Flagler Beach

By: Title: _____

Authorized Signature: _____

END OF SECTION

SECTION 00 51 20 NOTICE TO PROCEED

Owner:	City of Flagler Beach	Owner's Contract No.:	
Contractor:		Contractor's Project No.:	
Engineer:		Engineer's Project No.:	
Project:		Effective Date of Contract:	**_____, 20____**

TO CONTRACTOR:

Owner hereby notifies Contractor that the Contract Times under the above Contract will commence to run on _____, 20_____.

On that date, Contractor shall start performing its obligations under the Contract Documents. No Work shall be done at the Site prior to such date. **In accordance with the Agreement, the number of calendar days to achieve Substantial Completion is Ninety (90) days and the number of days to achieve readiness for final payment is one hundred thirty (120).**

Before starting any Work at the Site, Contractor must comply with the following: **Coordinate the official start date with the City Project Manager.**

_____

City Representative**:**

_____

Authorized Signature

By: _____

Title:_____

Date Issued: _____

END OF SECTION

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SECTION 00 61 10

Work Change Directive No.

Date of Issuance: Effective Date:

Owner: City of Flagler Beach Owner's Contract No.:

Contractor: Contractor's Project No.:

Engineer: Engineer's Project No.:

Project:

Contractor is directed to proceed promptly with the following change(s): Description:

Attachments: *[List documents supporting change]*

Purpose for Work Change Directive:

Directive to proceed promptly with the Work described herein, prior to agreeing to changes on Contract Price and Contract Time, is issued due to: *[check one or both of the following]*

Non-agreement on pricing of proposed change.

Necessity to proceed for schedule or other Project reasons.

Estimated Change in Contract Price and Contract Times (non-binding, preliminary):

Contract Price $ [increase] [decrease].

Contract Time days [increase] [decrease].

Basis of estimated change in Contract Price:

Lump Sum Unit Price

Cost of the Work Other

RECOMMENDED:	AUTHORIZED BY:	RECEIVED:
By: By:	By:	Contractor (Authorized Signature)
Engineer (Authorized Signature)	Owner (Authorized Signature)	
Title:	Title:	Title:
Date:	Date:	Date:

Approved by Funding Agency (if applicable)

By: Date:

Title:

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SECTION 00 62 50
NOTICE OF ACCEPTABILITY OF WORK

PROJECT:

OWNER: City of Flagler Beach

CONTRACTOR:

OWNER'S CONSTRUCTION CONTRACT IDENTIFICATION:

EFFECTIVE DATE OF THE CONSTRUCTION CONTRACT:_____, 20____

ENGINEER:

NOTICE DATE:

To: **City of Flagler Beach**
Owner

And To: _____
Contractor

From: _____
Engineer

The Engineer hereby gives notice to the above Owner and Contractor that Engineer has recommended final payment of Contractor, and that the Work furnished and performed by Contractor under the above Construction Contract is acceptable, expressly subject to the provisions of the related Contract Documents, the Agreement between Owner and Engineer for Professional Services dated _____, 20___, and the following terms and conditions of this Notice:

CONDITIONS OF NOTICE OF ACCEPTABILITY OF WORK

The Notice of Acceptability of Work ("Notice") is expressly made subject to the following terms and conditions to which all those who receive said Notice and rely thereon agree:

1. This Notice is given with the skill and care ordinarily used by members of the engineering profession practicing under similar conditions at the same time and in the same locality.

2. This Notice reflects and is an expression of the Engineer's professional opinion.

3. This Notice is given as to the best of Engineer's knowledge, information, and belief as of the Notice Date.

4. This Notice is based entirely on and expressly limited by the scope of services Engineer has been employed by Owner to perform or furnish during construction of the Project (including observation of the Contractor's work) under Engineer's Agreement with Owner, and applies only to facts that are within Engineer's knowledge or could reasonably have been ascertained by Engineer as a result of carrying out the responsibilities specifically assigned to Engineer under such Agreement.

5. This Notice is not a guarantee or warranty of Contractor's performance under the Construction Contract, an acceptance of Work that is not in accordance with the related Contract Documents, including but not limited to defective Work discovered after final inspection, nor an assumption of responsibility for any failure of Contractor to furnish and perform the Work thereunder in accordance with the Construction Contract Documents, or to otherwise comply with the Construction Contract Documents or the terms of any special guarantees specified therein.

6. This Notice does not relieve Contractor of any surviving obligations under the Construction Contract, and is subject to Owner's reservations of rights with respect to completion and final payment.

by: _____

Title: Project Manager

Dated: _____ 20__

END OF SECTION

SECTION 00 64 25
CERTIFICATE OF SUBSTANTIAL COMPLETION

Owner:	City of Flagler Beach	Owner's Contract No.:	
Contractor:		Contractor's Project No.:	
Engineer:		Engineer's Project No.:	

This [preliminary] [final] Certificate of Substantial Completion applies to:

☒ All Work ☐ The following specified portions of the Work:

_____, 20_____
Date of Substantial Completion

The Work to which this Certificate applies has been inspected by authorized representatives of Owner, Contractor, and Engineer, and found to be substantially complete. The Date of Substantial Completion of the Work or portion thereof designated above is hereby established, subject to the provisions of the Contract pertaining to Substantial Completion. The date of Substantial Completion in the final Certificate of Substantial Completion marks the commencement of the contractual correction period and applicable warranties required by the Contract.

A punch list of items to be completed or corrected is attached to this Certificate. This list may not be all-inclusive, and the failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract.

The responsibilities between Owner and Contractor for security, operation, safety, maintenance, heat, utilities, insurance, and warranties upon Owner's use or occupancy of the Work shall be as provided in the Contract, except as amended as follows: *None*.

Amendments to Owner's responsibilities:
☒ None
☐ As follows

Amendments to Contractor's responsibilities:
☒ None
☐ As follows:

The following documents are attached to and made a part of this Certificate: No Documents Attached.

This Certificate does not constitute an acceptance of Work not in accordance with the Contract Documents, nor is it a release of Contractor's obligation to complete the Work in accordance with the Contract.

EXECUTED BY ENGINEER:	RECEIVED:	RECEIVED:
By: _____ (Authorized signature)	By: _____ Owner (Authorized Signature)	By: _____ Contractor (Authorized Signature)
Title: Project Manager	Title: _____	Title: _____
Date: _____, 2022	Date: _____	Date: _____

SECTION 01110

SUMMARY OF WORK

PART 1 GENERAL

1.01 Section Includes

Summary of work, other contracts, work sequence, operation of existing facilities, use of premises, coordination, cutting and patching.

1.02 Summary of Work

The building sustained extensive water damages due to Hurricane Milton. The Project consists of miscellaneous interior and exterior repairs to the City of Flagler Beach Public Library building located at 315 South 7th Street in Flagler Beach, Florida. These include:

A. PRE-CONSTRUCTION WORK:

1. Contractor shall field verify all conditions and dimensions prior to performing demolition. Contractor is required to do demolition of all items required to accomplish the new work, whether or not shown or noted;
2. The Contractor shall be responsible for the removal and proper disposal of all materials as called for in the contract documents. The placement and access to waste receptacles for demolition/construction debris shall be coordinated with the Owner. Contractor to coordinate the demolition of all utilities with Owner prior to commencing demolition. Contractor is responsible for providing the name, address, and GPS coordinates of final disposal site of all debris in accordance with FEMA requirements;
3. The Owner has the first right of refusal on all salvaged equipment;
4. The Contractor shall notify and await approval from the owner before interruption of any utilities;
5. Facilities or portions of facilities shall not be occupied during construction, unless exits, fire detection, early warning systems and any safety barriers are continuously maintained and clearly marked at all times.
6. Prior to the issuance of the notice to proceed, a safety plan shall be provided by the Contractor which clearly delineates area(s) for construction, safety barriers, construction traffic during all phases, and conditions of construction.

B. INTERIOR WORK – INCLUDED IN BASE BID:

1. Replace all drywall on surfaces where previously removed – match thickness of existing;
2. Tape and mud all drywall joints and sand to a smooth finish – match texture of existing;
3. Replace all baseboard with new wood to match existing in species and profile;
4. Remove automatic door operator, push button, and all associated conduit/wiring – to be reinstalled after entry wall construction;
5. Remove exit sign and conduit – to be reinstalled after entry wall construction;

6. Remove doors and reinstall after new framing is constructed;
7. Remove framed wall from slab to underside of roof (approximately 10'-0" high) and from masonry wall to masonry wall (approximately 10'-8" wide);
8. Reconstruct removed framed wall as shown on Details 2 and 4 on Sheet A-2. Add R-19 batt insulation;
9. Remove existing laminate flooring at the entry doors and install new, owner-supplied ceramic tile (approximately 50 SF);
10. Paint all new surfaces to match existing;
11. Caulk all interior surfaces around windows and main entry doors.

C. EXTERIOR WORK – INCLUDED IN BASE BID:

1. On east wall only, completely remove the aluminum fascia covering and drip edge and the pressure-treated 2" x 6" wood fascia board along gable rake.
2. Rebuild the fascia as shown on Detail 5, Sheet A-2.
3. Remove push button for door opener and all conduit/wiring – to be reinstalled after entry wall construction;
4. Remove or secure existing camera located at northeast underside of canopy so as to be safeguarded from demolition/new construction while still remaining operational at all times – reinstall after exterior work is completed in the entrance area;
5. Remove existing outdoor carpeting, including metal edge-strips, located directly outside the double entry doors as shown on Detail 1, Sheet A-2. Remove any adhesive residue, thoroughly clean substrate concrete;
6. Caulk exterior surfaces around all windows and double entry doors;
7. Remove excess built-up soil above the slab level along the east and north walls. Regrade and provide new sod per Detail 6, Sheet A-2.

D. EXTERIOR WORK – ADD ALTERNATE – 1:

1. Remove completely the existing modified bitumen roof on entire building.
2. Remove all skylights on flat roof. Install new decking and insulation to match existing. These openings, once properly installed and inspected, will be covered by new roof.
3. Remove all skylights on elevated structure at the west end of the Library. Close with new deck material and insulation to match surrounding area. These openings, once properly installed and inspected, will be covered by new roof.

1.04 Work Sequence

The Contractor's sequence of work may be of his choosing in order to complete the work in the allowed time frame while accommodating other contractors on site.

1.05 Contractor Use of Premises

Confine operations at the site to areas permitted by applicable laws, ordinances, permits, and by the Contract Documents. Do not unreasonably encumber the site with materials or equipment. Do not load structures with weight that will endanger the structure. The Contractor shall assume full responsibility for protection and safekeeping of products stored on the job site.

1.06 Coordination

A. The Contractor shall be fully responsible for the coordination of its work and the work of its employees, subcontractors, and suppliers and to assure compliance with schedules.

B. The coordination requirements of this Section are in addition to the requirements of the front-end bidding documents issued by the City.

C. It is the Contractor's responsibility to coordinate with all the utilities regarding locates, testing, or relocations.

1.07 Cutting and Patching

A. The Contractor shall, at no additional expense to the City, perform cutting and patching necessary to the completion of the Project. Perform cutting and patching in a manner to prevent damage to the structure or previously completed work.

B. Refinish surfaces as necessary to provide an even finish.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 01270

MEASUREMENT AND PAYMENT - LUMP SUM CONTRACTS

PART 1 GENERAL

1.01 GENERAL

A. Payment for all work done in compliance with the Contract Documents, inclusive of furnishing all manpower, equipment, materials, and performance of all operations relative to construction of this project, will be made under Pay Items. Work for which there is not a pay item will be considered incidental to the Contract and no additional compensation will be allowed.

B. The Owner reserves the right to modify work as may be necessary and increase or decrease quantities of work to be performed, including deduction or cancellation of any one or more of the Pay Items. Changes in the work shall not be considered as a waiver of any conditions of the Contract nor invalidate any provisions thereof.

C. The Contractor's attention is again called to the fact that the quotations for the various items of work are intended to establish a total price cost for completing the work in its entirety. Should the Contractor feel that the cost of any item of the work has not been established by the Bid Form, he shall include the cost for the work in some other applicable bid item, so that his proposal for the project does reflect his total price for completing the work in its entirety.

D. The quantities for payment under this Contract shall be determined by actual measurement and payment of the completed items, in place, ready for service and accepted by the Owner, in accordance with the applicable method of measurement therefore contained herein. A representative of the Contractor shall witness all field measurements.

E. Work performed by the Contractor outside the limits of construction shall be at the Contractor's expense.

2.01 MEASUREMENT

A. The quantities for payment under this Contract shall be determined by actual measurement of the completed items, in place, ready for service and accepted by the Owner, in accordance with the applicable method of measurement therefore contained herein.

3.01 PAYMENT ITEMS

A. Items are as enumerated on the bid form and the lump sums provided encompass the entire scope of work as described herein.

END OF SECTION

SECTION 01320

PROJECT COMPLETION SCHEDULE

PART 1 GENERAL

1.01 Section Includes

Project completion scheduling

1.02 Submittals

A. Prior to construction, prepare a schedule showing all major activities needed to complete project. Include major material and equipment order and delivery times. Submit to Owner no later than the date of the preconstruction conference. Update the schedule if any major events occur that would alter the previously submitted schedule.

B. Include on the schedule a minimum float of 1 day every 3 weeks during construction.

C. Project substantial and final completion dates shown on schedule shall be same as or earlier than the contractual dates.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION

3.01 Monitoring and Updating of Schedule

A. Float shown on the schedule belongs to the project.

B. Progress data shall be accumulated to update the schedule on a monthly basis, prior to submittal of the application for payment. Progress data shall include:
1. Activities started
2. Activities completed
3. Predicted activity starts and predicted activity completions
4. Changes in original duration for specific activities
5. Changes in activity sequences
6. Percent complete on activities

END OF SECTION

SECTION 01410

REGULATORY REQUIREMENTS AND PERMITS

PART 1 GENERAL

1.01 Section Includes

Regulatory requirements, project permits

1.02 Requirements of Regulatory Agencies

A. Whenever the Drawings and Specifications conflict with the requirements of the permit, then the requirements of the permit shall govern and the cost of abiding by the provisions of the permit shall be considered incidental to the Contract.

B. All electrical apparatus and wiring pertaining to a piece of equipment or an appliance furnished and installed under this Contract shall comply with the National Electrical Code and shall be listed by Underwriters Laboratories or bear the approval of a recognized Testing Laboratory approved by the Engineer.

1.03 Project Permits

A. Prior to construction, the Contractor shall apply for a separate Building Permit for each pump station from the City of Flagler Beach Building Department. Signed and sealed construction plans will be provided to the Contractor for its use in applying for the above permits. The Contractor is to coordinate with each permitting agency in order to determine the number of sets of signed and sealed construction plans that are required and the required sheet size (full size 22”x34” or half size 11”x17”).

B. The Contractor shall review and become familiar with all permits for the Project, complete with all conditions, attachments, exhibits and permit modifications. A copy of all permits for the Project shall be maintained by the Contractor at the project site, and shall be available for review upon request.

C. The Contractor shall be fully responsible to abide by all provisions of the permits. The Contractor is responsible for the selection, implementation and operation of all measures required by the permits, including the maintenance of said measures as necessary during construction. No additional compensation will be allowed for any work associated with permit requirements.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 01420

ABBREVIATIONS

PART 1 GENERAL

1.01 Reference to Standards and Specifications of Technical Societies

A. Definitions and interpretations shall be as provided in Section 1 of the General Conditions.

B. Work specified by reference to published standard or specification of government agency, technical association, trade association, professional society or institute, testing agency, or other organization shall meet requirements or surpass minimum standards of quality for materials and workmanship established by designated standard or specification.

C. Where so specified, products or workmanship shall also meet or exceed additional prescriptive or performance requirements included within Contract Documents to establish a higher or more stringent standard of quality than required by referenced standard.

D. Where two or more standards are specified to establish quality, product and workmanship shall meet or exceed requirements of most stringent.

E. Where both a standard and a brand name are specified for a product in Contract Documents, proprietary product named shall meet or exceed requirements of specified reference standard.

F. Copies of standards and specifications of technical societies and copies of applicable referenced standards have not been bound in these Contract Documents.

G. Where copies of standards are needed by Contractor, obtain a copy or copies directly from publication source and maintain in an orderly manner at the Site as Work Site records, available to Contractor's personnel, Subcontractors, Owner, and Engineer.

1.02 Abbreviations

A. Following is a list of abbreviations for trade organizations, government agencies, and construction industry organizations to which references may be made in the Contract Documents, with abbreviations used.

AA	Aluminum Association
AABC	Associated Air Balance Council
AAMA	American Architectural Manufacturers Association
AASHTO	American Association of State Highway and Transportation Officials
ABMA	American Bearing Manufacturers' Association
ACAD	AutoCAD - Computer Aided Design Software manufactured by Autodesk
ACI	American Concrete Institute

AEIC	Association of Edison Illuminating Companies
AGA	American Gas Association
AGMA	American Gear Manufacturers' Association
AI	Asphalt Institute
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AITC	American Institute of Timber Construction
ALS	American Lumber Standards
AMCA	Air Movement and Control Association
ANSI	American National Standards Institute
APA	APA – The Engineered Wood Association
API	American Petroleum Institute
APWA	American Public Works Association
ARI	Air-Conditioning and Refrigeration Institute
ASAE	American Society of Agricultural Engineers
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.
ASME	American Society of Mechanical Engineers
ASNT	American Society for Nondestructive Testing
ASTM	ASTM International
AWI	Architectural Woodwork Institute
AWPA	American Wood Preservers' Association
AWPI	American Wood Preservers' Institute
AWS	American Welding Society
AWWA	American Water Works Association
BHMA	Builders Hardware Manufacturers' Association
CBM	Certified Ballast Manufacturer
CDA	Copper Development Association
CGA	Compressed Gas Association
CISPI	Cast Iron Soil Pipe Institute
CMAA	Crane Manufacturers' Association of America
CRSI	Concrete Reinforcing Steel Institute
CS	Commercial Standard
CSA	Canadian Standards Association
CSI	Construction Specifications Institute
DIN	Deutsches Institut für Normung e.V.
DIPRA	Ductile Iron Pipe Research Association
EIA	Electronic Industries Alliance
EJCDC	Engineers Joint Contract Documents' Committee
ETL	Electrical Test Laboratories
FAA	Federal Aviation Administration
FAC	Florida Administrative Code
FCC	Federal Communications Commission
FDA	Food and Drug Administration
FDEP	Florida Department of Environmental Protection
FDOT	Florida Department of Transportation
FEMA	Federal Emergency Management Agency
FIPS	Federal Information Processing Standards
FM	FM Global

Fed. Spec.	Federal Specifications (FAA Specifications)
FS	Federal Specifications and Standards (Technical Specifications)
GA	Gypsum Association
GANA	Glass Association of North America
HI	Hydraulic Institute
HMI	Hoist Manufacturers' Institute
IBC	International Building Code
ICBO	International Conference of Building Officials
ICC	International Code Council
ICEA	Insulated Cable Engineers' Association
IFC	International Fire Code
IEEE	Institute of Electrical and Electronics Engineers, Inc.
IESNA	Illuminating Engineering Society of North America
IFI	Industrial Fasteners Institute
IGMA	Insulating Glass Manufacturer's Alliance
IMC	International Mechanical Code
INDA	Association of the Nonwoven Fabrics Industry
IPC	International Plumbing Code
IRI	Industrial Risk Insurers
ISA	Instrumentation, Systems, and Automation Society
ISO	International Organization for Standardization
ITL	Independent Testing Laboratory
JIC	Joint Industry Conferences of Hydraulic Manufacturers
MIA	Marble Institute of America
MIL	Military Specifications
MMA	Monorail Manufacturers' Association
NAAMM	National Association of Architectural Metal Manufacturers
NACE	NACE International
NEBB	National Environmental Balancing Bureau
NEC	National Electrical Code
NECA	National Electrical Contractor's Association
NEMA	National Electrical Manufacturers' Association
NESC	National Electrical Safety Code
NETA	InterNational Electrical Testing Association
NFPA	National Fire Protection Association
NHLA	National Hardwood Lumber Association
NICET	National Institute for Certification in Engineering Technologies
NIST	National Institute of Standards and Technology
NRCA	National Roofing Contractors Association
NRTL	Nationally Recognized Testing Laboratories
NSF	NSF International
NSPE	National Society of Professional Engineers
NTMA	National Terrazzo and Mosaic Association
NWWDA	National Wood Window and Door Association
OSHA	Occupational Safety and Health Act (both Federal and State)
PCI	Precast/Prestressed Concrete Institute
PEI	Porcelain Enamel Institute
PPI	Plastic Pipe Institute
PS	Product Standards Section-U.S. Department of Commerce
RMA	Rubber Manufacturers' Association

RUS	Rural Utilities Service
SAE	Society of Automotive Engineers
SDI	Steel Deck Institute
SDI	Steel Door Institute
SJI	Steel Joist Institute
SJRWMD	St. Johns River Water Management District
SMACNA	Sheet Metal and Air Conditioning Contractors National Association
SPI	Society of the Plastics Industry
SSPC	The Society for Protective Coatings
SWI	Steel Window Institute
TEMA	Tubular Exchanger Manufacturers' Association
TCA	Tile Council of North America
TIA	Telecommunications Industry Association
UBC	Uniform Building Code
UFC	Uniform Fire Code
UL	Underwriters Laboratories Inc.
UMC	Uniform Mechanical Code
USBR	U.S. Bureau of Reclamation
WCLIB	West Coast Lumber Inspection Bureau
WWPA	Western Wood Products Association

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 01450

QUALITY CONTROL

PART 1 GENERAL

1.01 Section Includes

Quality control, quality assurance.

1.02 Quality Control

A. It is the Contractor's responsibility to perform all work in conformance with the Plans and Specifications. In order to fulfill this responsibility, the Contractor is required to have an approved Quality Control Program, including testing (if required by the permit), as part of its Contract work in accordance with the Contract Documents and to submit details of its Program to the City for review and approval prior to commencing any construction operations. The submittal shall include detailed information on locations and number of all tests, etc., that will be necessary for the Contractor to make its own determination that the work is being performed in compliance with the Project requirements.

B. In addition to Quality Control Testing, the Contractor shall be responsible for required testing or approvals for any work (or any part thereof) if laws or regulations of any public body having jurisdiction specifically require testing, inspections or approval. The Contractor shall pay all costs in connection therewith and shall furnish the City the required certificates of inspection, testing or approval. The Contractor shall also be responsible for and shall pay all costs in connection with any inspection or testing required in connection with City acceptance of a supplier of materials or equipment proposed to be incorporated into the work.

C. Any design or testing laboratory utilized by the Contractor shall be an independent laboratory acceptable to the City, approved in writing, and complying with the latest edition of the "Recommended Requirements for Independent Laboratory Qualification", published by the American Council of Independent Laboratories.

D. Testing laboratories, whether provided by the City or the Contractor, shall promptly notify the City and the Contractor of irregularities or deficiencies of work that are observed during performance of services. Laboratories shall submit electronic copies (PDF format) of all reports directly to the City and the Contractor.

1.03 Testing of Materials

A. Unless otherwise specified, all materials shall be sampled and tested in accordance with the latest published standard methods of ASTM in effect at the time bids are received.

B. Test of materials shall be made by a representative of the Contractor, unless otherwise provided. Testing of equipment shall be the responsibility of the Contractor or an authorized manufacturer's representative. All test results shall be furnished to the City in

writing. The Contractor shall provide facilities required to collect and forward samples. The Contractor shall furnish the required samples without charge.

C. The Contractor shall not make use of or incorporate in the work, the materials represented by the sample until tests have been made and the material found to be in accordance with the requirements of the Specifications.

D. Materials to be tested and the applicable test procedure shall be as outlined in the individual sections of these Specifications.

1.04 Source and Quality of Materials and Equipment

A. The source of materials to be used shall be in accordance with the Contract Documents and as approved by the City before delivery. The approval of the source of any material shall continue as long as the material conforms to the Specifications.

B. All material not conforming to the requirements of the Specifications shall be considered as defective and shall be removed from the work. If in place, faulty materials shall be removed by the Contractor at its expense and replaced with acceptable material unless permitted otherwise by the City. No defective materials that have been subsequently corrected shall be reused until approval has been given.

C. Upon failure of the Contractor to comply immediately with any order of the City to remove and replace defective material, the City shall have authority to remove and replace defective materials, and to deduct the cost of removal and replacement from any monies due or to become due to the Contractor. Failure to reject any defective materials or work at the time of installation shall in no way prevent later rejection when such defects are discovered, nor obligate the City to final acceptance.

1.05 Additional Testing

The Contractor shall perform other testing called for in the Contract Documents including but not limited to piping, pressure, leakage, infiltration and exfiltration, as required.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 01520

TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.01 Section Includes

Construction facilities, temporary utilities, project identification signs, field office and storage sheds, storage of materials and equipment.

1.02 Construction Facilities

All construction facilities remain the property of the Contractor establishing them and shall be maintained in a safe and useful condition until removed from the construction site.

1.03 Removal of Temporary Construction

Remove the various temporary facilities, services, and legally dispose of them as soon as the Owner deems permissible. Portions of the site and areas used for temporary facilities shall be restored to existing or better condition, including but not limited to fill replacement, regrading, compaction, and sodding.

1.04 Transportation and Handling

A. Manufactured materials and products shall be delivered to the project site as needed for installation, undamaged, in original packages, containers, or bundles, as packaged by the manufacturer with manufacturer's name, brand, seals, and labels intact.

B. Materials other than those designated within the Specifications or approved by the Owner shall not be delivered to the project site.

1.05 Storage and Protection

A. The Contractor shall be responsible for protection and preservation of all materials until final acceptance of the Project. Any damage to work prior to acceptance shall be remedied by the Contractor at no additional cost to the Owner.

B. Provide temporary weather-tight enclosures to protect work from damage by the elements, and protect finished surfaces to prevent any damage resulting from the work of any trade.

1.06 Security

A. Contractor shall, at all times, be responsible for the security required in all project areas and shall provide all reasonable protection to prevent damage, injury or loss to employees on the Work and all other persons who may be affected thereby; all the work materials and equipment to be incorporated therein, whether in storage on or off the project site, under the care, custody or control of the Contractor or any subcontractors; and any other property under the care, custody or control of the Contractor or any

subcontractors. Contractor shall be responsible for such security and safety until final acceptance of the Work.

B. Full time watchmen will not be specifically required as a part of the Contract, but the Contractor shall provide inspection of work area daily and shall take whatever measures are necessary to protect the safety of the public, workmen, and materials, and provide for the security of the site, both day and night.

PART 2 PRODUCTS

2.01 Temporary Electric Service

A. Furnish and maintain temporary lighting and power required to perform the Work. Include in the Bid all costs for providing temporary electrical service.

B. Temporary service shall include protective enclosures, branch wiring, outlets, lamps, and grounding as required by NEC and Local Electrical Codes.

2.02 Temporary Heating

The Contractor shall furnish fuel or power and provide and operate all temporary heating units. Heat shall be provided as necessary to perform the Work. Temporary heating units shall be adequately vented and approved devices which will not damage finished areas. The Contractor shall also furnish all tarpaulins and temporary enclosures necessary to provide this protection.

2.03 Temporary Ventilation

The Contractor shall provide, operate, and furnish power for temporary ventilation required for the proper installation and curing of materials and safety of workmen.

2.04 Temporary Sanitary Facilities

Provide temporary toilet facilities as required. Maintain these during the entire period of construction under this Contract for the use of all construction personnel on the job. Enough chemical toilets shall be provided to conveniently serve the needs of all personnel. Chemical toilets and their maintenance shall meet the requirements of State and local health regulations and ordinances.

2.05 Material Hoists and Cranes

A. Provide material hoists required for normal use by all trades and employ skilled hoist operators. Provide all necessary guards, signals, safety devices, etc., required for safe hoist operation. The construction and operation of material hoists shall be in accordance with the applicable ANSI Standards, the "Manual Code of Accident Prevention in Construction" of the Associated General Contractors of America, OSHA, and of other Federal, State, and municipal codes or ordinances. The Contractor shall prohibit the use of hoists for transporting personnel. Hoists shall be located to avoid risk of damage to completed work.

B. Special rigging and hoisting facilities shall be provided by each trade requiring their use.

2.06 Temporary Runways, Scaffolding, and Ladders

A. Provide temporary ladders, ramps, and runways as required for performance and inspection of the work. The above facilities shall be constructed and maintained in accordance with the applicable Federal, State, and Municipal regulations and codes.

B. Furnish, erect, and maintain all scaffolding required for this work. Scaffolding shall be constructed and maintained in accordance with applicable State and Federal laws and local ordinances. Scaffolding shall be promptly removed after serving its purpose.

C. The structural strength and safety of scaffolding, runways, covers, railings, ladders, stairs, etc., and compliance with law shall be the sole responsibility of the Contractor.

2.07 Temporary Chutes

No materials shall be dropped from structures except through enclosed wooden or metal chutes which shall be provided and maintained as required for the performance of the work by the various trades.

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 01770

CONTRACT CLOSEOUT

PART 1 GENERAL

1.01 Section Includes

Substantial completion requirements, clean-up, final completion requirements, closeout submittals

1.02 Clean-Up Operations

A. The entire project site shall be thoroughly cleaned at the completion of the work.

B. Clean all interior and exterior work areas, plus all adjacent areas affected by construction, as directed by the City or jurisdictional agency. Equipment to clean these surfaces shall be subject to approval by the City.

C. Restore to original condition or better all property not designated for alteration by the Contract Documents, including all areas used for staging and storage. Restoration includes but is not limited to fill replacement, regrading, compaction, and sodding. Conduct inspections of the completed restoration with the City, and conduct additional restoration as directed.

1.03 Substantial Completion Requirements

A. Complete the following before requesting the inspection for certification of substantial completion.

1. Submit record drawings in accordance with section 01780.
2. Complete required cleaning and testing of the completed construction in accordance with the specifications and the Owner's operating and maintenance personnel.

B. Work is not substantially complete until the following have occurred:

1. Flood testing of finished work areas to ensure water-tight installation.
2. All doors and windows are in excellent working order with no air or water penetration.

1.04 Final Completion Requirements

A. Complete the following before requesting the inspection for certification of final completion.

1. All punch list items identified during the substantial completion inspection.
2. Deliver tools, spare parts, extra stocks of material and similar physical items to the Owner.

3. Discontinue or change over and remove temporary facilities and services from the project site, along with construction tools and facilities, mock-ups, and similar elements.
4. Clean all marred surfaces including touch up painting, pressure washing, or other measures as needed as directed by the City.
5. Hose clean sidewalks, parking lot, loading areas, and others contiguous with principal structures.
6. Fully restore all property not designated for construction including all areas used for staging and storage.
7. Provide Final Record Drawings in accordance with Section 01780.

1.05 Closeout Submittals

A. Upon completion of the project, or portions thereof, the Contractor shall transfer to the City all applicable items accumulated throughout construction. These include but are not limited to the following items:

1. Service manuals, installation instructions, maintenance and operating instructions, special tools, and specialties
2. Spare parts ordered as part of this Contract
3. Delivery of any salvaged or borrowed materials or equipment to the Owner
4. All keys to all doors, gates, and equipment
5. Checklist indicating satisfactory completion of all unfinished items from the final inspection
6. Certificate of Substantial Completion
7. Certificate of Final Completion
8. Submittal of the Material and Workmanship Bond
9. Submittal of manufacturers' guarantees, warranties, bonds, and letters of coverage extending beyond the time limitations of the Contractor's guarantee.
10. Contractor’s Final Release of Lien
11. Final Waivers of lien from all Subcontractors and Suppliers
12. Consent of Surety to Final Payment
13. Final Record documents of completed facilities.
14. Certificate of Final Inspection
15. Certificate of Architect/Engineer

B. Closeout submittals provided by others include:

1. Certificate of Engineer/Architect

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

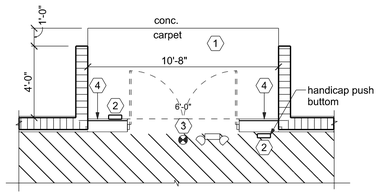
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GENERAL DEMOLITION NOTES:

1. Demolition notes are general in nature only and identify the basic scope and intent of the work.
2. Contractor shall field verify all conditions and dimensions prior to performing demolition - Contractor is required to do all demolition of all items required to acomplish the new construction in this project, whether or not shown or noted.
3. The contractor shall be responsible for the removal and proper disposal of all materials as called for in the contract documents. The placement and access to waste receptacles for demolition/construction debris shall be coordinated with the owner. Contractor to coordinate the demolition of all utilities with owner prior to commencing demolition. Contractor is responsible for providing the name, address, GPS coordinates of final disposal site for all debris, in accordance with FEMA requirements.
4. The owner has first right of refusal on all salvaged equipment.
5. The contractor shall notify and await approval from the owner before interruption of utilities.
6. Facilities or portions of facilities shall not be occupied during construction, unless exits, fire detection and early warning systems, fire protection, and any safety barriers are continuously maintained and clearly marked at all times.
7. Prior to the issuance of the notice to proceed, a safety plan shall be provided by the contractor which clearly delineates areas for construction, safety barriers, construction traffic during all phases and conditions of construction.

SPECIFIC NOTES

1. remove existing exterior carpeting, including metal strip along the edges. clean and remove any excess glue to provide a clean substrate
2. remove automatic door operator and associated wiring, to be reused.
3. remove door and reuse after new framing is installed.
4. remove framed wall from slab to top of opening, approx 10' high.
5. remove alum. fascia covering and drip edge and p.t. 2x6 subfascia along gable rake on the East Wall only.
6. remove excess soil built up above slab level along the east and northern walls. regrade and provide sod on all disturbed areas.



1 FRONT ENTRY
SCALE: 1/4" = 1'-0"

ELECTRICAL LEGEND		
ELECTRICAL	COUNT	SYMBOL
emergency light	1	
exit	1	

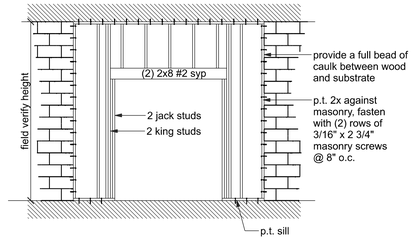
8" cmu with painted exterior p.t. furring and 1/2" drywall on interior

8" cmu with painted exterior on both sides

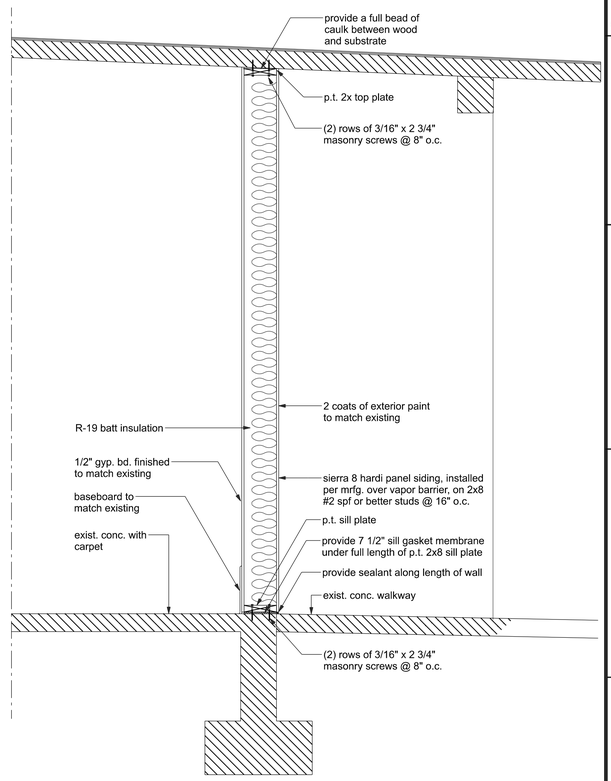
2x8 stud framing with T1-11 siding on exterior, 1/2" drwall interior

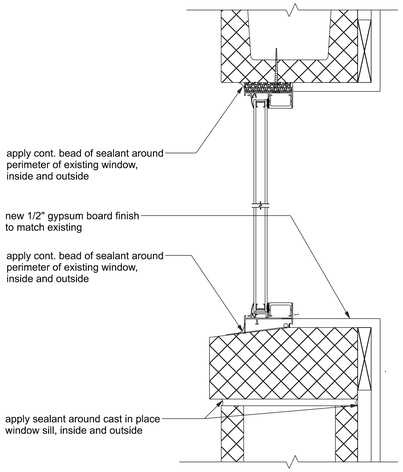
REMEDIATION WORK

1. re-caulk around windows. provide sealant around any gaps between cast in place window sill and masonry. repaint exterior to match
2. remove existing laminate flooring at the interior of entry door and install new, owner supplied ceramic tile, approx. 50 sf.
3. provide an alternate bid to remove existing modified bitumen roof including all skylights, flashing, gutters and downspouts. inspect decking for any damage and repair as needed. Install new 3-ply modified bitumen roofing with associated skylights, flashing, gutters and downspouts. Verify a minimum R-19 insulation exists on the roof. If not, install a minimum R-19 rigid insulation system under the new roof membrane.



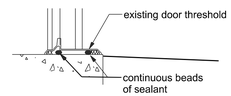
2 ENTRY FRAMING
SCALE: NTS



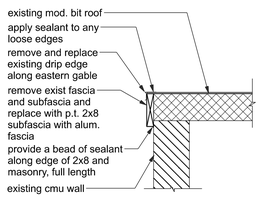


4 SECTION AT ENTRY
SCALE: 3/4" = 1'-0"

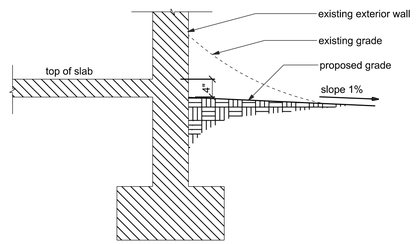
3 WINDOW SECTION
NTS



SILL DETAIL
SCALE: 1 1/2" = 1'-0"



5 SECTION AT EAVE
SCALE: 3/4" = 1'-0"



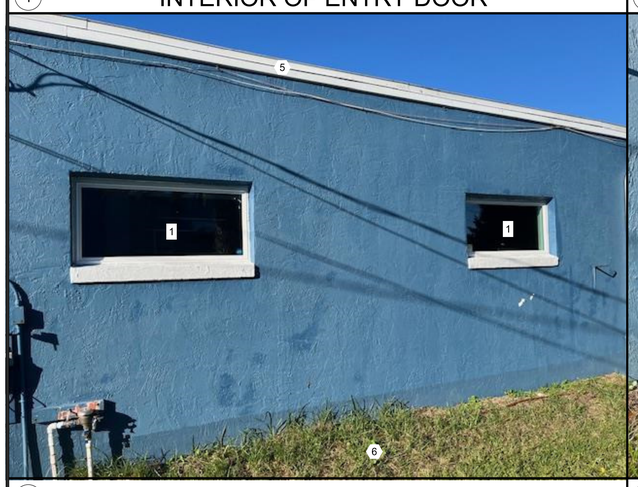
6 SECTION AT NORTH AND EAST WALL
SCALE: 3/4" = 1'-0"



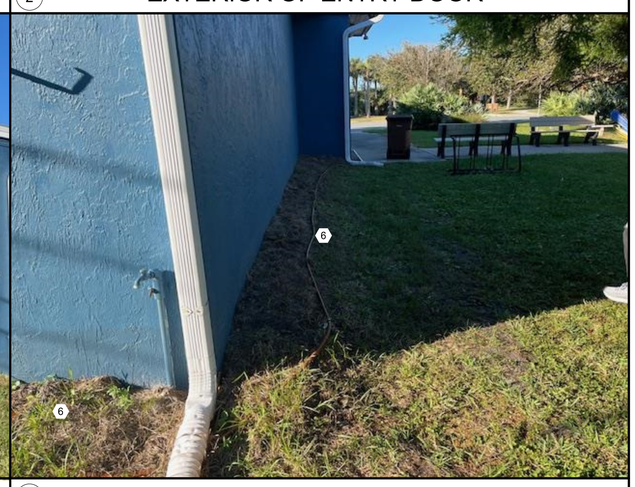
1 INTERIOR OF ENTRY DOOR



2 EXTERIOR OF ENTRY DOOR



3 EAST WALL



4 NORTH WALL

SHEET A-2
OF 2

SEAL

DATE:
REVISIONS:

SCALE:
DRAWN BY: W.H.F.
APPROVED: W.H.F.

City of Flagler Beach - Public Works
800 S. Daytona Ave.
Flagler Beach Fl. 32136
Phone: 386-276-1007

FLAGLER BEACH LIBRARY

HURRICANE REPAIR

City of Flagler Beach
105 S. 2nd Street
Flagler Beach, Florida 32136
(386) 517 – 2000 ext. 233

ADDENDUM NUMBER 1

TO THE BIDDING/CONTRACT DOCUMENTS AND SPECIFACATIONS
HURRICANE MILTON DAMAGE REPAIRS TO
FLAGLER BEACH PUBLIC LIBRARY
Bid Number FB-250102

January 13, 2025

To All Plan Holders:
The following changes, clarifications and additions are hereby made a part of the bidding and contract documents for the above referenced project, and prepared by the City of Flagler Beach as fully and completely as if the same were fully set forth therein.

Response to Questions received before the deadline of 5:00 p.m. Monday, January 13, 2025

Responses are below the questions in RED

QUESTION 1:

1.03 Project Permits

A. Prior to construction, the Contractor shall apply for a separate Building Permit for each pump station from the City of Flagler Beach Building Department. Signed and sealed construction plans will be provided to the Contractor for its use in applying for the above permits. The Contractor is to coordinate with each permitting agency in order to determine the number of sets of signed and sealed construction plans that are required and the required sheet size (full size 22"x34" or half size 11"x17").

B. The Contractor shall review and become familiar with all permits for the Project, complete with all conditions, attachments, exhibits and permit modifications. A copy of all permits for the Project shall be maintained by the Contractor at the project site, and shall be available for review upon request.

C. The Contractor shall be fully responsible to abide by all provisions of the permits. The Contractor is responsible for the selection, implementation and operation of all measures required by the permits, including the maintenance of said measures as necessary during construction. No additional compensation will be allowed for any work associated with permit requirements.

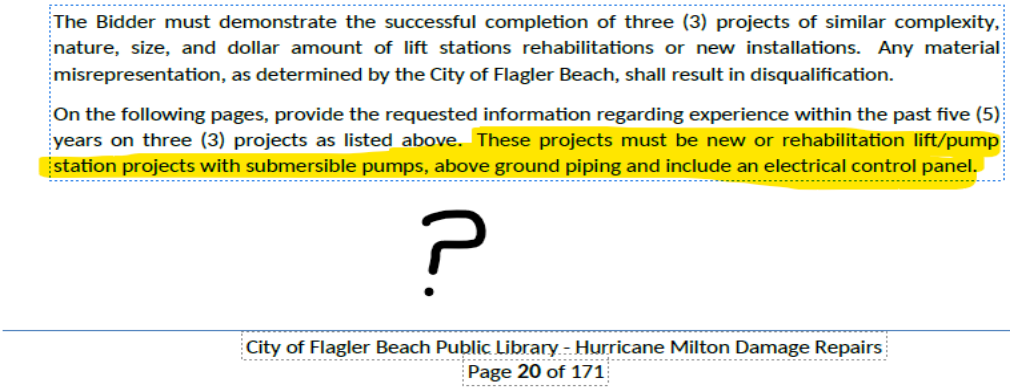
RESPONSE:

On Page 166 of 171 in the Project Manual, Delete Paragraph 1.03 (A) in its entirety. Substitute with the following: Prior to construction, the Contractor shall apply and pay for a Building Permit issued by the City of Flagler Beach Building Department. Submit the construction plans posted with the bid documents. The document size shall be Tabloid (11" x 17") and, if necessary, a set may be requested from the Engineering Department.

Paragraphs (B) and (C) shall refer to only the one permit issued by the Building Department.

QUESTION 2:

Please see the attached screenshot - I believe this was a copy and paste error, I am going to Fill page 21 out as similar to projects of this scope, however please let me know If I need to do anything else.



The Bidder must demonstrate the successful completion of three (3) projects of similar complexity, nature, size, and dollar amount of lift stations rehabilitations or new installations. Any material misrepresentation, as determined by the City of Flagler Beach, shall result in disqualification.

On the following pages, provide the requested information regarding experience within the past five (5) years on three (3) projects as listed above. These projects must be new or rehabilitation lift/pump station projects with submersible pumps, above ground piping and include an electrical control panel.

?

City of Flagler Beach Public Library - Hurricane Milton Damage Repairs
Page 20 of 171

RESPONSE:

On Page 20 of 171 in the Project Manual, Section 00 11 53 (Attachment E), Delete the sentence, "These projects must be new or rehabilitation lift/pump station projects with submersible pumps, above ground piping and include an electrical control panel."

Disclaimer: It is the sole responsibility of bidder to confirm that all addenda have been received prior to submitting bid and acknowledge such in bid documents

END OF ADDENDUM 1

City of Flagler Beach
105 S. 2nd Street
Flagler Beach, Florida 32136
(386) 517 – 2000 ext. 233

ADDENDUM NUMBER 2

TO THE BIDDING/CONTRACT DOCUMENTS AND SPECIFACATIONS
HURRICANE MILTON DAMAGE REPAIRS TO
FLAGLER BEACH PUBLIC LIBRARY
Bid Number FB-250102

January 16, 2025

To All Plan Holders:
The following changes, clarifications and additions are hereby made a part of the bidding and contract documents for the above referenced project, and prepared by the City of Flagler Beach as fully and completely as if the same were fully set forth therein.

The bid opening date was erroneously set on a Federal Holiday (Monday, January 20, 2025) and City Offices will not be open. Therefore, the bid opening date is moved to Tuesday, January 21, 2025, at 2:00 p.m.

Disclaimer: It is the sole responsibility of bidder to confirm that all addenda have been received prior to submitting bid and acknowledge such in bid documents

END OF ADDENDUM 2

CONTRACT DOCUMENTS FOR

CITY OF FLAGLER BEACH

HURRICANE MILTON DAMAGE REPAIRS TO FLAGLER BEACH PUBLIC LIBRARY

315 SOUTH SEVENTH STREET FLAGLER BEACH, FLORIDA 32136

CITY PROJECT NO: 285

CITY INVITATION TO BID NO: FB-250102

JANUARY 2, 2025

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SECTION 00 01 01

CONTRACT DOCUMENTS FOR

HURRICANE MILTON DAMAGE REPAIRS
TO
FLAGLER BEACH PUBLIC LIBRARY

315 SOUTH SEVENTH STREET
FLAGLER BEACH, FLORIDA 32136

CITY INVITATION TO BID NO: FB-250102

JANUARY 2, 2025

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DIVISION 00

BIDDING REQUIREMENTS, CONTRACT DOCUMENTS, AND FORMS
HURRICANE MILTON DAMAGE REPAIRS
FLAGLER BEACH PUBLIC LIBRARY
CITY PROJECT NO: 285

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00 01 07	CERTIFICATIONS PAGE
00 01 50	FLORIDA TRENCH SAFETY ACT
00 11 13	ADVERTISEMENT FOR BIDS
00 11 53	REQUEST FOR QUALIFICATION FORMS
00 21 13	INSTRUCTIONS TO BIDDERS
00 22 13	STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT
00 22 15	SUPPLEMENTARY CONDITIONS
00 41 13	BID FORM
00 43 25	PERFORMANCE BOND
00 51 00	NOTICE OF AWARD
00 51 20	NOTICE TO PROCEED
00 61 10	WORK CHANGE DIRECTIVE FORM
00 62 50	NOTICE OF ACCEPTABILITY OF WORK
00 62 50	NOTICE OF ACCEPTABILITY OF WORK
00 64 25	CERTIFICATE OF SUBSTANTIAL COMPLETION
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01 20 00	MEASUREMENT AND PAYMENT
01 32 36	PRECONSTRUCTION VIDEO
01 32 16	PROJECT COMPLETION SCHEDULE
01 41 00	REGULATORY REQUIREMENTS AND PERMITS
01 42 13	ABBREVIATIONS & ACRONYM S
	QUALITY CONTROL
01 55 26	TEMPORARY TRAFFIC CONTROL
01 77 00	CONTRACT CLOSEOUT

ATTACHMENTS

ATTACHMENT A	CERTIFICATE OF CORPORATION
ATTACHMENT B	CONTRACTOR QUESTIONNAIRE
ATTACHMENT C	REQUIRED DISCLOSURE
ATTACHMENT D	BIDDER INFORMATION
ATTACHMENT E	EXPERIENCE OF BIDDER
ATTACHMENT F	SWORN STATEMENT UNDER SECTION 287.133(3) (A), FLORIDA STATUTES, ON PUBLIC ENTITY CRIMES
ATTACHMENT G	AFFIDAVIT OF NON-COLLUSION
ATTACHMENT H	CERTIFICATION OF NON-SEGREGATED FACILITIES
ATTACHMENT I	DRUG-FREE WORK PLACE
ATTACHMENT J	CONFLICT OF INTEREST STATEMENT
ATTACHMENT K	COMPLIANCE WITH PUBLIC RECORDS LAW
ATTACHMENT L	AMERICANS WITH DISABILITIES ACT AFFIDAVIT
ATTACHMENT M	ADDITIONAL PURCHASING LANGUAGE
ATTACHMENT N	LIST OF LICENSES AND CERTIFICATIONS
ATTACHMENT O	LIST OF PROPOSED SUBCONTRACTORS/SUPPLIERS

END OF SECTION

CITY OF FLAGLER BEACH

ADVERTISEMENT FOR BID NO. FB-250102

HURRICANE MILTON DAMAGE REPAIRS
TO
FLAGLER BEACH PUBLIC LIBRARY

CITY OF FLAGLER BEACH
City Project No. 285

NOTICE IS HEREBY GIVEN THAT THE CITY OF FLAGER BEACH IS ISSUING THIS INVITATION TO BID (ITB) TO SOLICIT COMPETITIVE SEALED BIDS FROM LICENSED AND INSURED CONTRACTORS FOR THE CITY OF FLAGLER BEACH PUBLIC LIBRARY HURRICANE MILTON DAMAGE REPAIRS ACCORDING TO THE SCOPE OF WORK SEPCIFICATIONS. BIDS WILL BE RECEIVED FOR A SINGLE PRIME CONTRACT. BIDS SHALL BE ON A LUMP SUM AS INDICATED IN THE BID FORM.

IT IS THE INTENT AND PURPOSE OF THE CITY OF FLAGER BEACH THAT THIS INVITATION TO BID (ITB) PROMOTES COMPETITIVE SELECTION. IT IS THE BIDDER'S RESPONSIBILITY TO ADVISE THE FINANCE DIRECTOR IF ANY LANGUAGE, REQUIREMENTS, ETC., OR ANY COMBINATION THEREOF, INADVERTENTLY RESTRICTS OR LIMITS THE REQUIREMENTS STATED IN THIS ITB

All applicants must be properly licensed and show proof of insurance, licenses, and certificates as required by all local, State of Florida, and Federal agencies. Successful applicants will obtain all required permitting as previously stated.

Interested contractors may secure the, bid forms and other pertinent information by visiting the city website bid page: http://www.cityofflaglerbeach.com/Bids.aspx.or the website www.demandstar.com Bid packages also may be obtained by contacting the City Clerk, Penny Overstreet at 386-517-2000 ext. 233 or poverstreet@cityofflaglerbeach.com

For further information, contact: Penny Overstreet, City Clerk
Preferred method of contact email: poverstreet@cityofflaglerbeach.com (386) 517-2000, ext. 233

A Mandatory pre-bid meeting will be held at the Library on the date and time indicated below. No bids will be accepted by contractors who do not have representation at this meeting.

Sealed Bids must be addressed to the attention of **Penny Overstreet, City Clerk**. Sealed Bids must be received on or before ~~2:00 PM, Monday January 20, 2025.~~

No bids will be accepted a ter this deadline.

Sealed Bids must have the project title and bid number on outside of package. The City of Flagler Beach reserves the right to reject any and all Bids, to award all or segments of the project, and to waive any informality in Bids received, as may be in the best interest of the City.

MAILING ADDRESS:
105 S 2nd Street
Flagler Beach, FL
32136

WALK-IN DELIVERY ADDRESS:
105 S 2nd Street
Flagler Beach, FL 32136

Date of Distribution:	**JANUARY 3, 2025**
Mandatory Pre-Bid Meeting:	**THURSDAY JANUARY 9, 2025 at 10:00 AM EST**
Last Date for Questions:	**MONDAY JANUARY 13, 2025 at 5:00 PM EST**
Last Date for Addenda if Needed:	**WEDNESDAY JANUARY 15, 2025 at 5:00 PM EST**
BIDS DUE BY:	**MONDAY JANUARY 20, 2025 at 2:00 PM EST** after which time they will be publicly opened and read aloud.
COMMISSION MEETING:	• **THURSDAY FEBRUARY 13, 2025 at 5:30 PM EST**

END INVITATION TO BID

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SECTION 00 11 53
REQUEST FOR QUALIFICATION FORMS

Project Name: **CITY OF FLAGLER BEACH PUBLIC LIBRARY HURRICANE MILTON DAMAGE REPAIRS**

CITY PROJECT NO: 285

Company Name: Lads Construction Services LLC

Contact Name: Jeffrey Lademann

E-mail Address: Jeffrey@ladsconstructionllc.com

Mailing Address: 1312 S central Ave Flagler Beach FL 32136

Phone Number: 386-793-4342

Fax Number: _____

Contractor License Number: CGC:1528439

The CITY will post addenda information at Onvia DemandStar, Inc., at the following web address: www.demandstar.com. For technical assistance with this website, please contact Onvia Services at 1-800-711-1712. All Bidders should check the Onvia DemandStar website at least seven (7) calendar days before the date fixed to verify information regarding Addenda. Failure to do so could result in rejection of the submittal as unresponsive. Bidders shall sign, date, and return all addenda with their bid. It is the sole responsibility of the Bidder to ensure he/she obtains information related to Addenda. Oral and other interpretations or clarifications will be without legal effect.

The following Addenda were received:

Addendum No. 1 Date Received 01/19/25

Addendum No. 2 Date Received 01/19/25

Addendum No. _____ Date Received _____

Addendum No. _____ Date Received _____

The Bidder acknowledges the receipt, execution, and return of the following attachments:

- Attachment A: Certificate of Corporation
- Attachment B: Contractor Questionnaire
- Attachment C: Required Disclosure
- Attachment D: Bidder Information
- Attachment E: Experience of Bidder
- Attachment F: Sworn Statement Under section 287.133(3) (a), Florida Statutes, on Public Entity Crimes
- Attachment G: Affidavit of Non-Collusion
- Attachment H: Certification of Non-Segregated Facilities
- Attachment I: Drug-Free Work Place
- Attachment J: Conflict of Interest Statement
- Attachment K: Compliance with Public Records Law
- Attachment L: Americans with Disabilities Act Affidavit
- Attachment M: Additional Procurement Clauses for FEMA Work
- Attachment N: List of Proposed Subcontractors/Suppliers
- Attachment O: List of Licenses and Certifications

Name: Jeffrey Lademann - Lads Construction Services LLC

Authorized Signature: Jeffrey Lademann

Date: 01/11/2025

Title: President

ACKNOWLEDGEMENT

STATE OF FLORIDA

COUNTY OF Flagler

Sworn to (or affirmed) and subscribed before me by means of

online notarization ☐ *OR* physical presence ☒

this 11 day of January, 2025

Personally Known ☒ *OR* Produced identification ☐

Type of Identification Produced: _____

Jennifer S. Bennett

Signature of Notary Public

Print, Type or Stamp Commissioned Name of Notary Public below:

JENNIFER S. BENNETT
MY COMMISSION EXPIRES
NOVEMBER 9, 2025
#HH 196833
Bonded thru
Troy Fain Insurance
NOTARY PUBLIC, STATE OF FLORIDA

END OF SECTION

REQUEST FOR QUALIFICATION FORMS

ATTACHMENT A

CERTIFICATE OF CORPORATION

Please include a copy of your Certificate of Corporation from the State of Florida with this attachment.

STATE OF FLORIDA
COUNTY OF FLAGLER

I HEREBY CERTIFY that a meeting of the Board of Directors of Lads Construction Services LLC , a corporation under the laws of the State of Florida , was held on 01/11 , 20 25 . The following resolution was duly passed and adopted:

"RESOLVED, that Lads Construction Services LLC as Jeffrey Lademann President of the corporation is hereby authorized to execute the Contract dated 01/11 , 20 25 , between The City of Flagler Beach, a municipal corporation and this corporation, and that execution thereof, attested by the Secretary of the corporation and with corporate seal affixed, shall be the official act and deed of this corporation."

I further certify that said resolution is now in full force and effect.

IN WITNESS THEREOF, I have hereunto set my hand and affixed the official seal of the corporation

This 11th day of January , 20 25 .

Jeffrey Lademann
Corporate Secretary

END OF ATTACHMENT A

SECTION 00 11 53
REQUEST FOR QUALIFICATION FORMS

ATTACHMENT B

CONTRACTOR QUESTIONNAIRE

DATE: 01/11/2025

NAME OF BIDDER: Lads Construction Services LLC

BUSINESS ADDRESS: 6 Maple St Flagler Beach FL 32136

PHONE NUMBER: (386)-793-4342

CONTRACTOR'S FL LICENSE #: CGC:1528439

EXPIRATION DATE: 08/31/2026

The undersigned warrants the truth and accuracy of all statements and answers herein contained. Include additional sheets as necessary.

1. How many years has your organization been in business as a General Contractor?

5 Years - 12/11/2019

2. How many years has your organization been in business as a Subcontractor?

Lads Construction operates as the prime contractor

3. Name of Superintendent and length of time with your company?

Joe Cortese - 4 years

4. Describe in detail and give the date and owner, including phone numbers and contact person(s), of the last five (5) projects that you have completed similar in type, size, and nature as the project proposed?

Frank Johnson - President of - Johnson and Gilbert Law office (386)-852-8281. 170 E Granada BLVD Ormond Beach Fl 32174

Bill McLaughlin - President of - IMCO Independent Medical Co-Op (386)-258-1530. 129 Executive Cir, Daytona Beach FL 32114

David Main - GM / COO of Oceanside Country Club (386)-677-7200. 75 N Halifax Dr Ormond Beach FL 32176

David Main - GM / COO of Oceanside Country Club (386)-677-7200. 75 N Halifax Dr Ormond Beach FL 32176

Marcus Carr - Senior VP of Finance of Planet Bids - (818)-992-1771 x160. 200 E granada BLVD Suite 3003

5. Have you ever failed, or been alleged to have failed, to complete work awarded to you? If so, please list the project and explain the reasons why?

NO

6. Have you ever failed, or been alleged to have failed, to complete work within the Contract Time? If so, please list the project and explain the reasons why?

NO

7. Have you ever been assessed liquidated damages, or had liquidated damages assessed against you? If so, please list the project and explain the reasons why?

NO

8. Have you ever had a bond or letter of credit called by the owner of a project? If so, when?

NO

9. Have you personally inspected the site of the proposed Work? Describe, in full, any anticipated problems with the site and your proposed solutions?

Yes, 10am-11:15 AM on Thursday Jan, 9th 2024. No issues expected besides the future water intrusion / paint peeling off the rest of the building as the current plans are to paint touch up around the lower perimeter and only address peeling paint on the East facing wall. Sealing the whole building with a fresh high quality primer and sealant is key to keeping the building dry from future blowing wind / rain storms. As well as the sidewalk outside the front door - going to the parking lot is at the same elevation as the FFE. Once sod / landscape is lowered below the FFE, ultimately going to cause water to collect between the sidewalk and the building.

Bidder Name: Lads Construction Services LLC - Jeffrey Lademann

Signature: Jeffrey Lademann

Title: President

Attach the corporate information sheet from the Florida Department of State, Division of Corporation's, web site.

ACKNOWLEDGEMENT

STATE OF FLORIDA
COUNTY OF Flagler

Sworn to (or affirmed) and subscribed before me by means of
online notarization ☐ OR physical presence ☒
this 11 day of January, 2025.
Personally Known ☒ OR Produced identification ☐
Type of Identification Produced: _____

Jennifer S. Bennett
Signature of Notary Public
Print, Type or Stamp Commissioned Name of Notary Public below:

JENNIFER S. BENNETT
MY COMMISSION EXPIRES NOVEMBER 9, 2025
#IH 196833
Bonded thru Troy Fain Insurance
NOTARY PUBLIC, STATE OF FLORIDA

END OF ATTATCHMENT B

SECTION 00 11 53
REQUEST FOR QUALIFICATION FORMS

ATTACHMENT C

REQUIRED DISCLOSURE

The following disclosure is of all material facts pertaining to any felony conviction or any pending felony charges in the last three (3) years in this State or any other state of the United States against (1) the Bidder,
(2) any business entity related to or affiliated with the Bidder or (3) any present or former owner of the Bidder or of any such related or affiliated entity. This disclosure shall not apply to any person or entity which is only a stockholder, which person or entity owns twenty percent (20%) or less of the outstanding shares of the Bidder whose stock is publicly owned and traded:

N/A

Bidder Name: Lads Construction Services LLC - Jeffrey Lademann

Signature: Jeffrey Lademann

Title: President

Date: 01/11/2025

END OF ATTACHMENT C

SECTION 00 11 53
REQUEST FOR QUALIFICATION FORMS

ATTACHMENT D BIDDER INFORMATION

List the full legal name of each officer of the Corporation.

President: Jeffrey Lademann

Signature: Jeffrey Lademann Date: 01/11/2025

Vice-President: _____

Signature: _____ Date: _____

Secretary: _____

Signature: _____ Date: _____

Treasurer: _____

Signature: _____ Date: _____

List the Corporate Officer that will sign the contract: Jeffrey Lademann

END OF ATTACHMENT D

SECTION 00 11 53
REQUEST FOR QUALIFICATION FORMS

ATTACHMENT E
EXPERIENCE OF BIDDER

Bidder Name: Lads Construction Services LLC -Jeffrey Lademann

Authorized Signature: Jeffrey Lademann Date: 01/11/2025

Is your company currently involved in any active litigation? ____Yes __X__No

If Yes, explain: _____

_____

_____

_____

Has your company ever been sued? ____Yes __X__ No

If Yes, explain and/or submit court decision or judgment, as applicable: _____

_____

_____

_____

The Bidder must demonstrate the successful completion of three (3) projects of similar complexity, nature, size, and dollar amount of lift stations rehabilitations or new installations. Any material misrepresentation, as determined by the City of Flagler Beach, shall result in disqualification.

On the following pages, provide the requested information regarding experience within the past five (5) years on three (3) projects as listed above.

Project #1:

Contract Date: Jan. 2023

Contract Amount: $ 131,966

Project Name: Law office exterior reno

Project Location: 170 E Granada BLVD Ormond Beach Fl 32174

General Scope of Work: Replacement of existing flat roof with 3 ply roofing system. New AC stands, over 200 pitch pockets replaced. New exterior paint, ceiling tiles and insulation.

Client Name and Address: Frank Johnson - President of - Johnson and Gilbert Law office
170 E Granada BLVD Ormond Beach Fl 32174

Client Contact Phone: (386)-852-8281.

Client Contact Email: Frank@mylegalneeds.com

Was the project completed on schedule? X Yes ____ No

Total Amount of Change Orders: $ 14,670

Reasons for Change Orders: Customer wanted to remove foam bands around building, patch stucco / paint

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Project #2:

Contract Date: 10/2022

Contract Amount: $ 85,618.38

Project Name: IMCO Reno

Project Location: 129 Executive Cir, Daytona Beach FL 32114

General Scope of Work: New Roof, repairs to soffit, fascia, tree trimming off roof, repairs to landscape. Electrical boxes and lighting.

Client Name and Address: Bill McLaughlin - President of - IMCO Independent Medical Co-Op . 129 Executive Cir, Daytona Beach FL 32114

Client Contact Phone: (386)-258-1530

Client Contact Email: Bill.mclaughlinjr@imcoinc.com

Was the project completed on schedule? X Yes ____ No

Total Amount of Change Orders: $ N/A

Reasons for Change Orders: _____

REMAINDER OF PAGE INTENTIONALLY LEFT BLANK

Project #3:

Contract Date: 11/11/2024

Contract Amount: $ 111,949.49

Project Name: OOC Hurricane Milton Repairs

Project Location: 75 N halifax Dr, Ormond Beach FL 32176

General Scope of Work: Hurricane Milton repairs / water damage restoration / exterior repairs. Water damage - removal / replacement of drywall, trim, carpet. Removal / replacement of hardie siding damaged from the storm. Roof repair, interior / exterior painting. Removal of dirt build up along locker room wall / door. installation of drainage to stop future water intrusion.

Client Name and Address: David Main - GM-COO. 75 N halifax Dr, Ormond Beach FL 32176

Client Contact Phone: 386-677-7200

Client Contact Email: GM1907@occ.com

Was the project completed on schedule? X Yes _____No

Total Amount of Change Orders: $ N/A

Reasons for Change Orders: _____

END OF ATTACHMENT E

ATTACHMENT F

SWORN STATEMENT UNDER SECTION 287.133(3) (a), FLORIDA STATUTES, ON PUBLIC ENTITY CRIMES

THIS FORM MUST BE SIGNED IN THE PRESENCE OF A NOTARY PUBLIC OR OTHER OFFICER AUTHORIZED TO ADMINISTER OATHS.

This sworn statement is submitted to: **The City of Flagler Beach** (Public entity)

By: Jeffrey Lademann - President
(Individual's name and title)

For: Lads Construction Services LLC
(Name of entity submitting sworn statement)

Whose business address is: 6 Maple St Flagler Beach, FL 32136

Federal Employer Identification Number (FEIN): 84-2700292

(If the entity has no FEIN, include the Social Security Number of the individual signing this sworn statement)

1. I understand that a "public entity crime" as defined in Section 287.133(1)(g), Florida Statutes, means a violation of any State or Federal law by a person with respect to and directly related to the transaction of business with any public entity or with an agency or political subdivision of any other state or with the United States, including, but not limited to, any bid or contract for goods or services to be provided to any public entity or an agency or political subdivision of any other state or of the United States and involving antitrust, fraud, theft, bribery, collusion, racketeering, conspiracy, or material misrepresentation.
2. I understand that "convicted" or "conviction" as defined in Paragraph 287.133(1) (b), Florida Statutes, means a finding of guilt or a conviction of a public entity crimes, with or without an adjudication of guilt, in any Federal or state trial court of record relating to charges brought by indictment or information after July 1, 1989, as a result of a jury verdict, non-jury trial, or entry of a plea of guilty or nolo contendere.

3. I understand that an "affiliate" as defined in Section 287.133(1)(a), Florida Statutes, means: A predecessor or successor of a person convicted of a public entity crime: or an entity under the control of any natural person who is active in the management of the entity and how has been convicted of a public entity crime. The term "affiliate" includes those officers, directors, executives, partners, shareholders, employees, members, and agents who are active in the management of an affiliate. The ownership by one (1) person of shares constituting a controlling interest in another person, or a pooling of equipment or income among persons when not for fair market value under an arm's length agreement, shall be a prima facie case that one person controls another person. A person who knowingly enters into a joint venture with a person who has been convicted of a public entity crime in Florida during the preceding thirty-six (36) months shall be considered an affiliate.
4. I understand that a "person" as defined in Section 287.133(1) (e), Florida Statutes, means any natural person or entity organized under the laws of any state or of the United States with the legal power to enter into a binding contract and which bids or applies to bid on contracts for the provision of goods or services let by a public entity, or which otherwise transacts or applies to transact business with a public entity. The term "person" includes those officers, directors, executives, partners, shareholders, employees, members, and agents who are active in management of an entity.

Based on information and belief, the statement which I have marked below is true in relation to the entity submitting this sworn statement. (Indicate which statement applies.)

TRUE Neither the entity submitting this sworn statement, nor any officers, directors, executives, partners, shareholders, employees, members, or agent who is active in management of the entity, nor the affiliate of the entity, has been charged with and convicted of a public entity crime subsequent to July 1, 1989.

TRUE The entity submitting this sworn statement, or one or more of the officers, directors, executives, partners, shareholders, employees, members or agent who are active in management of the entity, or an affiliate of the entity, has been charged with and convicted of a public entity crime subsequent to July 1, 1989.

TRUE The entity submitting this sworn statement, or one or more of the officers, directors, executives, partners, shareholders, employees, members or agents who are active in management of the entity, or an affiliate of the entity, has been charged with and convicted of a public entity crime subsequent to July 1, 1989.

However, there has been a subsequent proceeding before an Administrative Law Jury of the State of Florida, Division of Administrative Hearings and the Final Order entered by the Administrative Law Jury

determined that it was not in the public interest to place the entity submitting this sworn statement on the convicted vendor list. (Attach a copy of the final order.)

I UNDERSTAND THAT THE SUBMISSION OF THIS FORM TO THE CITY OF FLAGLER IS FOR THE CITY ONLY AND, THAT THIS FORM IS VALID THROUGH DECEMBER 31, OF THE CALENDAR YEAR IN WHICH IT IS FILED. I ALSO UNDERSTAND THAT I AM REQUIRED TO INFORM THE CITY PRIOR TO ENTERING IN TO A CONTRACT IN EXCESS OF THE THRESHOLD AMOUNT PROVIDED IN SECTION 287.017, FLORIDA STATUES, FOR CATEGORY TWO OF ANY CHANGE IN THE INFORMATION CONTAINED IN THIS FORM.

Signature: _____

Date: 01-11-2025

State of: Florida

County of: Flagler

ACKNOWLEDGEMENT

STATE OF FLORIDA
COUNTY OF Flagler

Sworn to (or affirmed) and subscribed before me by means of
online notarization ☐ *OR* physical presence ☒
this 11 day of January, 2025
Personally Known ☒ *OR* Produced identification ☐
Type of Identification Produced: _____

Jennifer S. Bennett
Signature of Notary Public
Print, Type or Stamp Commissioned Name of Notary Public below:

END OF ATTACHMENT F

ATTACHMENT G AFFIDAVIT OF NON-COLLUSION

SECTION 00 11 53
REQUEST FOR QUALIFICATION FORMS

The undersigned bidder or agent, being duly sworn on oath, says that he/she has not, nor has any other member, representative, or agent of the firm, company, corporation or partnership represented by him, entered into any combination, collusion or agreement with any person relative to the price to be bid by anyone at such letting nor to prevent any person from bidding nor to include anyone to refrain from bidding, and that this bid is made without reference to any other bid and without any agreement, understanding or combination with any other person in reference to such bidding. He/She further says that no person or persons, firms, or corporation has, have or will receive directly or indirectly, any rebate, fee gift, commission or thing of value on account of such sale.

OATH AND AFFIRMATION

I HEREBY AFFIRM UNDER THE PENALTIES FOR PERJURY THAT THE FACTS AND INFORMATION CONTAINED IN THE FOREGOING BID FOR PUBLIC WORKS ARE TRUE AND CORRECT.

Dated this 11th day of January, 20 25.

LADS Construction LLC - Jeffrey Ludemann
(Bidder Name)

President
(Title)

(Signature)

ACKNOWLEDGEMENT

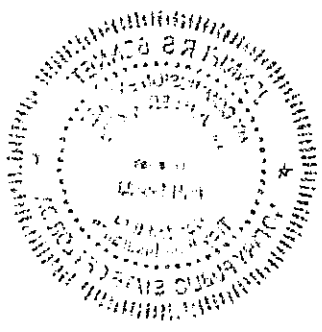
STATE OF FLORIDA
COUNTY OF Flagler

Jennifer S. Bennett
Signature of Notary Public
Print, Type or Stamp Commissioned Name of Notary Public below:

Sworn to (or affirmed) and subscribed before me by means of
online notarization ☐ OR physical presence ☒
this 11 day of January, 20 25
Personally Known ☒ OR Produced identification ☐
Type of Identification Produced:_____

JENNIFER S. BENNETT
MY COMMISSION EXPIRES NOVEMBER 9, 2025
#HH 196833
Bonded thru Troy Fain Insurance
NOTARY PUBLIC, STATE OF FLORIDA

END OF ATTACHMENT G



ATTACHMENT H
CERTIFICATION OF NON-SEGREGATED FACILITIES

SECTION 00 11 53
REQUEST FOR QUALIFICATION FORMS

The Bidder certifies that they do not maintain or provide for their employees any segregated facilities at any of his establishments, and that they do not permit their employees to perform their services at any location, under their control, where segregated facilities are maintained. The Bidder certifies further that they will not maintain or provide for their employees any segregated facilities at any location under their control where segregated facilities are maintained. The Bidder agrees that a breach of this certification will be a violation of the Equal Opportunity clause in any contract resulting from acceptance of this Bid. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, time clocks, locker rooms and other storage and dressing areas, parking lots, drinking fountains, recreation or entertainment area, transportation and housing facilities provided for employees which are segregated by explicit directive, or are in fact segregated on the basis of race, color, religious disability or national origin, because of habit, local custom, or otherwise. The Bidder agrees that (except where they have obtained identical certifications from proposed subcontractors for specific time periods) they will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity clause, and that he will retain such certifications in his files.

The nondiscriminatory guidelines as promulgated in Section 202, Executive Order 11246, and as amended by Executive Order 11375 and as amended, relative to Equal Opportunity for all persons and implementations of rules and regulations prescribed by the United States Secretary of Labor are incorporated herein.

Name: Lads Construction Services LLC - Jeffrey Lademann

Signature: Jeffrey Lademann

Date: 01/11/2025

Title: President

Official Address: 6 Maple St Flagler Beach, FL 32136

END OF ATTACHMENT H

ATTACHMENT I DRUG-FREE WORK PLACE

SECTION 00 11 53

REQUEST FOR QUALIFICATION FORMS

The undersigned vendor in accordance with Florida Statute 287.087 hereby certifies that

Lads Construction Services LLC does hereby: (Name of Business)

1. Publish a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the workplace and specifying the actions that will be taken against employees for violations of such prohibition.

2. Inform employees about the dangers of drug abuse in the workplace, the business's policy of maintaining a drug-free workplace, any available drug counseling, rehabilitation, and employee assistance programs, and the penalties that may be imposed upon employees for drug abuse violations.

3. Give each employee engaged in providing the commodities or contractual services that are proposed a copy of the statement specified in subsection (1).

4. In the statement specified in subsection (1), notify the employees that, as a condition of working on the commodities or contractual services that are under proposal, the employee will propose by the terms of the statement and will notify the employer of any conviction of, or plea of guilty or nolo contender to, any violation of Chapter 893, Florida Statutes, or of any controlled substance law of the United States or any state, for a violation occurring in the workplace no later than five (5) days after such conviction.

5. Impose a sanction on, or require the satisfactory participation in a drug abuse assistance or rehabilitation program if such is available in the employee's community, by any employee who is so convicted.

6. Make a good faith effort to continue to maintain a drug-free workplace through implementation of the matters set forth above.

As the person authorized to sign the statement, I certify that this firm complies fully with the above requirements.

Name: Lads Construction Services LLC - Jeffrey Lademann

Signature: Jeffrey Lademann

Date: 01/11/2025

Title: President

END OF ATTACHMENT I

ATTACHMENT J CONFLICT OF INTEREST STATEMENT
SECTION 00 11 53
REQUEST FOR QUALIFICATION FORMS

Before me, the undersigned authority, personally appeared Jeffrey Lademann, who was duly sworn, deposes, and states:

1. I am the President of Lads Construction Services LLC with a local office in Flagler Beach, FL and principal office in Flagler Beach, FL.
2. The above-named entity is submitting an Expression of Interest for the City of Flagler Beach project described as bid number NO: FB-250102.
3. The Affiant has made diligent inquiry and provides the information contained in this Affidavit based upon his own knowledge.
4. The Affiant states that only one submittal for the above project is being submitted and that the above-named entity has no financial interest in other entities submitting proposals for the same project.
5. Neither the Affiant nor the above-named entity has directly or indirectly entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive pricing in connection with the entity's submittal for the above project. This statement restricts the discussion of pricing data until the completion of negotiations and execution of the Agreement for this project.
6. Neither the entity nor its affiliates, nor any one associated with them, is presently suspended or otherwise ineligible from participating in contract lettings by any local, state, or federal agency.
7. Neither the entity, nor its affiliates, nor any one associated with them have any potential conflict of interest due to any other clients, contracts, or property interests for this project.
8. I certify that no member of the entity's ownership, management, or staff has a vested interest in any aspect of or Department of the City of Flagler Beach.
9. I certify that no member of the entity's ownership or management is presently applying for an employee position or actively seeking an elected position with City of Flagler Beach.
10. In the event that a conflict of interest is identified in the provision of services, I, on behalf of the above-named entity, will immediately notify the City of Flagler Beach in writing.

Jeffrey Lademann
Signature of Affiant

ACKNOWLEDGEMENT

STATE OF FLORIDA
COUNTY OF Flagler

Sworn to (or affirmed) and subscribed before me by means of

online notarization ☐ *OR* physical presence ☒

this 11 day of January, 2025

Personally Known ☒ *OR* Produced identification ☐

Type of Identification Produced: _____

Jennifer S. Bennett
Signature of Notary Public
Print, Type or Stamp Commissioned Name of Notary Public below:

JENNIFER S. BENNETT
MY COMMISSION EXPIRES
NOVEMBER 9, 2025
#HH 196833
Bonded thru
Troy Fain Insurance
NOTARY PUBLIC, STATE OF FLORIDA

END OF ATTACHMENT J

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ATTACHMENT K
COMPLIANCE WITH THE PUBLIC RECORDS LAW

SECTION 00 11 53
REQUEST FOR QUALIFICATION FORMS

Upon award recommendation or thirty (30) days after receiving submittals, they become "public records" and shall be subject to public disclosure consistent with Chapter 119, Florida Statutes. Proposers must invoke the exemptions to disclosure provided by law in the response to the solicitation, and must identify the data or other materials to be protected, and must state the reasons why such exclusion from public disclosure is necessary.

If the company submits information exempt from public disclosure, the company must identify with specificity which pages/paragraphs of their bid/proposal package are exempt from the Public Records Act, identifying the specific exemption section that applies to each. The protected information must be submitted to the City of Flagler Beach in a separate envelope marked accordingly.

Company Name: Lads Construction Services LLC

Authorized representative Printed Name: Jeffrey Lademann

Authorized Representative Signature: Jeffrey Lademann

Date: 01/11/2025

END OF ATTACHMENT K

ATTACHMENT L
AMERICANS WITH DISABILITIES ACT AFFIDAVIT
SECTION 00 11 53
REQUEST FOR QUALIFICATION FORMS

The undersigned CONTRACTOR swears that the information herein contained is true and correct and that none of the information supplied was for the purpose of defrauding the CITY.

The CONTRACTOR will not discriminate against any employee or applicant for employment because of physical or mental handicap in regard to any position for which the employee or applicant for employment is qualified. The CONTRACTOR agrees to comply with the rules, regulations and relevant orders issued pursuant to the Americans with Disabilities Act (ADA), 42 USC s. 12101 et seq. It is understood that in no event shall the CITY be held liable for the actions or omissions of the CONTRACTOR or any other party or parties to the Agreement for failure to comply with the ADA. The CONTRACTOR agrees to hold harmless and indemnify the CITY, its agents, officers or employees from any and all claims, demands, debts, liabilities or causes of action of every kind or character, whether in law or equity, resulting from the CONTRACTOR's acts or omissions in connection with the ADA.

Name: Lads Construction Services LLC

Authorized Signature: Jeffrey Lademann

Date: Lads Construction Services LLC

Title: President

Affix Corporate Seal:

ACKNOWLEDGEMENT

STATE OF FLORIDA
COUNTY OF Flagler

Sworn to (or affirmed) and subscribed before me by means of

online notarization ☐ OR physical presence ☒

this 11 day of January, 2025

Personally Known ☒ OR Produced identification ☐

Type of Identification Produced:

Jennifer S. Bennett
Signature of Notary Public
Print, Type or Stamp Commissioned Name of Notary Public below:

JENNIFER S. BENNETT
MY COMMISSION EXPIRES
NOVEMBER 9, 2025
#HH 196833
Bonded thru
Troy Fain Insurance
NOTARY PUBLIC, STATE OF FLORIDA

END OF ATTACHMENT L

ATTACHMENT M
ADDITIONAL PROCUREMENT CLAUSES FOR FEMA-RELATED PROJECTS

REQUEST FOR QUALIFICATION FORMS

TERMINATION FOR CAUSE AND CONVENIENCE

1. Contractor shall be considered in material default of the Agreement and such default shall be considered cause for the City to terminate the Agreement, in whole or in part, as further set forth in this Section 17, if Contractor: (i) fails to begin the Work under the Contract Documents within the time specified herein; (ii) fails to properly and timely perform the Work as directed by the City or as provided for in the approved Progress Schedule; (iii) performs the Work unsuitably or neglects or refuses to remove materials or to correct or replace such Work as may be rejected as unacceptable or unsuitable; (iv) discontinues the prosecution of the Work; (v) fails to resume Work which has been suspended within a reasonable time after being notified to resume Work; (vi) becomes insolvent or is declared bankrupt, or commits any act of bankruptcy; (vii) allows any final judgment to stand against it unsatisfied for more than ten (10) days; (viii) makes an assignment for the benefit of creditors; (ix) fails to obey any applicable codes, laws, ordinances, rules or regulations with respect to the Work; and/or (x) materially breaches any other provision of the Contract Documents.

2. City shall notify Contractor in writing of Contractor's default(s). If the City determines that Contractor has not remedied and cured the default(s) within seven (7) calendar days following receipt by Contractor of said written notice, then the City, at its option, without releasing or waiving its rights and remedies against the Contractor's sureties and without prejudice to any other right or remedy it may be entitled to hereunder or by law, may terminate all or any portion of the Work and any materials, tools, equipment, and appliances of Contractor, take assignments of any of Contractor's subcontracts and purchase orders, and complete all or any portion of Contractor's Work by whatever means, method or agency which the City, in its sole discretion, may choose.

3. If the City deems any of the foregoing remedies necessary, Contractor agrees that it shall not be entitled to receive any further payments hereunder until after the Project is completed. All monies expended and all of the costs, losses, damages, and extra expenses, including all management, administrative and other overhead and other direct and indirect expenses (including attorneys' fees) or damages incurred by the City incident to such completion, shall be deducted from the Contract Amount, and if such expenditures exceed the unpaid balance of the Contract Amount, Contractor agrees to pay promptly to City, on demand, the full amount of such excess, including costs of collection, attorneys' fee (including appeals) and interest thereon at the maximum legal rate of interest until paid. If the unpaid balance of the Contract Amount exceeds all such costs, expenditures and damages incurred by the City to complete the Work, such excess shall be paid to the Contractor. The amount to be paid to the Contractor or the City, as the case may be, and this obligation for payment shall survive termination of the Agreement.

4. The liability of Contractor hereunder shall extend to and include the full amount of any and all sums paid, expenses and losses incurred, damages sustained, and obligations assumed by the City in good faith under the belief that such payments or assumptions were necessary or required, in completing the Work and providing labor, materials, equipment, supplies, and other items therefore or re-letting the Work, in settlement, discharge or compromise of any claims, demands, suits and judgments pertaining to or arising out of the Work hereunder.

5. If, after notice of termination of Contractor's right to proceed pursuant to this Section 17, it is determined for any reason that Contractor was not in default, or that its default was excusable, or that the City is not entitled to the remedies against Contractor provided herein, then Contractor's remedies against the City shall be the same as and

limited to those afforded Contractor below under Subsection 18.1, below, regarding termination of the Agreement for convenience.

BUILD AMERICA BUY AMERICA ACT (BABAA)

The Office of Management and Budget (OMB) has revised its guidance in Title 2 of the Code of Federal Regulations (2 CFR) to add a new part 184 and revise 2 CFR § 200.322. The new part 184 provides guidance to federal agencies on how to apply the domestic content procurement preference as set forth in the Build America, Buy America Act (BABAA) to federal financial assistance for infrastructure projects.

The revised provision in 2 CFR § 200.322 specifies that federal agencies providing federal financial assistance for infrastructure projects must implement the BABAA requirements set forth in 2 CFR part 184. This link's URL is https://www.ecfr.gov/current/title-2/subtitle-A/chapter-I/part-184.

DEBARMENT AND SUSPENSION

1. The City shall have the right to terminate the Agreement without cause upon seven (7) calendar days written notice to Contractor. In the event of such termination for convenience, Contractor's recovery against City shall be limited to (i) that portion of the Contract Amount earned through the date of termination; (ii) any retainage withheld up to the date of termination, and (iii) actual out-of-pocket costs arising directly and solely from termination of this Agreement not to exceed under any circumstance five percent (5%) of that portion of the Contract Amount earned through the date of termination. Contractor shall not be entitled to any other or further recovery against the City, including, but not limited to, damages or any anticipated profit on portions of the Work not performed.

2. The City shall have the right to suspend all or any portions of the Work upon giving Contractor two (2) calendar days' prior written notice of such suspension. If all or any portion of the Work is so suspended, Contractor's sole and exclusive remedy shall be to seek an extension of time to its schedule in accordance with the procedures set forth in the Contract Documents. In no event shall the Contractor be entitled to any additional compensation or damages. Provided, however, if the ordered suspension exceeds three (3) months, the Contractor shall have the right to terminate the Agreement with respect to that portion of the Work which is subject to the ordered suspension.

BYRD ANTI-LOBBYING AMENDMENT

Contractors who apply or bid for an award of more than $100,000 shall file the required certification. Each tier certifies to the tier above that it will not and has not used federally appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, officer or employee of Congress, or an employee of a Member of Congress in connection with obtaining any federal contract, grant, or any other award covered by 31 U.S.C. § 1352. Each tier shall also disclose any lobbying with non-federal funds that takes place in connection with obtaining any federal award. Such disclosures are forwarded from tier to tier up to the recipient who in turn will forward the certification(s) to the federal awarding agency."

DAVIS-BACON ACT

As amended (40 U.S.C. 3141-3148). When required by Federal program legislation, all prime construction contracts in excess of $2,000 awarded by non-Federal entities must include a provision for compliance with the Davis-Bacon Act (40 U.S.C. 3141-3144, and 3146-3148) as supplemented by Department of Labor regulations (29 CFR Part 5, "Labor Standards Provisions Applicable to Contracts Covering Federally Financed and Assisted Construction"). In accordance with the statute, contractors must be required to pay wages to laborers and mechanics at a rate not less than the prevailing wages specified in a wage determination made by the Secretary of Labor. In addition, contractors must be required to pay wages not less than once a week. The non-Federal entity must place a copy of the current prevailing wage determination issued by the Department of Labor in each solicitation. The decision to award a contract or subcontract must be conditioned upon the acceptance of the wage determination. The non-Federal entity must report all suspected or reported violations to the Federal awarding agency. The contracts must also include a provision for compliance with the Copeland "Anti-Kickback" Act (40 U.S.C. 3145), as supplemented by Department of Labor regulations (29 CFR Part 3, "Contractors and Subcontractors on Public Building or Public Work Financed in Whole or in Part by Loans or Grants from the United States"). The Act provides that each contractor or sub recipient must be prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public work, to give up any part of the compensation to which he or she is otherwise entitled. The non-Federal entity must report all suspected or reported violations to the Federal awarding agency.

CERTIFICATION

The undersigned certifies, to the best of his or her knowledge and belief, that:
No federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any federal contract, the making of any federal grant, the making of any federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any federal contract, grant, loan, or cooperative agreement.

If any funds other than federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, Title 31, U.S.C. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure."

"The Contractor, CPH, LLC, certifies or affirms the truthfulness and accuracy of each statement of its certification and disclosure, if any. In addition, the Contractor understands and agrees that the provisions of 31 U.S.C. Chap. 38, Administrative Remedies for False Claims and Statements, apply to this certification and disclosure, if any.

Prohibition on Contracting for Covered Telecommunications Equipment or Services

(a) *Definitions.* As used in this clause, the terms backhaul; covered foreign country; covered telecommunications equipment or services; interconnection arrangements; roaming; substantial or essential component; and telecommunications equipment or services have the meaning as defined in FEMA Policy 405-143-1, Prohibitions on Expending FEMA Award Funds for Covered Telecommunications Equipment or Services (Interim), as used in this clause—

(b) *Prohibitions.*

(1) Section 889(b) of the John S. McCain National Defense Authorization Act for Fiscal Year 2019, Pub. L. No. 115-232, and 2 C.F.R. § 200.216 prohibit the head of an executive agency on or after Aug.13, 2020, from obligating or expending grant, cooperative agreement, loan, or loan guarantee funds on certain telecommunications products or from certain entities for national security reasons.

(2) Unless an exception in paragraph (c) of this clause applies, the contractor and its subcontractors may not use grant, cooperative agreement, loan, or loan guarantee funds from the Federal Emergency Management Agency to:

(i) Procure or obtain any equipment, system, or service that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology of any system;

(ii) Enter into, extend, or renew a contract to procure or obtain any equipment, system, or service that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology of any system;

(iii) Enter into, extend, or renew contracts with entities that use covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system; or

(iv) Provide, as part of its performance of this contract, subcontract, or other contractual instrument, any equipment, system, or service that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system.

(c) *Exceptions.*

(1) This clause does not prohibit contractors from providing—

(i) A service that connects to the facilities of a third-party, such as backhaul, roaming, or interconnection arrangements; or

(ii) Telecommunications equipment that cannot route or redirect user data traffic or permit visibility into any user data or packets that such equipment transmits or otherwise handles.

(2) By necessary implication and regulation, the prohibitions also do not apply to:
(i) Covered telecommunications equipment or services that: i. Are *not used* as a substantial or essential component of any system; *and*

(ii). Are *not used* as critical technology of any system.

(Iii) Other telecommunications equipment or services that are not considered covered telecommunications equipment or services.

(d) *Reporting requirement.*

(1) In the event the contractor identifies covered telecommunications equipment or services used as a substantial or essential component of any system, or as critical technology as part of any system, during contract performance, or the contractor is notified of such by a subcontractor at any tier or by any other source, the contractor shall report the information in paragraph (d)(2) of this clause to the recipient or subrecipient, unless elsewhere in this contract are established procedures for reporting the information.

(2) The Contractor shall report the following information pursuant to paragraph (d)(1) of this clause: (i) Within one business day from the date of such identification or notification: The contract number; the order number(s), if applicable; supplier name; supplier unique entity identifier (if known); supplier Commercial and Government Entity (CAGE) code (if known); brand; model number (original equipment manufacturer number, manufacturer part number, or wholesaler number); item description; and any readily available information about mitigation actions undertaken or recommended.

(ii) Within 10 business days of submitting the information in paragraph (d)(2)(i) of this clause: Any further available information about mitigation actions undertaken or recommended. In addition, the contractor shall describe the efforts it undertook to prevent use or submission of covered telecommunications equipment or services, and any additional efforts that will be incorporated to prevent future use or submission of covered telecommunications equipment or services.

(e) *Subcontracts.*
The Contractor shall insert the substance of this clause, including this paragraph (e), in all subcontracts and other contractual instruments."

Domestic Preferences for Procurements

As appropriate, and to the extent consistent with law, the contractor should, to the greatest extent practicable, provide a preference for the purchase, acquisition, or use of goods, products, or materials produced in the United States. This includes, but is not limited to iron, aluminum, steel, cement, and other manufactured products.

For purposes of this clause:
Produced in the United States means, for iron and steel products, that all manufacturing processes, from the initial melting stage through the application of coatings, occurred in the United States.

Manufactured products mean items and construction materials composed in whole or in part of non-ferrous metals such as aluminum; plastics and polymer-based products such as polyvinyl chloride pipe; aggregates such as concrete; glass, including optical fiber; and lumber."
Copyright and Data Rights

The Contractor grants to the City of Flagler Beach, a paid-up, royalty-free, nonexclusive, irrevocable, worldwide license in data first produced in the performance of this contract to reproduce, publish, or otherwise use, including prepare derivative works, distribute copies to the public, and perform publicly and display publicly such data. For data required by the contract but not first produced in the performance of this contract, the Contractor will identify such data and grant to the City of Flagler Beach or acquires on its behalf a license of the same scope as for data first produced in the performance of this contract. Data, as used herein, shall include any work subject to copyright under 17 U.S.C. § 102, for example, any written reports or literary works, software and/or source code, music, choreography, pictures or images, graphics, sculptures, videos, motion pictures or other audiovisual works, sound and/or video recordings, and architectural works. Upon or before the completion of this contract, the Contractor will deliver to the City of Flagler Beach data first produced in the performance of this contract and data required by the contract but not first produced in the performance of this contract in formats acceptable by the City of Flagler Beach.

END OF ATTACHMENT M

REQUEST FOR QUALIFICATION FORMS

ATTACHMENT N
LIST OF PROPOSED SUBCONTRACTORS/SUPPLIERS

All subcontractors and major materials suppliers are subject to approval of Owner. In the table below, list all subcontractors and manufacturers of materials and/or equipment that are proposed to be utilized by the Contractor in the performance of this work. Use additional sheets as necessary.

Company Name	Description	Contact Name, Phone, and Email
WKL Roofing	Roofing Company	Will Miller, (386)-846-8765 will.miller@wklroofing.com
S&G Drywall	Drywall Company	Sammy Guevara, (386)-479-7120 Samguevara22@gmail.com
Lads Construction Services LLC	CGC- In house employees will handle swing door, framing / paiting / flooring, trim work etc	Jeffrey Lademann, (386)-793-4342 Jeffrey@ladsconstructionllc.com
Cains Electric	Commercial Electrical Company	Shaunh Haffner (386)-562-7837 Shaunh@cainselectric.com

END OF ATTACHMENT N

SECTION 00 11 53

REQUEST FOR QUALIFICATION FORMS

ATTACHMENT O

LIST OF LICENSES and CERTIFICATIONS

License/Cert. Name	Number	Issuing Authority	Expiration Date
WKL ROOFING	CCC1327557	Caton-Hosey Insurance 3731 Nova Rd.	01/01/2026
S&G Drywall	FC:26746	East Florida Insurance LLC	05/13/25
Lads Construction Services LLC	CGC:1528439	Hayward Brown - Flagler, Inc. 3200 E. Moody Blvd. P.O. Box 1669 Bunnell FL	01/27/2026
Cains Electric	EC13003801	Foundation Risk Partners, Corp. dba Foundation Risk Partners of Florida 780 W Granada Blvd Ormond Beach FL 32174	01/01/2026

END OF ATTACHMENT O

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ARTICLE 1 – DEFINED TERMS

1.01 Terms used in these Instructions to Bidders have the meanings indicated in the General Conditions and Supplementary Conditions. Additional terms used in these Instructions to Bidders have the meanings indicated below:

A. *Issuing Office* – The office from which the Bidding Documents are to be issued.

NOTE(S) TO USER:

1. *In addition to terms specifically defined, terms with initial capital letters in the Bidding Requirements include references to identified articles and paragraphs, and the titles of other documents or forms.*
2. *Additional defined terms applicable to the Bidding Requirements should be included here and should be used uniformly throughout the Bidding Requirements with initial capitals. Additional defined terms applicable to the Contract Documents should be included in the Supplementary Conditions. Note the difference in the meanings of the terms "Bidding Requirements" and "Bidding Documents," as defined in the General Conditions, Paragraph 1.01.A.*
3. *It is strongly recommended that the Issuing Office be identified in the invitation to bid or advertisement. See EJCDC® C-111, Suggested Advertisement for Bids for Construction Contracts. If not, it should be identified in these Instructions.*

ARTICLE 2 – COPIES OF BIDDING DOCUMENTS

2.01 Complete sets of the Bidding Documents may be obtained from the Issuing Office as stated in the advertisement or invitation to bid.

2.02 Complete sets of Bidding Documents shall be used in preparing Bids; neither Owner nor Engineer assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.

2.03 Owner and Engineer, in making copies of Bidding Documents available on the above terms, do so only for the purpose of obtaining Bids for the Work and do not authorize or confer a license for any other use.

ARTICLE 3 – QUALIFICATIONS OF BIDDERS

3.01 To demonstrate Bidder's qualifications to perform the Work, Bidder shall submit all qualification forms listed below which are included in the bid documents:

A. Attachment A - Certificate of Corporation

B. Attachment B – Contractor Questionnaire

C. Attachment C - Required Disclosure

D. Attachment D - Bidder Information

E. Attachment E - Experience of Bidder

F. Attachment F – Sworn Statement Under Section 287.133(3) (A), Florida Statutes, on Public Entity Crimes

G. Attachment G - Affidavit of Non-Collusion

H. Attachment H - Certification of Non-Segregated Facilities

I. Attachment I - Drug-Free Workplace

J. Attachment J - Conflict of Interest Statement

K. Attachment K - Compliance with Public Records Law

L. Attachment L - Americans with Disabilities Act Affidavit

M. Attachment M - List of Licenses and Certifications

N. Attachment N - List of Proposed Subcontractors/Suppliers

O. Attachment O - List of Proposed Equipment

3.02 A Bidder's failure to submit required qualification information shall disqualify Bidder from receiving an award of the Contract.

3.03 No requirement in this Article 3 to submit information will prejudice the right of Owner to seek additional pertinent information regarding Bidder's qualifications.

3.04 Bidder is advised to carefully review those portions of the Bid Form requiring Bidder's representations and certifications.

ARTICLE 4 – SITE AND OTHER AREAS; EXISTING SITE CONDITIONS; EXAMINATION OF SITE; OWNER'S SAFETY PROGRAM; OTHER WORK AT THE SITE

4.01 *Site and Other Areas*

A. The Site is identified in the Bidding Documents. By definition, the Site includes rights-of-way, easements, and other lands furnished by Owner for the use of the Contractor. Any additional lands required for temporary construction facilities, construction equipment, or storage of materials and equipment, and any access needed for such additional lands, are to be obtained and paid for by Contractor.

4.02 *Existing Site Conditions*

A. Subsurface and Physical Conditions; Hazardous Environmental Conditions

1. The Supplementary Conditions identify:

a. those reports known to Owner of explorations and tests of subsurface conditions at or adjacent to the Site.

b. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities).

c. reports and drawings known to Owner relating to Hazardous Environmental

Conditions that have been identified at or adjacent to the Site.

d. Technical Data contained in such reports and drawings.

2. The Technical Data contained therein upon whose accuracy Bidder is entitled to rely, as provided in the General Conditions, has been identified and established in the Supplementary Conditions. Bidder is responsible for any interpretation or conclusion Bidder draws from any Technical Data or any other data, interpretations, opinions, or information contained in such reports or shown or indicated in such drawings. If the Supplementary Conditions do not identify Technical Data, the default definition Technical Data set forth in Article 1 of the General Conditions will apply.

3. Geotechnical Baseline Report: The Bidding Documents contain a Geotechnical Baseline Report (GBR). The GBR describes certain select subsurface conditions that are anticipated to be encountered by Contractor during construction in specified locations ("Baseline Conditions"). The GBR is a Contract Document.

   The Baseline Conditions in the GBR are intended to reduce uncertainty and the degree of contingency in submitted Bids. However, Bidders cannot rely solely on the Baseline Conditions. Bids should be based on a comprehensive approach that includes an independent review and analysis of the GBR, all other Contract Documents, Technical Data, other available information, and observable surface conditions. Not all potential subsurface conditions are baselined.

   Nothing in the GBR is intended to relieve Bidders of the responsibility to make their own determinations regarding construction costs, bidding strategies, and Bid prices, nor of the responsibility to select and be responsible for the means, methods, techniques, sequences, and procedures of construction, and for safety precautions and programs incident thereto.

B. Underground Facilities: Information and data shown or indicated in the Bidding Documents with respect to existing Underground Facilities at or adjacent to the Site are set forth in the Contract Documents and are based upon information and data furnished to Owner and Engineer by owners of such Underground Facilities, including Owner, or others.

C. Adequacy of Data: Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to subsurface conditions, other physical conditions, and Underground Facilities, and possible changes in the Bidding Documents due to differing or unanticipated subsurface or physical conditions appear in Paragraphs 5.03, 5.04, and 5.05 of the General Conditions. Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to a Hazardous Environmental Condition at the Site, if any, and possible changes in the Contract Documents due to any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work, appear in Paragraph 5.06 of the General Conditions.

4.03 *Site Visit and Testing by Bidders*

A. Bidder shall conduct the required Site visit during normal working hours, and shall not disturb any ongoing operations at the Site.

B. Bidder is not required to conduct any subsurface testing, or exhaustive investigations of Site conditions.

C. On request, and to the extent Owner has control over the Site, and schedule permitting, the Owner will provide Bidder access to the Site to conduct such additional examinations, investigations, explorations, tests, and studies as Bidder deems necessary for preparing and submitting a successful Bid. Owner will not have any obligation to grant such access if doing so is not practical because of existing operations, security or safety concerns, or restraints on Owner's authority regarding the Site.

D. Bidder shall comply with all applicable Laws and Regulations regarding excavation and location of utilities, obtain all permits, and comply with all terms and conditions established by Owner or by property owners or other entities controlling the Site with respect to schedule, access, existing operations, security, liability insurance, and applicable safety programs.

E. Bidder shall fill all holes and clean up and restore the Site to its former condition upon completion of such explorations, investigations, tests, and studies.

4.04 *Owner's Safety Program*

A. Site visits and work at the Site may be governed by an Owner safety program. As the General Conditions indicate, if an Owner safety program exists, it will be noted in the Supplementary Conditions.

4.05 *Other Work at the Site*

A. Reference is made to Article 8 of the Supplementary Conditions for the identification of the general nature of other work of which Owner is aware (if any) that is to be performed at the Site by Owner or others (such as utilities and other prime contractors) and relates to the Work contemplated by these Bidding Documents. If Owner is party to a written contract for such other work, then on request, Owner will provide to each Bidder access to examine such contracts (other than portions thereof related to price and other confidential matters), if any.

ARTICLE 5 – BIDDER'S REPRESENTATIONS

5.01 It is the responsibility of each Bidder before submitting a Bid to:

A. examine and carefully study the Bidding Documents, and any data and reference items identified in the Bidding Documents;

B. visit the Site, conduct a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfy itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work;

C. become familiar with and satisfy itself as to all Laws and Regulations that may affect cost, progress, and performance of the Work;

D. carefully study all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions,

especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings;

E. consider the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and the Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder; and (3) Bidder's safety precautions and programs;

agree, based on the information and observations referred to in the preceding paragraph, that at the time of submitting its Bid no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of its Bid for performance of the Work athe price bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents;

F. become aware of the general nature of the work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents;

G. promptly give Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder discovers in the Bidding Documents and confirm that the written resolution thereof by Engineer is acceptable to Bidder;

H. determine that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work; and

I. agree that the submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

ARTICLE 6 – PRE-BID CONFERENCE

6.01 There will be a **Mandatory** Pre-Bid Meeting on **Thursday January 9, 2025** at 10:00 am eastern standard time. Meeting to be held at Flagler Beach Library located at:

315 7th Street South
Flagler Beach, FL 32136

ARTICLE 7 – INTERPRETATIONS AND ADDENDA

7.01 All questions about the meaning or intent of the Bidding Documents are to be submitted to the City Clerk's office in writing (via email):

Penny Overstreet

Email: poverstreet@cityofflaglerbeach.com

Interpretations or clarifications considered necessary in response to such questions will be issued by Addenda delivered to all parties recorded as having received the Bidding Documents. The last day to submit questions is **Thursday January 4, 2024**. Questions received after that date and time may not be answered. Only questions answered by Addenda will be binding. Oral, emailed and other interpretations or clarifications will be without legal effect.

7.02 Addenda may be issued to clarify, correct, supplement, or change the Bidding Documents.

ARTICLE 8 – BID SECURITY

8.01 A Bid must be accompanied by Bid security made payable to Owner in an amount of five (5) percent of Bidder's maximum Bid price (determined by adding the base bid and all alternates) and in the form of a certified check, bank money order, or a Bid bond (on the form included in the Bidding Documents) issued by a surety meeting the requirements of Paragraphs 6.01 and 6.02 of the General Conditions.

8.02 The Bid security of the apparent Successful Bidder will be retained until Owner awards the contract to such Bidder, and such Bidder has executed the Contract Documents, furnished the required

contract security, and met the other conditions of the Notice of Award, whereupon the Bid security will be released. If the Successful Bidder fails to execute and deliver the Contract Documents and furnish the required contract security within 15 days after the Notice of Award, Owner may consider Bidder to be in default, annul the Notice of Award, and the Bid security of that Bidder will be forfeited. Such forfeiture shall be Owner's exclusive remedy if Bidder defaults.

8.03 The Bid security of other Bidders that Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earlier of seven days after the Effective Date of the Contract or 61 days after the Bid opening, whereupon Bid security furnished by such Bidders will be released.

8.04 Bid security of other Bidders that Owner believes do not have a reasonable chance of receiving the award will be released within seven days after the Bid opening.

ARTICLE 9 – CONTRACT TIMES

9.01 The number of days within which, or the dates by which the Work is to be substantially completed, and completed and ready for final payment, are set forth in the Agreement.

ARTICLE 10 – LIQUIDATED DAMAGES

10.01 Provisions for liquidated damages, if any, for failure to timely attain a Milestone, Substantial Completion, or completion of the Work in readiness for final payment, are set forth in the Agreement.

ARTICLE 11 – SUBSTITUTE AND "OR-EQUAL" ITEMS

11.01 The Contract for the Work, as awarded, will be on the basis of materials and equipment specified

or described in the Bidding Documents without consideration during the bidding and Contract award process of possible substitute or "or-equal" items. In cases in which the Contract allows the Contractor to request that Engineer authorize the use of a substitute or "or-equal" item of material or equipment, application for such acceptance may not be made to and will not be considered by Engineer until after the Effective Date of the Contract.

11.02 All prices that Bidder sets forth in its Bid shall be based on the presumption that the Contractor will furnish the materials and equipment specified or described in the Bidding Documents, as supplemented by Addenda. Any assumptions regarding the possibility of post-Bid approvals of "or- equal" or substitution requests are made at Bidder's sole risk.

ARTICLE 12 – SUBCONTRACTORS, SUPPLIERS, AND OTHERS

12.01 A Bidder shall be prepared to retain specific Subcontractors, Suppliers, or other individuals or entities for the performance of the Work if required by the Bidding Documents (most commonly in the Specifications) to do so. If a prospective Bidder objects to retaining any such Subcontractor, Supplier, or other individual or entity, and the concern is not relieved by an Addendum, then the prospective Bidder should refrain from submitting a Bid.

12.02 Subsequent to the submittal of the Bid, Owner may not require the Successful Bidder or Contractor to retain any Subcontractor, Supplier, or other individual or entity against which Contractor has reasonable objection.

12.03 The apparent Successful Bidder, and any other Bidder so requested, shall within five days after Bid opening, submit to Owner a list of the Subcontractors or Suppliers proposed. If requested by Owner, such list shall be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor, Supplier, or other individual or entity. If Owner or Engineer, after due investigation, has reasonable objection to any proposed Subcontractor, Supplier, individual, or entity, Owner may, before the Notice of Award is given, request apparent Successful Bidder to submit an acceptable substitute, in which case apparent Successful Bidder shall submit a substitute, Bidder's Bid price will be increased (or decreased) by the difference in cost occasioned by such substitution, and Owner may consider such price adjustment in evaluating Bids and making the Contract award.

12.04 If apparent Successful Bidder declines to make any such substitution, Owner may award the Contract to the next lowest Bidder that proposes to use acceptable Subcontractors, Suppliers, or other individuals or entities. Declining to make requested substitutions will constitute grounds for forfeiture of the Bid security of any Bidder. Any Subcontractor, Supplier, individual, or entity so listed and against which Owner or Engineer makes no written objection prior to the giving of the Notice of Award will be deemed acceptable to Owner and Engineer subject to subsequent revocation of such acceptance as provided in Paragraph 7.06 of the General Conditions.

ARTICLE 13 – PREPARATION OF BID

13.01 The Bid Form is included with the Bidding Documents.

A. All blanks on the Bid Form shall be completed in ink and the Bid Form signed in ink. Erasures or alterations shall be initialed in ink by the person signing the Bid Form. A Bid price shall be indicated for each section, Bid item, alternate, adjustment unit price item, and unit price item listed therein.

B. If the Bid Form expressly indicates that submitting pricing on a specific alternate item is optional, and Bidder elects to not furnish pricing for such optional alternate item, then Bidder may enter the words "No Bid" or "Not Applicable."

13.02 A Bid by a corporation shall be executed in the corporate name by a corporate officer (whose title must appear under the signature), accompanied by evidence of authority to sign. The corporate address and state of incorporation shall be shown.

13.03 A Bid by a partnership shall be executed in the partnership name and signed by a partner (whose title must appear under the signature), accompanied by evidence of authority to sign. The partnership's address for receiving notices shall be shown.

13.04 A Bid by a limited liability company shall be executed in the name of the firm by a member or other authorized person and accompanied by evidence of authority to sign. The state of formation of the firm and the firm's address for receiving notices shall be shown.

13.05 A Bid by an individual shall show the Bidder's name and address for receiving notices.

13.06 A Bid by a joint venture shall be executed by an authorized representative of each joint venturer in the manner indicated on the Bid Form. The joint venture's address for receiving notices shall be shown.

13.07 All names shall be printed in ink below the signatures.

13.08 The Bid shall contain an acknowledgment of receipt of all Addenda, the numbers of which shall be filled in on the Bid Form.

13.09 Postal and e-mail addresses and telephone number for communications regarding the Bid shall be shown.

13.10 The Bid shall contain evidence of Bidder's authority and qualification to do business in the state where the Project is located, or Bidder shall covenant in writing to obtain such authority and qualification prior to award of the Contract and attach such covenant to the Bid. Bidder's state contractor license number, if any, shall also be shown on the Bid Form.

ARTICLE 14 – BASIS OF BID

14.01 *Lump Sum*

A. Bidders shall submit a Bid on a lump sum Basis for both the Base Bid and Alternate #1.

14.02 *Unit Price (if used)*

A. Bidders shall submit a Bid on a unit price basis for each item of Work listed in the unit price section of the Bid Form.

B. The "Bid Price" (sometimes referred to as the extended price) for each unit price Bid item will be the product of the "Estimated Quantity" (which Owner or its representative has set forth in the Bid Form) for the item and the corresponding "Bid Unit Price" offered by the Bidder. The total of all unit price Bid items will be the sum of these "Bid Prices"; such total will be used by Owner for Bid comparison purposes. The final quantities and Contract Price will be determined in accordance with Paragraph 13.03 of the General Conditions.

C. Discrepancies between the multiplication of units of Work and unit prices will be resolved in

favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.

ARTICLE 15 – SUBMITTAL OF BID

15.01 A Bid shall be received no later than the date and time prescribed and at the place indicated in the advertisement or invitation to bid and shall be enclosed in a plainly marked package with the Project title (and, if applicable, the designated portion of the Project for which the Bid is submitted), the name and address of Bidder, and shall be accompanied by the Bid security and other required documents. If a Bid is sent by mail or other delivery system, the sealed envelope containing the Bid shall be enclosed in a separate package plainly marked on the outside with the notation "BID ENCLOSED."

15.02 Bids received after the date and time prescribed for the opening of bids, or not submitted at the correct location or in the designated manner, will not be accepted and will be returned to the Bidder unopened.

15.03 A Bid shall be received no later than the date and time prescribed and at the place indicated in the advertisement or invitation to bid and shall be enclosed in a plainly marked package with the Project title (and, if applicable, the designated portion of the Project for which the Bid is submitted), the name and address of Bidder, and shall be accompanied by the Bid security and other required documents. If a Bid is sent by mail or other delivery system, the sealed envelope containing the Bid shall be enclosed in a separate package plainly marked on the outside with the notation "BID ENCLOSED."

15.04 Bids received after the date and time prescribed for the opening of bids, or not submitted at the correct location or in the designated manner, will not be accepted and will be returned to the Bidder unopened.

ARTICLE 16 – MODIFICATION AND WITHDRAWAL OF BID

16.01 A Bid may be withdrawn by an appropriate document duly executed in the same manner that a Bid must be executed and delivered to the place where Bids are to be submitted prior to the date and time for the opening of Bids. Upon receipt of such notice, the unopened Bid will be returned to the Bidder

16.02 If a Bidder wishes to modify its Bid prior to Bid opening, Bidder must withdraw its initial Bid in the manner specified in Paragraph 16.01 and submit a new Bid prior to the date and time for the opening of Bids.

16.03 If within 24 hours after Bids are opened any Bidder files a duly signed written notice with Owner and promptly thereafter demonstrates to the reasonable satisfaction of Owner that there was a material and substantial mistake in the preparation of its Bid, that Bidder may withdraw its Bid, and the Bid security will be returned. Thereafter, if the Work is rebid, that Bidder will be disqualified from further bidding on the Work.

ARTICLE 17 – OPENING OF BIDS

17.01 Bids will be opened at the time and place indicated in the advertisement or invitation to bid and, unless obviously non-responsive, read aloud publicly. An abstract of the amounts of the base Bids

and major alternates, if any, will be made available to Bidders after the opening of Bids.

ARTICLE 18 – BIDS TO REMAIN SUBJECT TO ACCEPTANCE

18.01 All Bids will remain subject to acceptance for the period of time stated in the Bid Form, but Owner may, in its sole discretion, release any Bid and return the Bid security (if any) prior to the end of this period.

ARTICLE 19 – EVALUATION OF BIDS AND AWARD OF CONTRACT

19.01 Owner reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. Owner will reject the Bid of any Bidder that Owner finds, after reasonable inquiry and evaluation, to not be responsible. If Bidder purports to add terms or conditions to its Bid, takes exception to any provision of the Bidding Documents, or attempts to alter the contents of the Contract Documents for purposes of the Bid, then the Owner will reject the Bid as nonresponsive; provided that Owner also reserves the right to waive all minor informalities not involving price, time, or changes in the Work.

19.02 If Owner awards the contract for the Work, such award shall be to the responsible Bidder submitting the lowest responsive Bid.

19.03 Evaluation of Bids

A. In evaluating Bids, Owner will consider whether or not the Bids comply with the prescribed requirements, and such alternates, unit prices, and other data, as may be requested in the Bid Form or prior to the Notice of Award.

B. For the determination of the apparent low Bidder when unit price bids are submitted, Bids will be compared on the basis of the total of the products of the estimated quantity of each item and unit price Bid for that item, together with any lump sum items.

19.04 In evaluating whether a Bidder is responsible, Owner will consider the qualifications of the Bidder and may consider the qualifications and experience of Subcontractors and Suppliers proposed for those portions of the Work for which the identity of Subcontractors and Suppliers must be submitted as provided in the Bidding Documents.

19.05 Owner may conduct such investigations as Owner deems necessary to establish the responsibility, qualifications, and financial ability of Bidders and any proposed Subcontractors or Suppliers.

ARTICLE 20 – BONDS AND INSURANCE

20.01 Article 6 of the General Conditions, as may be modified by the Supplementary Conditions, sets forth Owner's requirements as to performance and payment bonds and insurance. When the Successful Bidder delivers the Agreement (executed by Successful Bidder) to Owner, it shall be accompanied by required bonds and insurance documentation.

ARTICLE 21 – SIGNING OF AGREEMENT

21.01 When Owner issues a Notice of Award to the Successful Bidder, it shall be accompanied by the unexecuted counterparts of the Agreement along with the other Contract Documents as identified in the Agreement. Within 15 days thereafter, Successful Bidder shall execute and deliver the required number of counterparts of the Agreement (and any bonds and insurance documentation required to be delivered by the Contract Documents) to Owner. Within ten days thereafter, Owner shall deliver one fully executed counterpart of the Agreement to Successful Bidder, together with printed and electronic copies of the Contract Documents as stated in Paragraph 2.02 of the General Conditions.

ARTICLE 22 – ALIEN WORKERS

22.01 The City of Flagler Beach does not award publicly funded Contracts to those who knowingly employ unauthorized alien workers in violation of section 274A of the Immigration and Naturalization Act. 8 United States Code §132a. Such employment deprives legal workers of job opportunities. Violation of section 274A shall be grounds for unilateral cancellation of the Contract, Agreement, Bid or Quote for purchase of services and goods by the City of Flagler Beach.

ARTICLE 23 – E-VERIFY

23.01 The Contractor shall utilize the U.S. Department of Homeland Security's E-Verify system, in accordance with the terms governing use of the system, to confirm the employment eligibility of all persons employed by the Contractor during the term of the Contract to perform employment duties within Florida and all persons, including subcontractors, assigned by the Contractor to perform work pursuant to the Contract with the Department.

END OF SECTION

SECTION 00 22 13
STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

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ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

A. Wherever used in the Bidding Requirements or Contract Documents, a term printed with initial capital letters, including the term's singular and plural forms, will have the meaning indicated in the definitions below. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.

1. *Addenda*—Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.

2. *Agreement*—The written instrument, executed by Owner and Contractor, that sets forth the Contract Price and Contract Times, identifies the parties and the Engineer, and designates the specific items that are Contract Documents.

3. *Application for Payment*—The form acceptable to Engineer which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.

4. *Bid*—The offer of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

5. *Bidder*—An individual or entity that submits a Bid to Owner.

6. *Bidding Documents*—The Bidding Requirements, the proposed Contract Documents, and all Addenda.

7. *Bidding Requirements*—The advertisement or invitation to bid, Instructions to Bidders, Bid Bond or other Bid security, if any, the Bid Form, and the Bid with any attachments.

8. *Change Order*—A document which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, or other revision to the Contract, issued on or after the Effective Date of the Contract.

9. *Change Proposal*—A written request by Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment in Contract Price or Contract Times, or both; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; challenging a set-off against payments due; or seeking other relief with respect to the terms of the Contract.

10. *Claim*—(a) A demand or assertion by Owner directly to Contractor, duly submitted in compliance with the procedural requirements set forth herein: seeking an adjustment of Contract Price or Contract Times, or both; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; contesting Engineer's decision regarding a Change Proposal; seeking resolution of a contractual issue that Engineer has declined to

11. address; or seeking other relief with respect to the terms of the Contract; or (b) a demand or assertion by Contractor directly to Owner, duly submitted in compliance with the procedural requirements set forth herein, contesting Engineer's decision regarding a Change Proposal; or seeking resolution of a contractual issue that Engineer has declined to address. A demand for money or services by a third party is not a Claim.

12. *Constituent of Concern*—Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to (a) the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. §§9601 et seq. ("CERCLA"); (b) the Hazardous Materials Transportation Act, 49 U.S.C. §§5101 et seq.; (c) the Resource Conservation and Recovery Act, 42 U.S.C. §§6901 et seq. ("RCRA"); (d) the Toxic Substances Control Act, 15 U.S.C. §§2601 et seq.; (e) the Clean Water Act, 33 U.S.C. §§1251 et seq.; (f) the Clean Air Act, 42 U.S.C. §§7401 et seq.; or (g) any other federal, state, or local statute, law, rule, regulation, ordinance, resolution, code, order, or decree regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.

13. *Contract*—The entire and integrated written contract between the Owner and Contractor concerning the Work.

14. *Contract Documents*—Those items so designated in the Agreement, and which together comprise the Contract.

15. *Contract Price*—The money that Owner has agreed to pay Contractor for completion of the Work in accordance with the Contract Documents.

16. *Contract Times*—The number of days or the dates by which Contractor shall: (a) achieve Milestones, if any; (b) achieve Substantial Completion; and (c) complete the Work.

17. *Contractor*—The individual or entity with which Owner has contracted for performance of the Work.

18. *Cost of the Work*—See Paragraph 13.01 for definition.

19. *Drawings*—The part of the Contract that graphically shows the scope, extent, and character of the Work to be performed by Contractor.

20. *Effective Date of the Contract*—The date, indicated in the Agreement, on which the Contract becomes effective.

21. *Engineer*—The individual or entity named as such in the Agreement.

22. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but does not change the Contract Price or the Contract Times.

23. *Hazardous Environmental Condition*—The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated in the Work, and that are

controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, does not establish a Hazardous Environmental Condition.

24. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.

25. *Liens*—Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.

26. *Milestone*—A principal event in the performance of the Work that the Contract requires Contractor to achieve by an intermediate completion date or by a time prior to Substantial Completion of all the Work.

27. *Notice of Award*—The written notice by Owner to a Bidder of Owner's acceptance of the Bid.

28. *Notice to Proceed*—A written notice by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work.

29. *Owner*—The individual or entity with which Contractor has contracted regarding the Work, and which has agreed to pay Contractor for the performance of the Work, pursuant to the terms of the Contract.

30. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor's plan to accomplish the Work within the Contract Times.

31. *Project*—The total undertaking to be accomplished for Owner by engineers, contractors, and others, including planning, study, design, construction, testing, commissioning, and start-up, and of which the Work to be performed under the Contract Documents is a part.

32. *Project Manual*—The written documents prepared for, or made available for, procuring and constructing the Work, including but not limited to the Bidding Documents or other construction procurement documents, geotechnical and existing conditions information, the Agreement, bond forms, General Conditions, Supplementary Conditions, and Specifications. The contents of the Project Manual may be bound in one or more volumes.

33. *Resident Project Representative*—The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative or "RPR" includes any assistants or field staff of Resident Project Representative.

34. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and that establish the standards by which such portion of the Work will be judged.

35. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer's review of the submittals and the performance of related construction activities.

36. *Schedule of Values*—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

37. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information that are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work. Shop Drawings, whether approved or not, are not Drawings and are not Contract Documents.

38. *Site*—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements, and such other lands furnished by Owner which are designated for the use of Contractor.

39. *Specifications*—The part of the Contract that consists of written requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable to the Work.

40. *Subcontractor*—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work.

41. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion thereof.

42. *Successful Bidder*—The Bidder whose Bid the Owner accepts, and to which the Owner makes an award of contract, subject to stated conditions.

43. *Supplementary Conditions*—The part of the Contract that amends or supplements these General Conditions.

44. *Supplier*—A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or a Subcontractor.

45. *Technical Data*—Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (a) subsurface conditions at the Site, or physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities) or (b) Hazardous Environmental Conditions at the Site. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then the data contained in boring logs, recorded measurements of subsurface water levels, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical or environmental report prepared for the Project and made available to Contractor are hereby defined as Technical Data with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06.

46. *Underground Facilities*—All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including but not limited to those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, fiber optic transmissions, cable television, water, wastewater, storm

47. water, other liquids or chemicals, or traffic or other control systems.

48. *Unit Price Work*—Work to be paid for on the basis of unit prices.

49. *Work*—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction; furnishing, installing, and incorporating all materials and equipment into such construction; and may include related services such as testing, start-up, and commissioning, all as required by the Contract Documents.

50. *Work Change Directive*—A written directive to Contractor issued on or after the Effective Date of the Contract, signed by Owner and recommended by Engineer, ordering an addition, deletion, or revision in the Work.

1.02 *Terminology*

A. The words and terms discussed in the following paragraphs are not defined but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.

B. *Intent of Certain Terms or Adjectives*:

1. The Contract Documents include the terms "as allowed," "as approved," "as ordered," "as directed" or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives "reasonable," "suitable," "acceptable," "proper," "satisfactory," or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Article 10 or any other provision of the Contract Documents.

C. *Day*:

1. The word "day" means a calendar day of 24 hours measured from midnight to the next midnight.

D. *Defective*:

1. The word "defective," when modifying the word "Work," refers to Work that is unsatisfactory, faulty, or deficient in that it:

a. does not conform to the Contract Documents; or

b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or

c. has been damaged prior to Engineer's recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 15.03 or 15.04).

E. *Furnish, Install, Perform, Provide*:

1. The word "furnish," when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (orsome other specified location) ready for use or installation and in usable or operable condition.

2. The word "install," when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.

3. The words "perform" or "provide," when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.

4. If the Contract Documents establish an obligation of Contractor with respect to specific services, materials, or equipment, but do not expressly use any of the four words "furnish," "install," "perform," or "provide," then Contractor shall furnish and install said services, materials, or equipment complete and ready for intended use.

F. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2 – PRELIMINARY MATTERS

2.01 *Delivery of Bonds and Evidence of Insurance*

A. *Bonds*: When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.

B. *Evidence of Contractor's Insurance*: When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner, with copies to each named insured and additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract), the certificates and other evidence of insurance required to be provided by Contractor in accordance with Article 6.

C. *Evidence of Owner's Insurance*: After receipt of the executed counterparts of the Agreement and all required bonds and insurance documentation, Owner shall promptly deliver to Contractor, with copies to each named insured and additional insured (as identified in the Supplementary Conditions or otherwise), the certificates and other evidence of insurance required to be provided by Owner under Article 6.

2.02 *Copies of Documents*

A. Owner shall furnish to Contractor four printed copies of the Contract (including one fully executed counterpart of the Agreement), and one copy in electronic portable document format (PDF). Additional printed copies will be furnished upon request at the cost of reproduction.

B. Owner shall maintain and safeguard at least one original printed record version of the

C. Contract, including Drawings and Specifications signed and sealed by Engineer and other design professionals. Owner shall make such original printed record version of the Contract available to Contractor for review. Owner may delegate the responsibilities under this provision to Engineer.

2.03 *Before Starting Construction*

A. *Preliminary Schedules*: Within 10 days after the Effective Date of the Contract (or as otherwise specifically required by the Contract Documents), Contractor shall submit to Engineer for timely review:

1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract;

2. a preliminary Schedule of Submittals; and

3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.04 *Preconstruction Conference; Designation of Authorized Representatives*

A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in Paragraph 2.03.A, procedures for handling Shop Drawings, Samples, and other submittals, processing Applications for Payment, electronic or digital transmittals, and maintaining required records.

B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit and receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.05 *Initial Acceptance of Schedules*

A. At least 10 days before submission of the first Application for Payment a conference, attended by Contractor, Engineer, and others as appropriate, will be held to review for acceptability to Engineer as provided below the schedules submitted in accordance with Paragraph 2.03.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to Contractor until acceptable schedules are submitted to Engineer.

1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefor.

2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.

3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to the component parts of the Work.

2.06 *Electronic Transmittals*

A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may transmit, and shall accept, Project-related correspondence, text, data, documents, drawings, information, and graphics, including but not limited to Shop Drawings and other submittals, in electronic media or digital format, either directly, or through access to a secure Project website.

B. If the Contract does not establish protocols for electronic or digital transmittals, then Owner, Engineer, and Contractor shall jointly develop such protocols.

C. When transmitting items in electronic media or digital format, the transmitting party makes no representations as to long term compatibility, usability, or readability of the items resulting from the recipient's use of software application packages, operating systems, or computer hardware differing from those used in the drafting or transmittal of the items, or from those established in applicable transmittal protocols.

ARTICLE 3 – DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 *Intent*

A. The Contract Documents are complementary; what is required by one is as binding as if required by all.

B. It is the intent of the Contract Documents to describe a functionally complete project (or part thereof) to be constructed in accordance with the Contract Documents.

C. Unless otherwise stated in the Contract Documents, if there is a discrepancy between the electronic or digital versions of the Contract Documents (including any printed copies derived from such electronic or digital versions) and the printed record version, the printed record version shall govern.

D. The Contract supersedes prior negotiations, representations, and agreements, whether written or oral.

E. Engineer will issue clarifications and interpretations of the Contract Documents as provided herein.

3.02 *Reference Standards*

A. Standards Specifications, Codes, Laws and Regulations

1. Reference in the Contract Documents to standard specifications, manuals, reference standards, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the standard specification, manual, reference standard, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Contract if there

2. were no Bids), except as may be otherwise specifically stated in the Contract Documents.

3. No provision of any such standard specification, manual, reference standard, or code, or any instruction of a Supplier, shall be effective to change the duties or responsibilities of Owner, Contractor, or Engineer, or any of their subcontractors, consultants, agents, or employees, from those set forth in the part of the Contract Documents prepared by or for Engineer. No such provision or instruction shall be effective to assign to Owner, Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the part of the Contract Documents prepared by or for Engineer.

3.03 *Reporting and Resolving Discrepancies*

A. *Reporting Discrepancies*:

1. *Contractor's Verification of Figures and Field Measurements*: Before undertaking each part of the Work, Contractor shall carefully study the Contract Documents, and check and verify pertinent figures and dimensions therein, particularly with respect to applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy that Contractor discovers, or has actual knowledge of, and shall not proceed with any Work affected thereby until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract Documents issued pursuant to Paragraph 11.01.

2. *Contractor's Review of Contract Documents*: If, before or during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation, (b) actual field conditions, (c) any standard specification, manual, reference standard, or code, or (d) any instruction of any Supplier, then Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 7.15) until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract Documents issued pursuant to Paragraph 11.01.

3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof.

B. *Resolving Discrepancies*:

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the part of the Contract Documents prepared by or for Engineer shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between such provisions of the Contract Documents and:

a. the provisions of any standard specification, manual, reference standard, or code,

b. or the instruction of any Supplier (whether or not specifically incorporated by reference as a Contract Document); or

c. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 *Requirements of the Contract Documents*

A. During the performance of the Work and until final payment, Contractor and Owner shall submit to the Engineer all matters in question concerning the requirements of the Contract Documents (sometimes referred to as requests for information or interpretation—RFIs), or relating to the acceptability of the Work under the Contract Documents, as soon as possible after such matters arise. Engineer will be the initial interpreter of the requirements of the Contract Documents, and judge of the acceptability of the Work thereunder.

B. Engineer will, with reasonable promptness, render a written clarification, interpretation, or decision on the issue submitted, or initiate an amendment or supplement to the Contract Documents. Engineer's written clarification, interpretation, or decision will be final and binding on Contractor, unless it appeals by submitting a Change Proposal, and on Owner, unless it appeals by filing a Claim.

C. If a submitted matter in question concerns terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work under the Contract Documents, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, then Engineer will promptly give written notice to Owner and Contractor that Engineer is unable to provide a decision or interpretation. If Owner and Contractor are unable to agree on resolution of such a matter in question, either party may pursue resolution as provided in Article 12.

3.05 *Reuse of Documents*

A. Contractor and its Subcontractors and Suppliers shall not:

1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media editions, or reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer; or

2. have or acquire any title or ownership rights in any other Contract Documents, reuse any such Contract Documents for any purpose without Owner's express written consent, or violate any copyrights pertaining to such Contract Documents.

B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein shall preclude Contractor from retaining copies of the Contract Documents for record purposes.

ARTICLE 4 – COMMENCEMENT AND PROGRESS OF THE WORK

4.01 *Commencement of Contract Times; Notice to Proceed*

A. The Contract Times will commence to run on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Contract. In no event will the Contract Times commence to run later than the sixtieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Contract, whichever date is earlier.

4.02 *Starting the Work*

A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work shall be done at the Site prior to such date.

4.03 *Reference Points*

A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.04 *Progress Schedule*

A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.05 as it may be adjusted from time to time as provided below.

1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.05) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times.

2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 11.

B. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, or during any appeal process, except as permitted by Paragraph 16.04, or as Owner and Contractor may otherwise agree in writing.

4.05 *Delays in Contractor's Progress*

A. If Owner, Engineer, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Times and Contract Price. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.

B. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delay, disruption, or interference caused by or within the control of Contractor. Delay, disruption, and interference attributable to and within the control of a Subcontractor or Supplier shall be deemed to be within the control of Contractor.

C. If Contractor's performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of Owner, Contractor, and those for which they are responsible, then Contractor shall be entitled to an equitable adjustment in Contract Times. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays, disruption, and interference described in this paragraph. Causes of delay, disruption, or interference that may give rise to an adjustment in Contract Times under this paragraph include but are not limited to the following:

1. severe and unavoidable natural catastrophes such as fires, floods, epidemics, and earthquakes;
2. abnormal weather conditions;
3. acts or failures to act of utility owners (other than those performing other work at or adjacent to the Site by arrangement with the Owner, as contemplated in Article 8); and
4. acts of war or terrorism.

D. Delays, disruption, and interference to the performance or progress of the Work resulting from the existence of a differing subsurface or physical condition, an Underground Facility that was not shown or indicated by the Contract Documents, or not shown or indicated with reasonable accuracy, and those resulting from Hazardous Environmental Conditions, are governed by Article 5.

E. Paragraph 8.03 governs delays, disruption, and interference to the performance or progress of the Work resulting from the performance of certain other work at or adjacent to the Site.

F. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Contractor.

G. Contractor must submit any Change Proposal seeking an adjustment in Contract Price or Contract Times under this paragraph within 30 days of the commencement of the delaying, disrupting, or interfering event.

ARTICLE 5 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

5.01 *Availability of Lands*

A. Owner shall furnish the Site. Owner shall notify Contractor of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work.

B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which permanent improvements are to be made and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.

C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

5.02 *Use of Site and Other Areas*

A. *Limitation on Use of Site and Other Areas*:

1. Contractor shall confine construction equipment, temporary construction facilities, the storage of materials and equipment, and the operations of workers to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and such other adjacent areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for (a) damage to the Site; (b) damage to any such other adjacent areas used for Contractor's operations; (c) damage to any other adjacent land or areas; and (d) for injuries and losses sustained by the owners or occupants of any such land or areas; provided that such damage or injuries result from the performance of the Work or from other actions or conduct of the Contractor or those for which Contractor is responsible.

2. If a damage or injury claim is made by the owner or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible, Contractor shall (a) take immediate corrective or remedial action as required by Paragraph 7.12, or otherwise; (b) promptly attempt to settle the claim as to all parties through negotiations with such owner or occupant, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or at law; and (c) to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claim, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused directly or indirectly, in whole or in part by, or based upon, Contractor's performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible.

B. *Removal of Debris During Performance of the Work*: During the progress of the Work the Contractor shall keep the Site and other adjacent areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.

C. *Cleaning*: Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site and adjacent areas all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.

D. *Loading of Structures*: Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any

part
of the Work or adjacent structures or land to stresses or pressures that will endanger them.

5.03 *Subsurface and Physical Conditions*

A. *Reports and Drawings*: The Supplementary Conditions identify:

1. those reports known to Owner of explorations and tests of subsurface conditions at or adjacent to the Site;
2. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities); and
3. Technical Data contained in such reports and drawings.

B. *Reliance by Contractor on Technical Data Authorized*: Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely upon the accuracy of the Technical Data (as defined in Article 1) contained in any geotechnical or environmental report prepared for the Project and made available to Contractor. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto; or
2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or
3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions, or information.

5.04 *Differing Subsurface or Physical Conditions*

A. *Notice by Contractor*: If Contractor believes that any subsurface or physical condition that is uncovered or revealed at the Site either:

1. is of such a nature as to establish that any Technical Data on which Contractor is entitled to rely as provided in Paragraph 5.03 is materially inaccurate; or
2. is of such a nature as to require a change in the Drawings or Specifications; or
3. differs materially from that shown or indicated in the Contract Documents; or
4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and

Engineer in writing about such condition. Contractor shall not further disturb such condition or perform Work in connection therewith (except with respect to an emergency) until receipt of a written statement permitting Contractor to do so.

B. *Engineer's Review*: After receipt of written notice as required by the preceding paragraph, Engineer will promptly review the subsurface or physical condition in question; determine the necessity of Owner's obtaining additional exploration or tests with respect to the condition; conclude whether the condition falls within any one or more of the differing site condition categories in Paragraph 5.04.A above; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the subsurface or physical condition in question and the need for any change in the Drawings or Specifications; and advise Owner in writing of Engineer's findings, conclusions, and recommendations.

C. *Owner's Statement to Contractor Regarding Site Condition*: After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the subsurface or physical condition in question, addressing the resumption of Work in connection with such condition, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations, in whole or in part.

D. *Possible Price and Times Adjustments*:

1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, or both, to the extent that the existence of a differing subsurface or physical condition, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

    a. such condition must fall within any one or more of the categories described in Paragraph 5.04.A;

    b. with respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03; and,

    c. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.

2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times with respect to a subsurface or physical condition if:

    a. Contractor knew of the existence of such condition at the time Contractor made a commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract, or otherwise; or

    b. the existence of such condition reasonably could have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas expressly required by the Bidding Requirements or Contract

Documents to be conducted by or for Contractor prior to Contractor's making such commitment; or

c. Contractor failed to give the written notice as required by Paragraph 5.04.A.

3. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, or both, then any such adjustment shall be set forth in a Change Order.

4. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, or both, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the subsurface or physical condition in question.

5.05 *Underground Facilities*

A. *Contractor's Responsibilities*: The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or adjacent to the Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

1. Owner and Engineer do not warrant or guarantee the accuracy or completeness of any such information or data provided by others; and

2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:

a. reviewing and checking all information and data regarding existing Underground Facilities at the Site;

b. locating all Underground Facilities shown or indicated in the Contract Documents as being at the Site;

c. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and

d. the safety and protection of all existing Underground Facilities at the Site, and repairing any damage thereto resulting from the Work.

B. *Notice by Contractor*: If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy, then Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer.

C. *Engineer's Review*: Engineer will promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the Underground Facility in question; determine the extent, if any, to which a change is required in the Drawings or Specifications

to reflect and document the consequences of the existence or location of the Underground Facility; and advise Owner in writing of Engineer's findings, conclusions, and recommendations. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

D. *Owner's Statement to Contractor Regarding Underground Facility*: After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the Underground Facility in question, addressing the resumption of Work in connection with such Underground Facility, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations in whole or in part.

E. *Possible Price and Times Adjustments*:

1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, or both, to the extent that any existing Underground Facility at the Site that was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:
   a. Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated the existence or actual location of the Underground Facility in question;
   b. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03;
   c. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times; and
   d. Contractor gave the notice required in Paragraph 5.05.B.
2. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, or both, then any such adjustment shall be set forth in a Change Order.
3. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, or both, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the Underground Facility in question.

5.06 *Hazardous Environmental Conditions at Site*

A. *Reports and Drawings*: The Supplementary Conditions identify:

1. those reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site; and
2. Technical Data contained in such reports and drawings.

B. *Reliance by Contractor on Technical Data Authorized*: Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with

respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely on the accuracy of the Technical Data (as defined in Article 1) contained in any geotechnical or environmental report prepared for the Project and made available to Contractor. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor and safety precautions and programs incident thereto; or
2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or
3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions or information.

C. Contractor shall not be responsible for removing or remediating any Hazardous Environmental Condition encountered, uncovered, or revealed at the Site unless such removal or remediation is expressly identified in the Contract Documents to be within the scope of the Work. Contractor shall be responsible for controlling, containing, and duly removing all Constituents of Concern brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible, and for any associated costs; and for the costs of removing and remediating any Hazardous Environmental Condition created by the presence of any such Constituents of Concern.

D. If Contractor encounters, uncovers, or reveals a Hazardous Environmental Condition whose removal or remediation is not expressly identified in the Contract Documents as being within the scope of the Work, or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, then Contractor shall immediately: (1) secure or otherwise isolate such condition; (2) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 7.15); and (3) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 5.06.F. If Contractor or anyone for whom Contractor is responsible created the Hazardous Environmental Condition in question, then Owner may remove and remediate the Hazardous Environmental Condition, and impose a set-off against payments to account for the associated costs.

E. Contractor shall not resume Work in connection with such Hazardous Environmental Condition or in any affected area until after Owner has obtained any required permits related thereto, and delivered written notice to Contractor either (1) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work, or (2) specifying any special conditions under which such Work may be resumed safely.

F. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if

any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, then within 30 days of Owner's written notice regarding the resumption of Work, Contractor may submit a Change Proposal, or Owner may impose a set-off.

G. If after receipt of such written notice Contractor does not agree to resume such Work based on a reasonable belief it is unsafe or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work, following the contractual change procedures in Article 11. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 8.

H. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition (1) was not shown or indicated in the Drawings, Specifications, or other Contract Documents, identified as Technical Data entitled to limited reliance pursuant to Paragraph 5.06.B, or identified in the Contract Documents to be included within the scope of the Work, and (2) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.I shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

I. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the failure to control, contain, or remove a Constituent of Concern brought to the Site by Contractor or by anyone for whom Contractor is responsible, or to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.J shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

J. The provisions of Paragraphs 5.03, 5.04, and 5.05 do not apply to the presence of Constituents of Concern or to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 6 – BONDS AND INSURANCE

6.01 *Performance, Payment, and Other Bonds*

A. Contractor shall furnish a performance bond and a payment bond, each in an amount at least equal to the Contract Price, as security for the faithful performance and payment of all of Contractor's obligations under the Contract. These bonds shall remain in effect until one

year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 15.08, whichever is later, except as provided otherwise by Laws or Regulations, the Supplementary Conditions, or other specific provisions of the Contract. Contractor shall also furnish such other bonds as are required by the Supplementary Conditions or other specific provisions of the Contract.

B. All bonds shall be in the form prescribed by the Contract except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (as amended and supplemented) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. A bond signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority shall show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.

C. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds in the required amounts.

D. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or its right to do business is terminated in any state or jurisdiction where any part of the Project is located, or the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the bond and surety requirements above.

E. If Contractor has failed to obtain a required bond, Owner may exclude the Contractor from the Site and exercise Owner's termination rights under Article 16.

F. Upon request, Owner shall provide a copy of the payment bond to any Subcontractor, Supplier, or other person or entity claiming to have furnished labor or materials used in the performance of the Work.

6.02 *Insurance—General Provisions*

A. Owner and Contractor shall obtain and maintain insurance as required in this Article and in the Supplementary Conditions.

B. All insurance required by the Contract to be purchased and maintained by Owner or Contractor shall be obtained from insurance companies that are duly licensed or authorized, in the state or jurisdiction in which the Project is located, to issue insurance policies for the required limits and coverages. Unless a different standard is indicated in the Supplementary Conditions, all companies that provide insurance policies required under this Contract shall have an A.M. Best rating of A-VII or better.

C. Contractor shall deliver to Owner, with copies to each named insured and additional insured (as identified in this Article, in the Supplementary Conditions, or elsewhere in the Contract), certificates of insurance establishing that Contractor has obtained and is maintaining the policies, coverages, and endorsements required by the Contract. Upon request by Owner or any other insured, Contractor shall also furnish other evidence of such required insurance, including but not limited to copies of policies and endorsements, and

documentation of applicable self-insured retentions and deductibles. Contractor may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.

D. Owner shall deliver to Contractor, with copies to each named insured and additional insured (as identified in this Article, the Supplementary Conditions, or elsewhere in the Contract), certificates of insurance establishing that Owner has obtained and is maintaining the policies, coverages, and endorsements required of Owner by the Contract (if any). Upon request by Contractor or any other insured, Owner shall also provide other evidence of such required insurance (if any), including but not limited to copies of policies and endorsements, and documentation of applicable self-insured retentions and deductibles. Owner may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.

E. Failure of Owner or Contractor to demand such certificates or other evidence of the other party's full compliance with these insurance requirements, or failure of Owner or Contractor to identify a deficiency in compliance from the evidence provided, shall not be construed as a waiver of the other party's obligation to obtain and maintain such insurance.

F. If either party does not purchase or maintain all of the insurance required of such party by the Contract, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage.

G. If Contractor has failed to obtain and maintain required insurance, Owner may exclude the Contractor from the Site, impose an appropriate set-off against payment, and exercise Owner's termination rights under Article 16.

H. Without prejudice to any other right or remedy, if a party has failed to obtain required insurance, the other party may elect to obtain equivalent insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and the Contract Price shall be adjusted accordingly.

I. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests.

J. The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner and other individuals and entities in the Contract.

6.03 *Contractor's Insurance*

A. *Workers' Compensation*: Contractor shall purchase and maintain workers' compensation and employer's liability insurance for:

1. claims under workers' compensation, disability benefits, and other similar employee benefit acts.

2. United States Longshoreman and Harbor Workers' Compensation Act and Jones Act coverage (if applicable).

3. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees (by stop-gap endorsement in monopolist worker's compensation states).

4. Foreign voluntary worker compensation (if applicable).

B. *Commercial General Liability—Claims Covered*: Contractor shall purchase and maintain commercial general liability insurance, covering all operations by or on behalf of Contractor, on an occurrence basis, against:

1. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees.
2. claims for damages insured by reasonably available personal injury liability coverage.
3. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom.

C. *Commercial General Liability—Form and Content*: Contractor's commercial liability policy shall be written on a 1996 (or later) ISO commercial general liability form (occurrence form) and include the following coverages and endorsements:

1. Products and completed operations coverage:
   a. Such insurance shall be maintained for three years after final payment.
   b. Contractor shall furnish Owner and each other additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract) evidence of continuation of such insurance at final payment and three years thereafter.
2. Blanket contractual liability coverage, to the extent permitted by law, including but not limited to coverage of Contractor's contractual indemnity obligations in Paragraph 7.18.
3. Broad form property damage coverage.
4. Severability of interest.
5. Underground, explosion, and collapse coverage.
6. Personal injury coverage.
7. Additional insured endorsements that include both ongoing operations and products and completed operations coverage through ISO Endorsements CG 20 10 10 01 and CG 20 37 10 01 (together); or CG 20 10 07 04 and CG 20 37 07 04 (together); or their equivalent.
8. For design professional additional insureds, ISO Endorsement CG 20 32 07 04, "Additional Insured—Engineers, Architects or Surveyors Not Engaged by the Named Insured" or its equivalent.

D. *Automobile liability*: Contractor shall purchase and maintain automobile liability insurance against claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance, or use of any motor vehicle. The automobile liability policy shall be written on an occurrence basis.

E. *Umbrella or excess liability*: Contractor shall purchase and maintain umbrella or excess liability insurance written over the underlying employer's liability, commercial general liability, and automobile liability insurance described in the paragraphs above. Subject to industry-standard exclusions, the coverage afforded shall follow form as to each and every

one of the underlying policies.

F. *Contractor's pollution liability insurance*: Contractor shall purchase and maintain a policy covering third-party injury and property damage claims, including clean-up costs, as a result of pollution conditions arising from Contractor's operations and completed operations. This insurance shall be maintained for no less than three years after final completion.

G. *Additional insureds*: The Contractor's commercial general liability, automobile liability, umbrella or excess, and pollution liability policies shall include and list as additional insureds Owner and Engineer, and any individuals or entities identified in the Supplementary Conditions; include coverage for the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of all such additional insureds; and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby (including as applicable those arising from both ongoing and completed operations) on a non-contributory basis. Contractor shall obtain all necessary endorsements to support these requirements.

H. *Contractor's professional liability insurance*: If Contractor will provide or furnish professional services under this Contract, through a delegation of professional design services or otherwise, then Contractor shall be responsible for purchasing and maintaining applicable professional liability insurance. This insurance shall provide protection against claims arising out of performance of professional design or related services, and caused by a negligent error, omission, or act for which the insured party is legally liable. It shall be maintained throughout the duration of the Contract and for a minimum of two years after Substantial Completion. If such professional design services are performed by a Subcontractor, and not by Contractor itself, then the requirements of this paragraph may be satisfied through the purchasing and maintenance of such insurance by such Subcontractor.

I. *General provisions*: The policies of insurance required by this Paragraph 6.03 shall:

1. include at least the specific coverages provided in this Article.
2. be written for not less than the limits of liability provided in this Article and in the Supplementary Conditions, or required by Laws or Regulations, whichever is greater.
3. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed, or renewal refused until at least 10 days prior written notice has been given to Contractor. Within three days of receipt of any such written notice, Contractor shall provide a copy of the notice to Owner, Engineer, and each other insured under the policy.
4. remain in effect at least until final payment (and longer if expressly required in this Article) and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work as a warranty or correction obligation, or otherwise, or returning to the Site to conduct other tasks arising from the Contract Documents.
5. be appropriate for the Work being performed and provide protection from claims that may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts

any of them may be liable.

J. The coverage requirements for specific policies of insurance must be met by such policies, and not by reference to excess or umbrella insurance provided in other policies.

6.04 *Owner's Liability Insurance*

A. In addition to the insurance required to be provided by Contractor under Paragraph 6.03, Owner, at Owner's option, may purchase and maintain at Owner's expense Owner's own liability insurance as will protect Owner against claims which may arise from operations under the Contract Documents.

B. Owner's liability policies, if any, operate separately and independently from policies required to be provided by Contractor, and Contractor cannot rely upon Owner's liability policies for any of Contractor's obligations to the Owner, Engineer, or third parties.

6.05 *Property Insurance*

A. *Builder's Risk*: Unless otherwise provided in the Supplementary Conditions, Contractor shall purchase and maintain builder's risk insurance upon the Work on a completed value basis, in the amount of the full insurable replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:

1. include the Owner and Contractor as named insureds, and all Subcontractors, and any individuals or entities required by the Supplementary Conditions to be insured under such builder's risk policy, as insureds or named insureds. For purposes of the remainder of this Paragraph 6.05, Paragraphs 6.06 and 6.07, and any corresponding Supplementary Conditions, the parties required to be insured shall collectively be referred to as "insureds."

2. be written on a builder's risk "all risk" policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire; lightning; windstorm; riot; civil commotion; terrorism; vehicle impact; aircraft; smoke; theft; vandalism and malicious mischief; mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake; volcanic activity, and other earth movement; flood; collapse; explosion; debris removal; demolition occasioned by enforcement of Laws and Regulations; water damage (other than that caused by flood); and such other perils or causes of loss as may be specifically required by the Supplementary Conditions. If insurance against mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake; volcanic activity, and other earth movement; or flood, are not commercially available under builder's risk policies, by endorsement or otherwise, such insurance may be provided through other insurance policies acceptable to Owner and Contractor.

3. cover, as insured property, at least the following: (a) the Work and all materials, supplies, machinery, apparatus, equipment, fixtures, and other property of a similar nature that are to be incorporated into or used in the preparation, fabrication, construction, erection, or completion of the Work, including Owner-furnished or

assigned property; (b) spare parts inventory required within the scope of the Contract; and (c) temporary works which are not intended to form part of the permanent constructed Work but which are intended to provide working access to the Site, or to the Work under construction, or which are intended to provide temporary support for the Work under construction, including scaffolding, form work, fences, shoring, falsework, and temporary structures.

4. cover expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects).
5. extend to cover damage or loss to insured property while in temporary storage at the Site or in a storage location outside the Site (but not including property stored at the premises of a manufacturer or Supplier).
6. extend to cover damage or loss to insured property while in transit.
7. allow for partial occupation or use of the Work by Owner, such that those portions of the Work that are not yet occupied or used by Owner shall remain covered by the builder's risk insurance.
8. allow for the waiver of the insurer's subrogation rights, as set forth below.
9. provide primary coverage for all losses and damages caused by the perils or causes of loss covered.
10. not include a co-insurance clause.
11. include an exception for ensuing losses from physical damage or loss with respect to any defective workmanship, design, or materials exclusions.
12. include performance/hot testing and start-up.
13. be maintained in effect, subject to the provisions herein regarding Substantial Completion and partial occupancy or use of the Work by Owner, until the Work is complete.

B. *Notice of Cancellation or Change*: All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with this Paragraph 6.05 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 10 days prior written notice has been given to the purchasing policyholder. Within three days of receipt of any such written notice, the purchasing policyholder shall provide a copy of the notice to each other insured.

C. *Deductibles*: The purchaser of any required builder's risk or property insurance shall pay for costs not covered because of the application of a policy deductible.

D. *Partial Occupancy or Use by Owner*: If Owner will occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 15.04, then Owner (directly, if it is the purchaser of the builder's risk policy, or through Contractor) will provide notice of such occupancy or use to the builder's risk insurer. The builder's risk insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy; rather, those portions of the Work that are occupied or used by Owner may come off the builder's risk policy, while those portions of the Work not yet occupied or

used by Owner shall remain covered by the builder's risk insurance.

E. *Additional Insurance*: If Contractor elects to obtain other special insurance to be included in or supplement the builder's risk or property insurance policies provided under this Paragraph 6.05, it may do so at Contractor's expense.

F. *Insurance of Other Property*: If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, such as tools, construction equipment, or other personal property owned by Contractor, a Subcontractor, or an employee of Contractor or a Subcontractor, then the entity or individual owning such property item will be responsible for deciding whether to insure it, and if so in what amount.

6.06 *Waiver of Rights*

A. All policies purchased in accordance with Paragraph 6.05, expressly including the builder's risk policy, shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any insureds thereunder, or against Engineer or its consultants, or their officers, directors, members, partners, employees, agents, consultants, or subcontractors. Owner and Contractor waive all rights against each other and the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Engineer, its consultants, all Subcontractors, all individuals or entities identified in the Supplementary Conditions as insureds, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Owner or Contractor as trustee or fiduciary, or otherwise payable under any policy so issued.

B. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, for:

1. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other perils whether or not insured by Owner; and

2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by Owner during partial occupancy or use pursuant to Paragraph 15.04, after Substantial Completion pursuant to Paragraph 15.03, or after final payment pursuant to Paragraph 15.06.

C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 6.06.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against Contractor, Subcontractors, or Engineer, or the officers, directors,

members, partners, employees, agents, consultants, or subcontractors of each and any of them.

D. Contractor shall be responsible for assuring that the agreement under which a Subcontractor performs a portion of the Work contains provisions whereby the Subcontractor waives all rights against Owner, Contractor, all individuals or entities identified in the Supplementary Conditions as insureds, the Engineer and its consultants, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by builder's risk insurance and any other property insurance applicable to the Work.

6.07 *Receipt and Application of Property Insurance Proceeds*

A. Any insured loss under the builder's risk and other policies of insurance required by Paragraph 6.05 will be adjusted and settled with the named insured that purchased the policy. Such named insured shall act as fiduciary for the other insureds, and give notice to such other insureds that adjustment and settlement of a claim is in progress. Any other insured may state its position regarding a claim for insured loss in writing within 15 days after notice of such claim.

B. Proceeds for such insured losses may be made payable by the insurer either jointly to multiple insureds, or to the named insured that purchased the policy in its own right and as fiduciary for other insureds, subject to the requirements of any applicable mortgage clause. A named insured receiving insurance proceeds under the builder's risk and other policies of insurance required by Paragraph 6.05 shall distribute such proceeds in accordance with such agreement as the parties in interest may reach, or as otherwise required under the dispute resolution provisions of this Contract or applicable Laws and Regulations.

C. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the money so received applied on account thereof, and the Work and the cost thereof covered by Change Order, if needed.

ARTICLE 7 – CONTRACTOR'S RESPONSIBILITIES

7.01 *Supervision and Superintendence*

A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction.

B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

7.02 *Labor; Working Hours*

A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the Site.

B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site may be performed during the hours of 7:00 am to 10:00 pm, seven days a week.

7.03 *Services, Materials, and Equipment*

A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start up, and completion of the Work, whether or not such items are specifically called for in the Contract Documents.

B. All materials and equipment incorporated into the Work shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications shall expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.

C. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

7.04 *"Or Equals"*

A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the Contract Price has been based upon Contractor furnishing such item as specified. The specification or description of such an item is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or equal" item is permitted, Contractor may request that Engineer authorize the use of other items of material or equipment, or items from other proposed suppliers under the circumstances described below.

1. If Engineer in its sole discretion determines that an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Engineer shall deem it an "or equal" item. For the purposes of this paragraph, a proposed item of material or equipment will be considered functionally equal to an item so named if:

a. in the exercise of reasonable judgment Engineer determines that:

1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;

2) it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole;

3) it has a proven record of performance and availability of responsive service; and

4) it is not objectionable to Owner.

b. Contractor certifies that, if approved and incorporated into the Work:

1) there will be no increase in cost to the Owner or increase in Contract Times; and

2) it will conform substantially to the detailed requirements of the item named in the Contract Documents.

B. *Contractor's Expense*: Contractor shall provide all data in support of any proposed "or equal" item at Contractor's expense.

C. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each "or-equal" request. Engineer may require Contractor to furnish additional data about the proposed "or-equal" item. Engineer will be the sole judge of acceptability. No "or-equal" item will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an "or-equal", which will be evidenced by an approved Shop Drawing or other written communication. Engineer will advise Contractor in writing of any negative determination.

D. *Effect of Engineer's Determination*: Neither approval nor denial of an "or-equal" request shall result in any change in Contract Price. The Engineer's denial of an "or-equal" request shall be final and binding, and may not be reversed through an appeal under any provision of the Contract Documents.

E. *Treatment as a Substitution Request*: If Engineer determines that an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item, Contractor may request that Engineer considered the proposed item as a substitute pursuant to Paragraph 7.05.

7.05 *Substitutes*

A. Unless the specification or description of an item of material or equipment required to be furnished under the Contract Documents contains or is followed by words reading that no substitution is permitted, Contractor may request that Engineer authorize the use of other items of material or equipment under the circumstances described below. To the extent possible such requests shall be made before commencement of related construction at the Site.

1. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is functionally equivalent to that named and an acceptable substitute therefor. Engineer will not accept requests for review of proposed substitute items of material or equipment from anyone other than Contractor.

2. The requirements for review by Engineer will be as set forth in Paragraph 7.05.B, as supplemented by the Specifications, and as Engineer may decide is appropriate under the circumstances.

3. Contractor shall make written application to Engineer for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application:

a. hall certify that the proposed substitute item will:

1) perform adequately the functions and achieve the results called for by the general design,

2) be similar in substance to that specified, and

3) be suited to the same use as that specified.

b. will state:

1) the extent, if any, to which the use of the proposed substitute item will necessitate a change in Contract Times,

2) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item, and

3) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty.

c. will identify:

1) all variations of the proposed substitute item from that specified, and

2) available engineering, sales, maintenance, repair, and replacement services.

d. shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including but not limited to changes in Contract Price, shared savings, costs of redesign, and claims of other contractors affected by any resulting change.

B. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each substitute request, and to obtain comments and direction from Owner. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No substitute will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an acceptable substitute. Engineer's determination will be evidenced by a Field Order or a proposed Change Order accounting for the substitution itself and all related impacts, including changes in Contract Price or Contract Times. Engineer will advise Contractor in writing of any negative determination.

C. *Special Guarantee*: Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.

D. *Reimbursement of Engineer's Cost*: Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.

E. *Contractor's Expense*: Contractor shall provide all data in support of any proposed

substitute at Contractor's expense.

F. *Effect of Engineer's Determination*: If Engineer approves the substitution request, Contractor shall execute the proposed Change Order and proceed with the substitution. The Engineer's denial of a substitution request shall be final and binding, and may not be reversed through an appeal under any provision of the Contract Documents. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.05.D, by timely submittal of a Change Proposal.

7.06 *Concerning Subcontractors, Suppliers, and Others*

A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner.

B. Contractor shall retain specific Subcontractors, Suppliers, or other individuals or entities for the performance of designated parts of the Work if required by the Contract to do so.

C. Subsequent to the submittal of Contractor's Bid or final negotiation of the terms of the Contract, Owner may not require Contractor to retain any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against which Contractor has reasonable objection.

D. Prior to entry into any binding subcontract or purchase order, Contractor shall submit to Owner the identity of the proposed Subcontractor or Supplier (unless Owner has already deemed such proposed Subcontractor or Supplier acceptable, during the bidding process or otherwise). Such proposed Subcontractor or Supplier shall be deemed acceptable to Owner unless Owner raises a substantive, reasonable objection within five days.

E. Owner may require the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work. Owner also may require Contractor to retain specific replacements; provided, however, that Owner may not require a replacement to which Contractor has a reasonable objection. If Contractor has submitted the identity of certain Subcontractors, Suppliers, or other individuals or entities for acceptance by Owner, and Owner has accepted it (either in writing or by failing to make written objection thereto), then Owner may subsequently revoke the acceptance of any such Subcontractor, Supplier, or other individual or entity so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity.

F. If Owner requires the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, or both, with respect to the replacement; and Contractor shall initiate a Change Proposal for such adjustment within 30 days of Owner's requirement of replacement.

G. No acceptance by Owner of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of the right of Owner to the completion of the Work in accordance with the Contract Documents.

H. On a monthly basis Contractor shall submit to Engineer a complete list of all Subcontractors and Suppliers having a direct contract with Contractor, and of all other Subcontractors and

Suppliers known to Contractor at the time of submittal.

I. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions.

J. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors, Suppliers, and all other individuals or entities performing or furnishing any of the Work.

K. Contractor shall restrict all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed herein.

L. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.

M. All Work performed for Contractor by a Subcontractor or Supplier shall be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer.

N. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor on account of Work performed for Contractor by the particular Subcontractor or Supplier.

O. Nothing in the Contract Documents:

1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier, or other individual or entity; nor
2. shall create any obligation on the part of Owner or Engineer to pay or to see to the payment of any money due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.

7.07 *Patent Fees and Royalties*

A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Engineer, its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by Owner in the Contract Documents.

B. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising

out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.

C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

7.08 *Permits*

A. Unless otherwise provided in the Contract Documents, Contractor shall obtain and pay for all construction permits and licenses. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of the submission of Contractor's Bid (or when Contractor became bound under a negotiated contract). Owner shall pay all charges of utility owners for connections for providing permanent service to the Work

7.09 *Taxes*

A. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

7.10 *Laws and Regulations*

A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.

B. If Contractor performs any Work or takes any other action knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all resulting costs and losses, and shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work or other action. It shall not be Contractor's responsibility to make certain that the Work described in the Contract Documents is in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.

C. Owner or Contractor may give notice to the other party of any changes after the submission of Contractor's Bid (or after the date when Contractor became bound under a

negotiated contract) in Laws or Regulations having an effect on the cost or time of performance of the Work, including but not limited to changes in Laws or Regulations having an effect on procuring permits and on sales, use, value-added, consumption, and other similar taxes. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times resulting from such changes, then within 30 days of such notice Contractor may submit a Change Proposal, or Owner may initiate a Claim.

7.11 *Record Documents*

A. Contractor shall maintain in a safe place at the Site one printed record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, written interpretations and clarifications, and approved Shop Drawings. Contractor shall keep such record documents in good order and annotate them to show changes made during construction. These record documents, together with all approved Samples, will be available to Engineer for reference. Upon completion of the Work, Contractor shall deliver these record documents to Engineer.

7.12 *Safety and Protection*

A. Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:

1. all persons on the Site or who may be affected by the Work;
2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and
3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, other work in progress, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.

B. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify Owner; the owners of adjacent property, Underground Facilities, and other utilities; and other contractors and utility owners performing work at or adjacent to the Site, when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.

C. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. The Supplementary Conditions identify any Owner's safety programs that are applicable to the Work.

D. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's

safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.

E. All damage, injury, or loss to any property referred to in Paragraph 7.12.A.2 or 7.12.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor at its expense (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).

F. Contractor's duties and responsibilities for safety and protection shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 15.06.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

G. Contractor's duties and responsibilities for safety and protection shall resume whenever Contractor or any Subcontractor or Supplier returns to the Site to fulfill warranty or correction obligations, or to conduct other tasks arising from the Contract Documents.

7.13 *Safety Representative*

A. Contractor shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

7.14 *Hazard Communication Programs*

A. Contractor shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

7.15 *Emergencies*

A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent threatened damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If Engineer determines that a change in the Contract Documents is required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.

7.16 *Shop Drawings, Samples, and Other Submittals*

A. *Shop Drawing and Sample Submittal Requirements*:

1. Before submitting a Shop Drawing or Sample, Contractor shall have:

a. reviewed and coordinated the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract

Documents;

b. determined and verified all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;

c. determined and verified the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and

d. determined and verified all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.

2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review of that submittal, and that Contractor approves the submittal.

3. With each submittal, Contractor shall give Engineer specific written notice of any variations that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be set forth in a written communication separate from the Shop Drawings or Sample submittal; and, in addition, in the case of Shop Drawings by a specific notation made on each Shop Drawing submitted to Engineer for review and approval of each such variation.

B. *Submittal Procedures for Shop Drawings and Samples*: Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals. Each submittal will be identified as Engineer may require.

1. *Shop Drawings*:

a. Contractor shall submit the number of copies required in the Specifications.

b. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide and to enable Engineer to review the information for the limited purposes required by Paragraph 7.16.D.

2. *Samples*:

a. Contractor shall submit the number of Samples required in the Specifications.

b. Contractor shall clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the submittal for the limited purposes required by Paragraph 7.16.D.

3. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.

C. *Other Submittals*: Contractor shall submit other submittals to Engineer in accordance with the accepted Schedule of Submittals, and pursuant to the applicable terms of the

Specifications.

D. *Engineer's Review*:

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.
2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction or to safety precautions or programs incident thereto.
3. Engineer's review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.
4. Engineer's review and approval of a Shop Drawing or Sample shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 7.16.A.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer will document any such approved variation from the requirements of the Contract Documents in a Field Order.
5. Engineer's review and approval of a Shop Drawing or Sample shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 7.16.A and B.
6. Engineer's review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, shall not, under any circumstances, change the Contract Times or Contract Price, unless such changes are included in a Change Order.
7. Neither Engineer's receipt, review, acceptance or approval of a Shop Drawing, Sample, or other submittal shall result in such item becoming a Contract Document.
8. Contractor shall perform the Work in compliance with the requirements and commitments set forth in approved Shop Drawings and Samples, subject to the provisions of Paragraph 7.16.D.4.

E. *Resubmittal Procedures*:

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals.
2. Contractor shall furnish required submittals with sufficient information and accuracy to obtain required approval of an item with no more than three submittals. Engineer will record Engineer's time for reviewing a fourth or subsequent submittal of a Shop Drawings, sample, or other item requiring approval, and Contractor shall be responsible for Engineer's charges to Owner for such time. Owner may impose a set-

off against payments due to Contractor to secure reimbursement for such charges.

3. If Contractor requests a change of a previously approved submittal item, Contractor shall be responsible for Engineer's charges to Owner for its review time, and Owner may impose a set-off against payments due to Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.

7.17 *Contractor's General Warranty and Guarantee*

A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective for a period of one year. The pump supplier shall provide a two-year warranty on the Pumps, Electrical Control Panel and any supplied appurtenances with the pump package that shall be transferred to the City. Engineer and its officers, directors, members, partners, employees, agents, consultants, and subcontractors shall be entitled to rely on Contractor's warranty and guarantee.

B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:

1. abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or

2. normal wear and tear under normal usage.

C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:

1. observations by Engineer;

2. recommendation by Engineer or payment by Owner of any progress or final payment;

3. the issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;

4. use or occupancy of the Work or any part thereof by Owner;

5. any review and approval of a Shop Drawing or Sample submittal;

6. the issuance of a notice of acceptability by Engineer;

7. any inspection, test, or approval by others; or

8. any correction of defective Work by Owner.

D. If the Contract requires the Contractor to accept the assignment of a contract entered into by Owner, then the specific warranties, guarantees, and correction obligations contained in the assigned contract shall govern with respect to Contractor's performance obligations to Owner for the Work described in the assigned contract.

7.18 *Indemnification*

A. To the fullest extent permitted by Laws and Regulations, and in addition to any other obligations of Contractor under the Contract or otherwise, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and

against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable.

B. In any and all claims against Owner or Engineer or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 7.18.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

C. The indemnification obligations of Contractor under Paragraph 7.18.A shall not extend to the liability of Engineer and Engineer's officers, directors, members, partners, employees, agents, consultants and subcontractors arising out of:

1. the preparation or approval of, or the failure to prepare or approve maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or

2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

7.19 *Delegation of Professional Design Services*

A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable Laws and Regulations.

B. If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.

C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance

and design criteria that such services must satisfy.

D. Pursuant to this paragraph, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 7.16.D.1.

E. Contractor shall not be responsible for the adequacy of the performance or design criteria specified by Owner or Engineer.

ARTICLE 8 – OTHER WORK AT THE SITE

8.01 *Other Work*

A. In addition to and apart from the Work under the Contract Documents, the Owner may perform other work at or adjacent to the Site. Such other work may be performed by Owner's employees, or through contracts between the Owner and third parties. Owner may also arrange to have third-party utility owners perform work on their utilities and facilities at or adjacent to the Site.

B. If Owner performs other work at or adjacent to the Site with Owner's employees, or through contracts for such other work, then Owner shall give Contractor written notice thereof prior to starting any such other work. If Owner has advance information regarding the start of any utility work at or adjacent to the Site, Owner shall provide such information to Contractor.

C. Contractor shall afford each other contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected.

D. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 8, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

8.02 *Coordination*

A. If Owner intends to contract with others for the performance of other work at or adjacent

to the Site, to perform other work at or adjacent to the Site with Owner's employees, or to arrange to have utility owners perform work at or adjacent to the Site, the following will be set forth in the Supplementary Conditions or provided to Contractor prior to the start of any such other work:

1. the identity of the individual or entity that will have authority and responsibility for coordination of the activities among the various contractors;
2. an itemization of the specific matters to be covered by such authority and responsibility; and
3. the extent of such authority and responsibilities.

B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

8.03 *Legal Relationships*

A. If, in the course of performing other work at or adjacent to the Site for Owner, the Owner's employees, any other contractor working for Owner, or any utility owner for whom the Owner is responsible causes damage to the Work or to the property of Contractor or its Subcontractors, or delays, disrupts, interferes with, or increases the scope or cost of the performance of the Work, through actions or inaction, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both. Contractor must submit any Change Proposal seeking an equitable adjustment in the Contract Price or the Contract Times under this paragraph within 30 days of the damaging, delaying, disrupting, or interfering event. The entitlement to, and extent of, any such equitable adjustment shall take into account information (if any) regarding such other work that was provided to Contractor in the Contract Documents prior to the submittal of the Bid or the final negotiation of the terms of the Contract. When applicable, any such equitable adjustment in Contract Price shall be conditioned on Contractor assigning to Owner all Contractor's rights against such other contractor or utility owner with respect to the damage, delay, disruption, or interference that is the subject of the adjustment. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.

B. Contractor shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of Owner, any other contractor, or any utility owner performing other work at or adjacent to the Site. If Contractor fails to take such measures and as a result damages, delays, disrupts, or interferes with the work of any such other contractor or utility owner, then Owner may impose a set-off against payments due to Contractor, and assign to such other contractor or utility owner the Owner's contractual rights against Contractor with respect to the breach of the obligations set forth in this paragraph.

C. When Owner is performing other work at or adjacent to the Site with Owner's employees, Contractor shall be liable to Owner for damage to such other work, and for the reasonable direct delay, disruption, and interference costs incurred by Owner as a result of Contractor's failure to take reasonable and customary measures with respect to Owner's other work. In response to such damage, delay, disruption, or interference, Owner may

impose a set-off against payments due to Contractor.

D. If Contractor damages, delays, disrupts, or interferes with the work of any other contractor, or any utility owner performing other work at or adjacent to the Site, through Contractor's failure to take reasonable and customary measures to avoid such impacts, or if any claim arising out of Contractor's actions, inactions, or negligence in performance of the Work at or adjacent to the Site is made by any such other contractor or utility owner against Contractor, Owner, or Engineer, then Contractor shall (1) promptly attempt to settle the claim as to all parties through negotiations with such other contractor or utility owner, or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law, and (2) indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claims, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such damage, delay, disruption, or interference.

ARTICLE 9 – OWNER'S RESPONSIBILITIES

9.01 *Communications to Contractor*

A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

9.02 *Replacement of Engineer*

A. Owner may at its discretion appoint an engineer to replace Engineer, provided Contractor makes no reasonable objection to the replacement engineer. The replacement engineer's status under the Contract Documents shall be that of the former Engineer.

9.03 *Furnish Data*

A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

9.04 *Pay When Due*

A. Owner shall make payments to Contractor when they are due as provided in the Agreement.

9.05 *Lands and Easements; Reports, Tests, and Drawings*

A. Owner's duties with respect to providing lands and easements are set forth in Paragraph 5.01.

B. Owner's duties with respect to providing engineering surveys to establish reference points are set forth in Paragraph 4.03.

C. Article 5 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of conditions at the Site, and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

9.06 *Insurance*

A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 6.

9.07 *Change Orders*

A. Owner's responsibilities with respect to Change Orders are set forth in Article 11.

9.08 *Inspections, Tests, and Approvals*

A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 14.02.B.

9.09 *Limitations on Owner's Responsibilities*

A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

9.10 *Undisclosed Hazardous Environmental Condition*

A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 5.06.

9.11 *Evidence of Financial Arrangements*

A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract Documents (including obligations under proposed changes in the Work).

9.12 *Safety Programs*

A. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed.

B. Owner shall furnish copies of any applicable Owner safety programs to Contractor.

ARTICLE 10 – ENGINEER'S STATUS DURING CONSTRUCTION

10.01 *Owner's Representative*

A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract.

10.02 *Visits to Site*

A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a

greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.

B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 10.08. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

10.03 *Project Representative*

A. This project was designed in-house by the City Engineer. The Project Representative will be the City-assigned Project Manager. This person will be assigned and present at the Mandatory Pre-Bid conference and will remain in that period for the duration of the project.

B. The RPR shall not:

1 Authorize any deviation from the Contract Documents or substitution of materials or equipment (including "or-equal" items).

2 Exceed limitations of Engineer's authority as set forth in the Contract Documents.

3 Undertake any of the responsibilities of Contractor, Subcontractors, or Suppliers.

4 Advise on, issue directions relative to, or assume control over any aspect of the means, methods, techniques, sequences or procedures of Contractor's work.

5 Advise on, issue directions regarding, or assume control over security or safety practices, precautions, and programs in connection with the activities or operations of Owner or Contractor.

6 Participate in specialized field or laboratory tests or inspections conducted off-site by others except as specifically authorized by City Project Manager.

7 Accept Shop Drawing or Sample submittals from anyone other than Contractor.

8 Authorize Owner to occupy the Project in whole or in part.

10.04 *Rejecting Defective Work*

B. Engineer has the authority to reject Work in accordance with Article 14.

10.05 *Shop Drawings, Change Orders and Payments*

B. Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, are set forth in Paragraph 7.16.

C. Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, are set forth in Paragraph 7.19.

D. Engineer's authority as to Change Orders is set forth in Article 11.

E. Engineer's authority as to Applications for Payment is set forth in Article 15.

10.06 *Determinations for Unit Price Work*

B. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor as set forth in Paragraph 13.03.

10.07 *Decisions on Requirements of Contract Documents and Acceptability of Work*

B. Engineer will render decisions regarding the requirements of the Contract Documents, and judge the acceptability of the Work, pursuant to the specific procedures set forth herein for initial interpretations, Change Proposals, and acceptance of the Work. In rendering such decisions and judgments, Engineer will not show partiality to Owner or Contractor, and will not be liable to Owner, Contractor, or others in connection with any proceedings, interpretations, decisions, or judgments conducted or rendered in good faith.

10.08 *Limitations on Engineer's Authority and Responsibilities*

B. Neither Engineer's authority or responsibility under this Article 10 or under any other provision of the Contract, nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer, shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

C. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

D. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.

E. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 15.06.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals, that the results certified indicate compliance with the Contract Documents.

F. The limitations upon authority and responsibility set forth in this Paragraph 10.08 shall also apply to the Resident Project Representative, if any.

10.09 *Compliance with Safety Program*

B. While at the Site, Engineer's employees and representatives will comply with the specific applicable requirements of Owner's and Contractor's safety programs (if any) of which Engineer has been informed.

ARTICLE 11 – AMENDING THE CONTRACT DOCUMENTS; CHANGES IN THE WORK

11.01 *Amending and Supplementing Contract Documents*

A. The Contract Documents may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.

1. *Change Orders*:

a. If an amendment or supplement to the Contract Documents includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order. A Change Order also may be used to establish amendments and supplements of the Contract Documents that do not affect the Contract Price or Contract Times.

b. Owner and Contractor may amend those terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work, **(2)** the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, without the recommendation of the Engineer. Such an amendment shall be set forth in a Change Order.

2. *Work Change Directives*: A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the modification ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order, following negotiations by the parties as to the Work Change Directive's effect, if any, on the Contract Price and Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Contract Documents governing adjustments, expressly including Paragraph 11.04 regarding change of Contract Price. Contractor must submit any Change Proposal seeking an adjustment of the Contract Price or the Contract Times, or both, no later than 30 days after the completion of the Work set out in the Work Change Directive. Owner must submit any Claim seeking an adjustment of the Contract Price or the Contract Times, or both, no later than 60 days after issuance of the Work Change Directive.

3. *Field Orders*: Engineer may authorize minor changes in the Work if the changes do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Such changes will be accomplished by a Field Order and will be binding on Owner and also on Contractor, which shall perform the Work involved promptly. If Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, then before proceeding with the Work at issue, Contractor shall submit a Change Proposal as provided herein.

11.02 *Owner-Authorized Changes in the Work*

A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work. Such changes shall be supported by Engineer's recommendation, to the extent the change involves the design (as set forth in the Drawings, Specifications, or otherwise), or other engineering or technical matters. Such changes may be accomplished by a Change Order, if Owner and Contractor have agreed as to the effect, if any, of the changes on Contract Times or Contract Price; or by a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved; or, in the case of a

deletion in the Work, promptly cease construction activities with respect to such deleted Work. Added or revised Work shall be performed under the applicable conditions of the Contract Documents. Nothing in this paragraph shall obligate Contractor to undertake work that Contractor reasonably concludes cannot be performed in a manner consistent with Contractor's safety obligations under the Contract Documents or Laws and Regulations.

11.03 *Unauthorized Changes in the Work*

A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents, as amended, modified, or supplemented, except in the case of an emergency as provided in Paragraph 7.15 or in the case of uncovering Work as provided in Paragraph 14.05.

11.04 *Change of Contract Price*

A. The Contract Price may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Price shall comply with the provisions of Paragraph 11.06. Any Claim for an adjustment of Contract Price shall comply with the provisions of Article 12.

B. An adjustment in the Contract Price will be determined as follows:

1. where the Work involved is covered by unit prices contained in the Contract Documents, then by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 13.03); or

2. where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.04.C.2); or

3. where the Work involved is not covered by unit prices contained in the Contract Documents and the parties do not reach mutual agreement to a lump sum, then on the basis of the Cost of the Work (determined as provided in Paragraph 13.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 11.04.C).

C. *Contractor's Fee*: When applicable, the Contractor's fee for overhead and profit shall be determined as follows:

1. a mutually acceptable fixed fee; or

2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:

a. for costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2, the Contractor's fee shall be 15 percent;

b. for costs incurred under Paragraph 13.01.B.3, the Contractor's fee shall be five percent;

c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 11.04.C.2.a and 11.04.C.2.b is that the Contractor's fee shall be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.A.1 and 13.01.A.2 by the Subcontractor that actually performs the Work, at whatever tier, and (2) with

respect to Contractor itself and to any Subcontractors of a tier higher than that of the Subcontractor that actually performs the Work, a fee of five percent of the amount (fee plus underlying costs incurred) attributable to the next lower tier Subcontractor; provided, however, that for any such subcontracted work the maximum total fee to be paid by Owner shall be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the work;

d. no fee shall be payable on the basis of costs itemized under Paragraphs 13.01.B.4, 13.01.B.5, and 13.01.C;

e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and

f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 11.04.C.2.a through 11.04.C.2.e, inclusive.

11.05 *Change of Contract Times*

A. The Contract Times may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Times shall comply with the provisions of Paragraph 11.06. Any Claim for an adjustment in the Contract Times shall comply with the provisions of Article 12.

B. An adjustment of the Contract Times shall be subject to the limitations set forth in Paragraph 4.05, concerning delays in Contractor's progress.

11.06 *Change Proposals*

A. Contractor shall submit a Change Proposal to Engineer to request an adjustment in the Contract Times or Contract Price; appeal an initial decision by Engineer concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; contest a set-off against payment due; or seek other relief under the Contract. The Change Proposal shall specify any proposed change in Contract Times or Contract Price, or both, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents.

1. *Procedures*: Contractor shall submit each Change Proposal to Engineer promptly (but in no event later than 30 days) after the start of the event giving rise thereto, or after such initial decision. The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the Engineer and Owner within 15 days after the submittal of the Change Proposal. The supporting data shall be accompanied by a written statement that the supporting data are accurate and complete, and that any requested time or price adjustment is the entire adjustment to which Contractor believes it is entitled as a result of said event. Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal.

2. *Engineer's Action*: Engineer will review each Change Proposal and, within 30 days after receipt of the Contractor's supporting data, either deny the Change Proposal in whole, approve it in whole, or deny it in part and approve it in part. Such actions shall be in

writing, with a copy provided to Owner and Contractor. If Engineer does not take action on the Change Proposal within 30 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of Engineer's inaction the Change Proposal is deemed denied, thereby commencing the time for appeal of the denial under Article 12.

3. *Binding Decision*: Engineer's decision will be final and binding upon Owner and Contractor, unless Owner or Contractor appeals the decision by filing a Claim under Article 12.

B. *Resolution of Certain Change Proposals*: If the Change Proposal does not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters, then Engineer will notify the parties that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice shall be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.

11.07 *Execution of Change Orders*

A. Owner and Contractor shall execute appropriate Change Orders covering:

1. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive;

2. changes in Contract Price resulting from an Owner set-off, unless Contractor has duly contested such set-off;

3. changes in the Work which are: (a) ordered by Owner pursuant to Paragraph 11.02, (b) required because of Owner's acceptance of defective Work under Paragraph 14.04 or Owner's correction of defective Work under Paragraph 14.07, or (c) agreed to by the parties, subject to the need for Engineer's recommendation if the change in the Work involves the design (as set forth in the Drawings, Specifications, or otherwise), or other engineering or technical matters; and

4. changes in the Contract Price or Contract Times, or other changes, which embody the substance of any final and binding results under Paragraph 11.06, or Article 12.

B. If Owner or Contractor refuses to execute a Change Order that is required to be executed under the terms of this Paragraph 11.07, it shall be deemed to be of full force and effect, as if fully executed.

11.08 *Notification to Surety*

A. If the provisions of any bond require notice to be given to a surety of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times), the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

ARTICLE 12 – CLAIMS

12.01 *Claims*

A. *Claims Process*: The following disputes between Owner and Contractor shall be submitted to the Claims process set forth in this Article:

1. Appeals by Owner or Contractor of Engineer's decisions regarding Change Proposals;
2. Owner demands for adjustments in the Contract Price or Contract Times, or other relief under the Contract Documents; and
3. Disputes that Engineer has been unable to address because they do not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters.

B. *Submittal of Claim*: The party submitting a Claim shall deliver it directly to the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto; in the case of appeals regarding Change Proposals within 30 days of the decision under appeal. The party submitting the Claim shall also furnish a copy to the Engineer, for its information only. The responsibility to substantiate a Claim shall rest with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, or both, Contractor shall certify that the Claim is made in good faith, that the supporting data are accurate and complete, and that to the best of Contractor's knowledge and belief the amount of time or money requested accurately reflects the full amount to which Contractor is entitled.

C. *Review and Resolution*: The party receiving a Claim shall review it thoroughly, giving full consideration to its merits. The two parties shall seek to resolve the Claim through the exchange of information and direct negotiations. The parties may extend the time for resolving the Claim by mutual agreement. All actions taken on a Claim shall be stated in writing and submitted to the other party, with a copy to Engineer.

D. *Mediation*:

1. At any time after initiation of a Claim, Owner and Contractor may mutually agree to mediation of the underlying dispute. The agreement to mediate shall stay the Claim submittal and response process.
2. If Owner and Contractor agree to mediation, then after 60 days from such agreement, either Owner or Contractor may unilaterally terminate the mediation process, and the Claim submittal and decision process shall resume as of the date of the termination. If the mediation proceeds but is unsuccessful in resolving the dispute, the Claim submittal and decision process shall resume as of the date of the conclusion of the mediation, as determined by the mediator.
3. Owner and Contractor shall each pay one-half of the mediator's fees and costs.

E. *Partial Approval*: If the party receiving a Claim approves the Claim in part and denies it in part, such action shall be final and binding unless within 30 days of such action the other party invokes the procedure set forth in Article 17 for final resolution of disputes.

F. *Denial of Claim*: If efforts to resolve a Claim are not successful, the party receiving the Claim may deny it by giving written notice of denial to the other party. If the receiving party does not take action on the Claim within 90 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of the inaction, the Claim is deemed denied, thereby commencing the time for appeal of the denial. A

denial of the Claim shall be final and binding unless within 30 days of the denial the other party invokes the procedure set forth in Article 17 for the final resolution of disputes.

G. *Final and Binding Results*: If the parties reach a mutual agreement regarding a Claim, whether through approval of the Claim, direct negotiations, mediation, or otherwise; or if a Claim is approved in part and denied in part, or denied in full, and such actions become final and binding; then the results of the agreement or action on the Claim shall be incorporated in a Change Order to the extent they affect the Contract, including the Work, the Contract Times, or the Contract Price.

ARTICLE 13 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

13.01 *Cost of the Work*

A. *Purposes for Determination of Cost of the Work*: The term Cost of the Work means the sum of all costs necessary for the proper performance of the Work at issue, as further defined below. The provisions of this Paragraph 13.01 are used for two distinct purposes:

1. To determine Cost of the Work when Cost of the Work is a component of the Contract Price, under cost-plus-fee, time-and-materials, or other cost-based terms; or

2. To determine the value of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price. When the value of any such adjustment is determined on the basis of Cost of the Work, Contractor is entitled only to those additional or incremental costs required because of the change in the Work or because of the event giving rise to the adjustment.

B. *Costs Included*: Except as otherwise may be agreed to in writing by Owner, costs included in the Cost of the Work shall be in amounts no higher than those prevailing in the locality of the Project, shall not include any of the costs itemized in Paragraph 13.01.C, and shall include only the following items:

1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, and vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by Owner.

2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates, and refunds and returns from sale of surplus materials and equipment shall accrue to Owner, and Contractor

shall make provisions so that they may be obtained.

3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 13.01.

4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.

5. Supplemental costs including the following:
   a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.
   b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.
   c. Rentals of all construction equipment and machinery, and the parts thereof, whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.
   d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.
   e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.
   f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with Paragraph 6.05), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee.

g. The cost of utilities, fuel, and sanitary facilities at the Site.

h. Minor expenses such as communication service at the Site, express and courier services, and similar petty cash items in connection with the Work.

i. The costs of premiums for all bonds and insurance that Contractor is required by the Contract Documents to purchase and maintain.

C. *Costs Excluded*: The term Cost of the Work shall not include any of the following items:

1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expediters, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 13.01.B.1 or specifically covered by Paragraph 13.01.B.4. The payroll costs and other compensation excluded here are to be considered administrative costs covered by the Contractor's fee.

2. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.

3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.

4. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.

5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraph 13.01.B.

D. *Contractor's Fee*: When the Work as a whole is performed on the basis of cost-plus, Contractor's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 11.04.C.

E. *Documentation*: Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

13.02 *Allowances*

A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.

B. *Cash Allowances*: Contractor agrees that:

1. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at

the Site, and all applicable taxes; and

2. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.

C. *Contingency Allowance*: Contractor agrees that a contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.

D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

13.03 *Unit Price Work (if used)*

A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.

B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Payments to Contractor for Unit Price Work will be based on actual quantities.

C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.

D. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, subject to the provisions of the following paragraph.

E. Within 30 days of Engineer's written decision under the preceding paragraph, Contractor may submit a Change Proposal, or Owner may file a Claim, seeking an adjustment in the Contract Price if:

1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement;

2. there is no corresponding adjustment with respect to any other item of Work; and

3. Contractor believes that it is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price, and the parties are unable to agree as to the amount of any such increase or decrease.

ARTICLE 14 – TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

14.01 *Access to Work*

A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and authorities having jurisdiction will have access to the Site and the Work at reasonable times for their observation, inspection, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's safety procedures and programs so that they may comply therewith as applicable.

14.02 *Tests, Inspections, and Approvals*

A. Contractor shall give Engineer timely notice of readiness of the Work (or specific parts thereof) for all required inspections and tests, and shall cooperate with inspection and testing personnel to facilitate required inspections and tests.

B. Owner shall retain and pay for the services of an independent inspector, testing laboratory, or other qualified individual or entity to perform all inspections and tests expressly required by the Contract Documents to be furnished and paid for by Owner, except that costs incurred in connection with tests or inspections of covered Work shall be governed by the provisions of Paragraph 14.05.

C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.

D. Contractor shall be responsible for arranging, obtaining, and paying for all inspections and tests required:

1. by the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to Owner;
2. to attain Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work;
3. by manufacturers of equipment furnished under the Contract Documents;
4. for testing, adjusting, and balancing of mechanical, electrical, and other equipment to be incorporated into the Work; and
5. for acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work.

Such inspections and tests shall be performed by independent inspectors, testing laboratories, or other qualified individuals or entities acceptable to Owner and Engineer.

E. If the Contract Documents require the Work (or part thereof) to be approved by Owner, Engineer, or another designated individual or entity, then Contractor shall assume full responsibility for arranging and obtaining such approvals.

F. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation. Such uncovering shall be at Contractor's expense unless Contractor had given Engineer timely notice of Contractor's intention to cover the same and Engineer had not acted with reasonable promptness in response to

such notice.

14.03 *Defective Work*

A. *Contractor's Obligation*: It is Contractor's obligation to assure that the Work is not defective for a period of one year. The pump supplier shall provide a two-year warranty on the Pumps, Electrical Control Panel and any supplied appurtenances with the pump package that shall be transferred to the City.

B. *Engineer's Authority*: Engineer has the authority to determine whether Work is defective, and to reject defective Work.

C. *Notice of Defects*: Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor.

D. *Correction, or Removal and Replacement*: Promptly after receipt of written notice of defective Work, Contractor shall correct all such defective Work, whether or not fabricated, installed, or completed, or, if Engineer has rejected the defective Work, remove it from the Project and replace it with Work that is not defective.

E. *Preservation of Warranties*: When correcting defective Work, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

F. *Costs and Damages*: In addition to its correction, removal, and replacement obligations with respect to defective Work, Contractor shall pay all claims, costs, losses, and damages arising out of or relating to defective Work, including but not limited to the cost of the inspection, testing, correction, removal, replacement, or reconstruction of such defective Work, fines levied against Owner by governmental authorities because the Work is defective, and the costs of repair or replacement of work of others resulting from defective Work. Prior to final payment, if Owner and Contractor are unable to agree as to the measure of such claims, costs, losses, and damages resulting from defective Work, then Owner may impose a reasonable set-off against payments due under Article 15.

14.04 *Acceptance of Defective Work*

A. If, instead of requiring correction or removal and replacement of defective Work, Owner prefers to accept it, Owner may do so (subject, if such acceptance occurs prior to final payment, to Engineer's confirmation that such acceptance is in general accord with the design intent and applicable engineering principles, and will not endanger public safety). Contractor shall pay all claims, costs, losses, and damages attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness), and for the diminished value of the Work to the extent not otherwise paid by Contractor. If any such acceptance occurs prior to final payment, the necessary revisions in the Contract Documents with respect to the Work shall be incorporated in a Change Order. If the parties are unable to agree as to the decrease in the Contract Price, reflecting the diminished value of Work so accepted, then Owner may impose a reasonable set-off against payments due under Article 15. If the acceptance of defective Work occurs after final payment, Contractor shall pay an appropriate amount to Owner.

14.05 *Uncovering Work*

A. Engineer has the authority to require additional inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed.

B. If any Work is covered contrary to the written request of Engineer, then Contractor shall, if requested by Engineer, uncover such Work for Engineer's observation, and then replace the covering, all at Contractor's expense.

C. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, then Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, and provide all necessary labor, material, and equipment.

1. If it is found that the uncovered Work is defective, Contractor shall be responsible for all claims, costs, losses, and damages arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and pending Contractor's full discharge of this responsibility the Owner shall be entitled to impose a reasonable set-off against payments due under Article 15.

2. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, then Contractor may submit a Change Proposal within 30 days of the determination that the Work is not defective.

14.06 *Owner May Stop the Work*

A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, then Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work shall not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

14.07 *Owner May Correct Defective Work*

A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace rejected Work as required by Engineer, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, then Owner may, after seven days written notice to Contractor, correct or remedy any such deficiency.

B. In exercising the rights and remedies under this Paragraph 14.07, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and

employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this paragraph.

C. All claims, costs, losses, and damages incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 14.07 will be charged against Contractor as set-offs against payments due under Article 15. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.

D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 14.07.

ARTICLE 15 – PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD

15.01 *Progress Payments*

A. *Basis for Progress Payments*: The Schedule of Values established as provided in Article 2 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed during the pay period, as determined under the provisions of Paragraph 13.03. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period.

B. *Applications for Payments*:

1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens, and evidence that the materials and equipment are covered by appropriate property insurance, a warehouse bond, or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.

2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.

3. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

C. *Review of Applications*:

1. Engineer will, within 10 business days after receipt of each Application for Payment, including each resubmittal, either indicate in writing a recommendation of payment

and present the Application to Owner, or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.

2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:

   a. the Work has progressed to the point indicated;

   b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 13.03, and any other qualifications stated in the recommendation); and

   c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.

3. By recommending any such payment Engineer will not thereby be deemed to have represented that:

   a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract; or

   b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.

4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:

   a. to supervise, direct, or control the Work, or

   b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or

   c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or

   d. to make any examination to ascertain how or for what purposes Contractor has used the money paid on account of the Contract Price, or

   e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.

5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 15.01.C.2.

6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer's opinion to protect Owner from loss because:

   a. the Work is defective, requiring correction or replacement;

   b. the Contract Price has been reduced by Change Orders;

   c. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;

   d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible; or

   e. Engineer has actual knowledge of the occurrence of any of the events that would constitute a default by Contractor and therefore justify termination for cause under the Contract Documents.

D. *Payment Becomes Due*:

   1. Thirty (30) days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended (subject to any Owner set-offs) will become due, and when due will be paid by Owner to Contractor.

E. *Reductions in Payment by Owner*:

   1. In addition to any reductions in payment (set-offs) recommended by Engineer, Owner is entitled to impose a set-off against payment based on any of the following:

      a. claims have been made against Owner on account of Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages on account of Contractor's conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;

      b. Contractor has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Site;

      c. Contractor has failed to provide and maintain required bonds or insurance;

      d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible;

      e. Owner has incurred extra charges or engineering costs related to submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to manufacturing or assembly facilities;

      f. the Work is defective, requiring correction or replacement;

      g. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;

h. the Contract Price has been reduced by Change Orders;

i. an event that would constitute a default by Contractor and therefore justify a termination for cause has occurred;

j. liquidated damages have accrued as a result of Contractor's failure to achieve Milestones, Substantial Completion, or final completion of the Work;

k. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;

l. there are other items entitling Owner to a set off against the amount recommended.

2. If Owner imposes any set-off against payment, whether based on its own knowledge or on the written recommendations of Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and the specific amount of the reduction, and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, if Contractor remedies the reasons for such action. The reduction imposed shall be binding on Contractor unless it duly submits a Change Proposal contesting the reduction.

3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 15.01.C.1 and subject to interest as provided in the Agreement.

15.02 *Contractor's Warranty of Title*

A. Contractor warrants and guarantees that title to all Work, materials, and equipment furnished under the Contract will pass to Owner free and clear of (1) all Liens and other title defects, and (2) all patent, licensing, copyright, or royalty obligations, no later than seven days after the time of payment by Owner.

15.03 *Substantial Completion*

A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete and request that Engineer issue a certificate of Substantial Completion. Contractor shall at the same time submit to Owner and Engineer an initial draft of punch list items to be completed or corrected before final payment.

B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.

C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a preliminary certificate of Substantial Completion which shall fix the date of Substantial Completion. Engineer shall attach to the certificate a punch list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the

preliminary certificate during which to make written objection to Engineer as to any provisions of the certificate or attached punch list. If, after considering the objections to the provisions of the preliminary certificate, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the preliminary certificate to Owner, notify Contractor in writing that the Work is not substantially complete, stating the reasons therefor. If Owner does not object to the provisions of the certificate, or if despite consideration of Owner's objections Engineer concludes that the Work is substantially complete, then Engineer will, within said 14 days, execute and deliver to Owner and Contractor a final certificate of Substantial Completion (with a revised punch list of items to be completed or corrected) reflecting such changes from the preliminary certificate as Engineer believes justified after consideration of any objections from Owner.

D. At the time of receipt of the preliminary certificate of Substantial Completion, Owner and Contractor will confer regarding Owner's use or occupancy of the Work following Substantial Completion, review the builder's risk insurance policy with respect to the end of the builder's risk coverage, and confirm the transition to coverage of the Work under a permanent
property insurance policy held by Owner. Unless Owner and Contractor agree otherwise in writing, Owner shall bear responsibility for security, operation, protection of the Work, property insurance, maintenance, heat, and utilities upon Owner's use or occupancy of the Work.

E. After Substantial Completion the Contractor shall promptly begin work on the punch list of items to be completed or corrected prior to final payment. In appropriate cases Contractor may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.

F. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the punch list.

15.04 *Partial Use or Occupancy*

A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:

1. At any time Owner may request in writing that Contractor permit Owner to use or occupy any such part of the Work that Owner believes to be substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 15.03.A through E for that part of the Work.

2. At any time Contractor may notify Owner and Engineer in writing that Contractor considers any such part of the Work substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.

3. Within a reasonable time after either such request, Owner, Contractor, and Engineer

shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 15.03 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 6.05 regarding builder's risk or other property insurance.

15.05 *Final Inspection*

A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work, or agreed portion thereof, is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

15.06 *Final Payment*

A. *Application for Payment*:

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, annotated record documents (as provided in Paragraph 7.11), and other documents, Contractor may make application for final payment.

2. The final Application for Payment shall be accompanied (except as previously delivered) by:

   a. all documentation called for in the Contract Documents;

   b. consent of the surety, if any, to final payment;

   c. satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to Owner free and clear of any Liens or other title defects, or will so pass upon final payment.

   d. a list of all disputes that Contractor believes are unsettled; and

   e. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of the Work, and of Liens filed in connection with the Work.

3. In lieu of the releases or waivers of Liens specified in Paragraph 15.06.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (a) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (b) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other

burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien, or Owner at its option may issue joint checks payable to Contractor and specified Subcontractors and Suppliers.

B. *Engineer's Review of Application and Acceptance*:

1. If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of final payment and present the Application for Payment to Owner for payment. Such recommendation shall account for any set-offs against payment that are necessary in Engineer's opinion to protect Owner from loss for the reasons stated above with respect to progress payments. At the same time Engineer will also give written notice to Owner and Contractor that the Work is acceptable, subject to the provisions of Paragraph 15.07. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

C. *Completion of Work*: The Work is complete (subject to surviving obligations) when it is ready for final payment as established by the Engineer's written recommendation of final payment.

D. *Payment Becomes Due*: Thirty days after the presentation to Owner of the final Application for Payment and accompanying documentation, the amount recommended by Engineer (less any further sum Owner is entitled to set off against Engineer's recommendation, including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions above with respect to progress payments) will become due and shall be paid by Owner to Contractor.

15.07 *Waiver of Claims*

A. The making of final payment will not constitute a waiver by Owner of claims or rights against Contractor. Owner expressly reserves claims and rights arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 15.05, from Contractor's failure to comply with the Contract Documents or the terms of any special guarantees specified therein, from outstanding Claims by Owner, or from Contractor's continuing obligations under the Contract Documents.

B. The acceptance of final payment by Contractor will constitute a waiver by Contractor of all claims and rights against Owner other than those pending matters that have been duly submitted or appealed under the provisions of Article 17.

15.08 *Correction Period*

A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the

Contract Documents, or by any specific provision of the Contract Documents), any Work is found to be defective, or if the repair of any damages to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas used by Contractor as permitted by Laws and Regulations, is found to be defective, then Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:

1. correct the defective repairs to the Site or such other adjacent areas;
2. correct such defective Work;
3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and
4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others, or to other land or areas resulting therefrom.

B. If Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others).

C. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.

D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

E. Contractor's obligations under this paragraph are in addition to all other obligations and warranties. The provisions of this paragraph shall not be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

ARTICLE 16 – SUSPENSION OF WORK AND TERMINATION

16.01 *Owner May Suspend Work*

A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by written notice to Contractor and Engineer. Such notice will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be entitled to an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension. Any Change Proposal seeking such adjustments shall be submitted no later than 30 days after the date fixed for resumption of Work.

16.02 *Owner May Terminate for Cause*

A. The occurrence of any one or more of the following events will constitute a default by Contractor and justify termination for cause:

1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the Progress Schedule);
2. Failure of Contractor to perform or otherwise to comply with a material term of the Contract Documents;
3. Contractor's disregard of Laws or Regulations of any public body having jurisdiction; or
4. Contractor's repeated disregard of the authority of Owner or Engineer.

B. If one or more of the events identified in Paragraph 16.02.A occurs, then after giving Contractor (and any surety) ten days written notice that Owner is considering a declaration that Contractor is in default and termination of the contract, Owner may proceed to:

1. declare Contractor to be in default, and give Contractor (and any surety) notice that the Contract is terminated; and
2. enforce the rights available to Owner under any applicable performance bond.

C. Subject to the terms and operation of any applicable performance bond, if Owner has terminated the Contract for cause, Owner may exclude Contractor from the Site, take possession of the Work, incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and complete the Work as Owner may deem expedient.

D. Owner may not proceed with termination of the Contract under Paragraph 16.02.B if Contractor within seven days of receipt of notice of intent to terminate begins to correct its failure to perform and proceeds diligently to cure such failure.

E. If Owner proceeds as provided in Paragraph 16.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds the cost to complete the Work, including all related claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals) sustained by Owner, such excess will be paid to Contractor. If the cost to complete the Work including such related claims, costs, losses, and damages exceeds such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this paragraph, Owner shall not be required to obtain the lowest price for the Work performed.

F. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue, or any rights or remedies of Owner against Contractor or any surety under any payment bond or performance bond. Any retention or payment of money due Contractor by Owner will not release Contractor from liability.

G. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 6.01.A, the provisions of that bond shall govern over any inconsistent

provisions of Paragraphs 16.02.B and 16.02.D.

16.03 *Owner May Terminate For Convenience*

A. Upon seven days written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):

1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;

2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses; and

3. other reasonable expenses directly attributable to termination, including costs incurred to prepare a termination for convenience cost proposal.

B. Contractor shall not be paid on account of loss of anticipated overhead, profits, or revenue, or other economic loss arising out of or resulting from such termination.

16.04 *Contractor May Stop Work or Terminate*

A. If, through no act or fault of Contractor, (1) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (2) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or **(3)** Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven days written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the contract and recover from Owner payment on the same terms as provided in Paragraph 16.03.

B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, seven days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this paragraph are not intended to preclude Contractor from submitting a Change Proposal for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this paragraph.

ARTICLE 17 – FINAL RESOLUTION OF DISPUTES

17.01 *Methods and Procedures*

A. *Disputes Subject to Final Resolution*: The following disputed matters are subject to final resolution under the provisions of this Article:

1. A timely appeal of an approval in part and denial in part of a Claim, or of a denial in full; and

2. Disputes between Owner and Contractor concerning the Work or obligations under the Contract Documents, and arising after final payment has been made.

B. *Final Resolution of Disputes*: For any dispute subject to resolution under this Article, Owner or Contractor may:

1. elect in writing to invoke the dispute resolution process provided for in the Supplementary Conditions; or

2. agree with the other party to submit the dispute to another dispute resolution process; or

3. if no dispute resolution process is provided for in the Supplementary Conditions or mutually agreed to, give written notice to the other party of the intent to submit the dispute to a court of competent jurisdiction.

ARTICLE 18 – MISCELLANEOUS

18.01 *Giving Notice*

A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if: delivered in person, by a commercial courier service or otherwise, to the individual or to a member of the firm or to an officer of the corporation for which it is intended; or

1. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the sender of the notice.

B. When any period of time is referred to in the Contract by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

18.02 *Cumulative Remedies*

A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract. The provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

18.03 *Limitation of Damages*

A. With respect to any and all Change Proposals, Claims, disputes subject to final resolution, and other matters at issue, neither Owner nor Engineer, nor any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, shall be liable to Contractor for any claims, costs, losses, or damages sustained by Contractor on or in connection with any other project or anticipated project.

18.04 *No Waiver*

A. A party's non-enforcement of any provision shall not constitute a waiver of that provision, nor shall it affect the enforceability of that provision or of the remainder of this Contract.

18.05 *Survival of Obligations*

A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract, as well as all continuing obligations indicated in the Contract, will survive final payment, completion, and acceptance of the Work or termination or completion of the Contract or termination of the services of Contractor.

18.06 *Controlling Law*

A. This Contract is to be governed by the law of the state in which the Project is located.

18.07 *Headings*

A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

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SECTION 00 22 15
SUPPLEMENTARY CONDITIONS

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract, EJCDC® C-700 (2013 Edition). All provisions that are not so amended or supplemented remain in full force and effect.

The terms used in these Supplementary Conditions have the meanings stated in the General Conditions. Additional terms used in these Supplementary Conditions have the meanings stated below, which are applicable to both the singular and plural thereof.

The address system used in these Supplementary Conditions is the same as the address system used in the General Conditions, with the prefix "SC" added thereto.

ARTICLE 5 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

SC-5.06 Hazardous Environmental Conditions

SC 5.06 Delete Paragraphs 5.06.A and 5.06.B in their entirety and insert the following:

A. No reports or drawings related to Hazardous Environmental Conditions at the Site are known to Owner.

ARTICLE 6 – BONDS AND INSURANCE

SC-6.02 Insurance—General Provisions

SC-6.02 Add the following paragraph immediately after Paragraph 6.02.B:

1. Contractor may obtain worker's compensation insurance from an insurance company that has not been rated by A.M. Best, provided that such company (a) is domiciled in the state in which the project is located, (b) is certified or authorized as a worker's compensation insurance provider by the appropriate state agency, and (c) has been accepted to provide worker's compensation insurance for similar projects by the state within the last 12 months.

SC-6.03 Contractor's Liability Insurance

SC 6.03 Add the following new paragraph immediately after Paragraph 6.03.J:

K. The limits of liability for the insurance required by Paragraph 6.03 of the General Conditions shall provide coverage for not less than the following amounts or greater where required by Laws and Regulations:

1. Workers' Compensation, and related coverages under Paragraphs 6.03.A.1 and A.2 of the General Conditions:

State:	Statutory
Federal, if applicable (e.g., Longshoreman's):	Statutory
Jones Act coverage, if applicable:	
Bodily injury by accident, each accident	$ NA
Bodily injury by disease, aggregate	$ NA
Employer's Liability:	
Bodily injury, each accident	$ 500,000.00
Bodily injury by disease, each employee	$ 500,000.00
Bodily injury/disease aggregate	$ 1,000,000.00
Foreign voluntary worker compensation	Statutory

2. Contractor's Commercial General Liability under Paragraphs 6.03.B and 6.03.C of the General Conditions:

General Aggregate	$ 2,000,000.00
Products - Completed Operations Aggregate	$ 1,000,000.00
Personal and Advertising Injury	$ 1,000,000.00
Each Occurrence (Bodily Injury and Property Damage)	$ 1,000,000.00

3. Automobile Liability under Paragraph 6.03.D. of the General Conditions:

Bodily Injury:	
Each person	$ 500,000.00
Each accident	$ 1,000,000.00
Property Damage:	
Combined Single Limit of	$ 1,000,000.00

4. **Excess or Umbrella Liability:**

General Aggregate	$	1,000,000.00

5. **Contractor's Professional Liability:**

Each Claim	$	1,000,000.00
Annual Aggregate	$	2,000,000.00

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ARTICLE 7 – CONTRACTOR'S RESPONSIBILITIES

A. If the Owner has no objections to the Contractor working multiple shifts, weekends, and legal holidays, use the following:

SC-7.02.B. Delete Paragraph 7.02 B. in its entirety, and insert the following:

B. In the absence of any Laws or Regulations to the contrary, Contractor may perform the Work on holidays, during any or all hours of the day, and on any or all days of the week, at Contractor's sole discretion.

SC-7.02.C. Add the following new paragraph immediately after Paragraph 7.02.B:

Contractor shall be responsible for the cost of any overtime pay or other expense incurred by the Owner for Engineer's services (including those of the Resident Project Representative, if any), Owner's representative, and construction observation services, occasioned by the performance of Work on Saturday or as overtime on any regular work day. If Contractor is responsible but does not pay, or if the parties are unable to agree as to the amount owed, then Owner may impose a reasonable set-off against payments due under Article 15.

ARTICLE 15 – PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD

SC-15.03 Substantial Completion

SC 15.03.B Add the following new subparagraph to Paragraph 15.03.B:

1. If some or all of the Work has been determined not to be at a point of Substantial Completion and will require re-inspection or re-testing by Engineer, the cost of such re-inspection or re-testing, including the cost of time, travel and living expenses, shall be paid by Contractor to Owner. If Contractor does not pay, or the parties are unable to agree as to the amount owed, then Owner may impose a reasonable set-off against payments due under Article 15.

ARTICLE 17 – FINAL RESOLUTION OF DISPUTES

SC-17.02 Add the following new paragraph immediately after Paragraph 17.01.

SC-17.02 Arbitration

A. All matters subject to final resolution under this Article will be decided by arbitration in accordance with the Florida Rules of Civil Procedure, subject to the conditions and limitations of this paragraph. This agreement to arbitrate and any other agreement or consent to arbitrate entered into will be specifically enforceable under the prevailing law of any court having jurisdiction.

B. The demand for arbitration will be filed in writing with the other party to the Contract and with the selected arbitrator or arbitration provider, and a copy will be sent to Engineer for information. The demand for arbitration will be made within the specific time required in this Article, or if no specified time is applicable within a reasonable time after the matter in question has arisen, and in no event shall any such demand be made after the date when institution of

legal or

equitable proceedings based on such matter in question would be barred by the applicable statute of limitations. The demand for arbitration should include specific reference to Paragraph SC-17.02.D below.

C. No arbitration arising out of or relating to the Contract shall include by consolidation, joinder, or in any other manner any other individual or entity (including Engineer, and Engineer's consultants and the officers, directors, partners, agents, employees or consultants of any of them) who is not a party to this Contract unless:

1. the inclusion of such other individual or entity is necessary if complete relief is to be afforded among those who are already parties to the arbitration; and
2. such other individual or entity is substantially involved in a question of law or fact which is common to those who are already parties to the arbitration and which will arise in such proceedings.

D. The award rendered by the arbitrator(s) shall be consistent with the agreement of the parties, in writing, and include a concise breakdown of the award, and a written explanation of the award specifically citing the Contract provisions deemed applicable and relied on in making the award.

E. The award will be final. Judgment may be entered upon it in any court having jurisdiction thereof, and it will not be subject to modification or appeal, subject to provisions of the Laws and Regulations relating to vacating or modifying an arbitral award.

F. The fees and expenses of the arbitrators and any arbitration service shall be shared equally by Owner and Contractor.

END OF SECTION

SECTION 00 26 00 AGREEMENT BETWEEN OWNER AND CONTRACTOR FOR CONSTRUCTION CONTRACT

THIS AGREEMENT is by and between **The City of Flagler Beach** ("Owner") and **Lads Construction Services LLC** ("Contractor").

Owner and Contractor hereby agree as follows:

ARTICLE 1 – WORK

1.01 Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows: Hurricane Milton Damage Repairs to Flagler Beach Public Library.

ARTICLE 2 – THE PROJECT

2.01 The Project, of which the Work under the Contract Documents is a part, is generally described as follows: Hurricane Milton Damage Repairs to Flagler Beach Public Library.

ARTICLE 3 – ENGINEER

3.01 The part of the Project that pertains to the Work has been designed by the City of Flagler Beach.

ARTICLE 4 – CONTRACT TIMES

4.01 *Time of the Essence*

A. All time limits for Substantial Completion, and Final Completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.

4.02 *Contract Times: Days*

A. The Work will be substantially completed within Ninety (90) days after the date when the Contract Times commence to run as provided in Paragraph 4.01 of the General Conditions, and completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions within One Hundred Twenty (120) days after the date when the Contract Times commence to run.

4.03 *Liquidated Damages*

A. Contractor and Owner recognize that time is of the essence as stated in Paragraph 4.01 above and that Owner will suffer financial and other losses if the Work is not completed and Milestones not achieved within the times specified in Paragraph 4.02 above, plus any extensions thereof allowed in accordance with the Contract. The parties also recognize the delays, expense, and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty):

1. Substantial Completion: Contractor shall pay Owner $500.00 for each day that expires after the time (as duly adjusted pursuant to the Contract) specified in Paragraph 4.02.A above for Substantial Completion until the Work is substantially complete.
2. Completion of Remaining Work: After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Times (as duly adjusted pursuant to the Contract) for completion and readiness for final payment, Contractor shall pay Owner $1,000.00 for each day that expires after such time until the Work is completed and ready for final payment.
3. Liquidated damages for failing to timely attain Substantial Completion and final completion are not additive and will not be imposed concurrently.

ARTICLE 5 – CONTRACT PRICE

5.01 Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents the amounts that follow, subject to adjustment under the Contract:

ARTICLE 6 – PAYMENT PROCEDURES

6.01 *Submittal and Processing of Payments*

A. Contractor shall submit Applications for Payment in accordance with Article 15 of the General Conditions. Applications for Payment will be processed by Engineer as provided in the General Conditions.

6.02 *Progress Payments; Retainage*

A. Owner shall make progress payments on account of the Contract Price on the basis of Contractor's Applications for Payment on or about the 15th day of each month during performance of the Work as provided in Paragraph 6.02.A.1 below, provided that such Applications for Payment have been submitted in a timely manner and otherwise meet the requirements of the Contract. All such payments will be measured by the Schedule of Values established as provided in the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no Schedule of Values, as provided elsewhere in the Contract.

1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such amounts as Owner may withhold, including but not limited to liquidated damages, in accordance with the Contract

a. 95 percent of Work completed (with the balance being retainage). If the Work has been 50 percent completed as determined by Engineer, and if the character and progress of the Work have been satisfactory to Owner and Engineer, then as long as the character and progress of the Work remain satisfactory to Owner and Engineer, there will be no additional retainage; and

B. Upon Substantial Completion, Owner shall pay an amount sufficient to increase total payments to Contractor to 100 percent of the Work completed, less such amounts set off by Owner pursuant to Paragraph 15.01.E of the General Conditions, and less 200 percent of

Engineer's estimate of the value of Work to be completed or corrected as shown on the punch list of items to be completed or corrected prior to final payment.

6.03 *Final Payment*

A. Upon final completion and acceptance of the Work in accordance with Paragraph 15.06 of the General Conditions, Owner shall pay the remainder of the Contract Price as recommended by Engineer as provided in said Paragraph 15.06.

ARTICLE 7 – INTEREST

7.01 All amounts not paid when due shall bear interest at the rate of 3 percent per annum.

ARTICLE 8 – CONTRACTOR'S REPRESENTATIONS

8.01 In order to induce Owner to enter into this Contract, Contractor makes the following representations:

A. Contractor has examined and carefully studied the Contract Documents, and any data and reference items identified in the Contract Documents.

B. Contractor has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

C. Contractor is familiar with and is satisfied as to all Laws and Regulations that may affect cost, progress, and performance of the Work.

D. Contractor has carefully studied all reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings.

E. Contractor has considered the information known to Contractor itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and the Site-related reports and drawings identified in the Contract Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor; and (3) Contractor's safety precautions and programs.

F. Based on the information and observations referred to in the preceding paragraph, Contractor agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.

G. Contractor is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Contract Documents.

H. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.

I. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

J. Contractor's entry into this Contract constitutes an incontrovertible representation by Contractor that without exception all prices in the Agreement are premised upon performing and furnishing the Work required by the Contract Documents.

ARTICLE 9 – CONTRACT DOCUMENTS

9.01 *Contents*

A. The Contract Documents consist of the following:

1. This Agreement (pages 132 to 137, inclusive).
2. The Drawings (Sheets A1 – A2, attached separately).
3. Performance bond (pages 144 to 146, inclusive).
4. General Conditions (pages *i* to *v* and pages 59 to 125, inclusive).
5. Supplementary Conditions (pages 127 to 131, inclusive).
6. Specifications as listed in the table of contents of the Project Manual.
7. Issued Addenda
8. Exhibits to this Agreement (enumerated as follows):
   a. Contractor's Bid Form (pages *i* to *ii* and pages 138 to 143, inclusive).
9. The following which may be delivered or issued on or after the Effective Date of the Contract and are not attached hereto:
   a. Notice to Proceed.
   b. Work Change Directives.
   c. Change Orders.
   d. Field Orders.

B. The documents listed in Paragraph 9.01.A are attached to this Agreement (except as expressly noted otherwise above).

C. There are no Contract Documents other than those listed above in this Article 9.

D. The Contract Documents may only be amended, modified, or supplemented as provided in the General Conditions.

ARTICLE 10 – MISCELLANEOUS

10.01 *Terms*

A. Terms used in this Agreement will have the meanings stated in the General Conditions and the Supplementary Conditions. *Assignment of Contract*

B. Unless expressly agreed to elsewhere in the Contract, no assignment by a party hereto of any rights under or interests in the Contract will be binding on another party hereto without the written consent of the party sought to be bound; and, specifically but without limitation, money that may become due and money that is due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

10.02 *Successors and Assigns*

A. Owner and Contractor each binds itself, its successors, assigns, and legal representatives to the other party hereto, its successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

10.03 *Severability*

A. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon Owner and Contractor, who agree that the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

10.04 *Contractor's Certifications*

A. Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 10.05:

1. "corrupt practice" means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the bidding process or in the Contract execution;

2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner, (b) to establish Bid or Contract prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;

3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, non-competitive levels; and

4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

OWNER:	CONTRACTOR:
_____	Lads Construction Services LLC
By: _____	By: Jeffrey Lademann
Title: _____	Title: President
	(If Contractor is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)
Attest: _____	Attest: _____
Title: _____	Title: _____
Address for giving notices:	Address for giving notices:
_____	1312 S Central Ave Flagler Beach, FL 32136
_____	_____
_____	_____
	License No.: CGC:1528439

(If Owner is a corporation, attach evidence of authority to sign. If Owner is a public body, attach evidence of authority to sign and resolution or other documents authorizing execution of this Agreement.)

END OF SECTION

SECTION 00 41 13 BID FORM

HURRICANE MILTON DAMAGE REPAIRS
TO
FLAGLER BEACH PUBLIC LIBRARY

315 SOUTH SEVENTH STREET
FLAGLER BEACH, FLORIDA 32136

CITY PROJECT NO: 285

CITY INVITATION TO BID NO: FB-250102

JANUARY 2025

INVITATION TO BID
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ARTICLE 1 – BID RECIPIENT

1.01 This Bid is submitted to:

City of Flagler Beach
105 S 2nd Street
Flagler Beach, FL 32136

1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

ARTICLE 2 – BIDDER'S ACKNOWLEDGEMENTS

2.01 Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for 60 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

ARTICLE 3 – BIDDER'S REPRESENTATIONS

3.01 In submitting this Bid, Bidder represents that:

A. Bidder has examined and carefully studied the Bidding Documents, and any data and reference items identified in the Bidding Documents, and hereby acknowledges receipt of the following Addenda:

Addendum No.	Addendum, Date
1	01/19/25
2	01/19/25

B. Bidder (or authorized representative) has attended the Mandatory Pre-Bid Conference.

C. Bidder has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfied itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

D. Bidder is familiar with and has satisfied itself as to all Laws and Regulations that may affect cost, progress, and performance of the Work.

E. Bidder has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings.

F. Bidder has considered the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations

obtained from visits to the Site; the Bidding Documents; and any Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder; and (3) Bidder's safety precautions and programs.

G. Bidder agrees, based on the information and observations referred to in the preceding paragraph, that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents.

H. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.

I. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and confirms that the written resolution thereof by Engineer is acceptable to Bidder.

J. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work.

K. The submission of this Bid constitutes an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, and that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

ARTICLE 4 – BIDDER'S CERTIFICATION

4.01 Bidder certifies that:

A. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation;

B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;

C. Bidder has not solicited or induced any individual or entity to refrain from bidding; and

D. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 4.01.D:

1. "corrupt practice" means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the bidding process;

2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;

3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels; and

4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the e execution of the Contract.

ARTICLE 5 – BASIS OF BID

5.01 **BASE BID:** Bidder will complete the Base Bid Work in accordance with the Contract Documents for the following price(s):

Base Bid Lump Sum Bid Price	$ 34,440.00

5.02 **ALTERNATE 1:** Replace Roof.

A. See Drawings Sheet A-2, Remediation Work for details.

B. See Section 01110, Summary of Work for the full scope.

Alternate #1 Remove Skylights & Replace Roofs	$ 92,375.00

Total of Lump Sum + Alternate #1 = Total Bid $ 126,815.00

ARTICLE 6 – TIME OF COMPLETION

6.01 The Project shall be substantially completed within Ninety (90) days from the Notice to Proceed. An additional Thirty (30) days shall be used to complete any outstanding issues or punch-list items. Final Completion shall be One Hundred Twenty (120) days from Notice to Proceed.

6.02 Bidder agrees that the Work will be substantially complete and will be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before the dates or within the number of calendar days indicated.

6.03 Bidder accepts the provisions of the Agreement as to liquidated damages established as Five Hundred ($500) per day beyond the 120 days of total project time.

ARTICLE 7 – ATTACHMENTS TO THIS BID

7.01 The following documents are submitted with and made a condition of this Bid:

A. Required Performance security;

B. List of Proposed Subcontractors;

C. List of Proposed Suppliers;

D. List of Project References;

E. Evidence of authority to do business in the state of the Project; or a written covenant to obtain such license within the time for acceptance of Bids;

F. Required Bidder Qualification Statement with supporting Attachments A through O; and

G. Submit sealed bids including one (1) original copy and one (1) electronic copy in pdf format on USB thumb drive.

ARTICLE 8 – DEFINED TERMS

8.01 The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions.

ARTICLE 9 – BID SUBMITTAL

BIDDER: *[Indicate correct name of bidding entity]*

Lads construction Services LLC

By:
[Signature] Jeffrey Lademann

[Printed name] Jeffrey Lademann

(If Bidder is a corporation, a limited liability company, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest:
[Signature] _____

[Printed name] _____

Title: _____

Submittal Date: _____

Address for giving notices:
1312 S central Ave Flagler Beach, FL 32136

Telephone Number: (386)-793-4342

Fax Number: _____

Contact Name: Jeffrey Lademann

Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.

Contact e-mail address: Jeffrey@LadsConstructionLLC.com

Bidder's License No.: CGC: 1528439

END OF SECTION

SECTION 00 43 25
PERFORMANCE BOND

CONTRACTOR *(name and address)*: SURETY *(name and address of principal place of business)*:

LADS Construction LLC - 6 Maple St. Flagler Beach FL 32136

OWNER
City of Flagler Beach 105 S 2nd Street
Flagler Beach, FL 32137

See Bid Bond | P.O.A. from Surety At End of Packet.

CONSTRUCTION CONTRACT
Effective Date of the Agreement:
Amount:
Description: City of Flagler Beach Bid Number FB-250102 Public Library Hurricane Milton Damage Repairs, Flagler Beach, FL 32136

BOND
Bond Number:
Date *(not earlier than the Effective Date of the Agreement of the Construction Contract)*:
Amount:
Modifications to this Bond Form: ☐ None ☐ See Paragraph 16

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL	**SURETY**
LADS Construction Services LLC *(seal)*	_____ *(seal)*
Contractor's Name and Corporate Seal	Surety's Name and Corporate Seal
By: _____	By: _____
Signature	Signature *(attach power of attorney)*
Jeffrey Ludemann	See Attached At
Print Name	Print Name
President	End of Doc.
Title	Title
Attest: Jennifer S. Bennett	Attest: _____
Signature	Signature
Witness	_____
Title	Title

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

2. If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Paragraph 3.

3. If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond shall arise after:

3.1 The Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice shall indicate whether the Owner is requesting a conference among the Owner, Contractor, and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Paragraph 3.1 shall be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor, and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default;

3.2 The Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and

3.3 The Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

4. Failure on the part of the Owner to comply with the notice requirement in Paragraph 3.1 shall not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

5. When the Owner has satisfied the conditions of Paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

5.1 Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;

5.2 Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;

5.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owners concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

5.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor, and with reasonable promptness under the circumstances:

5.4.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or

5.4.2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

6. If the Surety does not proceed as provided in Paragraph 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Paragraph 5.4, and the Owner refuses the payment or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

7. If the Surety elects to act under Paragraph 5.1, 5.2, or 5.3, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication for:

7.1 the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;

7.2 additional legal, design professional, and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 5; and

7.3 liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

8. If the Surety elects to act under Paragraph 5.1, 5.3, or 5.4, the Surety's liability is limited to the amount of this Bond.

9. The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced

or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors, and assigns.

10. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.

11. Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum periods of limitations available to sureties as a defense in the jurisdiction of the suit shall be applicable.

12. Notice to the Surety, the Owner, or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears.

13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted here from and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

14. Definitions

14.1 Balance of the Contract Price: The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made including allowance for the Contractor for any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

14.2 Construction Contract: The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

14.3 Contractor Default: Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

14.4 Owner Default: Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

14.5 Contract Documents: All the documents that comprise the agreement between the Owner and Contractor.

15. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

END OF SECTION

Auto-Owners INSURANCE

LIFE • HOME • CAR • BUSINESS

BOND NUMBER: BD160946

BID BOND

KNOW ALL MEN BY THESE PRESENTS:
That we, LADS CONSTRUCTION SERVICES LLC 1312 S CENTRAL AVE FLAGLER BEACH, FL 32136-3720 as Principal, hereinafter called the Principal, and Auto-Owners Insurance Company as Surety, hereinafter called the Surety, are held and firmly bound unto CITY OF FLAGLER BEACH 105 S 2ND ST, FLAGLER BEACH FL 32136-3672 as Obligee, hereinafter called the Obligee, in the penal sum of Five percent of bid dollars (5% of attached bid) for the payment of which the Principal and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that WHEREAS, the Principal has submitted or is about to submit a proposal to the Obligee on a contract for INTERIOR AND EXTERIOR CONSTRUCTION TO REPAIR DAMAGES TO PUBLIC LIBRARY BUILIG FROM HURRICANE MILTON

NOW, THEREFORE, if the said contract be timely awarded to the Principal and the Principal shall, within such time as may be specified, enter into the contract in writing, and give bond, if bond is required, with surety acceptable to the Obligee for the faithful performance of the said contract, then this obligation shall be void; otherwise to remain in full force and effect.

SIGNED AND SEALED this 21ST day of JANUARY, 2025.

LADS CONSTRUCTION SERVICES LLC
Principal

Jennifer S. Bennett
Witness

By _____

AUTO-OWNERS INSURANCE CORPORATE SEAL LANSING, MICHIGAN

Auto-Owners Insurance Company
Surety

Susan E. Theisen
Susan E. Theisen Witness

By _____
Teresa E. Gibson Attorney-In-Fact

29392 (01-18)

Auto-Owners Insurance
Life Home Car Business

Bond Number BD160946

ACKNOWLEDGEMENT BY SURETY

STATE OF MICHIGAN

County of Eaton

On this 21ST day of JANUARY, 2025, before me personally appeared Teresa E. Gibson, known to me to be the Attorney-in-Fact of Auto-Owners Insurance Company, the corporation that executed the within instrument, and acknowledged to me that such corporation executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal, at my office in the aforesaid County, the day and year in this certificate first above written.

JEFFREY P MANY
NOTARY PUBLIC
COUNTY OF INGHAM
My Commission Expires
Acting in the County of
STATE OF MICHIGAN

Jeffrey P. Many
Notary Public in the State of Michigan
County of Ingham

JEFFREY P MANY
NOTARY PUBLIC-STATE OF MICHIGAN
COUNTY INGHAM
My Commission Expires Jan 26, 2029
Acting in the County of

Print Date: 01/21/2025 Print Time: 10:35:21 AM

DATE AND ATTACH TO ORIGINAL BOND

AUTO-OWNERS INSURANCE COMPANY

LANSING, MICHIGAN

POWER OF ATTORNEY

NO. BD160946

KNOW ALL MEN BY THESE PRESENTS: That the AUTO-OWNERS INSURANCE COMPANY AT LANSING, MICHIGAN, a Michigan Corporation, having its principal office at Lansing, County of Eaton, State of Michigan, adopted the following Resolution by the directors of the Company on January 27, 1971, to wit:

"RESOLVED, That the President or any Vice President or Secretary or Assistant Secretary of the Company shall have the power and authority to appoint Attorneys-in-fact, and to authorize them to execute on behalf of the Company, and attach the seal of the Company thereto, bonds and undertakings, recognizances, contracts of indemnity, and other writings obligatory in the nature thereof. Signatures of officers and seal of Company imprinted on such powers of attorney by facsimile shall have same force and effect as if manually affixed. Said officers may at any time remove and revoke the authority of any such appointee."

Does hereby constitute and appoint Teresa E. Gibson

Its true and lawful attorney(s)-in-fact, to execute, seal and deliver for and on its behalf as surety, any and all bonds and undertakings, recognizances, contracts of indemnity and other writings obligatory in the nature thereof, and the execution of such instrument(s) shall be as binding upon the AUTO-OWNERS INSURANCE COMPANY AT LANSING, MICHIGAN as fully and amply, to all intents and purposes, as if the same had been duly executed and acknowledged by its regularly elected officers at its principal office.

IN WITNESS WHEREOF, the AUTO-OWNERS INSURANCE COMPANY AT LANSING, MICHIGAN, has caused this to be signed by its authorized officer this 22nd day of December, 2023.

Brandi Holly — Senior Vice President

STATE OF MICHIGAN } ss.
COUNTY OF EATON }

On this 22nd day of December, 2023, before me personally came Brandi Holly, to me known, who being duly sworn, did depose and say that they are Brandi Holly, Senior Vice President of AUTO-OWNERS INSURANCE COMPANY, the corporation described in and which executed the above instrument, that they know the seal of said corporation, that the seal affixed to said instrument is such Corporate Seal, and that they received said instrument on behalf of the corporation by authority of their office pursuant to a Resolution of the Board of Directors of said corporation.

JEFFREY P MANY NOTARY PUBLIC COUNTY OF MICHIGAN My Commission Expires January 26th, 2029 Acting in the County of STATE OF MICHIGAN

My commission expires January 26th, 2029.

Jeffrey P. Many — Notary Public

STATE OF MICHIGAN } ss.
COUNTY OF EATON }

I, the undersigned First Vice President, Secretary and General Counsel of AUTO-OWNERS INSURANCE COMPANY, do hereby certify that the authority to issue a power of attorney as outlined in the above board of directors resolution remains in full force and effect as written and has not been revoked and the resolution as set forth is now in force.

Signed and sealed at Lansing, Michigan. Dated this 21st day of January, 2025.

AUTO-OWNERS INSURANCE CORPORATE SEAL LANSING, MICHIGAN

William F. Woodbury, First Vice President, Secretary and General Counsel

SECTION 00 51 00
NOTICE OF AWARD

Date of Issuance: _____ ___, 20_____

Owner: City of Flagler Beach — Owner's Project No.:

Engineer: — Engineer's Project No.:

Project: City of Flagler Beach Bid Number FB-250102 Public Library Hurricane Milton Damage Repairs, Flagler Beach, FL 32136

TO BIDDER:

You are notified that Owner has accepted your Bid dated _____ __, 20_____ for the above Contract, and that you are the Successful Bidder and are awarded a Contract for: City of Flagler Beach Bid Number FB-250102 Public Library Hurricane Milton Damage Repairs, Flagler Beach, FL 32136

The Contract Price of the awarded Contract is: **$**_____

One (1) unexecuted counterparts of the Agreement accompany this Notice of Award and one copy of the Contract Documents has been made available to Bidder electronically.

☐ a set of the Drawings will be delivered separately from the other Contract Documents.

You must comply with the following conditions precedent within ten (10) days of the date of this Notice of Award:

1. Deliver to Owner Three (3) counterparts of the Agreement, fully executed by Bidder.
2. Deliver with the executed Agreement(s) the Contract security *[e.g., performance bond]* and insurance documentation as specified in the Instructions to Bidders and General Conditions, Articles 2 and 6.
3. Other conditions precedent (if any): *None*

Failure to comply with these conditions within the time specified will entitle Owner to consider you in default, annul this Notice of Award, and declare your Bid security forfeited.

Within ten days after you comply with the above conditions, Owner will return to you one fully executed counterpart of the Agreement, together with any additional copies of the Contract Documents as indicated in Paragraph 2.02 of the General Conditions.

Owner: City of Flagler Beach

By: Title: _____

Authorized Signature: _____

END OF SECTION

SECTION 00 51 20 NOTICE TO PROCEED

Owner:	City of Flagler Beach	Owner's Contract No.:	
Contractor:		Contractor's Project No.:	
Engineer:		Engineer's Project No.:	
Project:		Effective Date of Contract: _____, 20____	

TO CONTRACTOR:

Owner hereby notifies Contractor that the Contract Times under the above Contract will commence to run on _____, 20_____.

On that date, Contractor shall start performing its obligations under the Contract Documents. No Work shall be done at the Site prior to such date. **In accordance with the Agreement, the number of calendar days to achieve Substantial Completion is Ninety (90) days and the number of days to achieve readiness for final payment is one hundred thirty (120).**

Before starting any Work at the Site, Contractor must comply with the following: **Coordinate the official start date with the City Project Manager.**

_____

City Representative:

_____

Authorized Signature

By: _____

Title: _____

Date Issued: _____

END OF SECTION

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Work Change Directive No.

Date of Issuance: Effective Date:

Owner: City of Flagler Beach Owner's Contract No.:

Contractor: Contractor's Project No.:

Engineer: Engineer's Project No.:

Project:

Contractor is directed to proceed promptly with the following change(s): Description:

Attachments: *[List documents supporting change]*

Purpose for Work Change Directive:

Directive to proceed promptly with the Work described herein, prior to agreeing to changes on Contract Price and Contract Time, is issued due to: *[check one or both of the following]*

Non-agreement on pricing of proposed change.

Necessity to proceed for schedule or other Project reasons.

Estimated Change in Contract Price and Contract Times (non-binding, preliminary):

Contract Price $ [increase] [decrease].

Contract Time days [increase] [decrease].

Basis of estimated change in Contract Price:

Lump Sum Unit Price

Cost of the Work Other

RECOMMENDED:	AUTHORIZED BY:	RECEIVED:
By: By:	By:	
Engineer (Authorized Signature)	Owner (Authorized Signature)	Contractor (Authorized Signature)
Title:	Title:	Title:
Date:	Date:	Date:

Approved by Funding Agency (if applicable)

By: Date:

Title:

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SECTION 00 62 50
NOTICE OF ACCEPTABILITY OF WORK

PROJECT:

OWNER: City of Flagler Beach

CONTRACTOR:

OWNER'S CONSTRUCTION CONTRACT IDENTIFICATION:

EFFECTIVE DATE OF THE CONSTRUCTION CONTRACT:_____, 20____

ENGINEER:

NOTICE DATE:

To: City of Flagler Beach
Owner

And To: _____
Contractor

From: _____
Engineer

The Engineer hereby gives notice to the above Owner and Contractor that Engineer has recommended final payment of Contractor, and that the Work furnished and performed by Contractor under the above Construction Contract is acceptable, expressly subject to the provisions of the related Contract Documents, the Agreement between Owner and Engineer for Professional Services dated _____, 20___, and the following terms and conditions of this Notice:

CONDITIONS OF NOTICE OF ACCEPTABILITY OF WORK

The Notice of Acceptability of Work ("Notice") is expressly made subject to the following terms and conditions to which all those who receive said Notice and rely thereon agree:

1. This Notice is given with the skill and care ordinarily used by members of the engineering profession practicing under similar conditions at the same time and in the same locality.

2. This Notice reflects and is an expression of the Engineer's professional opinion.

3. This Notice is given as to the best of Engineer's knowledge, information, and belief as of the Notice Date.

4. This Notice is based entirely on and expressly limited by the scope of services Engineer has been employed by Owner to perform or furnish during construction of the Project (including observation of the Contractor's work) under Engineer's Agreement with Owner, and applies only to facts that are within Engineer's knowledge or could reasonably have been ascertained by Engineer as a result of carrying out the responsibilities specifically assigned to Engineer under such Agreement.

5. This Notice is not a guarantee or warranty of Contractor's performance under the Construction Contract, an acceptance of Work that is not in accordance with the related Contract Documents, including but not limited to defective Work discovered after final inspection, nor an assumption of responsibility for any failure of Contractor to furnish and perform the Work thereunder in accordance with the Construction Contract Documents, or to otherwise comply with the Construction Contract Documents or the terms of any special guarantees specified therein.

6. This Notice does not relieve Contractor of any surviving obligations under the Construction Contract, and is subject to Owner's reservations of rights with respect to completion and final payment.

by: _____

Title: Project Manager

Dated: _____ 20__

END OF SECTION

SECTION 00 64 25
CERTIFICATE OF SUBSTANTIAL COMPLETION

Owner: City of Flagler Beach	Owner's Contract No.:
Contractor:	Contractor's Project No.:
Engineer:	Engineer's Project No.:

This [preliminary] [final] Certificate of Substantial Completion applies to:

☒ All Work ☐ The following specified portions of the Work:

_____, 20

Date of Substantial Completion

The Work to which this Certificate applies has been inspected by authorized representatives of Owner, Contractor, and Engineer, and found to be substantially complete. The Date of Substantial Completion of the Work or portion thereof designated above is hereby established, subject to the provisions of the Contract pertaining to Substantial Completion. The date of Substantial Completion in the final Certificate of Substantial Completion marks the commencement of the contractual correction period and applicable warranties required by the Contract.

A punch list of items to be completed or corrected is attached to this Certificate. This list may not be all-inclusive, and the failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract.

The responsibilities between Owner and Contractor for security, operation, safety, maintenance, heat, utilities, insurance, and warranties upon Owner's use or occupancy of the Work shall be as provided in the Contract, except as amended as follows: *None.*

Amendments to Owner's responsibilities:
☒ None
☐ As follows

Amendments to Contractor's responsibilities:
☒ None
☐ As follows:

The following documents are attached to and made a part of this Certificate: No Documents Attached.

This Certificate does not constitute an acceptance of Work not in accordance with the Contract Documents, nor is it a release of Contractor's obligation to complete the Work in accordance with the Contract.

EXECUTED BY ENGINEER:	RECEIVED:	RECEIVED:
By: _____ (Authorized signature)	By: _____ Owner (Authorized Signature)	By: _____ Contractor (Authorized Signature)
Title: Project Manager	Title: _____	Title: _____
Date: _____, 2022	Date: _____	Date: _____

SECTION 01110

SUMMARY OF WORK

PART 1 GENERAL

1.01 Section Includes

Summary of work, other contracts, work sequence, operation of existing facilities, use of premises, coordination, cutting and patching.

1.02 Summary of Work

The building sustained extensive water damages due to Hurricane Milton. The Project consists of miscellaneous interior and exterior repairs to the City of Flagler Beach Public Library building located at 315 South 7th Street in Flagler Beach, Florida. These include:

A. PRE-CONSTRUCTION WORK:

1. Contractor shall field verify all conditions and dimensions prior to performing demolition. Contractor is required to do demolition of all items required to accomplish the new work, whether or not shown or noted;
2. The Contractor shall be responsible for the removal and proper disposal of all materials as called for in the contract documents. The placement and access to waste receptacles for demolition/construction debris shall be coordinated with the Owner. Contractor to coordinate the demolition of all utilities with Owner prior to commencing demolition. Contractor is responsible for providing the name, address, and GPS coordinates of final disposal site of all debris in accordance with FEMA requirements;
3. The Owner has the first right of refusal on all salvaged equipment;
4. The Contractor shall notify and await approval from the owner before interruption of any utilities;
5. Facilities or portions of facilities shall not be occupied during construction, unless exits, fire detection, early warning systems and any safety barriers are continuously maintained and clearly marked at all times.
6. Prior to the issuance of the notice to proceed, a safety plan shall be provided by the Contractor which clearly delineates area(s) for construction, safety barriers, construction traffic during all phases, and conditions of construction.

B. INTERIOR WORK – INCLUDED IN BASE BID:

1. Replace all drywall on surfaces where previously removed – match thickness of existing;
2. Tape and mud all drywall joints and sand to a smooth finish – match texture of existing;
3. Replace all baseboard with new wood to match existing in species and profile;
4. Remove automatic door operator, push button, and all associated conduit/wiring – to be reinstalled after entry wall construction;
5. Remove exit sign and conduit – to be reinstalled after entry wall construction;

6. Remove doors and reinstall after new framing is constructed;
7. Remove framed wall from slab to underside of roof (approximately 10'-0" high) and from masonry wall to masonry wall (approximately 10'-8" wide);
8. Reconstruct removed framed wall as shown on Details 2 and 4 on Sheet A-2. Add R-19 batt insulation;
9. Remove existing laminate flooring at the entry doors and install new, owner-supplied ceramic tile (approximately 50 SF);
10. Paint all new surfaces to match existing;
11. Caulk all interior surfaces around windows and main entry doors.

C. EXTERIOR WORK – INCLUDED IN BASE BID:

1. On east wall only, completely remove the aluminum fascia covering and drip edge and the pressure-treated 2" x 6" wood fascia board along gable rake.
2. Rebuild the fascia as shown on Detail 5, Sheet A-2.
3. Remove push button for door opener and all conduit/wiring – to be reinstalled after entry wall construction;
4. Remove or secure existing camera located at northeast underside of canopy so as to be safeguarded from demolition/new construction while still remaining operational at all times – reinstall after exterior work is completed in the entrance area;
5. Remove existing outdoor carpeting, including metal edge-strips, located directly outside the double entry doors as shown on Detail 1, Sheet A-2. Remove any adhesive residue, thoroughly clean substrate concrete;
6. Caulk exterior surfaces around all windows and double entry doors;
7. Remove excess built-up soil above the slab level along the east and north walls. Regrade and provide new sod per Detail 6, Sheet A-2.

D. EXTERIOR WORK – ADD ALTERNATE – 1:

1. Remove completely the existing modified bitumen roof on entire building.
2. Remove all skylights on flat roof. Install new decking and insulation to match existing. These openings, once properly installed and inspected, will be covered by new roof.
3. Remove all skylights on elevated structure at the west end of the Library. Close with new deck material and insulation to match surrounding area. These openings, once properly installed and inspected, will be covered by new roof.

1.04 Work Sequence

The Contractor's sequence of work may be of his choosing in order to complete the work in the allowed time frame while accommodating other contractors on site.

1.05 Contractor Use of Premises

Confine operations at the site to areas permitted by applicable laws, ordinances, permits, and by the Contract Documents. Do not unreasonably encumber the site with materials or equipment. Do not load structures with weight that will endanger the structure. The Contractor shall assume full responsibility for protection and safekeeping of products stored on the job site.

1.06 Coordination

A. The Contractor shall be fully responsible for the coordination of its work and the work of its employees, subcontractors, and suppliers and to assure compliance with schedules.

B. The coordination requirements of this Section are in addition to the requirements of the front-end bidding documents issued by the City.

C. It is the Contractor's responsibility to coordinate with all the utilities regarding locates, testing, or relocations.

1.07 Cutting and Patching

A. The Contractor shall, at no additional expense to the City, perform cutting and patching necessary to the completion of the Project. Perform cutting and patching in a manner to prevent damage to the structure or previously completed work.

B. Refinish surfaces as necessary to provide an even finish.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 01270

MEASUREMENT AND PAYMENT - LUMP SUM CONTRACTS

PART 1 GENERAL

1.01 GENERAL

A. Payment for all work done in compliance with the Contract Documents, inclusive of furnishing all manpower, equipment, materials, and performance of all operations relative to construction of this project, will be made under Pay Items. Work for which there is not a pay item will be considered incidental to the Contract and no additional compensation will be allowed.

B. The Owner reserves the right to modify work as may be necessary and increase or decrease quantities of work to be performed, including deduction or cancellation of any one or more of the Pay Items. Changes in the work shall not be considered as a waiver of any conditions of the Contract nor invalidate any provisions thereof.

C. The Contractor's attention is again called to the fact that the quotations for the various items of work are intended to establish a total price cost for completing the work in its entirety. Should the Contractor feel that the cost of any item of the work has not been established by the Bid Form, he shall include the cost for the work in some other applicable bid item, so that his proposal for the project does reflect his total price for completing the work in its entirety.

D. The quantities for payment under this Contract shall be determined by actual measurement and payment of the completed items, in place, ready for service and accepted by the Owner, in accordance with the applicable method of measurement therefore contained herein. A representative of the Contractor shall witness all field measurements.

E. Work performed by the Contractor outside the limits of construction shall be at the Contractor's expense.

2.01 MEASUREMENT

A. The quantities for payment under this Contract shall be determined by actual measurement of the completed items, in place, ready for service and accepted by the Owner, in accordance with the applicable method of measurement therefore contained herein.

3.01 PAYMENT ITEMS

A. Items are as enumerated on the bid form and the lump sums provided encompass the entire scope of work as described herein.

END OF SECTION

SECTION 01320

PROJECT COMPLETION SCHEDULE

PART 1 GENERAL

1.01 Section Includes

Project completion scheduling

1.02 Submittals

A. Prior to construction, prepare a schedule showing all major activities needed to complete project. Include major material and equipment order and delivery times. Submit to Owner no later than the date of the preconstruction conference. Update the schedule if any major events occur that would alter the previously submitted schedule.

B. Include on the schedule a minimum float of 1 day every 3 weeks during construction.

C. Project substantial and final completion dates shown on schedule shall be same as or earlier than the contractual dates.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION

3.01 Monitoring and Updating of Schedule

A. Float shown on the schedule belongs to the project.

B. Progress data shall be accumulated to update the schedule on a monthly basis, prior to submittal of the application for payment. Progress data shall include:

1. Activities started
2. Activities completed
3. Predicted activity starts and predicted activity completions
4. Changes in original duration for specific activities
5. Changes in activity sequences
6. Percent complete on activities

END OF SECTION

SECTION 01410

REGULATORY REQUIREMENTS AND PERMITS

PART 1 GENERAL

1.01 Section Includes

Regulatory requirements, project permits

1.02 Requirements of Regulatory Agencies

A. Whenever the Drawings and Specifications conflict with the requirements of the permit, then the requirements of the permit shall govern and the cost of abiding by the provisions of the permit shall be considered incidental to the Contract.

B. All electrical apparatus and wiring pertaining to a piece of equipment or an appliance furnished and installed under this Contract shall comply with the National Electrical Code and shall be listed by Underwriters Laboratories or bear the approval of a recognized Testing Laboratory approved by the Engineer.

1.03 Project Permits

A. Prior to construction, the Contractor shall apply for a separate Building Permit for each pump station from the City of Flagler Beach Building Department. Signed and sealed construction plans will be provided to the Contractor for its use in applying for the above permits. The Contractor is to coordinate with each permitting agency in order to determine the number of sets of signed and sealed construction plans that are required and the required sheet size (full size 22"x34" or half size 11"x17").

B. The Contractor shall review and become familiar with all permits for the Project, complete with all conditions, attachments, exhibits and permit modifications. A copy of all permits for the Project shall be maintained by the Contractor at the project site, and shall be available for review upon request.

C. The Contractor shall be fully responsible to abide by all provisions of the permits. The Contractor is responsible for the selection, implementation and operation of all measures required by the permits, including the maintenance of said measures as necessary during construction. No additional compensation will be allowed for any work associated with permit requirements.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 01420

ABBREVIATIONS

PART 1 GENERAL

1.01 Reference to Standards and Specifications of Technical Societies

A. Definitions and interpretations shall be as provided in Section 1 of the General Conditions.

B. Work specified by reference to published standard or specification of government agency, technical association, trade association, professional society or institute, testing agency, or other organization shall meet requirements or surpass minimum standards of quality for materials and workmanship established by designated standard or specification.

C. Where so specified, products or workmanship shall also meet or exceed additional prescriptive or performance requirements included within Contract Documents to establish a higher or more stringent standard of quality than required by referenced standard.

D. Where two or more standards are specified to establish quality, product and workmanship shall meet or exceed requirements of most stringent.

E. Where both a standard and a brand name are specified for a product in Contract Documents, proprietary product named shall meet or exceed requirements of specified reference standard.

F. Copies of standards and specifications of technical societies and copies of applicable referenced standards have not been bound in these Contract Documents.

G. Where copies of standards are needed by Contractor, obtain a copy or copies directly from publication source and maintain in an orderly manner at the Site as Work Site records, available to Contractor's personnel, Subcontractors, Owner, and Engineer.

1.02 Abbreviations

A. Following is a list of abbreviations for trade organizations, government agencies, and construction industry organizations to which references may be made in the Contract Documents, with abbreviations used.

AA	Aluminum Association
AABC	Associated Air Balance Council
AAMA	American Architectural Manufacturers Association
AASHTO	American Association of State Highway and Transportation Officials
ABMA	American Bearing Manufacturers' Association
ACAD	AutoCAD - Computer Aided Design Software manufactured by Autodesk
ACI	American Concrete Institute

AEIC	Association of Edison Illuminating Companies
AGA	American Gas Association
AGMA	American Gear Manufacturers' Association
AI	Asphalt Institute
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AITC	American Institute of Timber Construction
ALS	American Lumber Standards
AMCA	Air Movement and Control Association
ANSI	American National Standards Institute
APA	APA – The Engineered Wood Association
API	American Petroleum Institute
APWA	American Public Works Association
ARI	Air-Conditioning and Refrigeration Institute
ASAE	American Society of Agricultural Engineers
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.
ASME	American Society of Mechanical Engineers
ASNT	American Society for Nondestructive Testing
ASTM	ASTM International
AWI	Architectural Woodwork Institute
AWPA	American Wood Preservers' Association
AWPI	American Wood Preservers' Institute
AWS	American Welding Society
AWWA	American Water Works Association
BHMA	Builders Hardware Manufacturers' Association
CBM	Certified Ballast Manufacturer
CDA	Copper Development Association
CGA	Compressed Gas Association
CISPI	Cast Iron Soil Pipe Institute
CMAA	Crane Manufacturers' Association of America
CRSI	Concrete Reinforcing Steel Institute
CS	Commercial Standard
CSA	Canadian Standards Association
CSI	Construction Specifications Institute
DIN	Deutsches Institut für Normung e.V.
DIPRA	Ductile Iron Pipe Research Association
EIA	Electronic Industries Alliance
EJCDC	Engineers Joint Contract Documents' Committee
ETL	Electrical Test Laboratories
FAA	Federal Aviation Administration
FAC	Florida Administrative Code
FCC	Federal Communications Commission
FDA	Food and Drug Administration
FDEP	Florida Department of Environmental Protection
FDOT	Florida Department of Transportation
FEMA	Federal Emergency Management Agency
FIPS	Federal Information Processing Standards
FM	FM Global

Fed. Spec.	Federal Specifications (FAA Specifications)
FS	Federal Specifications and Standards (Technical Specifications)
GA	Gypsum Association
GANA	Glass Association of North America
HI	Hydraulic Institute
HMI	Hoist Manufacturers' Institute
IBC	International Building Code
ICBO	International Conference of Building Officials
ICC	International Code Council
ICEA	Insulated Cable Engineers' Association
IFC	International Fire Code
IEEE	Institute of Electrical and Electronics Engineers, Inc.
IESNA	Illuminating Engineering Society of North America
IFI	Industrial Fasteners Institute
IGMA	Insulating Glass Manufacturer's Alliance
IMC	International Mechanical Code
INDA	Association of the Nonwoven Fabrics Industry
IPC	International Plumbing Code
IRI	Industrial Risk Insurers
ISA	Instrumentation, Systems, and Automation Society
ISO	International Organization for Standardization
ITL	Independent Testing Laboratory
JIC	Joint Industry Conferences of Hydraulic Manufacturers
MIA	Marble Institute of America
MIL	Military Specifications
MMA	Monorail Manufacturers' Association
NAAMM	National Association of Architectural Metal Manufacturers
NACE	NACE International
NEBB	National Environmental Balancing Bureau
NEC	National Electrical Code
NECA	National Electrical Contractor's Association
NEMA	National Electrical Manufacturers' Association
NESC	National Electrical Safety Code
NETA	InterNational Electrical Testing Association
NFPA	National Fire Protection Association
NHLA	National Hardwood Lumber Association
NICET	National Institute for Certification in Engineering Technologies
NIST	National Institute of Standards and Technology
NRCA	National Roofing Contractors Association
NRTL	Nationally Recognized Testing Laboratories
NSF	NSF International
NSPE	National Society of Professional Engineers
NTMA	National Terrazzo and Mosaic Association
NWWDA	National Wood Window and Door Association
OSHA	Occupational Safety and Health Act (both Federal and State)
PCI	Precast/Prestressed Concrete Institute
PEI	Porcelain Enamel Institute
PPI	Plastic Pipe Institute
PS	Product Standards Section-U.S. Department of Commerce
RMA	Rubber Manufacturers' Association

RUS	Rural Utilities Service
SAE	Society of Automotive Engineers
SDI	Steel Deck Institute
SDI	Steel Door Institute
SJI	Steel Joist Institute
SJRWMD	St. Johns River Water Management District
SMACNA	Sheet Metal and Air Conditioning Contractors National Association
SPI	Society of the Plastics Industry
SSPC	The Society for Protective Coatings
SWI	Steel Window Institute
TEMA	Tubular Exchanger Manufacturers' Association
TCA	Tile Council of North America
TIA	Telecommunications Industry Association
UBC	Uniform Building Code
UFC	Uniform Fire Code
UL	Underwriters Laboratories Inc.
UMC	Uniform Mechanical Code
USBR	U.S. Bureau of Reclamation
WCLIB	West Coast Lumber Inspection Bureau
WWPA	Western Wood Products Association

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 01450

QUALITY CONTROL

PART 1 GENERAL

1.01 Section Includes

Quality control, quality assurance.

1.02 Quality Control

A. It is the Contractor's responsibility to perform all work in conformance with the Plans and Specifications. In order to fulfill this responsibility, the Contractor is required to have an approved Quality Control Program, including testing (if required by the permit), as part of its Contract work in accordance with the Contract Documents and to submit details of its Program to the City for review and approval prior to commencing any construction operations. The submittal shall include detailed information on locations and number of all tests, etc., that will be necessary for the Contractor to make its own determination that the work is being performed in compliance with the Project requirements.

B. In addition to Quality Control Testing, the Contractor shall be responsible for required testing or approvals for any work (or any part thereof) if laws or regulations of any public body having jurisdiction specifically require testing, inspections or approval. The Contractor shall pay all costs in connection therewith and shall furnish the City the required certificates of inspection, testing or approval. The Contractor shall also be responsible for and shall pay all costs in connection with any inspection or testing required in connection with City acceptance of a supplier of materials or equipment proposed to be incorporated into the work.

C. Any design or testing laboratory utilized by the Contractor shall be an independent laboratory acceptable to the City, approved in writing, and complying with the latest edition of the "Recommended Requirements for Independent Laboratory Qualification", published by the American Council of Independent Laboratories.

D. Testing laboratories, whether provided by the City or the Contractor, shall promptly notify the City and the Contractor of irregularities or deficiencies of work that are observed during performance of services. Laboratories shall submit electronic copies (PDF format) of all reports directly to the City and the Contractor.

1.03 Testing of Materials

A. Unless otherwise specified, all materials shall be sampled and tested in accordance with the latest published standard methods of ASTM in effect at the time bids are received.

B. Test of materials shall be made by a representative of the Contractor, unless otherwise provided. Testing of equipment shall be the responsibility of the Contractor or an authorized manufacturer's representative. All test results shall be furnished to the City in

writing. The Contractor shall provide facilities required to collect and forward samples. The Contractor shall furnish the required samples without charge.

C. The Contractor shall not make use of or incorporate in the work, the materials represented by the sample until tests have been made and the material found to be in accordance with the requirements of the Specifications.

D. Materials to be tested and the applicable test procedure shall be as outlined in the individual sections of these Specifications.

1.04 Source and Quality of Materials and Equipment

A. The source of materials to be used shall be in accordance with the Contract Documents and as approved by the City before delivery. The approval of the source of any material shall continue as long as the material conforms to the Specifications.

B. All material not conforming to the requirements of the Specifications shall be considered as defective and shall be removed from the work. If in place, faulty materials shall be removed by the Contractor at its expense and replaced with acceptable material unless permitted otherwise by the City. No defective materials that have been subsequently corrected shall be reused until approval has been given.

C. Upon failure of the Contractor to comply immediately with any order of the City to remove and replace defective material, the City shall have authority to remove and replace defective materials, and to deduct the cost of removal and replacement from any monies due or to become due to the Contractor. Failure to reject any defective materials or work at the time of installation shall in no way prevent later rejection when such defects are discovered, nor obligate the City to final acceptance.

1.05 Additional Testing

The Contractor shall perform other testing called for in the Contract Documents including but not limited to piping, pressure, leakage, infiltration and exfiltration, as required.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 01520

TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.01 Section Includes

Construction facilities, temporary utilities, project identification signs, field office and storage sheds, storage of materials and equipment.

1.02 Construction Facilities

All construction facilities remain the property of the Contractor establishing them and shall be maintained in a safe and useful condition until removed from the construction site.

1.03 Removal of Temporary Construction

Remove the various temporary facilities, services, and legally dispose of them as soon as the Owner deems permissible. Portions of the site and areas used for temporary facilities shall be restored to existing or better condition, including but not limited to fill replacement, regrading, compaction, and sodding.

1.04 Transportation and Handling

A. Manufactured materials and products shall be delivered to the project site as needed for installation, undamaged, in original packages, containers, or bundles, as packaged by the manufacturer with manufacturer's name, brand, seals, and labels intact.

B. Materials other than those designated within the Specifications or approved by the Owner shall not be delivered to the project site.

1.05 Storage and Protection

A. The Contractor shall be responsible for protection and preservation of all materials until final acceptance of the Project. Any damage to work prior to acceptance shall be remedied by the Contractor at no additional cost to the Owner.

B. Provide temporary weather-tight enclosures to protect work from damage by the elements, and protect finished surfaces to prevent any damage resulting from the work of any trade.

1.06 Security

A. Contractor shall, at all times, be responsible for the security required in all project areas and shall provide all reasonable protection to prevent damage, injury or loss to employees on the Work and all other persons who may be affected thereby; all the work materials and equipment to be incorporated therein, whether in storage on or off the project site, under the care, custody or control of the Contractor or any subcontractors; and any other property under the care, custody or control of the Contractor or any

subcontractors. Contractor shall be responsible for such security and safety until final acceptance of the Work.

B. Full time watchmen will not be specifically required as a part of the Contract, but the Contractor shall provide inspection of work area daily and shall take whatever measures are necessary to protect the safety of the public, workmen, and materials, and provide for the security of the site, both day and night.

PART 2 PRODUCTS

2.01 Temporary Electric Service

A. Furnish and maintain temporary lighting and power required to perform the Work. Include in the Bid all costs for providing temporary electrical service.

B. Temporary service shall include protective enclosures, branch wiring, outlets, lamps, and grounding as required by NEC and Local Electrical Codes.

2.02 Temporary Heating

The Contractor shall furnish fuel or power and provide and operate all temporary heating units. Heat shall be provided as necessary to perform the Work. Temporary heating units shall be adequately vented and approved devices which will not damage finished areas. The Contractor shall also furnish all tarpaulins and temporary enclosures necessary to provide this protection.

2.03 Temporary Ventilation

The Contractor shall provide, operate, and furnish power for temporary ventilation required for the proper installation and curing of materials and safety of workmen.

2.04 Temporary Sanitary Facilities

Provide temporary toilet facilities as required. Maintain these during the entire period of construction under this Contract for the use of all construction personnel on the job. Enough chemical toilets shall be provided to conveniently serve the needs of all personnel. Chemical toilets and their maintenance shall meet the requirements of State and local health regulations and ordinances.

2.05 Material Hoists and Cranes

A. Provide material hoists required for normal use by all trades and employ skilled hoist operators. Provide all necessary guards, signals, safety devices, etc., required for safe hoist operation. The construction and operation of material hoists shall be in accordance with the applicable ANSI Standards, the "Manual Code of Accident Prevention in Construction" of the Associated General Contractors of America, OSHA, and of other Federal, State, and municipal codes or ordinances. The Contractor shall prohibit the use of hoists for transporting personnel. Hoists shall be located to avoid risk of damage to completed work.

B. Special rigging and hoisting facilities shall be provided by each trade requiring their use.

2.06 Temporary Runways, Scaffolding, and Ladders

A. Provide temporary ladders, ramps, and runways as required for performance and inspection of the work. The above facilities shall be constructed and maintained in accordance with the applicable Federal, State, and Municipal regulations and codes.

B. Furnish, erect, and maintain all scaffolding required for this work. Scaffolding shall be constructed and maintained in accordance with applicable State and Federal laws and local ordinances. Scaffolding shall be promptly removed after serving its purpose.

C. The structural strength and safety of scaffolding, runways, covers, railings, ladders, stairs, etc., and compliance with law shall be the sole responsibility of the Contractor.

2.07 Temporary Chutes

No materials shall be dropped from structures except through enclosed wooden or metal chutes which shall be provided and maintained as required for the performance of the work by the various trades.

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 01770

CONTRACT CLOSEOUT

PART 1 GENERAL

1.01 Section Includes

Substantial completion requirements, clean-up, final completion requirements, closeout submittals

1.02 Clean-Up Operations

A. The entire project site shall be thoroughly cleaned at the completion of the work.

B. Clean all interior and exterior work areas, plus all adjacent areas affected by construction, as directed by the City or jurisdictional agency. Equipment to clean these surfaces shall be subject to approval by the City.

C. Restore to original condition or better all property not designated for alteration by the Contract Documents, including all areas used for staging and storage. Restoration includes but is not limited to fill replacement, regrading, compaction, and sodding. Conduct inspections of the completed restoration with the City, and conduct additional restoration as directed.

1.03 Substantial Completion Requirements

A. Complete the following before requesting the inspection for certification of substantial completion.

1. Submit record drawings in accordance with section 01780.
2. Complete required cleaning and testing of the completed construction in accordance with the specifications and the Owner's operating and maintenance personnel.

B. Work is not substantially complete until the following have occurred:

1. Flood testing of finished work areas to ensure water-tight installation.
2. All doors and windows are in excellent working order with no air or water penetration.

1.04 Final Completion Requirements

A. Complete the following before requesting the inspection for certification of final completion.

1. All punch list items identified during the substantial completion inspection.
2. Deliver tools, spare parts, extra stocks of material and similar physical items to the Owner.

3. Discontinue or change over and remove temporary facilities and services from the project site, along with construction tools and facilities, mock-ups, and similar elements.
4. Clean all marred surfaces including touch up painting, pressure washing, or other measures as needed as directed by the City.
5. Hose clean sidewalks, parking lot, loading areas, and others contiguous with principal structures.
6. Fully restore all property not designated for construction including all areas used for staging and storage.
7. Provide Final Record Drawings in accordance with Section 01780.

1.05 Closeout Submittals

A. Upon completion of the project, or portions thereof, the Contractor shall transfer to the City all applicable items accumulated throughout construction. These include but are not limited to the following items:

1. Service manuals, installation instructions, maintenance and operating instructions, special tools, and specialties
2. Spare parts ordered as part of this Contract
3. Delivery of any salvaged or borrowed materials or equipment to the Owner
4. All keys to all doors, gates, and equipment
5. Checklist indicating satisfactory completion of all unfinished items from the final inspection
6. Certificate of Substantial Completion
7. Certificate of Final Completion
8. Submittal of the Material and Workmanship Bond
9. Submittal of manufacturers' guarantees, warranties, bonds, and letters of coverage extending beyond the time limitations of the Contractor's guarantee.
10. Contractor's Final Release of Lien
11. Final Waivers of lien from all Subcontractors and Suppliers
12. Consent of Surety to Final Payment
13. Final Record documents of completed facilities.
14. Certificate of Final Inspection
15. Certificate of Architect/Engineer

B. Closeout submittals provided by others include:

1. Certificate of Engineer/Architect

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

END OF DOCUMENT

Ron DeSantis, Governor

Melanie S. Griffin, Secretary

Florida dbpr

STATE OF FLORIDA
DEPARTMENT OF BUSINESS AND PROFESSIONAL REGULATION

CONSTRUCTION INDUSTRY LICENSING BOARD

THE GENERAL CONTRACTOR HEREIN IS CERTIFIED UNDER THE
PROVISIONS OF CHAPTER 489, FLORIDA STATUTES

LADEMANN, JEFFREY

LADS CONSTRUCTION SERVICES LLC
6 MAPLE STREET
FLAGLER BEACH FL 32136

LICENSE NUMBER: CGC1528439

EXPIRATION DATE: AUGUST 31, 2026

Always verify licenses online at MyFloridaLicense.com

ISSUED: 08/06/2024

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STAFF REPORT

City Commission Regular Meeting

February 13, 2025

To: Elected Officials

From: Dale L. Martin, City Manager

Date: February 7, 2025

Item Name: Resolution 2025-12. A Resolution by the City Commission of the City of Flagler Beach, to approve Project #589 in an amount not to exceed $164,500 to DDS Enterprises, LLC to improve Parking Lot #4; providing for conflict and an effective date.

Background: City staff prepared and solicited proposals for the improvements to the S. Central Avenue/S. 8th Street parking facility (Parking Lot #3), opening said proposals on November 14, 2024. This project was presented before the Commission (and the Community Redevelopment Agency Executive Board) and approved on December 12, 2024 (Resolution 2024-55). The award was for $147,000.00 to DDS Enterprises, LLC (DDS). Work commenced the week of January 6, 2025 and is nearing completion.

The City Engineer, at the request of the City Manager, delegated to staff the task of obtaining a Change Order to the original contract with DDS Enterprises to similarly improve Parking Lot #4, located at the corner of N. Central Avenue and N. 5th Street. This work will remove the current shell surface and install turf block with gravel infill. Also included are stub-outs for water and sewer to connect a future restroom facility constructed on site (when determined and budgeted by the City Commission/Community Redevelopment Agency Executive Board).

Staff has analyzed the proposal and found it to be reasonable and consistent with the project amount approved for Parking Lot #3.

Fiscal Impact: The Community Redevelopment Agency 2024/2025 budget included an appropriation of $285,000 for Parking Facility Improvements (said funds transferred to the Capital Fund). The original project (Parking Lot #3) cost $147,000. The proposed cost for the second parking facility (Parking Lot #4) is $164,500, for a total Parking Facility Improvement cost of $311,500, leading to a deficit of $26,500 for the two projects in relation to the budgeted amount. The proposed Resolution includes a budget amendment to transfer funds within the Community Redevelopment Agency (from Salaries and related benefits to Transfer to Capital Fund) to address the $26,500 shortfall.

Staff Recommendation: Staff recommends approval of Resolution 2025-12.

Attachment:

Resolution 2025-12

RESOLUTION 2025-12

A RESOLUTION BY THE CITY COMMISSION OF THE CITY OF FLAGLER BEACH, TO APPROVE PROJECT #589 (IMPROVEMENTS TO PARKING LOT #4) IN AN AMOUNT NOT TO EXCEED $164,500 TO DDS ENTERPRISES, LLC; PROVIDING FOR CONFLICT AND AN EFFECTIVE DATE.

WHEREAS, the City owns several parcels within the Community Redevelopment Agency (CRA) district, with those parcels being used for public parking; and,

WHEREAS, the 2024/2025 CRA budget included an appropriation of $285,000 for improvements to two of the public parking facilities (S. 8th Street at S. Central Avenue and N. 5th Street at N. Central Avenue); and,

WHEREAS, a contract for improvements to the S. 8th Street at S. Central Avenue parking facility was awarded to DDS Enterprises in the amount of $147,000 on December 12, 2024 (Resolution 2024-55); and,

WHEREAS, City staff requested that DDS Enterprises submit a proposal to construct similar improvements to the N. 5th Street at N. Central Avenue parking facility; and,

WHEREAS, DDS Enterprises submitted the proposal as a Change Order to the original contract for improvements to the N. 5th Street at N. Central Avenue parking facility ($164,500; see Exhibit A) for City consideration; and,

WHEREAS, additional funds within the CRA Fund budget are available to be transferred for the costs that exceed the approved budget appropriation ($26,500);

NOW THEREFORE BE IT RESOLVED BY THE CITY COMMISSION OF THE CITY OF FLAGLER BEACH, AS FOLLOWS:

SECTION 1. The City of Flagler Beach City Commission approves the proposal from DDS Enterprises (January 30, 2025), as presented in Exhibit A to this Resolution, as Change Order No. 1 to the original contract with DDS Enterprises (Resolution 2024-55).

SECTION 2. The City Commission approves a budget transfer in the amount of $26,500 from CRA Department Salaries (Line 101.5391.101200) to Transfer to Capital Fund (Line 101.5391.909304).

SECTION 3. All resolutions or parts of resolutions in conflict herewith are hereby repealed.

SECTION 4. This Resolution shall become effective immediately upon passage as provided by law.

PASSED AND ADOPTED THIS 13th DAY OF FEBRUARY, 2025.

CITY OF FLAGLER BEACH, FLORIDA
CITY COMMISSION

ATTEST:

_____
Patti King, Mayor

_____
Penny Overstreet, City Clerk

Attachment
Exhibit A

ESTIMATE

DDS Enterprises LLC
463 Shaw Lake Rd
Pierson, FL 32180

DDSEnterprisesLLC@yahoo.com
+1 (386) 490-5631

Bill to
Christine Novak
City of Flagler Beach
105 S 2nd Street
Flagler Beach, Florida 32136

Ship to
Christine Novak
City of Flagler Beach
105 S 2nd Street
Flagler Beach, Florida 32136

Estimate details
Estimate no.: 1042
Estimate date: 01/30/2025

#	Product or service	Description	Qty	Rate	Amount
1.	**Miscellaneous Construction**	Off Beach Parking Lot #4 upgrades	1	$164,500.00	$164,500.00

Total **$164,500.00**

Note to customer

Complete all scope of project provided by City of Flagler Beach.

Additional item not on plans included with project total:
-Install approx. 400LF of concrete ribbon curb on border of pavers as required by manufacturer. 6" x 8" x 400' with (2) #4 rebar

Accepted date **Accepted by**

STAFF REPORT

City Commission Regular Meeting

February 13, 2025

To: Elected Officials

From: Dale L. Martin, City Manager

Date: February 7, 2025

Item Name: Resolution 2025-13. A Resolution of the City Commission of the City of Flagler Beach accepting a proposal from Neu Urban Concepts to develop a Mobility Action Plan and Mobility Fee for the City of Flagler Beach; providing for conflict and an effective date.

Background: The City Commission has previously expressed interest in establishing a Mobility Fee. This fee, when developed and approved, would be assessed on all new construction, payable in association with the building permit fee.

In order to implement a Mobility Fee, the City must first develop a Mobility Plan to demonstrate the need for additional transportation projects. Efforts to solicit a consultant to prepare a Mobility Plan for the City were generally unsuccessful, until City Attorney Mr. Smith shared with me the efforts of the City of Oviedo with Neu Urban Concepts.

Following an "electronic introduction," City Planner Lupita McClenning and I had a lengthy discussion and provided documentation to Neu Urban Concepts staff, specifically the Downtown Master Plan and the most current area traffic study completed by the Veranda Bay developers. Using those documents, Neu Urban Concepts has prepared a proposal to develop a Mobility Plan for City Commission consideration.

Ms. Lauren Rushing of Neu Urban Concepts will be available to answer questions and provide additional insight to the process and final products.

Fiscal Impact: Funding for this project ($140,000) will be drawn from the City's Infrastructure Surtax Reserve (current balance approximately $2,125,000)

Staff Recommendation: Staff recommends approval of Resolution 2025-13.

Attachment:

Resolution 2025-11
Correspondence, D. Martin to L. Rushing (Sep 25, 2024)
Correspondence, D. Smith to D. Martin (Jan 9, 2025)

From: Lauren Rushing <lauren@nueurbanconcepts.com>
Sent: Wednesday, September 25, 2024 2:31 PM
To: Dale Martin <dmartin@cityofflaglerbeach.com>
Cc: Lupita McClenning <LMcClenning@cityofflaglerbeach.com>
Subject: External - Re: External - Re: Flagler Beach

You don't often get email from lauren@nueurbanconcepts.com. Learn why this is important
Caution: This email originated from outside the organization. Do not click or open attachments unless you recognize the sender and know the content is safe.

Hi Dale,

Fernandina Beach is a great place. I briefly crossed paths with their Planning Director Kelly Gibson back in 2016 when I reviewed/assisted (through FDOT) with the Small Area Plan for 8th Street.

Looking at our calendars, next Friday (10/4) works best for us.

I'll send an invite to you and Ms. Lupita for 1pm that day.

Until then, best wishes for staying out of Hurricane Helene's path.

Best,
Lauren

On Wed, Sep 25, 2024 at 11:51 AM Dale Martin <dmartin@cityofflaglerbeach.com> wrote:

Good morning, Ms. Rushing:

Thank you for the prompt response. Referencing Mr. Paul's comments, Lassiter was one of the consultants to whom I reached out, but never received a reply.

As for meeting, this week may be disrupted because of Hurricane Helene (although its actual effects here may be minimal, we still have to prepare).

As for next week, my calendar is fully available on Monday, late afternoon Wednesday, and late morning/all afternoon Friday.

I have added Ms. Lupita McClenning (City Planner) to this discussion. For additional reference, prior to coming to Flagler Beach, I was closer to the Jacksonville area, serving in Fernandina Beach for over seven years.

I look forward to speaking with you soon.

Mr. Dale L. Martin
City Manager
105 S. 2nd Street

From: Lauren Rushing <lauren@nueurbanconcepts.com>
Sent: Wednesday, September 25, 2024 11:43 AM
To: NUE Urban Primary <nueurbanconcepts@gmail.com>
Cc: Dale Martin <dmartin@cityofflaglerbeach.com>
Subject: External - Re: Flagler Beach

You don't often get email from lauren@nueurbanconcepts.com. Learn why this is important
Caution: This email originated from outside the organization. Do not click or open attachments unless you recognize the sender and know the content is safe.

Hi Dale,

It's great to see you have interest in a mobility plan and fee for Flagler Beach.

I'm happy to facilitate a meeting so we can discuss further. Can you please provide us with your availability for the remainder of this week and next week?

I will send a Zoom invite once we can coordinate a time.

Thank you and we look forward to speaking with you.

Best regards,
Lauren Rushing

On Wed, Sep 25, 2024 at 11:28 AM NUE Urban Primary <nueurbanconcepts@gmail.com> wrote:

Hello Dale,

We are very interested.

We are working on or have just completed 15 of these right now from the panhandle to Miami.

We have just successfully taken Oviedo and Longwood to adoption and are wrapping up Okaloosa, DeBary, Palm Beach Gardens, Boynton Beach, and North Miami.

We did St Augustine's three years back. We have done more than any firm in the state. We are always working with Lassiter on Palm Coast road impact fee update.

Please let me know when would be a good time to touch base. I have copied Lauren with my firm, she is out of Jacksonville.

You have my email, my cell is 352-363-0614. We could set-up a zoom call or get on a team call.

Thanks
Jonathan B. Paul, AICP
Principal
NUE Urban Concepts, LLC

On Sep 25, 2024, at 11:09 AM, Dale Martin <dmartin@cityofflaglerbeach.com> wrote:

Good morning:

The City of Flagler Beach is interested in preparing a Mobility Plan and implementing a mobility fee (neither of which have been previously undertaken in the City). I have reached out to several consultants to learn of interest to assist the City, but have not received responses to those inquiries. The City Attorney was aware of your related efforts for the City of Oviedo and encouraged me to contact you.

If interested in learning more about the City of Flagler Beach, please contact me at your convenience.

I look forward to hearing from you.

Mr. Dale L. Martin
City Manager
105 S. 2nd Street
Flagler Beach, FL 32136
O: (386) 517-2000 x222 M: (904) 557-5047

Dale Martin

From: Drew Smith <dsmith@shepardfirm.com>
Sent: Thursday, January 9, 2025 11:35 AM
To: Dale Martin
Subject: External - RE: External - Flagler Beach Mobility Action Plan & Fee Scope

Caution: This email originated from outside the organization. Do not click or open attachments unless you recognize the sender and know the content is safe.

Dale,

The Infrastructure surtax proceeds do have some limitations. They have to 1) be used on infrastructure, which in the definition used for the surtax statutes means: “any fixed capital expenditure or fixed capital costs associated with the construction, reconstruction, or improvement of public facilities that have a life expectancy of 5 or more years and any land acquisition, land improvement, design, and engineering costs related thereto” and 2) be included within the stated purposes of the surtax when it was put out to referendum by the County.

The County’s stated purpose for the surtax is "To provide the funding for necessary public capital projects, Flagler County and its cities require additional revenue. The proposed revenue source is a ten (10) year 0.5 cent (0.5¢) per dollar sales surtax on taxable transactions occurring within Flagler County. These revenues would be used for funding public projects and improvements such as the renovation, reconstruction and construction of roads, streets, pedestrian safety projects, motor vehicles, public buildings and associated capital facilities throughout Flagler County." I think the inclusion of roads, streets, pedestrian safety projects, and motor vehicles is enough to include mobility *projects* as an allowable use. In addition, in 2012, we asked for an Attorney General Opinion on behalf of the City if the surtax proceeds could be used for planning expenses related to beach improvement. While the Attorney General suggested the purpose statement was not broad enough to include beach restoration activities, she did opine that *design and planning* expenses related to construction of covered infrastructure would be allowed.

With that in mind, infrastructure surtax proceeds could be used to pay the costs of actual design and planning of mobility infrastructure. The question that remains is whether the mobility plan is far enough along the road of design and planning of infrastructure to fall into that allowance. Reviewing the proposal, I think we can certainly call it planning. What I don’t know and where I have some reservations, though, is how much actual design of infrastructure we would get out of it. If the plan is going to be “these are things that you could do,” I would lean away from using infrastructure surtax. If, however, the plan is going to be (and the proposal reads this way to me) step one in planning the implementation of a transportation infrastructure improvement plan that will be implemented by the City, I think that would bring us into the realm of “design and planning” of actual infrastructure to be constructed.

Drew

D. ANDREW SMITH, III | ATTORNEY AT LAW
BOARD CERTIFIED - CITY, COUNTY & LOCAL GOVERNMENT LAW

SHEPARD, SMITH,
HAND & BRACKINS, P.A.
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MAITLAND, FL 32751
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FAX: 407.622.1884
SHEPARDFIRM.COM

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From: Dale Martin <dmartin@cityofflaglerbeach.com>
Sent: Thursday, January 9, 2025 10:44 AM
To: Drew Smith <dsmith@shepardfirm.com>
Cc: Rhonda <rallen@CityofFlaglerBeach.com>; Hollie Harlan <HHarlan@cityofflaglerbeach.com>; Lupita McClenning <LMcClenning@cityofflaglerbeach.com>
Subject: FW: External - Flagler Beach Mobility Action Plan & Fee Scope

Good morning, Drew:

Please see the attached proposal received to prepare a Mobility Plan (with the intent to develop and implement a Mobility Impact Fee).

Ms. Allen has indicated that the City has sufficient funds received from the State (identified as Infrastructure Surtax). Are you aware of any restrictions on the use of these funds or can I present these funds as a funding source to the City Commission?

Thank you for your review.

Mr. Dale L. Martin
City Manager
105 S. 2nd Street
Flagler Beach, FL 32136
O: (386) 517-2000 x222 M: (904) 557-5047

RESOLUTION 2025-13

A RESOLUTION OF THE CITY COMMISSION OF THE CITY OF FLAGLER BEACH ACCEPTING A PROPOSAL FROM NEU URBAN CONCEPTS TO DEVELOP A MOBILITY ACTION PLAN AND MOBILITY FEE FOR THE CITY OF FLAGLER BEACH; PROVIDING FOR CONFLICT AND AN EFFECTIVE DATE.

WHEREAS, the City Commission requested the City Manager proceed with obtaining consultant(s) to develop a Mobility Action Plan and Impact Fee; and

WHEREAS, following an introduction and discussion with Neu Urban Concepts, including a review of previously completed Mobility Plans and conversations with other engaged municipalities, Neu Urban Concepts was invited to prepare and present a proposal to assist the City of Flagler Beach to develop a Mobility Plan; and,

WHEREAS, the Neu Urban Concept Proposal is attach as Exhibit A; and,

WHEREAS, funding to support the cost of the Neu Urban Concept proposal with be drawn from the City's Infrastructure Surtax Reserve; and,

NOW THEREFORE BE IT RESOLVED BY THE CITY COMMISSION OF THE CITY OF FLAGLER BEACH, AS FOLLOWS:

SECTION 1. The City of Flagler Beach City Commission approves the proposal submitted by New Urban Concepts in an amount not to exceed $140,000 for the scope of work and services described in Exhibit A.

SECTION 2. The City Commission authorizes City Staff to issue a Notice to Proceed.

SECTION 3. All resolutions or parts of resolutions in conflict herewith be and the same are hereby repealed.

SECTION 4. This Resolution shall become effective immediately upon passage as provided by law.

PASSED AND ADOPTED THIS 13th DAY OF FEBRUARY, 2025.

CITY OF FLAGLER BEACH, FLORIDA
CITY COMMISSION

ATTEST:

_____
Patti King, Mayor

_____
Penny Overstreet, City Clerk

Attachment:
Exhibit A

NUE URBAN CONCEPTS
LAND USE • MOBILITY • PARKING • FEES

2000 PGA Blvd, Suite 4440
Palm Beach Gardens, FL 33408
352-363-0614 (c) 833-682-8484 (o)
www.nueurbanconcepts.com
nueurbanconcepts@gmail.com

November 21st, 2024

Dale Martin
City Manger
City of Flagler Beach
105 S. 2nd Street
Flagler Beach, FL 32136

RE: MOBILITY ACTION PLAN & MOBILITY FEE FOR FLAGLER BEACH

NUE Urban Concepts (NUC) **(Consultant)** is pleased to provide a scope of service to develop a mobility action plan and mobility fee for the City of Flagler Beach **(City)**. An adopted mobility action plan would serve as the basis for development of a mobility fee. The mobility action plan will set the framework for follow-on actions to be undertaken by the City. The mobility action plan will also incorporate projects, to the extent they are still priorities, identified in other adopted plans, such as a Downtown Master Plan or Long Range Transportation Plan.

One of the concepts that could be incorporated into the mobility action plan would be the concept of a park once environment, with the potential for transit circulators on both land and water. The other concept will include a recommendation for street quality of service (QOS) standards, based on posted speed limits, that could replace roadway level of service standards for City Streets and establish the framework for implementation of low speed shared streets between the Matanzas River and the Atlantic.

A mobility fee is a one-time fee charged to new development and redevelopment to mitigate any transportation impacts from that development. The adoption of a mobility fee would serve as an alternative to transportation concurrency and proportionate share. The mobility fee would provide Flagler Beach with a revenue funding source that it controls and prioritizes based on the projects identified in the mobility action plan. One concept that has worked well in other beach front communities is basing residential fees on square footage, versus per dwelling unit, to account for tear downs and impacts from building larger units. Another concept is assessing vacation rentals per room, excluding kitchens and baths, similar to other overnight accommodations, as opposed to per dwelling unit.

The development of a mobility action plan and mobility fee will require follow-on initiatives (aka actions) to develop administration, implementation, and funding steps for the mobility projects. Some of these initiatives are included as additional tasks, others would be undertaken by the City as part of day to day administration and implementation. Many of these initiatives can be funded either from collected mobility fees or from a service charge based on a study that is applied to mobility fees to help off-set the cost to administer, implement, and update mobility fees consistent with case law and Florida Statute.

HB 479 was adopted by the Florida Legislature this past session and went into effect on October 1st, 2024. HB 479 updated the criteria for development of a mobility plan and a mobility fee. HB 479 also requires that municipalities and counties negotiate the mitigation of transportation impacts, where both local governments attempt to collect a transportation mitigation fee from one development. Since Flagler County does not require the City to collect its transportation impact fee, this provision of HB 479 would not apply to the City. However, it may be prudent for the City to consider what would occur should the County attempt to collect a transportation mitigation fee.

The final deliverable for the Mobility Action Plan & Mobility Fee will consist of **1) a Mobility Action Plan; 2) a Mobility Fee Technical Report**; and **3)** a **Mobility Fee ordinance**. Through a separate additional task, the mobility action plan would need to be incorporated into the Comprehensive Plan, either through inclusion of plans and projects or as an implementing measure of the Comprehensive Plan.

The scope of service identifies primary tasks and subtasks. The scope of service also includes a cost, and hours estimate per primary task. The scope of service is as follows:

MOBILITY SCOPE OF SERVICE:

TASK 1: MOBILITY ACTION PLAN DEVELOPMENT

TASK 1.1 – DATA & PLAN REVIEW: The Consultant will review existing GIS and other available data and resources provided by the City including the Comprehensive Plan and Capital Improvements Program, the FDOT Transportation Improvement Program, the River to Sea TPO Long Range Transportation Plan, the 2006 Downtown Master Plan, the Veranda Bay Traffic Impact Analysis, and other relevant plans identified by Flager Beach staff. The review will identify funded and unfunded mobility projects proposed or planned within and adjacent to the City of Flagler Beach.

TASK 1.2 – DATA COLLECTION: The Consultant will collect and compile existing traffic characteristics data for functionally classified arterial and collector roads from the City, County, and FDOT into a traffic characteristics report. The data will include the number of travel lanes, AADT, functional classification, length of segment, speed limits, and LOS Standards. ***Additional traffic counts may be needed if the City does not currently have traffic counts for functionally classified City roads. If traffic counts are not available, an addendum will be required to collect the counts or have the City collect the counts through other means.***

TASK 1.3 – IDENTIFY MOBILITY ACTION PLAN PROJECTS: The Consultant will explore innovative solutions to providing a safe, connected, and integrated multimodal transportation system that moves people whether they are walking, bicycling, riding golf carts or a transit circulator, or driving a vehicle.

The Consultant will incorporate projects identified through Task 1.1. The Consultant will also identify up to ten (10) unique projects and up to fifteen (15) generalized (catch-all) mobility action plan projects not currently identified through Task 1.1 (e.g., Construct high visibility mid-block crossings at up to 10 locations within the City).

All projects will be coordinated with City Staff. The consultant, as part of the 10 mobility action plan projects, will recommend projects for creation of a park once environment as a follow-on initiative and establishment of street QOS standards to promote establishment of low speed shared streets.

The Consultant will review the Veranda Bay Traffic Impact Analysis and evaluate whether additional off-site improvements will be necessary to accommodate the future annexation of the +/- 900 acre proposed development into the City of Flagler Beach as part of the 10 unique projects.

The Consultant will develop GIS map(s) of identified mobility action plan projects.

TASK 1.4 – MOBILITY ACTION PLAN PROJECT COST: The Consultant will prepare planning level cost estimates for the mobility action plan projects. The planning level cost for the proposed mobility action plan projects will be based on the most recent and localized data as required by Florida Statute. ***The City shall provide any current cost associated with planning, design right-of-way, inspection, landscape, streetscape, utility relocation, stormwater, and construction cost from any recent multimodal projects.***

TASK 1.5 – ESTABLISH MULTIMODAL CAPACITIES: The Consultant will calculate multimodal capacities for projects to be included in the mobility action plan. Multimodal capacities are necessary to ensure mobility projects are adequate to accommodate future travel demand and new development is not charged more than its fair share. The multimodal capacities will also be used in the mobility fee calculations.

Deliverables: (1) Mobility Action Plan with table that includes project, description, planning level cost estimate, multimodal capacity, and time frames for prioritization. (2) Maps of the location of mobility action plan projects.

TASK 2: MOBILITY FEE DEVELOPMENT

TASK 2.1 – MOBILITY FEE SCHEDULE: The Consultant will evaluate the City's Future Land Use Map, and existing development patterns and develop a proposed schedule of land uses. The City will feature a single assessment area and a single benefit district. ***Additional mobility fee schedule alternatives, multiple assessment areas, or multiple benefit districts would be considered an additional service.***

TASK 2.2 – PROJECT FUTURE GROWTH: The Consultant will evaluate the latest Central Florida Regional Planning Model (CFRPM) to obtain base year and future year vehicle miles of travel (VMT) data. The calculated growth rate would then be used to project travel demand (aka VMT) out to 2045.

TAZ data from the Central Florida Regional Planning Model (CFRPM) will be used to obtain population and employment projections to demonstrate future growth and need as required to meet the first part of the dual rational nexus test. The VMT (aka travel demand) data will be used for planning and to calculate a mobility fee.

TASK 2.3 – PERSON MILES OF TRAVEL (PMT) Factor: The Consultant will develop a person miles of travel (PMT) factor to convert vehicle miles of travel to person miles of travel to account for multiple modes of travel within the City. The PMT factor will be based upon the 2022 National Household Travel Survey. The PMT factor will be used to establish a person miles of travel rate to be used in the mobility fee calculation and the new growth evaluation to ensure new development is not being charged more than its fair share of the cost of mobility action plan projects.

TASK 2.4 – BACKLOG EVALUATION: The Consultant will conduct an existing areawide level of service analysis for the study area network. The evaluation will be conducted to ensure new growth is not paying for existing deficiencies.

TASK 2.5 – NEW GROWTH EVALUATION: The Consultant will conduct a new growth evaluation based on the projected increase in person miles of travel using the VMT data, the PMT factor and the increase in multimodal capacity. The analysis will be utilized to develop a new growth evaluation factor to demonstrate that new growth is not being charged for more than its fair share of projects.

TASK 2.6 – REVENUE ADJUSTMENTS: The Consultant will evaluate existing funding sources for multimodal projects. Case law requires that existing funding for multimodal projects is factored into the mobility fee. Funding may include sales tax, gas tax, special assessments and grants that are reasonably available to fund the multimodal improvements. Revenue funding adjustments will be developed based on whole dollar funding availability to reduce overall cost.

TASK 2.7 – PERSON MILES OF CAPACITY (PMC) RATE: The Consultant will develop a person mile of capacity rate based upon the cost of mobility action plan projects, with adjustments for deficiencies, new growth, and available revenues. The rate will be divided by the increase in person miles of travel based on the regional travel demand model.

TASK 2.8 – PERSON TRAVEL DEMAND (PTD) FOR LAND USES: The Consultant will calculate a person travel demand (PTD) for each land use identified in the mobility fee schedule for travel within the City. The PTD will be based on trip generation rates, adjusted for pass-by and internal capture, adjustments for limited access facilities, origin and destination, and person trips and trip lengths from the 2022 National Household Travel Survey Data, adjusted for local conditions and City travel.

TASK 2.9 – CALCULATE THE MOBILITY FEE: The Consultant will develop a mobility fee schedule based on the data and analysis from prior tasks. The mobility fee schedule will include the applicable units of measure and the mobility fee rates to be assessed per land use. ***The mobility fee will address all requirements of HB 479.***

TASK 2.10 - MOBILITY FEE TECHNICAL REPORT: A technical report will document the methodology and data used to develop the mobility action plan and the mobility fee. The technical report will provide the factual basis to demonstrate the mobility action plan and mobility fee meets legal and statutory requirements. The report will include an in-depth legal review and include definitions and future recommendations.

Deliverable: Mobility Fee Technical Report documenting the methodology used to develop the Mobility Fee Schedule.

TASK 3: MOBILITY FEE ORDINANCE

The Consultant will assist the City with development of a mobility fee implementing ordinance. The Consultant shall take the lead in development of the ordinance with assistance from the City Attorney. The Mobility Fee Ordinance provides the legal basis to enact a mobility fee and allows the City to begin to assess new development for its multimodal travel impact. ***The City will provide the title block, the Code or Ordinance or Land Development Article, Section and Chapter location, and an Ordinance format with the ordinance formatting detailed in a word document.***

Deliverable: Mobility Fee Ordinance.

TASK 4: BUSINESS IMPACT STATEMENT

The consultant will develop a "Business Impact Statement" for the Mobility Fee Ordinance as required by Florida Statute including information such as the proposed ordinance's purpose, estimated economic impact on businesses, and compliance costs.

TASK 5: MEETINGS, PUBLIC HEARINGS & WORKSHOPS

TASK 5.1 - PRESENTATIONS: The Consultant shall prepare presentations as required for meetings, hearings, and workshops.

TASK 5.2 - CONFERENCE CALLS: The Consultant shall participate in conference calls scheduled by the City or as requested by the City.

TASK 5.3 – IN-PERSON MEETINGS: Consultant will participate in a maximum of five (5) in person meetings, with one (1) consultant team members consisting of some combination of: staff meetings, public workshops, community outreach, hearings, and coordination with governmental and transportation partners. Additional team members will attend virtually.

All outreach materials, advertisement, social media engagement, meeting locations, food and beverage, meeting set-ups, and meeting logistics is the responsibility of the City.

Hours for meetings, hearings, and workshops shall be based on the time, including travel, allocated for preparation and participation in meetings. There will be a maximum number of hours allocated. If the City utilizes the allotment of hours, then the scope will require an amendment to address the need for additional hours.

Final Deliverables:

(1) Mobility Action Plan
(2) Mobility Fee Technical Report
(3) Mobility Fee Ordinance
(4) Business Impact Statement

All deliverables are in an electronic format only. No hardcopy materials are included in this scope.

CALENDAR

Florida Statute requires that the Study be completed, and the fee adopted within one year from the date that the study commenced.

Scope Cost: The cost per hour is based on a rate of $200 per hour. The total number of projected hours is up to 700 and the total cost is not to exceed $140,000. Of that total, 100 hours and $20,000, is for meetings, hearings and public workshops, which is fairly typical for this type of service.

TASK #	TASK	HOURS	COST
1	MOBILITY ACTION PLAN DEVELOPMENT	230	$46,000
2	MOBILITY FEE DEVELOPMENT	250	$50,000
3	MOBILITY FEE ORDINANCE	100	$20,000
4	BUSINESS IMPACT STATEMENT	20	$4,000
5	MEETINGS, HEARINGS & PUBLIC WORKSHOPS	100	$20,000
Total		700	140,000

ADDITIONAL TASK (NOT COVERED IN THE SCOPE):

COMPREHENSIVE PLAN AMENDMENT: The Consultant will integrate the mobility action plan and mobility fee into the Comprehensive Plan. The Consultant will also update goals, objectives, and policies (GOP's) to ensure consistency with Florida Statute. The amendment will include an overview behind the amended GOPs and the necessary data inventory and analysis. **Hours Estimate: (130 hours, includes Planning Board, transmittal & adoption hearings, and response to agency comments)**

Note: This is a follow on task to be completed within one (1) year from date of adoption to insure internal consistency. Staff would advertise Comprehensive Plan Amendment hearings and formally submit the amendment to Florida Commerce. The consultant would assist with the staff report, support documentation and the ordinance.

ADDITIONAL TASK CONSIDERATIONS (NOT COVERED IN THE SCOPE):

Tasks included in the scope above are legally and statutorily required tasks. The following are tasks requested by local governments to compliment the day-to-day assessment, administration, and implementation of a mobility action plan and mobility fee. The following are related to the Mobility Action Plan and Mobility Fee:

PARKING ONCE ENVIRONEMNT: The Consultant will further refine the components to create a park once environment with recommendations on phasing of parking and ideal locations for a potential parking structure. Planning for transit circulation via low speed electric vehicles and multi-passenger water borne vehicles (aka water taxi) will be incorporated into planning for a park once environment. The planning initiative will also include recommendations for variable message signs related to parking availability.
Hours Estimate: (100 to 150 hours)

PARKING MANAGEMENT STRATEGIES: The Consultant will develop parking and curbside management strategies to include dynamic pricing, time of day restrictions, residential parking permit programs, visitor parking passes for overnight accommodations and coordinating with the State to regulate on-street parking. Coordination with the County may also include development of a County resident program to pay for beach parking. While there is some potential overlap with creating a park once environment, this program is more focused on capturing revenue for ongoing parking demand and developing a program that protects City residents. **Hours Estimate: (100 to 150 hours)**

LOW SPEED SHARED STREETS PROGRAM: The Consultant will develop a low speed shared streets program for City Streets east of the Matanzas River. This program will integrate Street Quality of Service (QOS) Standards and allow for the City to lower speed limits on City Streets (the State sets speed limits on State Roads). The speed limits could range between 15 MPH to 25 MPH, with 20 MPH being a representative speed limit.

Just posting speed limits won't result in a reduction in speeds. There are geometric and physical changes that will be needed to existing ROW. Some involve traffic calming techniques through physical vertical deflection (aka chicane, mini roundabout, raised intersection) other involve horizontal changes through pavement markings that limit effective pavement width. Some local governments elect to go as far as conversion of streets to one-way pairs and adding either dedicated spaces for bicycles, golf carts, and scooters, or the addition of metered on-street parking to help off-set maintenance cost and pay for improvements. **Hours Estimate: (125 to 175 hours)**

FINANCE COORDINATION: Florida Statute requires that Mobility Fees be maintained in separate funding accounts to allow for annual auditing. In addition, there are legal requirements regarding the collection and expenditure of Mobility Fee funds and the ability to audit said expenditures. Coordination is required with Finance and Accounting and Budgeting Departments to ensure fund accounts are consistent with the adopted ordinance and Statutory requirements. **Hours Estimate: (10 to 15 hours)**

BUILDING PERMIT INTEGRATION: The City's permit system may need to be updated to process the collection of mobility fees. Some permit systems are relatively simple and can be accommodated through simple look up tables and excel spreadsheets. Other permit systems are propriety and require coordination with third party venders to initiate updates. Permit clerks may need to be trained, and a process established for quality control checks. The Building Permit Department is also the front-line interaction with the development community. There is oftentimes further outreach done with the development community and builders during the implementation stage. Florida Statute requires a minimum of 90 days between the adoption of a Fee Implementing Ordinance and collection of the Fee, unless the fee is lower than existing fees. **Hours Estimate: (15 to 20 hours)**

SITE / MOBILITY IMPACT ANALYSIS REQUIREMENTS: The City would be eliminating transportation concurrency through adoption of a mobility action plan and mobility fee. The City may wish to consider developing site / mobility impact analysis requirements as a replacement of traffic impact analysis. These requirements address site related turn lanes, traffic control devices, trip generation, driveway design, access management, on-site and off-site multimodal improvements, internal circulation, and parking. While these requirements can be included in Land Development Regulations, they are also provided as separate stand-alone requirements. **Hours Estimate: (100 to 150 hours)**

ADMINISTRATIVE MANUAL: There are many day-to-day administrative items that arise in the assessment and collection of fees. Some local governments have developed an administrative manual to address these issues. The manual often incudes forms, review fees for special request related to credit, determinations, and offsets. The manual also provides consistency in implementation to address changes in Staff administering the ordinance and provides back-up to permit clerks and interim administrators should the individual(s) tasked with implementing the Fee not be available. Florida Statute has placed the burden on local governments to defend not only its Fee but also its administration
Hours Estimate: (125 to 150 hours).

ADMINISTRATIVE SERVICE CHARGES: To relieve impact to the general fund, local governments frequently develop administrative service charges and fees to administer and implement the mobility fee. Florida Statute requires service charges not exceed the cost to fully administer a mobility fee. NUE Urban Concepts can prepare a report documenting the cost to administer and implement a mobility fee **Hours Estimate: (75 to 100 hours)**.

INTERLOCAL AGREEMENT: The Consultant will assist the City with developing an interlocal agreement with Flagler County. The interlocal update would include any mobility fees to be set aside for County Roads and County impact fees to be set aside for City Roads. The update would also identify the County Road projects for which the mobility fees would be expended and the City Roads for which County impact fees would be required. The interlocal agreement would address requirements of HB 479. **Hours Estimate: (100 to 125 hours)**.

Thank you for your consideration of this first draft scope of services. Please let me know if have any questions.

Sincerely,



Jonathan B. Paul, AICP
Principal

FLAGLER BEACH

Introduction to Mobility Plans & Fees

Lauren Rushing, AICP

Transportation Planner, NUE Urban Concepts



NUE URBAN CONCEPTS
LAND USE • MOBILITY • PARKING • FEES

2025





Jonathan B. Paul, AICP
Lauren Rushing, AICP

- 35 years of land use, transportation & impact fee/mobility fee experience
- Served as Concurrency & Impact Fee Manager for Alachua County
- Created 1st Mobility Plan & Mobility Fee in FL
- Developed more Mobility Plans & Fees (or alternative mobility funding systems) than any other firm in FL

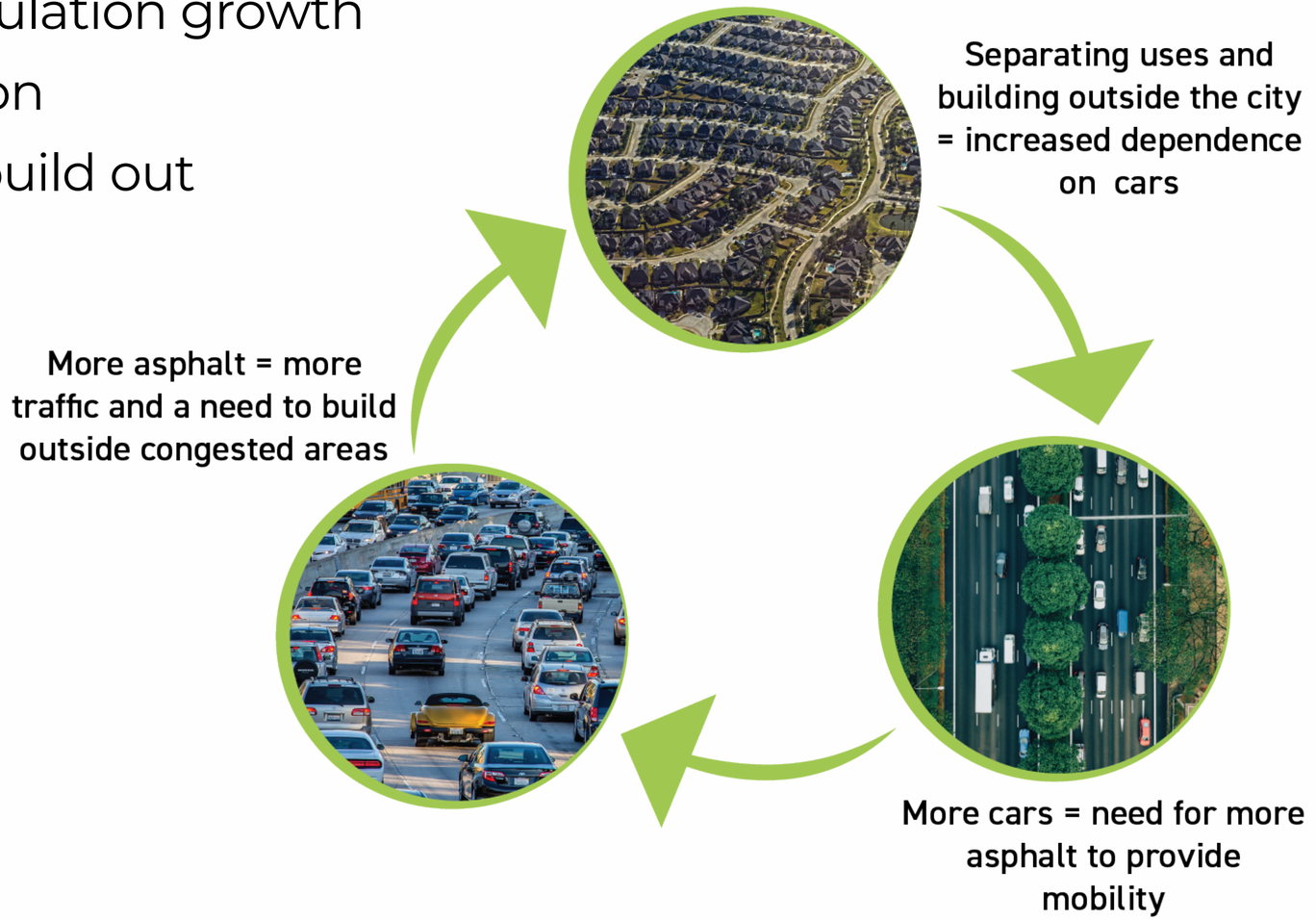
NUE URBAN CONCEPTS

LAND USE · MOBILITY · PARKING · FEES

Vicious Cycle of Induced Demand

- Florida has experienced rapid population growth
- Unprecedented levels of congestion
- Many communities are reaching build out

How can Flagler Beach prevent the issues other communities are facing?



EXISTING MOBILITY FEES AND SIMILAR PROGRAMS IN FLORIDA

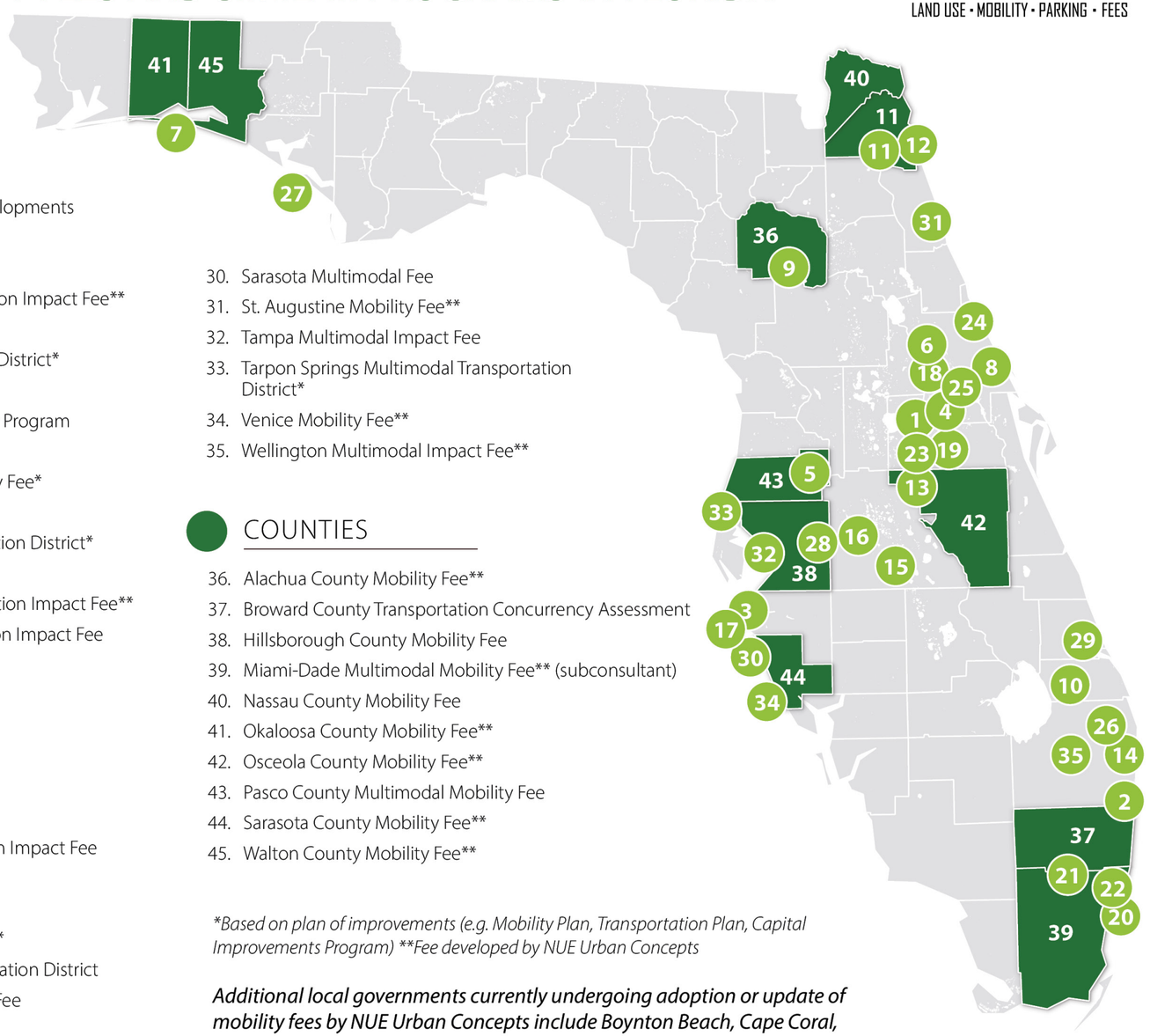
NUE URBAN CONCEPTS
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MUNICIPALITIES

1. Altamonte Springs Mobility Fee**
2. Boca Raton Planned Mobility Developments
3. Bradenton Mobility Fee**
4. Casselberry Mobility Fee
5. Dade City Multimodal Transportation Impact Fee**
6. DeBary Mobility Fee**
7. Destin Multimodal Transportation District*
8. Edgewater Mobility Fee
9. Gainesville Transportation Mobility Program
10. Indiantown Mobility Fee**
11. Jacksonville/Duval County Mobility Fee*
12. Jacksonville Beach Mobility Fee
13. Kissimmee Multimodal Transportation District*
14. Lake Park Mobility Fee**
15. Lake Wales Multimodal Transportation Impact Fee**
16. Lakeland Multimodal Transportation Impact Fee
17. Longboat Key Mobility Fee**
18. Longwood Mobility Fee**
19. Maitland Mobility Fee**
20. Miami Beach Mobility Fee**
21. Miami Lakes Mobility Fee
22. North Miami Mobility Fee**
23. Orlando Multimodal Transportation Impact Fee
24. Ormond Beach Mobility Fee
25. Oviedo Mobility Fee**
26. Palm Beach Gardens Mobility Fee**
27. Panama City Multimodal Transportation District
28. Plant City Transportation Mobility Fee
29. Port St. Lucie Mobility Fee**
30. Sarasota Multimodal Fee
31. St. Augustine Mobility Fee**
32. Tampa Multimodal Impact Fee
33. Tarpon Springs Multimodal Transportation District*
34. Venice Mobility Fee**
35. Wellington Multimodal Impact Fee**

COUNTIES

36. Alachua County Mobility Fee**
37. Broward County Transportation Concurrency Assessment
38. Hillsborough County Mobility Fee
39. Miami-Dade Multimodal Mobility Fee** (subconsultant)
40. Nassau County Mobility Fee
41. Okaloosa County Mobility Fee**
42. Osceola County Mobility Fee**
43. Pasco County Multimodal Mobility Fee
44. Sarasota County Mobility Fee**
45. Walton County Mobility Fee**



**Based on plan of improvements (e.g. Mobility Plan, Transportation Plan, Capital Improvements Program) **Fee developed by NUE Urban Concepts*

Additional local governments currently undergoing adoption or update of mobility fees by NUE Urban Concepts include Boynton Beach, Cape Coral, Crestview, Flagler Beach, Gainesville (Mobility Fee), Lake City, Palm Springs, and West Palm Beach.

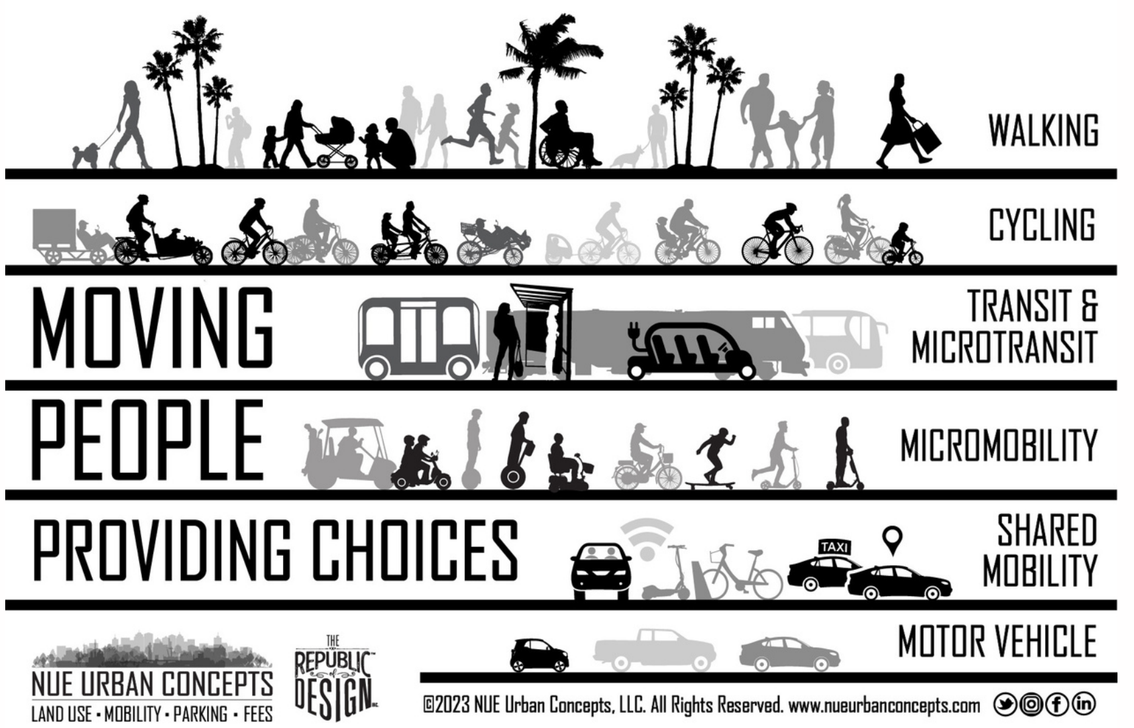
What is a Mobility Plan?

- Vision for the City's transportation system to transition from one focused primarily on **moving vehicles quickly** to **moving people safely** and providing **mobility choices**

- **Long-term plan** (2050 horizon)

- Identifies project needs at a high level

- Required by Florida Statute to serve as basis for development of a **mobility fee**



What is a Mobility Fee?

- Alternative to transportation concurrency & road impact fees
- One-time fee paid by (re) development
- Intended to mitigate transportation impact
- Creates city-controlled funding source
- Funds variety of multimodal infrastructure
- Funds policies, programs, and services



Road Impact Fee vs Mobility Fee

Impact Fees

- Based on general cost of capacity, not specific projects
- Fund adding road capacity
- Based on future vehicle miles of travel

Mobility Fees

- **Based on a plan of mobility projects**
- Fund variety of multimodal facilities, plans, programs, and policies
- Based on cost of multimodal projects in the Mobility Plan
- Based on person miles of travel and person travel demand

DEVELOPING A **MOBILITY PLAN & MOBILITY FEE**

1 LAND USE EVALUATION

Review existing development patterns, future Land Use Plans, Special Area Plans, & Zoning Districts

2 DATA COLLECTION

Existing traffic & travel characteristics, demographics, mode share, & multimodal infrastructure

3 EXISTING CONDITIONS EVALUATION

Identify existing system-level traffic backlog & deficiency

(Function: Demonstrates that new growth is not paying for existing backlog & deficiency)

4 PROJECT FUTURE GROWTH

Calculate Projected Growth in population, employment, & Vehicle & Person Miles of Travel (VMT & PMT). Alternatives: Calculate VMT & PMT based on future land use for defined area or establish future mode share goals

(Function: The first component of the dual rational nexus test is to demonstrate need)

5 PREPARE MULTIMODAL PROJECT COST

Develop Planning Level Cost Estimates for Mobility Plan projects

6 ESTABLISH SERVICE STANDARDS

Develop Areawide Road Level of Service (LOS) & Multimodal Quality of Service (QOS) Standards for Mobility Plan projects

7 ESTABLISH MULTIMODAL CAPACITIES

Develop Multimodal Capacities for Mobility Plan projects based on LOS & QOS Standards

8 IDENTIFY AVAILABLE FUNDING

Existing and Projected Funding Sources

(Function: Ensures new development is not paying twice for the same mobility projects by recognizing reasonable anticipated funding of mobility plan projects)

9 CONDUCT NEW GROWTH EVALUATION

Establish the share of Mobility Plan projects assignable & attributable to New Growth

(Function: Demonstrates new growth is not responsible for more than its fair share of mobility plan projects)

10 CALCULATE PERSON MILES OF CAPACITY (PMC) OR TRAVEL RATE (PMT)

Based on Steps 3 to 8 develop a PMC or PMT Mobility Fee Rate attributable to New Growth

(Function: Demonstrates new growth is not being charged for existing deficiencies and is being assessed more than its fair share of the cost of mobility plan projects)

11 ESTABLISH ASSESSMENT AREAS

Defined Areas for Mobility Fee assessment & collection

Function: Reflects localized differences in existing infrastructure, the need for mobility plan projects, & PMT

12 ESTABLISH MOBILITY FEE SCHEDULE OF USES

Develop a Schedule of Uses based on Land Use evaluation & established Assessment Areas

13 CALCULATE PERSON TRAVEL DEMAND PER USE

Based on Trip Generation, % of new trips, Person Trip Conversion factors, Person Trip length, Assessment Areas, Limited Access Travel, & Origin & Destination adjustments

(Function: Used to demonstrate that the mobility fee is roughly proportional to the impact of new growth)

14 CALCULATE MOBILITY FEE PER USE

Establish a Mobility Fee per Specific Use & Assessment Area based on Steps 12, 14, & 15

(Function: Calculation of mobility fees to be paid by new development to fund assignable and attributable mobility plan projects)

15 ESTABLISH BENEFIT DISTRICTS

Define Benefit Districts for expenditure of Mobility Fee to fund Mobility Plan projects

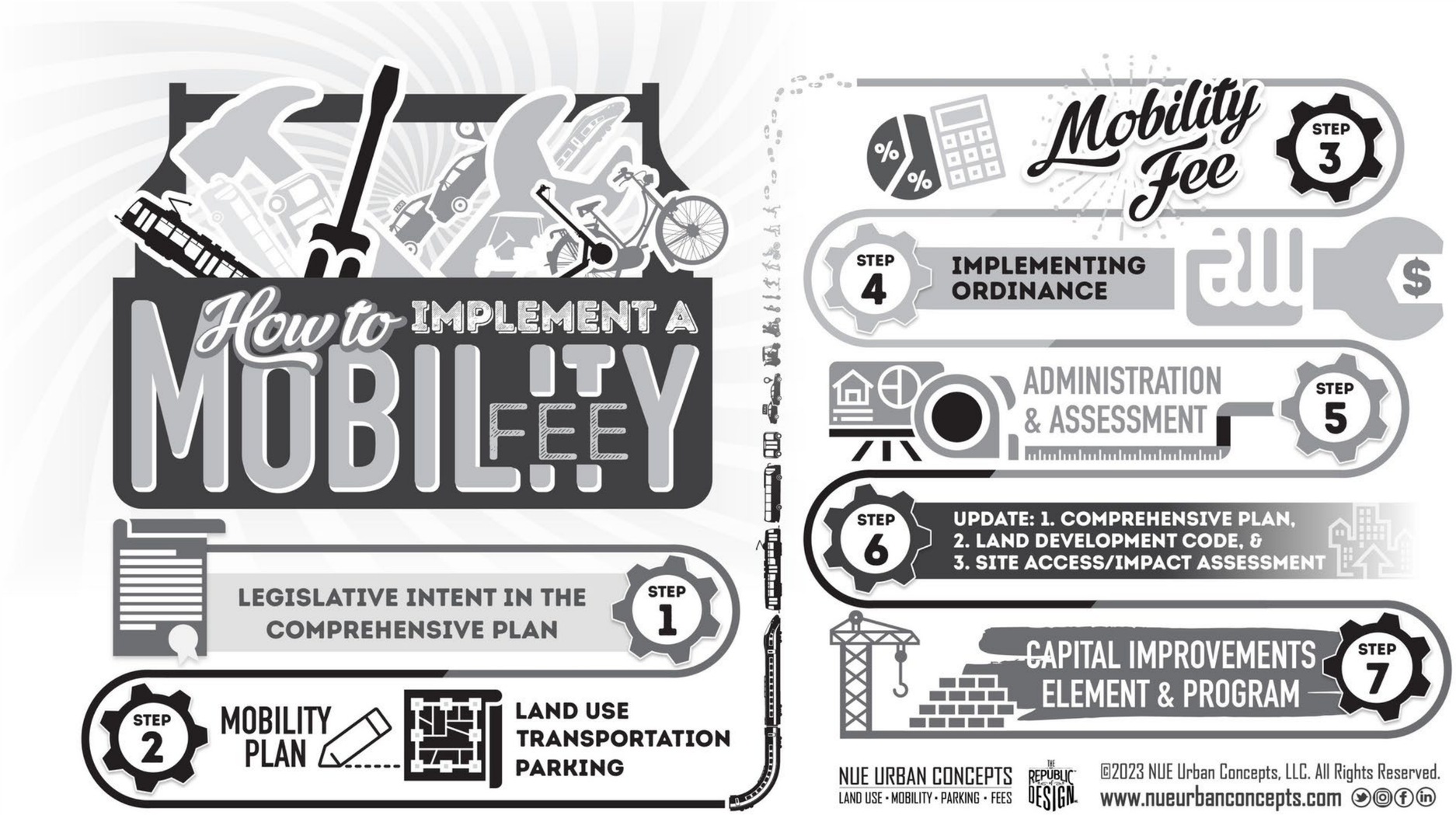
(Function: The second component of the dual rational nexus test is to demonstrate benefit)

16 DEVELOP MOBILITY FEE TECHNICAL REPORT

Document Data Sources and Methodology

Function: Demonstrates that the data & methodology used to calculate the mobility fee is legally & statutorily compliant. Provides documentation used to develop or update mobility fee implementing ordinance)

How to Implement a Mobility



How to Assess a Mobility Fee?

The Mobility Fee features two assessment areas: (1) Within the Multimodal District; and (2) Outside the Multimodal District. The Mobility Fee is lower within the Multimodal District due to shorter trip lengths, mixture of land uses, and the interconnected transportation network. Any areas that annex into the City would be assessed the Mobility Fee based on the Outside the Multimodal District rates. Assessment Areas are established as part of the legally and statutorily required rough proportionality test.

The Mobility Fee will feature a Single Benefit District. Mobility Fees collected within the City can be spent on multimodal projects throughout the City. Travel patterns are citywide and multimodal projects will serve residents and businesses throughout the City. A Benefit District is established to meet the second requirement of the legally and statutorily required dual rational nexus test. The first requirement of the legally and statutorily required dual rational nexus test is addressed based on future person travel demand and is addressed in the Mobility Plan and Mobility Fee technical Report.



Mobility Fee Schedule

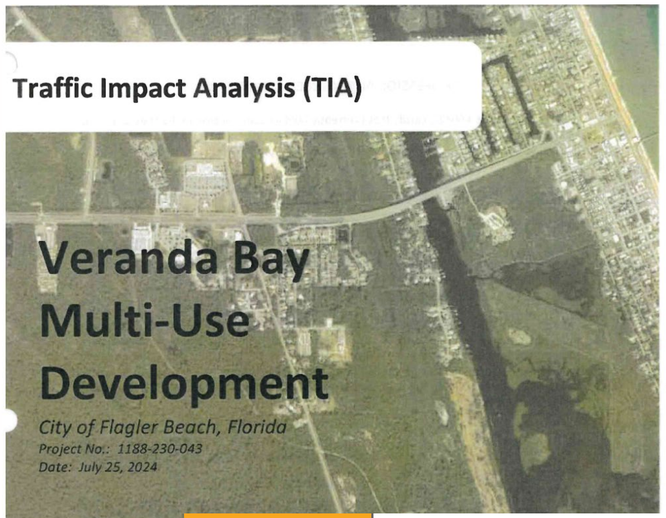
Use Categories, Land Uses Classifications, and Representative Land Uses	*Unit of Measure*	*Mobility Fee*
Residential & Lodging Uses		
Residential	per sq. ft.	$1.05
Overnight Lodging (Bed & breakfast, Hotel, Inn, Motel, Vacation Rental)	per room	$1,763
Mobile Residence (Mobile Home, RV, Home on Wheels, Travel Trailer)	per space/lot	$1,216
Institutional Uses		
Community Serving (Civic, Place of Assembly, Museum, Gallery)	per sq. ft.	$0.86
Long Term Care (Assisted Living, Congregate Care Facility, Nursing Facility)	per sq. ft.	$0.87
Private Education (Day Care, Private Primary School, Pre-K)	per sq. ft.	$1.57
Industrial Uses		
Industrial (Assembly, Manufacturing, Nursery, Outdoor Storage, Warehouse, Utilities)	per sq. ft.	$0.58
Recreational Uses		
Indoor Commercial Recreation (Gym, Indoor Sports, Kids Activities, Recreation)	per sq. ft.	$3.54
Outdoor Commercial Recreation (Amusement, Golf, Multi-Purpose, Sports, Tennis)	per acre	$1,873
Marina (Including dry storage)	per berth	$370
Office Uses		
Office (Bank, General, Higher Education, Professional)	per sq. ft.	$1.62
Medical Office (Clinic, Dental, Emergency Care, Hospital, Medical, Veterinary)	per sq. ft.	$2.43

Why Mobility Plans & Fees Work

- Allows city to plan and **fund a variety of multimodal mobility projects**
- Helps address short-term, **day-to-day needs**
- Provides **comprehensive vision** to guide capital projects and development
- Assists city in **prioritizing** mobility projects to best meet the needs of the city
- Helps the City **balance** community growth and reducing congestion
- Opens up additional **funding opportunities** for mobility projects
- Provides a framework for innovation



Identify Future Roadway & Multimodal Needs





DOWNTOWN MASTER PLAN
City of Flagler Beach, Florida

January 2006



(C3C-Suburban Commercial)

AADT

	B	C	D	E
2 Lane	*	15,300	21,700	**
4 Lane	*	30,700	36,600	**
6 Lane	*	47,700	54,100	**
8 Lane	*	64,000	64,200	**



(C3R-Suburban Residential)

	B	C	D	E
2 Lane	*	19,600	22,400	**
4 Lane	*	34,300	37,300	**
6 Lane	*	52,900	55,100	**



(C4-Urban General)

	B	C	D	E
2 Lane	*	*	17,600	24,000
4 Lane	*	24,400	36,100	40,800
6 Lane	*	44,700	56,800	60,400
8 Lane	*	52,300	66,900	70,900

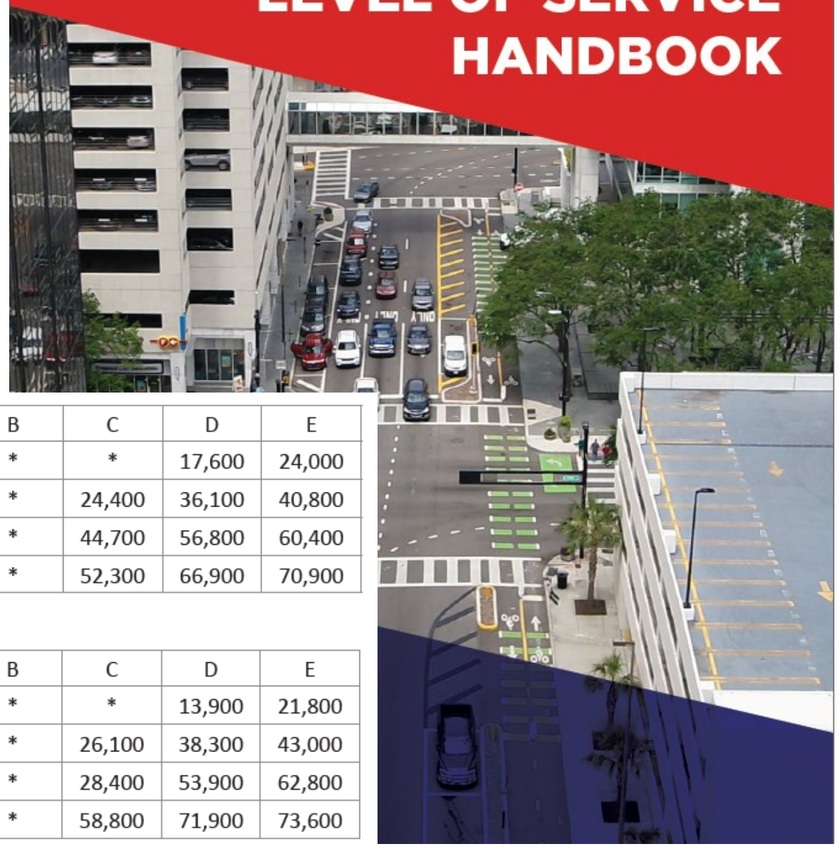


(C5-Urban Center)

	B	C	D	E
2 Lane	*	*	13,900	21,800
4 Lane	*	26,100	38,300	43,000
6 Lane	*	28,400	53,900	62,800
8 Lane	*	58,800	71,900	73,600

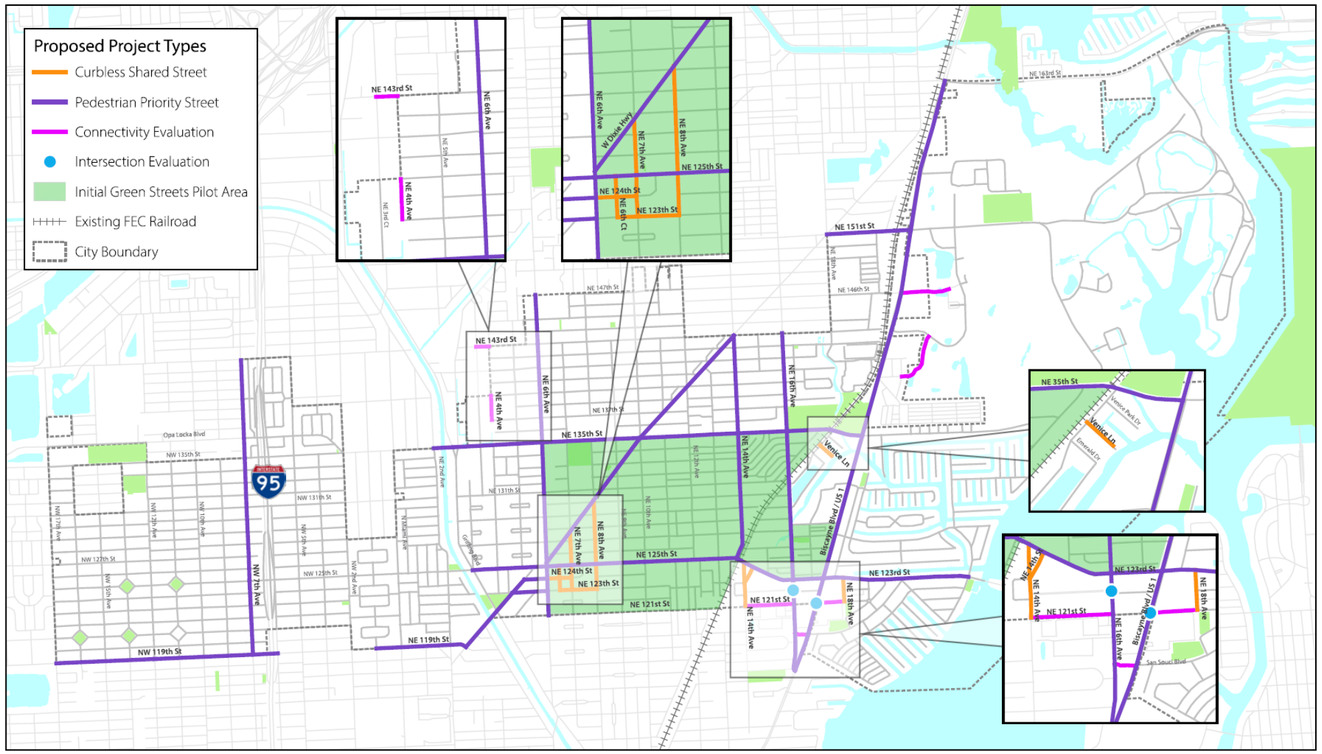
FDOT

2023
MULTIMODAL QUALITY/
LEVEL OF SERVICE
HANDBOOK



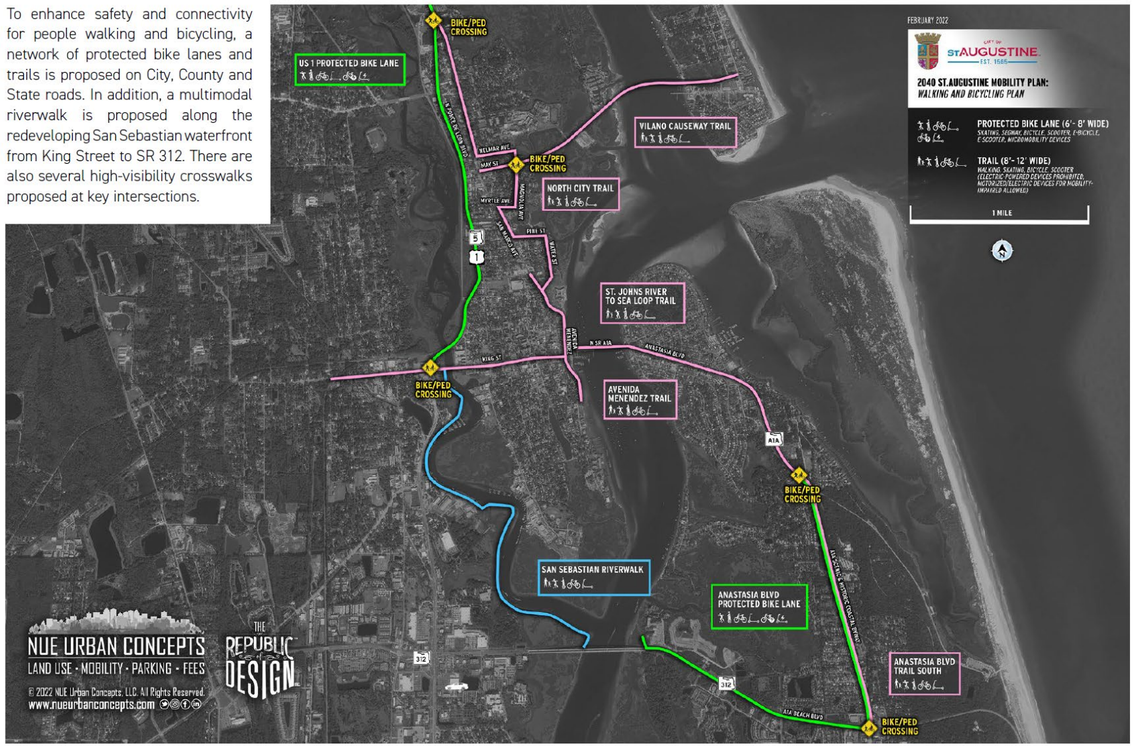
Develop Mobility Plan

CITY OF NORTH MIAMI 2045 MOBILITY PLAN
STREETS PLAN



2040 MOBILITY PLAN: WALKING & BICYCLING PLAN

To enhance safety and connectivity for people walking and bicycling, a network of protected bike lanes and trails is proposed on City, County and State roads. In addition, a multimodal riverwalk is proposed along the redeveloping San Sebastian waterfront from King Street to SR 312. There are also several high-visibility crosswalks proposed at key intersections.



What Types of Projects Will a Mobility Fee Fund?

Everything that can be funded with road impact fees, plus the following:

- Sidewalks
- Multi-use/shared-use paths
- Greenways
- Bike lanes
- Streetscape & landscape
- Traffic calming / low speed streets
- Roundabouts / traffic circles
- Micromobility & microtransit
- Policies, programs, services and studies
- Green infrastructure
- Parking
- Mobility hubs
- Tactical urbanism (quick build)
- Transit circulators
- Transit vehicles
- Transit stop enhancements
- Safety improvements & upgrades

Park Once Environment

City of St. Augustine “Park Once” Environment













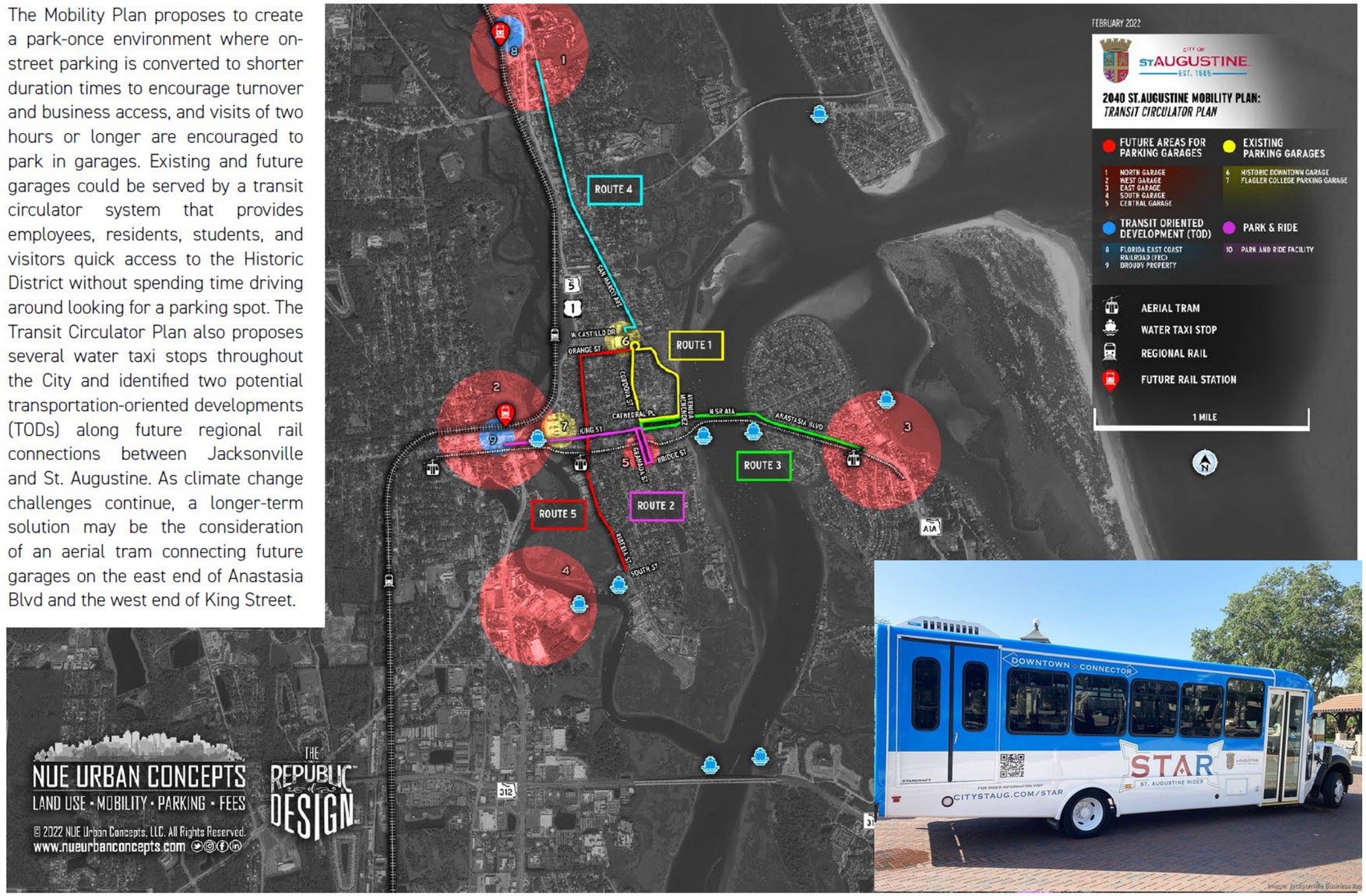




Park Once Environment

City of St. Augustine Transit Circulator Plan

The Mobility Plan proposes to create a park-once environment where on-street parking is converted to shorter duration times to encourage turnover and business access, and visits of two hours or longer are encouraged to park in garages. Existing and future garages could be served by a transit circulator system that provides employees, residents, students, and visitors quick access to the Historic District without spending time driving around looking for a parking spot. The Transit Circulator Plan also proposes several water taxi stops throughout the City and identified two potential transportation-oriented developments (TODs) along future regional rail connections between Jacksonville and St. Augustine. As climate change challenges continue, a longer-term solution may be the consideration of an aerial tram connecting future garages on the east end of Anastasia Blvd and the west end of King Street.



Micromobility & Low Speed Vehicles

Example: Altamonte Springs Multimodal Ways





Low Speed Vehicles





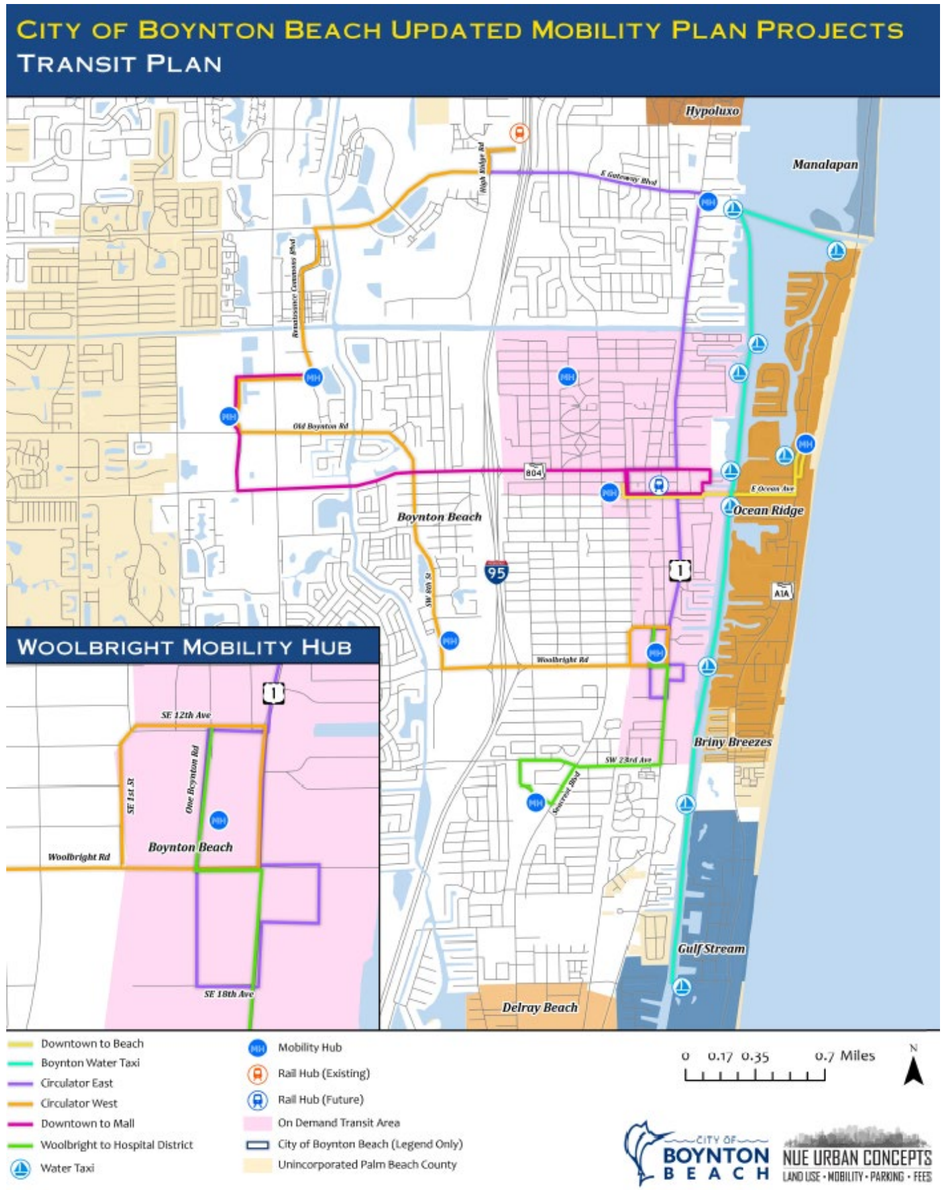








Microtransit & Mobility on Demand (MoD)









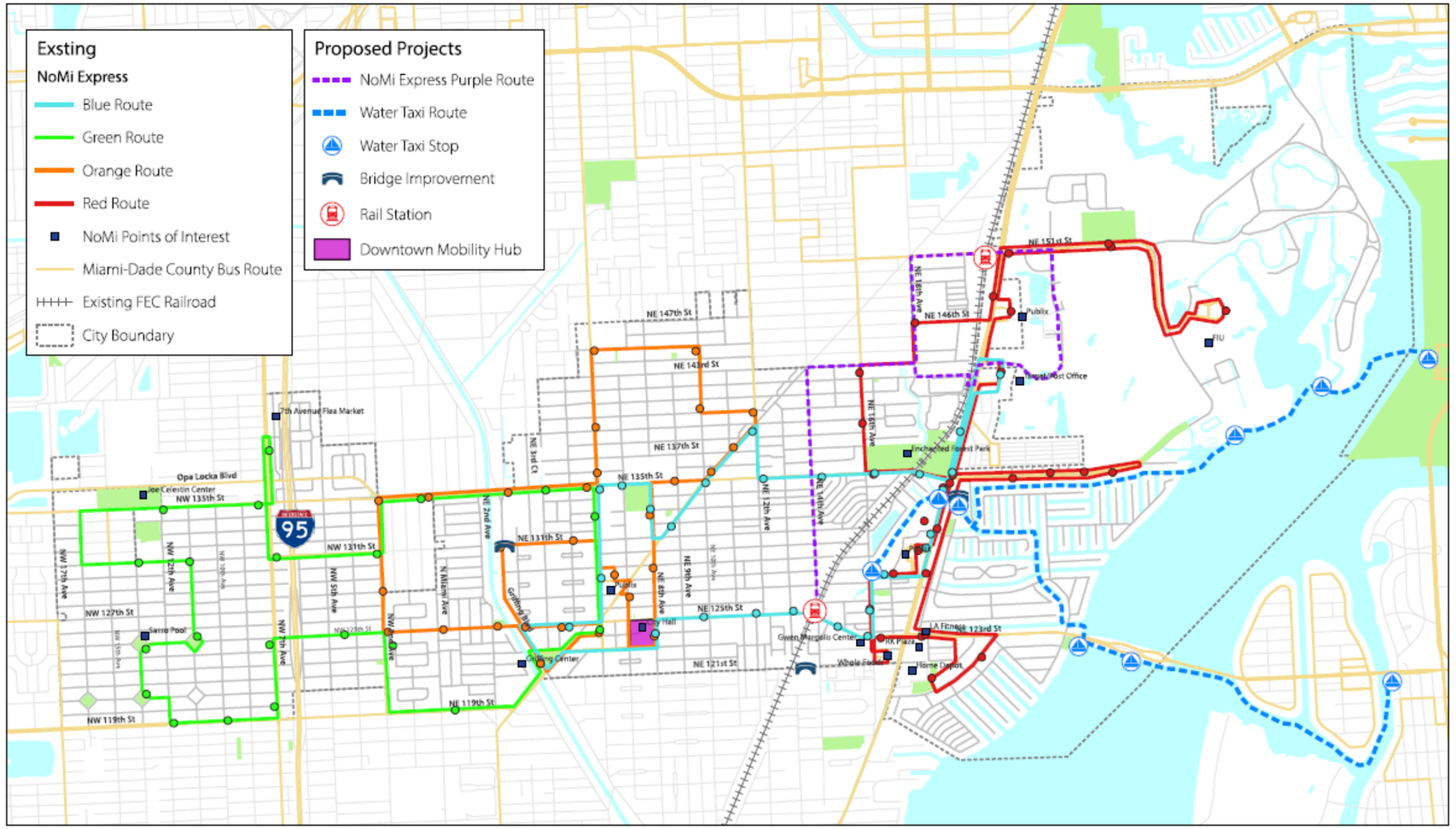
Water Taxis

CITY OF NORTH MIAMI 2045 MOBILITY PLAN

TRANSIT PLAN

NORTH MIAMI FLORIDA

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TAMPA WATER TAXI



MIAMI BEACH WATER TAXI


20
SLOW
DOWN


SLOW
DOWN
20MPH

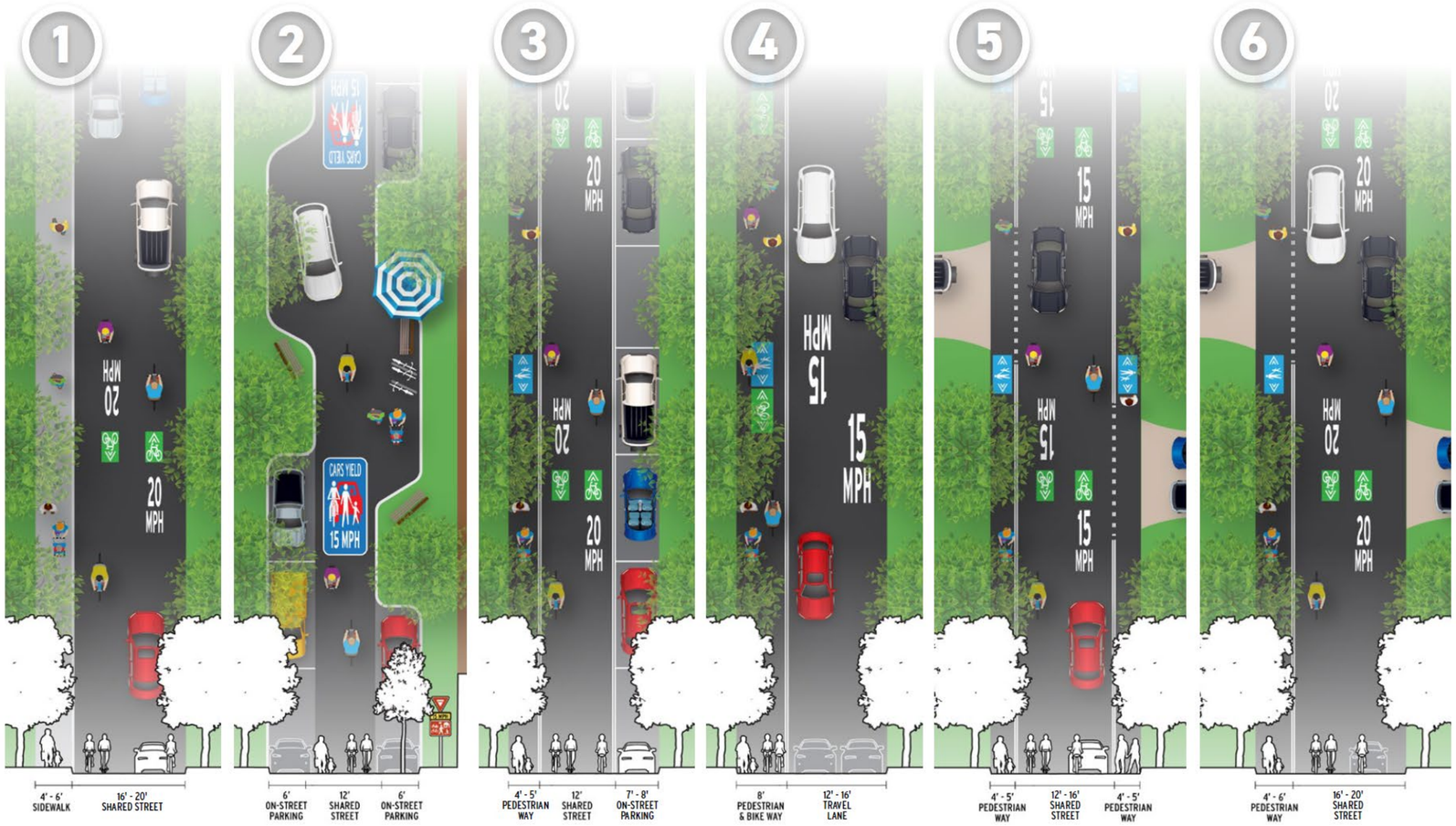

SPEED
LIMIT
20
SPEED
LIMIT
20
NO
TU RN


SPEED
LIMIT
20
Curl
XING



Low Speed Streets

Example: St Augustine Advisory Bike Lanes & Sidewalks



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Low Speed Streets

Example: Gainesville Yield Streets, Bike Boulevards, Multimodal One-Way Pairs







What Types of Projects Will a Mobility Fee Fund?

Example: Gainesville Traffic Calming

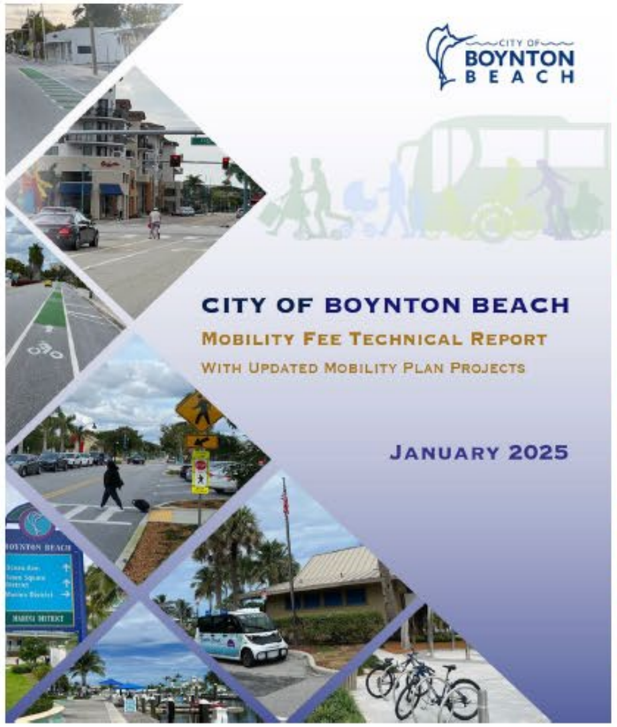


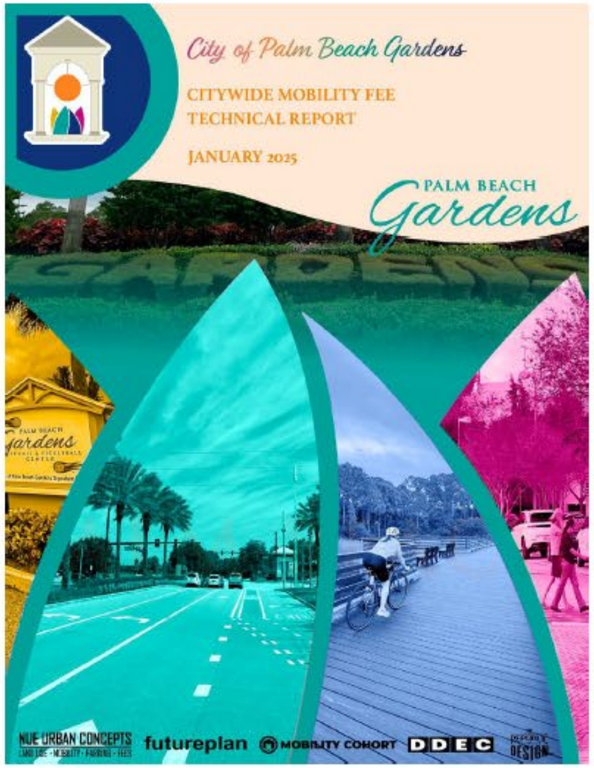


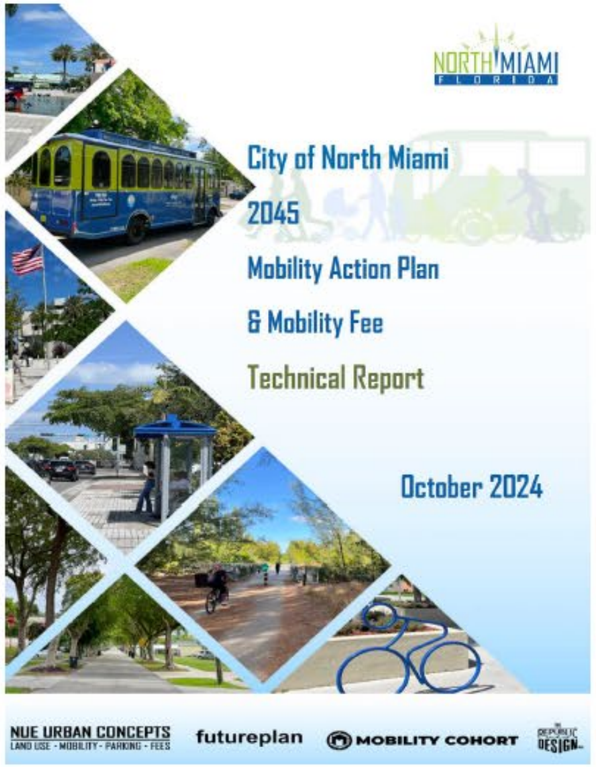




Mobility Fee: Funding Source to Implement Mobility Plan









Questions?

Lauren Rushing, AICP
Transportation Planner

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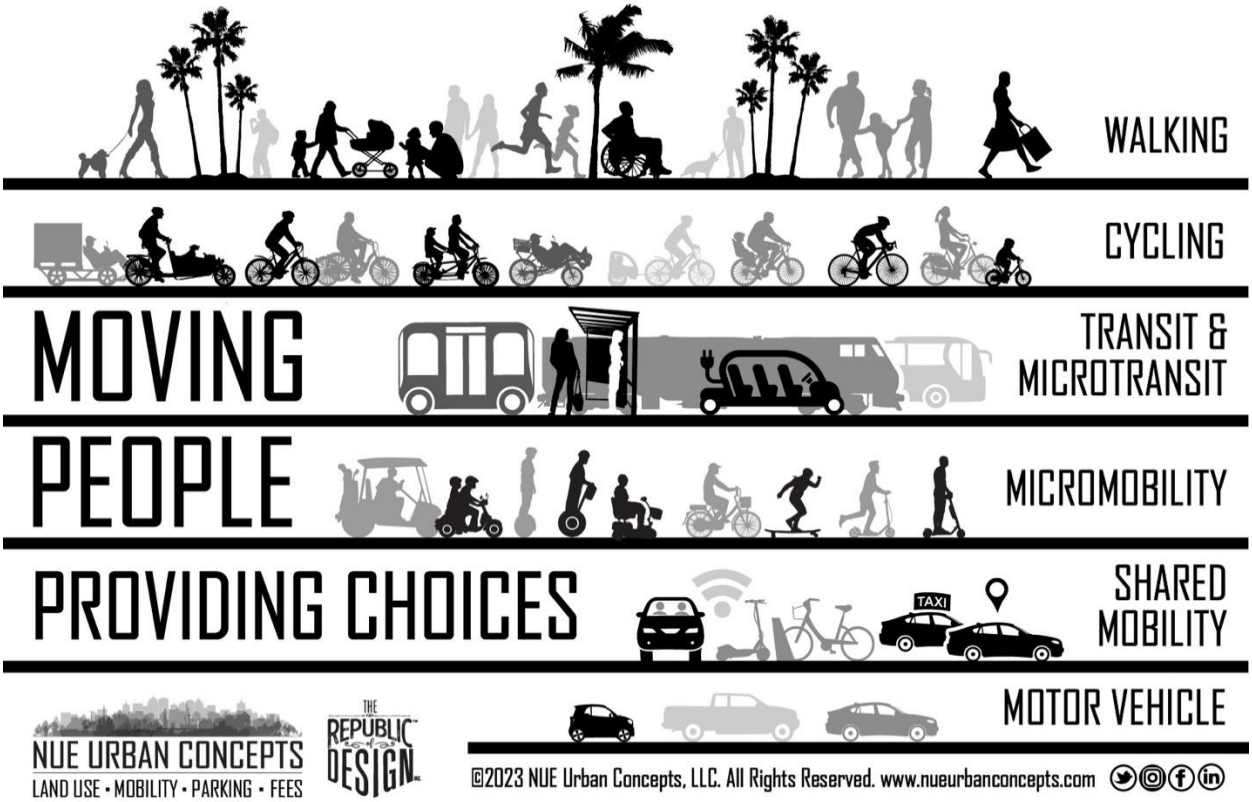
THE CITY OF FLAGLER BEACH
MOBILITY PLAN & MOBILITY FEE
FREQUENTLY ASKED QUESTIONS (FAQ)

WHY DOES THE CITY NEED A MOBILITY PLAN?

Development of a mobility plan would enable the City to move towards further development of a connected and integrated multimodal transportation system and to develop a comprehensive vision for mobility in Flagler Beach. Identification of mobility plan projects would assist the City in efforts to pursue Federal and State funding in partnership with Flagler County and FDOT.

WHAT IS A MOBILITY PLAN?

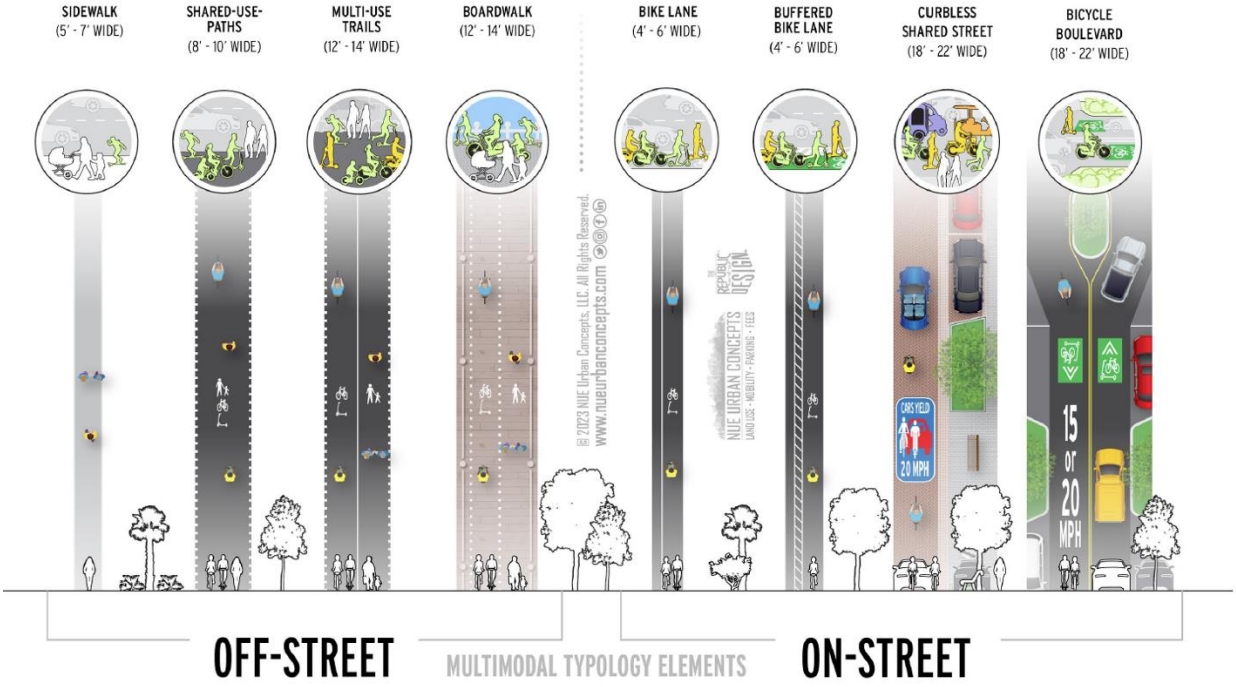
A mobility plan is a blueprint from which the City can **reimagine and repurpose** its transportation system **from primarily moving cars** on congested roads towards a multimodal system that **emphasizes safely moving people:** whether they walk, bicycle, ride a golf cart or a transit circulator, need mobility assistance (i.e., wheelchair), use shared mobility, or drive a vehicle.



THE CITY OF FLAGLER BEACH
MOBILITY PLAN & MOBILITY FEE
FREQUENTLY ASKED QUESTIONS (FAQ)

WHAT TYPE OF PROJECTS CAN BE INCLUDED IN THE MOBILITY PLAN?

The mobility plan can include sidewalks, paths, trails, bike lanes, curbless shared streets, complete streets, new roads, road upgrades, road widenings, roundabouts, intersection improvements, pedestrian safety improvements, and more. The plan can also include innovative concepts such as transit circulators, mobility on demand, parking structures, and shared mobility services such as electric bikes or golf carts. The establishment of planning initiatives through the mobility plan also allows for incorporation of traffic calming and low speed streets, low speed vehicle policies, landscape and streetscape projects, alleyway revitalization, upgrades to transit stops, road safety initiatives, and improvements for compliance with the Americans with Disabilities Act (ADA) requirements.



WILL THE MOBILITY PLAN INCLUDE COUNTY AND STATE ROADS?

The proposed mobility plan can include improvements on County and State Roads. Since the City does not maintain these roads, the ultimate decision on the design and funding of improvements will be the County and the State. However, both the County and the State do look to municipalities for their feedback and support for projects. A mobility fee would provide the City a funding source to offer as a local contribution for funding improvements that the County and State would not typically fund. The mobility fee would be designed to be adopted as a standalone City mobility fee separate from the County transportation impact fee and to be the only fee assessed within the city limits of Flagler Beach.

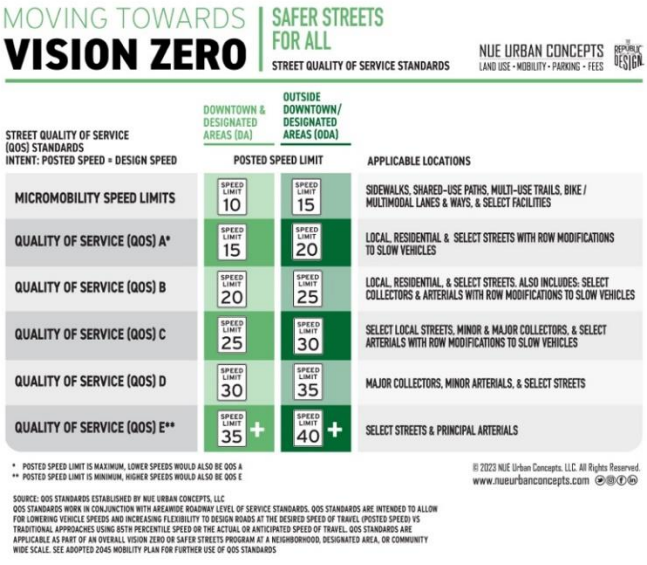
THE CITY OF FLAGLER BEACH
MOBILITY PLAN & MOBILITY FEE
FREQUENTLY ASKED QUESTIONS (FAQ)

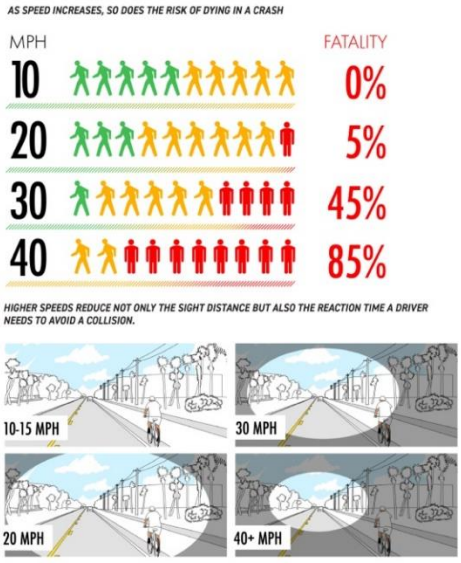
HB 479 was adopted by the Florida Legislature this past session and went into effect on October 1st, 2024. HB 479 updated the criteria for development of a mobility plan and a mobility fee. HB 479 also requires that municipalities and counties negotiate the mitigation of transportation impacts where both local governments attempt to collect a transportation mitigation fee from one development. Since Flagler County does not require the City to collect its transportation impact fee, this provision of HB 479 would not apply to the City. However, it may be prudent for the City to consider what would occur should the County attempt to collect a transportation mitigation fee. House Bill 479, will significantly assist in the coordination process with the County.

CAN THE CITY ELIMINATE ROADWAY LEVEL OF SERVICE (LOS)?

Florida Statute encourages local governments adopting a mobility plan and fee to establish tools and techniques, such as "multimodal level of service standards," to complement its application. Florida Statute also requires the adoption of measurable standards in the Comprehensive Plan to address transportation and mobility. Many local governments are using the development of a mobility plan and mobility fee to move beyond monitoring roadway level of service (LOS) for transportation concurrency and adding roadway capacity.

NUE Urban Concepts has developed Street Quality of Service (QOS) standards, which are then tailored to each local government, that allow local governments to either eliminate or supplement road LOS. The Street QOS is based on posted speed limit and establishes a very simple and straightforward premise: **streets should be designed at the desired speed of travel.** Street QOS allows elected officials to prioritize safety for all users by actively supporting a street QOS of "A" or "B", versus settling for congestion and being resigned to road LOS of "E" or "F".

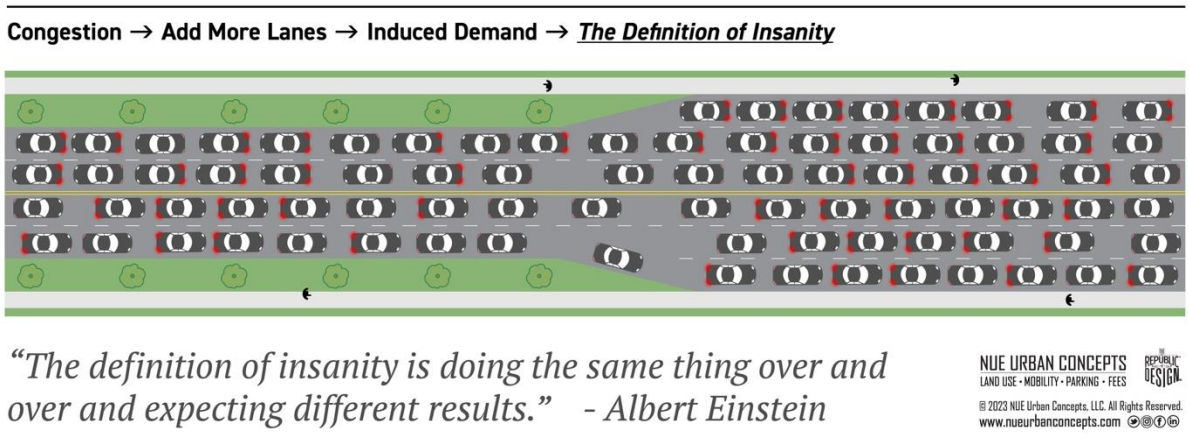


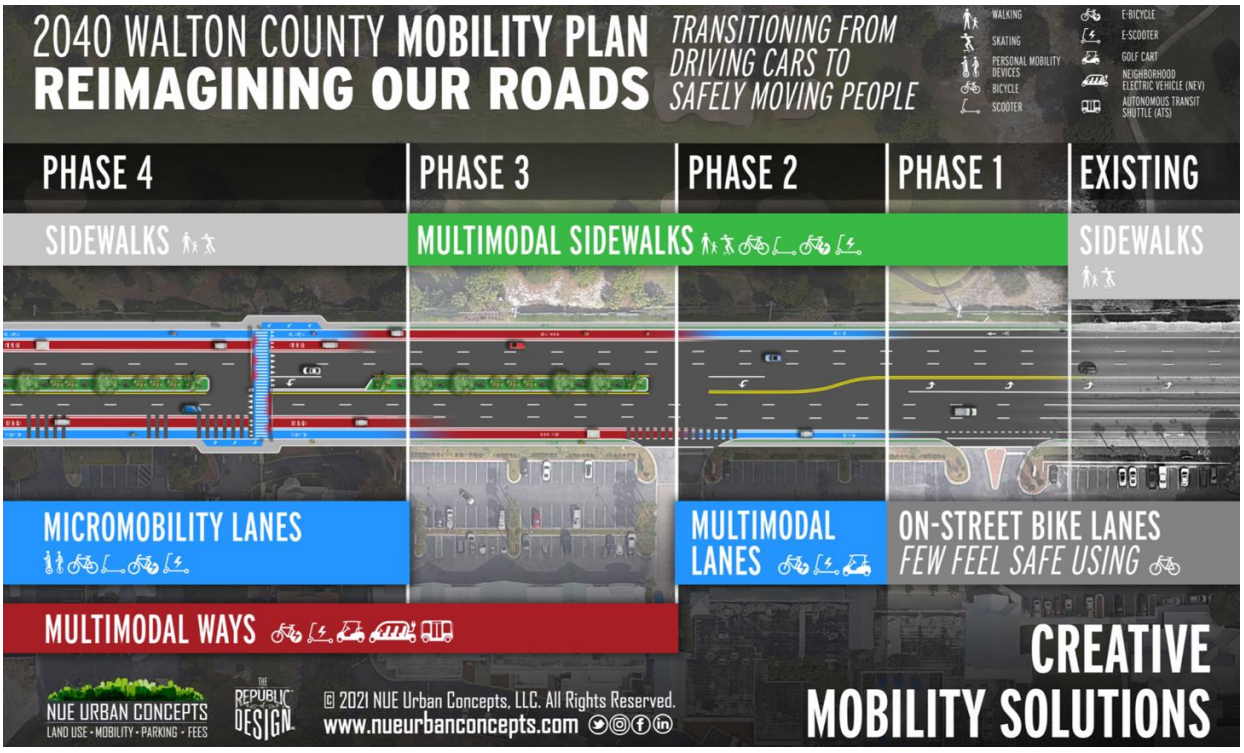


THE CITY OF FLAGLER BEACH
MOBILITY PLAN & MOBILITY FEE
FREQUENTLY ASKED QUESTIONS (FAQ)

IS THERE AN ALTERNATIVE TO CHASING CONGESTION?

No government globally has been able to build enough roads to eliminate congestion. This is due in part to the theory of "induced demand" (aka build it and they will come). The addition of road capacity does not reduce congestion, as the new capacity is used up shortly after being added. The current transportation system did not develop overnight. It is the result of funding and policy decisions over the last 75 years that prioritized the movement of cars. Land use polices that incentivize mixed-use, parking regulations that allow for innovation, and a mobility plan focused on moving people are needed to reimagine and repurpose our roads to enhance mobility.



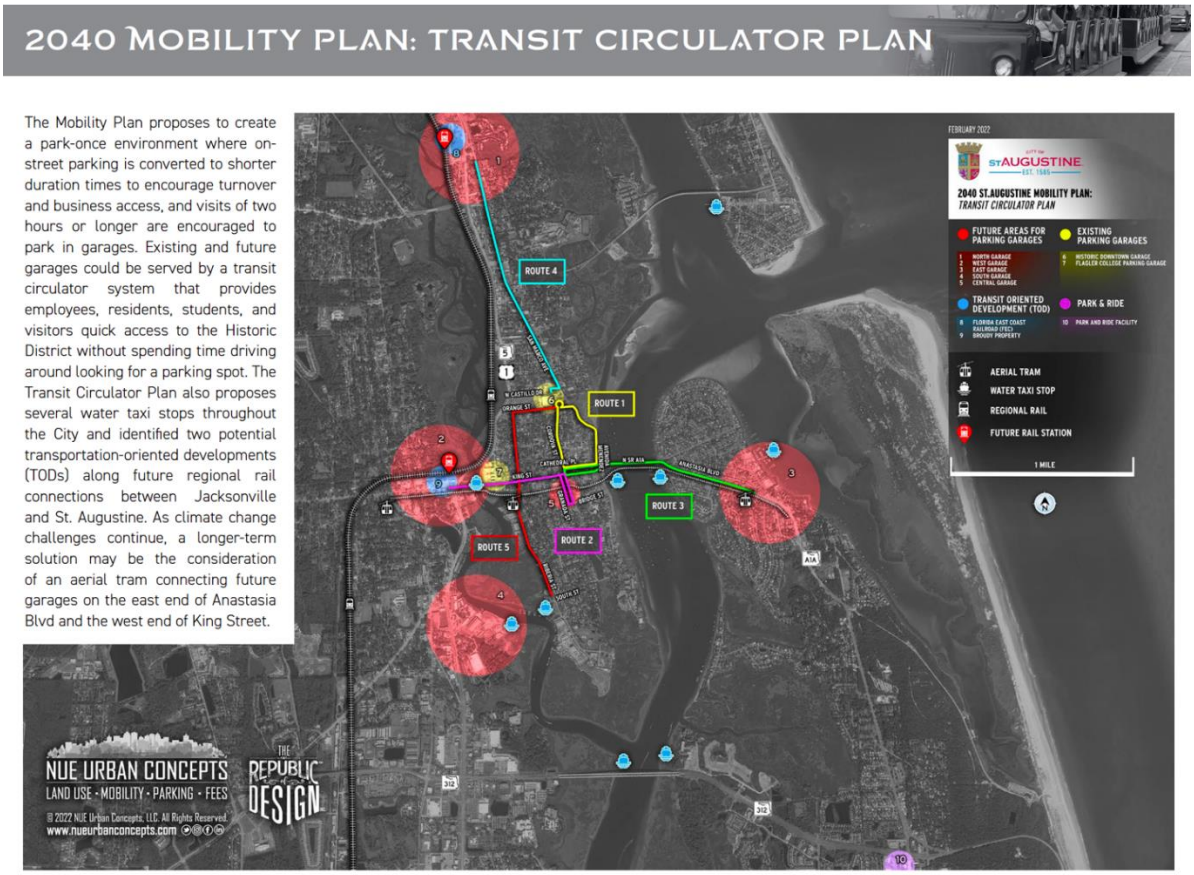


THE CITY OF FLAGLER BEACH
MOBILITY PLAN & MOBILITY FEE
FREQUENTLY ASKED QUESTIONS (FAQ)

CAN MOBILITY PLANS BE USED TO CREATE A PARK ONCE ENVIRONMENT?

The integration of parking management has become a major component in the development of mobility plans. Developing a park once environment that still recognizes people will drive, but once they reach a destination, the goal is that they use some other form of transportation for mobility. These other forms would be walking, bicycling, riding a scooter, or using microtransit circulator services in the form of neighborhood electric vehicles or rubber-tired trolleys.

The mobility plan sets the stage for a park once environment and can identify desired locations for mobility hubs with existing or planned parking lots or structures, and then a network of transit circulator routes, water taxis, and/or enhanced bicycle ways to connect residents, destinations, and mobility hubs. There are follow-on planning initiatives that address the specific components of creating a park once environment. The City of St. Augustine's adopted Mobility Plan is a recent example, and the City's mobility fee is a funding source for transit service and vehicles and a change in its approach to parking in its land development regulations.



THE CITY OF FLAGLER BEACH
MOBILITY PLAN & MOBILITY FEE
FREQUENTLY ASKED QUESTIONS (FAQ)

HOW ARE MOBILITY PLANS DIFFERENT THAN OTHER PLANS?

Reimagining and repurposing the City's transportation system from one focused on moving cars to safely moving people requires more than installing bike lanes. Land use policies, as well as design standards, can either facilitate or create barriers to reducing congestion and offering multimodal lifestyles. Mobility Plans take a holistic approach to mobility by integrating transportation with land use. Mobility Plans serve as a tool for managing growth and are a catalyst for new development, redevelopment, and equitable placemaking.

WHAT IS A MOBILITY FEE?

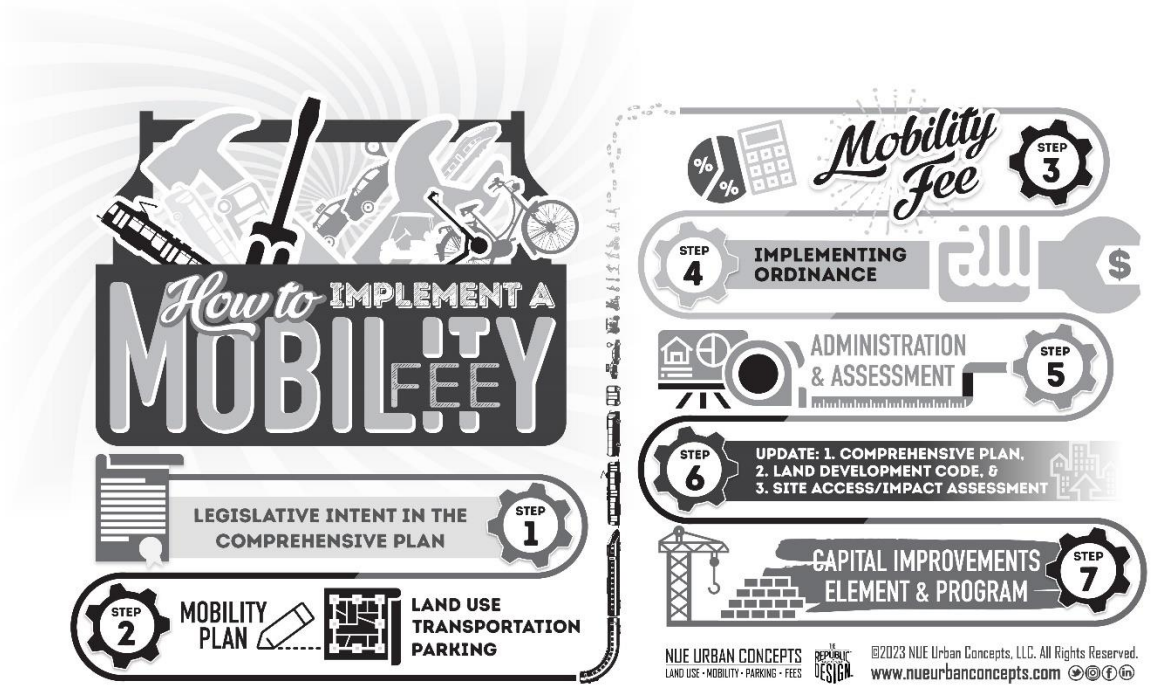
A mobility fee is a **one-time fee** paid by new development activity to the City to mitigate the traffic impact of the development on the City's transportation system. Mobility fees, based on a plan of improvements (i.e., mobility plan), were established by the Legislature in 2013 through Florida Statute 163.3180 to provide new development activity a simplified alternative to transportation concurrency, proportionate share, and road impact fees. The City's **Mobility Fees** will be **based on projects** (improvements, services, programs) adopted as part of the City's **Mobility Plan.** Those **Fees** will be used to **fund the projects** identified in the **Plan.**



THE CITY OF FLAGLER BEACH
MOBILITY PLAN & MOBILITY FEE
FREQUENTLY ASKED QUESTIONS (FAQ)

HOW WILL THE MOBILITY FEE BE DEVELOPED?

The City's mobility fee will be developed based on data and methodologies detailed in a technical report that will be designed to meet what are known as the dual relational nexus test and the rough proportionately test established by case law and Florida Statute. The graphic on the following page shows the steps that are typically undertaken to develop a Mobility Fee. Steps one (1) and six (6) can overlap, depending on the City's existing Comprehensive Plan. Steps five (5) and seven (7) typically occur after adoption of the mobility plan and mobility fee.



WHO PAYS A MOBILITY FEE?

Any new development activity within the City that requires the issuance of a building permit and results in an increase in person travel demand (impact) above the existing use of property will be assessed a mobility fee. Mobility fees are not a tax, and they are not charged to existing homes, businesses, or property; unless there is an addition, change of use, expansion, modification, or redevelopment that **requires issuance of a building permit** and **generates additional person travel demand** above the existing use of property. Florida Statute exempts State of Florida governmental uses, and public and charter schools from paying mobility fees. The City may also elect to exempt other governmental uses, as well as affordable housing.

THE CITY OF FLAGLER BEACH
MOBILITY PLAN & MOBILITY FEE
FREQUENTLY ASKED QUESTIONS (FAQ)

WHEN DOES NEW DEVELOPMENT ACTIVITY PAY ITS MOBILITY FEE?

Mobility fees are generally assessed at the time of a building permit application. Mobility fees would be required to be paid no later than issuance of a building permit, unless otherwise specified in an approved development order or agreement. Adopted mobility fees could become effective as soon as 90 days after 1st public notice of the fees. Some local governments make the fees effective 90 days after they are officially adopted after second reading of an ordinance.

HOW IS A MOBILITY FEE DETERMINED FOR NEW DEVELOPMENT ACTIVITY?

The mobility plan and mobility fee technical report and the implementing ordinance will include a simplified table, known as a mobility fee schedule, that provides the mobility fee rates for various uses of property, such as residential, retail, industrial, and office. The mobility fee assessed is calculated based on the mobility fee rate and a specific unit of measure, such as heated and cooled square feet for a residential use, and number of rooms for a hotel.

ARE OFFSETS OR CREDITS AVAILABLE FOR MOBILITY FEES?

Offsets of mobility fees may be available where redevelopment is replacing an existing structure. Credits may be available for previous proportionate share payments, for dedication of right-of-way, and/or the construction of multimodal projects identified in the mobility plan. The mobility fee ordinance will contain details for off-sets and credits.

WHAT WILL HAPPEN TO MOBILITY FEES PAID TO THE CITY?

Mobility fees are required by Florida Statue to be separated into a specific fund that tracks both payments and expenditures. The fund is subject to an annual audit by the State of Florida Department of Revenue. The requirement for a special fund is to ensure that: (1) mobility fees are not included in general revenues, (2) that the collection and expenditure of fees is transparent, and (3) the fees are being used for the purpose for which they were collected.

STAFF REPORT

City Commission Regular Meeting

February 13, 2025

To: Elected Officials

From: Dale L. Martin, City Manager

Date: February 7, 2025

Item Name: Resolution 2025-14. A Resolution by the City Commission of the City of Flagler Beach, to award a contract to Moffatt & Nichol (M&N) for the fee of $ $349,500 to provide construction support services in the capacity of Engineer of Record (EOR) overseeing the construction of the Flagler Beach Pier; providing for conflict and an effective date.

Background: Flagler Beach Pier is located at 215 South Ocean Shore Boulevard in Flagler Beach, Florida. The project consists of the demolition and reconstruction of the historic Flagler Beach Pier that was initially built in 1928. The pier has suffered significant damage due to several storms and hurricanes and was deemed inoperable in 2022.

The City has contracted with Moffatt & Nichol for design and permitting services for the demolition and reconstruction. The scope of this project is complicated and stringent reporting requirements will have to mbe met to ensure Federal and State funding is not jeopardized. The additional construction support services are part of the federal requirements to provide adequate on-site construction observation.

Fiscal Impact: The funds to support the additional construction support services will be drawn from the City's General Fund Unrestricted Reserve and then be reimbursed (87.5%) by Federal and State agencies.

Staff Recommendation: Staff recommends approval of Resolution 2025-14.

Attachment:

Resolution 2025-14

RESOLUTION 2025-14

A RESOLUTION BY THE CITY COMMISSION OF THE CITY OF FLAGLER BEACH, TO AWARD A CONTRACT TO MOFFATT & NICHOL (M&N) FOR THE FEE OF $ $349,500 TO PROVIDE CONSTRUCTION SUPPORT SERVICES IN THE CAPACITY OF ENGINEER OF RECORD (EOR) OVERSEEING THE CONSTRUCTION OF THE FLAGLER BEACH PIER; PROVIDING FOR CONFLICT AND AN EFFECTIVE DATE.

WHEREAS, the City hired the firm of Moffatt & Nichol to design Project #260 Flagler Beach Pier Construction; and

WHEREAS, City staff solicited a proposal (Exhibit A) from Moffatt & Nichol, to provide construction support services;

NOW THEREFORE BE IT RESOLVED BY THE CITY COMMISSION OF THE CITY OF FLAGLER BEACH, AS FOLLOWS:

SECTION 1. The City of Flagler Beach City Commission approves the proposal submitted by Moffatt & Nichol in an amount not to exceed $349,500 (Exhibit A) for construction support services related to Project #260 Flagler Beach Fishing Pier.

SECTION 2. The City Commission authorizes City Staff to issue a Notice to Proceed.

SECTION 3. All resolutions or parts of resolutions in conflict herewith be and the same are hereby repealed.

SECTION 4. This Resolution shall become effective immediately upon passage as provided by law.

PASSED AND ADOPTED THIS 13th DAY OF FEBRUARY, 2025.

CITY OF FLAGLER BEACH, FLORIDA
CITY COMMISSION

ATTEST:

_____

Patti King, Mayor

_____

Penny Overstreet, City Clerk

Attachment
Exhibit A

moffatt & nichol

501 E Kennedy Boulevard, Suite 1910
Tampa, FL 33602

Tel: (813) 258-8818 Fax: (813) 258-8525
www.moffattnichol.com

EXH

January 15, 2025

City of Flagler Beach
105 S. 2nd Street
Flagler Beach, Florida 32136

Attn: Dale Martin, City Manager

Subject: Flagler Beach Pier – Construction Support Services

Dear Mr. Martin:

Moffatt & Nichol (M&N) is submitting this proposal to provide construction support services to the City of Flagler Beach (the City) during the Flagler Beach Pier construction project. This work is a continuation of our engineering services provided during the planning, permitting, design and bid phases of this project. Construction support services will be performed in three tasks:

- Task 1: On-Site Construction Observations and Meetings
- Task 2: Engineering Office Support
- Task 3: Geotechnical Engineering Support

M&N will work closely with the City, the City's construction manager (CM), the Contractor, and stakeholders toward the pier construction's technical alignment with the engineering design and construction documents and produce a set of record drawings following construction completion.

Task 1: On-Site Construction Observations and Meetings

Scope:

Moffatt & Nichol will perform regular on-site observations to support the City's construction management team during pre-construction and throughout construction, including:

- Attending up to two (2) in-person pre-construction meetings with the Contractor and stakeholders.
- Attending up to six (6) public meetings and City Commission meetings and presenting, as needed, to keep the public informed on progress.
- Performing site visits and attending in-person meetings. M&N staff will be on site four (4) to eight (8) days per month with greater presence during the start and toward the end of construction.
- Reviewing construction progress based on the approved schedule maintained by the CM and responding to Contractor inquiries while on site.
- Generating daily field reports documenting observations with photographs while on site.
- Preparing a pre-punch list as the project is nearing substantial completion.

- Preparing a punch list at substantial completion.
- Performing final walk through with the City and CM.

Dependencies/Special Requirements:

- Construction management services and continuous onsite representation are not included and will be provided by the City.
- A temporary workspace for on-site staff will be provided by the City or the Contractor that includes a desk and internet connection.
- Construction inspection and materials testing are not included. M&N staff will be on site to observe construction progress and conformance with the contract documents and to facilitate technical communications, not to perform construction inspection and materials testing tasks.
- Pre-construction and construction activities are anticipated to have durations of two (2) and sixteen (16) months, respectively.

Deliverables:

- Daily field visit reports summarizing observations with photographs.
- Pre-punch list and punch list following substantial completion.

Task 2: Engineering Office Support

Scope:

M&N staff will provide in-office engineering construction support services that include Contractor shop drawing reviews, submittal reviews, responding to Contractor and CM RFIs (requests for additional information) during construction, and participating in virtual meetings with the Contractor and the City's construction management team. Services for this task include:

- Reviewing shop drawings and submittals from the Contractor.
- Responding to Contractor and CM RFIs expeditiously during construction.
- Developing construction sketches, as needed, to clarify the design drawings for the Contractor.
- Reviewing Contractor-provided as-built surveys.
- Performing required design modifications and issuing drawing revisions, accordingly.
- Working with our subconsultant, Tierra, to verify the geotechnical site conditions.
- Issuing record drawings following construction completion that include any design modifications and Contractor-provided redlines/as-built surveys.

Dependencies/Special Requirements:

- Contractor to provide redlines and as-built surveys as they become available.
- As-built surveys provided by the Contractor will be signed and sealed by a licensed FL surveyor.
- Construction management services and continuous onsite Owner representation is not included and will be provided by the City.
- Review and processing of contractor pay applications is not included.
- Environmental permitting compliance support is not included.

Deliverables:

- RFI responses within ten (10) days of receipt.
- Submittals and shop drawing review comments within ten (10) days of receipt.
- Record drawings incorporating revisions and Contractor as-built surveys and redline drawings.

Task 3: Geotechnical Engineering Support

The geotechnical engineering support services will be performed by Tierra as a subconsultant to M&N. Tierra will utilize the Contactor's working platform for access to perform four (4) geotechnical verification borings along the length of the new pier. Once the additional borings have been completed, M&N and Tierra will work together on verifying the initial pile designs.

Scope:

The geotechnical exploration and evaluation to supplement the final design criteria and construction of the new pier will include the following:

- Executing a program of subsurface exploration consisting of four (4) Standard Penetration Test (SPT) borings using a track-mounted drill rig completed from the top of the working platform to be constructed by the Contractor
    - The borings will be performed to a depth of approximately 125 feet below the elevation of the working platform (approximate elevation +25 feet NAVD).
    - The soil sampling will be performed in accordance with the American Society for Testing and Materials (ASTM) test designation D-1586.
    - Typically, SPT resistance N-values will be taken continuously to a depth of ten (10) feet below the sea floor and on intervals of five (5) feet thereafter.
- Visually classifying soil samples in the lab using the Unified Soil Classification System (USCS)
- Identifying soil conditions at each of the boring locations and perform a laboratory testing program.
- Evaluating the design pier foundation piles based on the new SPT boring results and design loads, including performing axial capacity analyses, lateral load analyses, and determining estimated pile tip elevations.
- Preparing an engineering report summarizing the work performed, field data generated, subsurface conditions encountered, and engineering recommendations.

Dependencies/Special Requirements:

- The Contractor's working platform must be capable of supporting the drill equipment, which weighs approximately 27,000 pounds requires a minimum working space of approximately 25 ft by 10 ft.
- The Contractor will provide access for Tierra's equipment onto the working platform, including cranes if needed, and to the boring locations. Costs related to equipment rental or other means necessary to facilitate access to the boring locations for Tierra's drill equipment are not included.

Deliverables:

- Final Geotechnical Report

Project Schedule

This proposal has a duration of eighteen (18) months from notice to proceed / Contractor selection that includes two (2) months of pre-construction activities and sixteen (16) months of construction.

Fees

Professional engineering fees for the above referenced services will be Lump Sum and are summarized in the table below. M&N will invoice each month on a percent completed basis. This proposal is valid for sixty (60) days from date on proposal cover sheet.

Task	Description	Fees
1	On-site Construction Observation and Meetings	$183,800
2	Engineering Office Support	$92,900
	Subtotal	*$276,700*
3	Geotechnical Engineering Support	$72,800
	TOTAL	**$349,500**

We appreciate the opportunity to submit this proposal, and we look forward to supporting the City of Flagler Beach during construction of this iconic project. Should you have any questions, please contact Gabriel Perdomo at 813.695.9562 or gperdomo@moffattnichol.com.

Sincerely,

MOFFATT & NICHOL

Michael Herrman, PE

Vice President

Gabriel Perdomo, PE

Senior Project Manager

STAFF REPORT

City Commission Regular Meeting

February 13, 2025

To: Elected Officials

From: Dale L. Martin, City Manager

Date: February 7, 2025

Item Name: Resolution 2025-15. A Resolution by the City Commission of the City of Flagler Beach, Florida, approving an amendment of the Fiscal Year 2024/25 Budget to authorize the merger of two budget line items (Taser Reserve and Body Cam Reserve); authorizing the purchase of Tasers and Body Cams from Axon; providing for conflict and an effective date.

Background: Currently, Police Officers at the Flagler Beach Police Department are issued Tasers, a Conducted Energy Weapon (CEW), and Body Worn Cameras (BWC). Axon Enterprise Inc. ("Axon") is the vendor for both products and currently the City is slated to purchase new Tasers during this fiscal year, and new BWC's next fiscal year (2025/2026).

Police Department Command Staff, in the process of negotiating an extension of the current Tasers contract with a representative from Axon, an alternative five-year contract was developed to replace both Tasers and BWC's this year. The average annual savings for the City of Flagler Beach by placing the two (2) purchases into the same budget year through 2029 is $18,928.24. Over the proposed five-year length of the reconfigured contract, the total savings to the City for purchasing this equipment now is **$94,644.24**. The first payment for the proposed contact would be $79,052.65, due in April 2025, and the second payment in May 2025 would be $2,438.79 (total $81,491.44). Currently, the Taser Reserve total balance is $81,540 and BWC reserve balance is $50,000. The total balance if the aforementioned line items merged into one (1) would be **$131,540**.

Fiscal Impact: As indicated, the two budget lines (Taser Reserve: Line 001-5214-606400.275, balance $81,540; Body Camera Reserve: Line 001-5214-606400.276, balance $50,000) will sufficiently fund the proposed combined expenditure of $81,491.44. Subsequently, through the reconfigured contract for both items, the anticipated savings to the City over five years is $94,644.24 over a five (5) year period.

Staff Recommendation: Staff recommends approval of Resolution 2025-15.

Attachment:

Resolution 2025-15

RESOLUTION 2025-15

A RESOLUTION BY THE CITY COMMISSION OF THE CITY OF FLAGLER BEACH, FLORIDA, APPROVING AN AMENDMENT OF THE FISCAL YEAR 2024/25 BUDGET TO AUTHORIZE THE MERGER OF TWO BUDGET LINE ITEMS (TASER RESERVE AND BODY CAM RESERVE); AUTHORIZING THE PURCHASE OF TASERS AND BODY CAMS FROM AXON; PROVIDING FOR CONFLICT AND AN EFFECTIVE DATE HEREOF.

WHEREAS, the City Commission has approved budget reserves for the Police Taser and Body Worn Camera equipment, and

WHEREAS, Staff has negotiated with the contracted provider to reduce costs over a five (5) year period, while maintaining the same equipment and quantiles by merging the two (2) individual contracts into one, and

WHEREAS, a budget amendment is necessary to merge the two (2) line items into one (1). Line 001-5214-606400.276 Body Camera Reserve in the amount of $50,000 will be merged into Line 001-5214-606400.275 totaling $131,540 and the line will be renamed Taser/Body Cam Reserve.

NOW THEREFORE BE IT RESOLVED BY THE CITY COMMISSION OF THE CITY OF FLAGLER BEACH, AS FOLLOWS:

SECTION 1. Authorizes the Finance Director to combine 001-5214-606400.275 (Taser Reserve) and 001-5214-606400.276 (Body Worn Camera Reserve) to create one (1) budget line for both.

SECTION 2. Authorizes the expenditure of $94,644.24 as detailed in the attached Exhibit “A” proposal from Axon Enterprises Inc. dated January 2025.

SECTION 3. All resolutions or parts of resolutions in conflict herewith be and the same are hereby repealed.

SECTION 4. This Resolution shall become effective immediately upon passage as provided by law.

PASSED AND ADOPTED THIS 13TH DAY OF FEBRUARY 2025.

CITY OF FLAGLER BEACH, FLORIDA
CITY COMMISSION

ATTEST:

_____
Patti King, Mayor

_____
Penny Overstreet, City Clerk

Axon Enterprise, Inc.
17800 N 85th St.
Scottsdale, Arizona 85255
United States
VAT: 86-0741227
Domestic: (800) 978-2737
International: +1.800.978.2737

Q-632053-45678.616ES

Issued: 01/21/2025

Quote Expiration: 03/20/2025

Estimated Contract Start Date: 05/01/2025

Account Number: 472299

Payment Terms: N30

Delivery Method:

SHIP TO	BILL TO
Flagler Beach Police Dept. - FL 204 S Flagler Ave Flagler Beach, FL 32136-3736 USA	**Flagler Beach Police Dept. - FL** **PO Box 36** Flagler Beach FL 32136-0036 **USA** Email:

SALES REPRESENTATIVE	PRIMARY CONTACT
Evan Schwartz Phone: Email: eschwartz@axon.com Fax:	Lance Blanchette Phone: 386-517-2039 Email: lblanchette@fbpd.org Fax: (386) 517-2022

Quote Summary

Program Length	60 Months
TOTAL COST	$186,452.26
ESTIMATED TOTAL W/ TAX	$186,452.26

Discount Summary

Average Savings Per Year	$18,928.85
TOTAL SAVINGS	$94,644.24

Payment Summary

Date	Subtotal	Tax	Total
Apr 2025	$79,052.65	$0.00	$79,052.65
May 2025	$2,438.79	$0.00	$2,438.79
Apr 2026	$26,240.22	$0.00	$26,240.22
Apr 2027	$26,240.20	$0.00	$26,240.20
Apr 2028	$26,240.20	$0.00	$26,240.20
Apr 2029	$26,240.20	$0.00	$26,240.20
Total	**$186,452.26**	**$0.00**	**$186,452.26**

Quote Unbundled Price:	
Quote List Price:	**$238,350.70**
Quote Subtotal:	**$186,452.26**

Pricing

All deliverables are detailed in Delivery Schedules section lower in proposal

Item	Description	Qty	Term	Unbundled	List Price	Net Price	Subtotal	Tax	Total
Program									
100553	TRANSFER CREDIT - SOFTWARE AND SERVICES	1			$1.00	($3,458.00)	($3,458.00)	$0.00	($3,458.00)
BWCamMBDTAP	Body Worn Camera Multi-Bay Dock TAP Bundle	3	60	$73.05	$36.07	$32.54	$5,857.20	$0.00	$5,857.20
BWCamTAP	Body Worn Camera TAP Bundle	18	60	$42.20	$33.80	$30.49	$32,929.20	$0.00	$32,929.20
C00024	BUNDLE - TASER 10 CERTIFICATION STANDARD	18	60	$110.83	$86.66	$78.17	$84,423.60	$0.00	$84,423.60
Fleet3B	Fleet 3 Basic	1	60	$176.64	$161.41	$132.61	$7,956.60	$0.00	$7,956.60
A la Carte Hardware									
H00002	AB4 Multi Bay Dock Bundle	3			$1,638.90	$0.00	$0.00	$0.00	$0.00
H00001	AB4 Camera Bundle	18			$899.00	$0.00	$0.00	$0.00	$0.00
A la Carte Software									
80401	AXON FLEET 3 - ALPR LICENSE - 1 CAMERA	1	60		$64.01	$64.01	$3,840.60	$0.00	$3,840.60
73686	AXON EVIDENCE - STORAGE - UNLIMITED (AXON DEVICE)	18	60		$27.12	$19.27	$20,807.46	$0.00	$20,807.46
BasicLicense	Basic License Bundle	18	60		$16.27	$14.66	$15,830.10	$0.00	$15,830.10
ProLicense	Pro License Bundle	6	60		$48.82	$43.97	$15,830.10	$0.00	$15,830.10
A la Carte Services									
101208	AXON TASER 10 - 2 DAY INSTRUCTOR COURSE - INSIDE SALES	1			$2,700.00	$2,435.40	$2,435.40	$0.00	$2,435.40
Total							$186,452.26	$0.00	$186,452.26

Delivery Schedule

Hardware

Bundle	Item	Description	QTY	Shipping Location	Estimated Delivery Date
AB4 Camera Bundle	100147	AXON BODY 4 - CAMERA - NA US FIRST RESPONDER BLK RAPIDLOCK	18	1	04/01/2025
AB4 Camera Bundle	100466	AXON BODY 4 - CABLE - USB-C TO USB-C	20	1	04/01/2025
AB4 Camera Bundle	74028	AXON BODY - MOUNT - WING CLIP RAPIDLOCK	20	1	04/01/2025
AB4 Multi Bay Dock Bundle	100206	AXON BODY 4 - 8 BAY DOCK	3	1	04/01/2025
AB4 Multi Bay Dock Bundle	70033	AXON - DOCK WALL MOUNT - BRACKET ASSY	3	1	04/01/2025
AB4 Multi Bay Dock Bundle	71019	AXON BODY - DOCK POWERCORD - NORTH AMERICA	3	1	04/01/2025
BUNDLE - TASER 10 CERTIFICATION STANDARD	100126	AXON VR - TACTICAL BAG	1	1	04/01/2025
BUNDLE - TASER 10 CERTIFICATION STANDARD	100390	AXON TASER 10 - HANDLE - YELLOW CLASS 3R	18	2	04/01/2025
BUNDLE - TASER 10 CERTIFICATION STANDARD	100393	AXON TASER 10 - MAGAZINE - LIVE DUTY BLACK	18	1	04/01/2025
BUNDLE - TASER 10 CERTIFICATION STANDARD	100394	AXON TASER 10 - MAGAZINE - HALT TRAINING BLUE	4	1	04/01/2025
BUNDLE - TASER 10 CERTIFICATION STANDARD	100395	AXON TASER 10 - MAGAZINE - LIVE TRAINING PURPLE	3	1	04/01/2025
BUNDLE - TASER 10 CERTIFICATION STANDARD	100396	AXON TASER 10 - MAGAZINE - INERT RED	1	1	04/01/2025
BUNDLE - TASER 10 CERTIFICATION STANDARD	100399	AXON TASER 10 - CARTRIDGE - LIVE	270	1	04/01/2025

Hardware

Bundle	Item	Description	QTY	Shipping Location	Estimated Delivery Date
BUNDLE - TASER 10 CERTIFICATION STANDARD	100400	AXON TASER 10 - CARTRIDGE - HALT	130	1	04/01/2025
BUNDLE - TASER 10 CERTIFICATION STANDARD	100401	AXON TASER 10 - CARTRIDGE - INERT	10	1	04/01/2025
BUNDLE - TASER 10 CERTIFICATION STANDARD	100591	AXON TASER - CLEANING KIT	1	1	04/01/2025
BUNDLE - TASER 10 CERTIFICATION STANDARD	100611	AXON TASER 10 - SAFARILAND HOLSTER - RH	18	1	04/01/2025
BUNDLE - TASER 10 CERTIFICATION STANDARD	100623	AXON TASER - TRAINING - ENHANCED HALT SUIT V2	1	1	04/01/2025
BUNDLE - TASER 10 CERTIFICATION STANDARD	100748	AXON VR - CONTROLLER - TASER 10	1	1	04/01/2025
BUNDLE - TASER 10 CERTIFICATION STANDARD	101122	AXON VR - HOLSTER - T10 SAFARILAND GRAY - RH	1	1	04/01/2025
BUNDLE - TASER 10 CERTIFICATION STANDARD	101455	AXON TASER 10 - REPLACEMENT TOOL KIT - INTERPOSER BUCKET	1	1	04/01/2025
BUNDLE - TASER 10 CERTIFICATION STANDARD	101456	AXON TASER 10 - REPLACEMENT INTERPOSER BUCKET	1	1	04/01/2025
BUNDLE - TASER 10 CERTIFICATION STANDARD	20018	AXON TASER - BATTERY PACK - TACTICAL	18	1	04/01/2025
BUNDLE - TASER 10 CERTIFICATION STANDARD	20018	AXON TASER - BATTERY PACK - TACTICAL	4	1	04/01/2025
BUNDLE - TASER 10 CERTIFICATION STANDARD	20378	AXON VR - HEADSET - HTC FOCUS 3	1	1	04/01/2025
BUNDLE - TASER 10 CERTIFICATION STANDARD	70033	AXON - DOCK WALL MOUNT - BRACKET ASSY	1	1	04/01/2025
BUNDLE - TASER 10 CERTIFICATION STANDARD	71019	AXON BODY - DOCK POWERCORD - NORTH AMERICA	1	1	04/01/2025
BUNDLE - TASER 10 CERTIFICATION STANDARD	74200	AXON TASER - DOCK - SIX BAY PLUS CORE	1	1	04/01/2025
BUNDLE - TASER 10 CERTIFICATION STANDARD	80087	AXON TASER - TARGET - CONDUCTIVE PROFESSIONAL RUGGEDIZED	1	1	04/01/2025
BUNDLE - TASER 10 CERTIFICATION STANDARD	80090	AXON TASER - TARGET FRAME - PROFESSIONAL 27.5 IN X 75 IN	1	1	04/01/2025
Fleet 3 Basic	100989	AXON FLEET - CRADLEPOINT R920-C7A+5YR NETCLOUD	1	1	04/01/2025
Fleet 3 Basic	70112	AXON SIGNAL - VEHICLE	1	1	04/01/2025
Fleet 3 Basic	71200	AXON FLEET - AIRGAIN ANT - 5-IN-1 2LTE 2WIFI 1GNSS BL	1	1	04/01/2025
Fleet 3 Basic	72036	AXON FLEET 3 - STANDARD 2 CAMERA KIT	1	1	04/01/2025
BUNDLE - TASER 10 CERTIFICATION STANDARD	100400	AXON TASER 10 - CARTRIDGE - HALT	90	1	04/01/2026
BUNDLE - TASER 10 CERTIFICATION STANDARD	100400	AXON TASER 10 - CARTRIDGE - HALT	90	1	04/01/2027
Body Worn Camera Multi-Bay Dock TAP Bundle	73689	AXON BODY - TAP REFRESH 1 - DOCK MULTI BAY	3	1	10/01/2027
Body Worn Camera TAP Bundle	73309	AXON BODY - TAP REFRESH 1 - CAMERA	18	1	10/01/2027
BUNDLE - TASER 10 CERTIFICATION STANDARD	101012	AXON VR - TAP REFRESH 1 - CONTROLLER	1	1	10/01/2027
BUNDLE - TASER 10 CERTIFICATION STANDARD	20373	AXON VR - TAP REFRESH 1 - HEADSET	1	1	10/01/2027
BUNDLE - TASER 10 CERTIFICATION STANDARD	100400	AXON TASER 10 - CARTRIDGE - HALT	90	1	04/01/2028
BUNDLE - TASER 10 CERTIFICATION STANDARD	100400	AXON TASER 10 - CARTRIDGE - HALT	90	1	04/01/2029
Body Worn Camera Multi-Bay Dock TAP Bundle	73688	AXON BODY - TAP REFRESH 2 - DOCK MULTI BAY	3	1	04/01/2030
Body Worn Camera TAP Bundle	73310	AXON BODY - TAP REFRESH 2 - CAMERA	18	1	04/01/2030

Software

Bundle	Item	Description	QTY	Estimated Start Date	Estimated End Date
Basic License Bundle	73683	AXON EVIDENCE - STORAGE - 10GB A LA CARTE	18	05/01/2025	04/30/2030
Basic License Bundle	73840	AXON EVIDENCE - ECOM LICENSE - BASIC	18	05/01/2025	04/30/2030
BUNDLE - TASER 10 CERTIFICATION STANDARD	101180	AXON TASER - DATA SCIENCE PROGRAM	18	05/01/2025	04/30/2030
BUNDLE - TASER 10 CERTIFICATION STANDARD	101703	AXON VR - USER ACCESS - TASER SKILLS	18	05/01/2025	04/30/2030
BUNDLE - TASER 10 CERTIFICATION STANDARD	20248	AXON TASER - EVIDENCE.COM LICENSE	1	05/01/2025	04/30/2030
BUNDLE - TASER 10 CERTIFICATION STANDARD	20248	AXON TASER - EVIDENCE.COM LICENSE	18	05/01/2025	04/30/2030
Fleet 3 Basic	80400	AXON EVIDENCE - FLEET VEHICLE LICENSE	1	05/01/2025	04/30/2030
Fleet 3 Basic	80410	AXON EVIDENCE - STORAGE - FLEET 1 CAMERA UNLIMITED	2	05/01/2025	04/30/2030
Pro License Bundle	73683	AXON EVIDENCE - STORAGE - 10GB A LA CARTE	18	05/01/2025	04/30/2030
Pro License Bundle	73746	AXON EVIDENCE - ECOM LICENSE - PRO	6	05/01/2025	04/30/2030
A la Carte	73686	AXON EVIDENCE - STORAGE - UNLIMITED (AXON DEVICE)	18	05/01/2025	04/30/2030
A la Carte	80401	AXON FLEET 3 - ALPR LICENSE - 1 CAMERA	1	05/01/2025	04/30/2030

Services

Bundle	Item	Description	QTY
BUNDLE - TASER 10 CERTIFICATION STANDARD	100751	AXON TASER 10 - REPLACEMENT ACCESS PROGRAM - DUTY CARTRIDGE	18
BUNDLE - TASER 10 CERTIFICATION STANDARD	101193	AXON TASER - ON DEMAND CERTIFICATION	1
Fleet 3 Basic	100738	AXON FLEET 3 - SIM INSERTION - VZW 4FF	1
Fleet 3 Basic	73391	AXON FLEET 3 - DEPLOYMENT PER VEHICLE - NOT OVERSIZED	1
A la Carte	101208	AXON TASER 10 - 2 DAY INSTRUCTOR COURSE - INSIDE SALES	1

Warranties

Bundle	Item	Description	QTY	Estimated Start Date	Estimated End Date
Body Worn Camera Multi-Bay Dock TAP Bundle	80465	AXON BODY - TAP WARRANTY - MULTI BAY DOCK	3	04/01/2026	04/30/2030
Body Worn Camera TAP Bundle	80464	AXON BODY - TAP WARRANTY - CAMERA	18	04/01/2026	04/30/2030
BUNDLE - TASER 10 CERTIFICATION STANDARD	100197	AXON VR - EXT WARRANTY - HEADSET	1	04/01/2026	04/30/2030
BUNDLE - TASER 10 CERTIFICATION STANDARD	100704	AXON TASER 10 - EXT WARRANTY - HANDLE	18	04/01/2026	04/30/2030
BUNDLE - TASER 10 CERTIFICATION STANDARD	101007	AXON VR - EXT WARRANTY - CONTROLLER	1	04/01/2026	04/30/2030
BUNDLE - TASER 10 CERTIFICATION STANDARD	80374	AXON TASER - EXT WARRANTY - BATTERY PACK T7/T10	18	04/01/2026	04/30/2030
BUNDLE - TASER 10 CERTIFICATION STANDARD	80374	AXON TASER - EXT WARRANTY - BATTERY PACK T7/T10	4	04/01/2026	04/30/2030
BUNDLE - TASER 10 CERTIFICATION STANDARD	80396	AXON TASER - EXT WARRANTY - DOCK SIX BAY T7/T10	1	04/01/2026	04/30/2030
Fleet 3 Basic	80379	AXON SIGNAL - EXT WARRANTY - SIGNAL UNIT	1	04/01/2026	04/30/2030
Fleet 3 Basic	80495	AXON FLEET 3 - EXT WARRANTY - 2 CAMERA KIT	1	04/01/2026	04/30/2030

Shipping Locations

Location Number	Street	City	State	Zip	Country
1	204 S Flagler Ave	Flagler Beach	FL	32136-3736	USA
2	204 S Flagler Ave	Flagler Beach	FL	32136-3736	USA

Payment Details

Apr 2025

Invoice Plan	Item	Description	Qty	Subtotal	Tax	Total
Year 1	73686	AXON EVIDENCE - STORAGE - UNLIMITED (AXON DEVICE)	18	$9,157.86	$0.00	$9,157.86
Year 1	80401	AXON FLEET 3 - ALPR LICENSE - 1 CAMERA	1	$1,690.34	$0.00	$1,690.34
Year 1	BasicLicense	Basic License Bundle	18	$6,967.20	$0.00	$6,967.20
Year 1	BWCamMBDTAP	Body Worn Camera Multi-Bay Dock TAP Bundle	3	$2,577.50	$0.00	$2,577.50
Year 1	BWCamTAP	Body Worn Camera TAP Bundle	18	$14,491.82	$0.00	$14,491.82
Year 1	C00024	BUNDLE - TASER 10 CERTIFICATION STANDARD	18	$37,156.84	$0.00	$37,156.84
Year 1	Fleet3B	Fleet 3 Basic	1	$3,501.89	$0.00	$3,501.89
Year 1	H00001	AB4 Camera Bundle	18	$0.00	$0.00	$0.00
Year 1	H00002	AB4 Multi Bay Dock Bundle	3	$0.00	$0.00	$0.00
Year 1	ProLicense	Pro License Bundle	6	$6,967.20	$0.00	$6,967.20
Invoice Upon Fulfillment	100553	TRANSFER CREDIT - SOFTWARE AND SERVICES	1	($3,458.00)	$0.00	($3,458.00)
Total				$79,052.65	$0.00	$79,052.65

May 2025

Invoice Plan	Item	Description	Qty	Subtotal	Tax	Total
Invoice Upon Fulfillment	101208	AXON TASER 10 - 2 DAY INSTRUCTOR COURSE - INSIDE SALES	1	$2,435.40	$0.00	$2,435.40
Invoice Upon Fulfillment	BWCamMBDTAP	Body Worn Camera Multi-Bay Dock TAP Bundle	3	$0.87	$0.00	$0.87
Invoice Upon Fulfillment	BWCamTAP	Body Worn Camera TAP Bundle	18	$2.52	$0.00	$2.52
Total				$2,438.79	$0.00	$2,438.79

Apr 2026

Invoice Plan	Item	Description	Qty	Subtotal	Tax	Total
Year 2	73686	AXON EVIDENCE - STORAGE - UNLIMITED (AXON DEVICE)	18	$2,912.40	$0.00	$2,912.40
Year 2	80401	AXON FLEET 3 - ALPR LICENSE - 1 CAMERA	1	$537.57	$0.00	$537.57
Year 2	BasicLicense	Basic License Bundle	18	$2,215.73	$0.00	$2,215.73
Year 2	BWCamMBDTAP	Body Worn Camera Multi-Bay Dock TAP Bundle	3	$819.70	$0.00	$819.70
Year 2	BWCamTAP	Body Worn Camera TAP Bundle	18	$4,608.72	$0.00	$4,608.72
Year 2	C00024	BUNDLE - TASER 10 CERTIFICATION STANDARD	18	$11,816.70	$0.00	$11,816.70
Year 2	Fleet3B	Fleet 3 Basic	1	$1,113.67	$0.00	$1,113.67
Year 2	H00001	AB4 Camera Bundle	18	$0.00	$0.00	$0.00
Year 2	H00002	AB4 Multi Bay Dock Bundle	3	$0.00	$0.00	$0.00
Year 2	ProLicense	Pro License Bundle	6	$2,215.73	$0.00	$2,215.73
Total				$26,240.22	$0.00	$26,240.22

Apr 2027

Invoice Plan	Item	Description	Qty	Subtotal	Tax	Total
Year 3	73686	AXON EVIDENCE - STORAGE - UNLIMITED (AXON DEVICE)	18	$2,912.40	$0.00	
Year 3	80401	AXON FLEET 3 - ALPR LICENSE - 1 CAMERA	1	$537.57	$0.00	
Year 3	BasicLicense	Basic License Bundle	18	$2,215.72	$0.00	
Year 3	BWCamMBDTAP	Body Worn Camera Multi-Bay Dock TAP Bundle	3	$819.70	$0.00	$819.70
Year 3	BWCamTAP	Body Worn Camera TAP Bundle	18	$4,608.71	$0.00	$4,608.71
Year 3	C00024	BUNDLE - TASER 10 CERTIFICATION STANDARD	18	$11,816.71	$0.00	$11,816.71
Year 3	Fleet3B	Fleet 3 Basic	1	$1,113.67	$0.00	$1,113.67
Year 3	H00001	AB4 Camera Bundle	18	$0.00	$0.00	$0.00
Year 3	H00002	AB4 Multi Bay Dock Bundle	3	$0.00	$0.00	$0.00
Year 3	ProLicense	Pro License Bundle	6	$2,215.72	$0.00	$2,215.72
Total				$26,240.20	$0.00	$26,240.20

Apr 2028

Invoice Plan	Item	Description	Qty	Subtotal	Tax	Total
Year 4	73686	AXON EVIDENCE - STORAGE - UNLIMITED (AXON DEVICE)	18	$2,912.40	$0.00	$2,912.40
Year 4	80401	AXON FLEET 3 - ALPR LICENSE - 1 CAMERA	1	$537.57	$0.00	$537.57
Year 4	BasicLicense	Basic License Bundle	18	$2,215.72	$0.00	$2,215.72
Year 4	BWCamMBDTAP	Body Worn Camera Multi-Bay Dock TAP Bundle	3	$819.70	$0.00	$819.70
Year 4	BWCamTAP	Body Worn Camera TAP Bundle	18	$4,608.71	$0.00	$4,608.71
Year 4	C00024	BUNDLE - TASER 10 CERTIFICATION STANDARD	18	$11,816.71	$0.00	$11,816.71
Year 4	Fleet3B	Fleet 3 Basic	1	$1,113.67	$0.00	$1,113.67
Year 4	H00001	AB4 Camera Bundle	18	$0.00	$0.00	$0.00
Year 4	H00002	AB4 Multi Bay Dock Bundle	3	$0.00	$0.00	$0.00
Year 4	ProLicense	Pro License Bundle	6	$2,215.72	$0.00	$2,215.72
Total				$26,240.20	$0.00	$26,240.20

Apr 2029

Invoice Plan	Item	Description	Qty	Subtotal	Tax	Total
Year 5	73686	AXON EVIDENCE - STORAGE - UNLIMITED (AXON DEVICE)	18	$2,912.40	$0.00	$2,912.40
Year 5	80401	AXON FLEET 3 - ALPR LICENSE - 1 CAMERA	1	$537.57	$0.00	$537.57
Year 5	BasicLicense	Basic License Bundle	18	$2,215.72	$0.00	$2,215.72
Year 5	BWCamMBDTAP	Body Worn Camera Multi-Bay Dock TAP Bundle	3	$819.70	$0.00	$819.70
Year 5	BWCamTAP	Body Worn Camera TAP Bundle	18	$4,608.71	$0.00	$4,608.71
Year 5	C00024	BUNDLE - TASER 10 CERTIFICATION STANDARD	18	$11,816.71	$0.00	$11,816.71
Year 5	Fleet3B	Fleet 3 Basic	1	$1,113.67	$0.00	$1,113.67
Year 5	H00001	AB4 Camera Bundle	18	$0.00	$0.00	$0.00
Year 5	H00002	AB4 Multi Bay Dock Bundle	3	$0.00	$0.00	$0.00
Year 5	ProLicense	Pro License Bundle	6	$2,215.72	$0.00	$2,215.72
Total				$26,240.20	$0.00	$26,240.20

Tax is estimated based on rates applicable at date of quote and subject to change at time of invoicing. If a tax exemption certificate should be applied, please submit prior to invoicing.

Standard Terms and Conditions

Axon Enterprise Inc. Sales Terms and Conditions

Axon Master Services and Purchasing Agreement:

This Quote is limited to and conditional upon your acceptance of the provisions set forth herein and Axon's Master Services and Purchasing Agreement (posted at https://www.axon.com/sales-terms-and-conditions), as well as the attached Statement of Work (SOW) for Axon Fleet and/or Axon Interview Room purchase, if applicable. In the event you and Axon have entered into a prior agreement to govern all future purchases, that agreement shall govern to the extent it includes the products and services being purchased and does not conflict with the Axon Customer Experience Improvement Program Appendix as described below.

ACEIP:

The Axon Customer Experience Improvement Program Appendix, which includes the sharing of de-identified segments of Agency Content with Axon to develop new products and improve your product experience (posted at www.axon.com/legal/sales-terms-and-conditions), is incorporated herein by reference. By signing below, you agree to the terms of the Axon Customer Experience Improvement Program.

Acceptance of Terms:

Any purchase order issued in response to this Quote is subject solely to the above referenced terms and conditions. By signing below, you represent that you are lawfully able to enter into contracts. If you are signing on behalf of an entity (including but not limited to the company, municipality, or government agency for whom you work), you represent to Axon that you have legal authority to bind that entity. If you do not have this authority, please do not sign this Quote.

Exceptions to Standard Terms and Conditions

Agency has existing contract(s) originated via Quote(s):

Q-416620

Agency is terminating those contracts effective 5/1/2025 Any changes in this date will result in modification of the program value which may result in additional fees or credits due to or from Axon.

The parties agree that Axon is applying a Net Transfer Credit of -$3,458

Any credits contained in this quote are contingent upon payment in full of the following amounts:

INV-342293 Posted 11/1/2024 $17,406.62

100% discounted body-worn camera and docking station hardware contained in this quote reflects a TAP replacement for hardware purchased under existing contract #Q-416620. All TAP obligations from this contract will be considered fulfilled upon execution of this quote.

_____ _____

Signature Date Signed

1/21/2025



City of Flagler Beach

Planning & Zoning Department
P.O. Box 70 * 800 S Daytona Ave.
Flagler Beach, FL 32136
www.cityofflaglerbeach.com

MEMORANDUM

To: **City Commission**
From: **Lupita McClenning, City Planner**
Date: **February 6, 2025**
Re: **Floodplain Management Articles IV, V, VI, VIII, and IX**

Summary
The city had +2 ft in all flood zones, which was rolled back in Zone A/AE by Ord 2016-01. Subsequently, the city adopted local amendments to the Florida Building Code to:

1) limit enclosures below elevated buildings in coastal high hazard areas and Coastal A Zones;
2) increase the minimum elevation requirements for nonresidential buildings and dwellings in coastal high hazard areas, and
3) require construction documents for dwellings to be prepared and sealed by registered design professionals, for buildings and structures in flood hazard areas for the purpose of participating in the National Flood Insurance Program's Community Rating System.

Pursuant to section 553.73(5), F.S., the city is reformatting those requirements to coordinate with the *Florida Building Code,* and adopting a requirement to increase the minimum elevation requirement for dwellings in all flood hazard areas for the purpose of participating in the National Flood Insurance Program's Community Rating System and to coordinate with the *Florida Building Code*.

The City of Flagler Beach participates in the National Flood Insurance Program and participates in the NFIP's Community Rating System, a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the minimum program requirements and achieved a CRS rating of Class #6, making citizens who purchase NFIP flood insurance policies eligible for premium discounts.

In 2020 the NFIP Community Rating System established certain minimum prerequisites for communities to qualify for or maintain class ratings of Class 8 or better. To satisfy the prerequisite and for the city to maintain the current CRS rating, all homes installed or replaced in special flood hazard areas must be elevated to or above at least the base flood elevation plus 1 foot, which necessitates modification of the existing requirements.

The city determined that it is in the public interest to amend the floodplain management regulations to better protect manufactured homes and to continue participating in the Community Rating System at the current class rating.

The Code of Ordinances, Appendix" A," Land Development Regulations, is amended as follows:
Article IV Environmental and Cultural Resource Protection
Section 4.07.00 Floodplain Management

The intent and purpose of this section and the flood load and flood resistant construction requirements of the Florida Building Code are to establish minimum requirements to safeguard the public health, safety, and general welfare and to minimize public and private losses due to flooding through regulation of development in flood hazard areas.

The provisions of this section apply to all development that is wholly within or partially within any flood hazard area, including but not limited to the subdivision of land; filling, grading, and other site improvements and utility installations; construction, alteration, remodeling, enlargement, improvement, replacement, repair, relocation or demolition of buildings, structures, and facilities that are exempt from the Florida Building Code; placement, installation, or replacement of manufactured homes and manufactured buildings; including installation or replacement of tanks; placement of recreational vehicles; installation of swimming pools; and any other development.

The applicability of this section applies to all flood hazard areas within the city.

The city engineer, is designated as the floodplain administrator. The floodplain administrator has the authority to render interpretations of this section consistent with the intent and purpose of this section and may establish policies and procedures in order to clarify the application of its provisions.

Any owner or owner's authorized agent who intends to undertake any development activity which is wholly within or partially within any flood hazard area shall first make application to the floodplain administrator, and the building official if applicable, and shall obtain the required permit(s) and approval(s).

Site plan or construction documents for any development subject to the requirements of this section shall be drawn to scale and shall include, as applicable to the proposed development delineation of flood hazard areas, flood zone(s), base flood elevation(s), and ground elevations necessary for review of the proposed development. Development for which a floodplain development permit is required shall be subject to inspection.

Any development regulated by this section that does not fully comply is presumed to be in violation and the floodplain administrator is authorized to serve notices of violation or stop work orders.

Technical amendments to the Florida Building Code that address design requirements for buildings in flood hazard areas are adopted in Section 5.00.10.

Article V Development Design and Improvement Standards
Section 5.00.10 Technical Amendment to the Florida Building Code

The minimum elevation for buildings in flood hazard areas that are within the scope of the Florida Building Code, Building, shall be, as specified in ASCE 24, the base flood elevation plus two (2) feet, or the design flood elevation, whichever is higher.

The minimum elevation for one- and two-family dwellings and townhouses in flood hazard areas that are within the scope of the Florida Building Code, Residential, shall be the base flood elevation plus two (2) feet or the design flood elevation, whichever is higher.

Enclosures below elevated buildings in coastal high hazard areas and Coastal A Zones. In coastal high hazard areas and Coastal A Zones, enclosed areas below the elevation required in the building code shall not be partitioned or finished into separate rooms except for stairwells, ramps, and elevators and the access to enclosed areas shall be the minimum necessary to allow for the parking of vehicles (garage door) or limited storage of maintenance equipment used in connection with the premises (standard exterior door) or entry to the building (stairway or elevator).

Construction documents for dwellings in flood hazard areas. Construction documents for dwellings in flood hazard areas shall include documentation that is prepared and sealed by a registered design professional that the foundation design accounts for flood loads.

Article VI Subdivisions
Section 6.00.005 Minimum Elevation

The language for minimum elevation in this section is found in Article IX, Engineering Design.

Article VIII Administration and Enforcement

In addition to the requirements for granting a variance found in Section. 8.04.16 (a) 1-6, in reviewing requests for variances, the city commission shall consider all technical evaluations, all relevant factors, all other applicable provisions of the Florida Building Code, this article, and the following considerations:

(a) The danger that materials and debris may be swept onto other lands resulting in further injury or damage;

(b) The danger to life and property due to flooding or erosion damage;

(c) The susceptibility of the proposed development, including contents, to flood damage and the effect of such damage on current and future owners;

(d) The importance of the services provided by the proposed development to the community;

(e) The availability of alternate locations for the proposed development that are subject to lower risk of flooding or erosion;

(f) The compatibility of the proposed development with existing and anticipated development;

(g) The relationship of the proposed development to the comprehensive plan and floodplain management program for the area;

(h) The safety of access to the property in times of flooding for ordinary and emergency vehicles;

(i) The expected heights, velocity, duration, rate of rise and debris and sediment transport of the floodwaters and the effects of wave action, if applicable, expected at the site; and

(j) The costs of providing governmental services during and after flood conditions including maintenance and repair of public utilities and facilities such as sewer, gas, electrical and water systems, streets and bridges.

Additionally, variances shall be issued only upon the following conditions:

(a) Submission by the applicant, of a showing of good and sufficient cause that the unique characteristics of the size, configuration, or topography of the site limit compliance with any provision of this article or the required elevation standards;

(b) Determination by the city commission that:

(i) Failure to grant the variance would result in exceptional hardship due to the physical characteristics of the land that render the lot undevelopable; increased costs to satisfy the requirements or inconvenience do not constitute hardship;
(ii) The granting of a variance will not result in increased flood heights, additional threats to public safety, extraordinary public expense, nor create nuisances, cause fraud on or victimization of the public or conflict with existing local laws and ordinances; and
(iii) The variance is the minimum necessary, considering the flood hazard, to afford relief;

(c) Receipt of a signed statement by the applicant that the variance, if granted, shall be recorded in the office of the clerk of the court in such a manner that it appears in the chain of title of the affected parcel of land; and

(d) If the request is for a variance to allow construction of the lowest floor of a new building, or substantial improvement of a building, below the required elevation, a copy in the record of a written notice from the floodplain administrator to the applicant for the variance, specifying the difference between the base flood elevation and the proposed elevation of the lowest floor, stating that the cost of federal flood insurance will be commensurate with the increased risk resulting from the reduced floor elevation (up to amounts as high as twenty-five dollars ($25.00) for one hundred dollars ($100.00) of insurance coverage), and stating that construction below the base flood elevation increases risks to life and property.

Article IX Engineering Design and Development

The purpose of this section is to set forth engineering design regulations for residential and nonresidential uses as required in the Land Development Code. The floodplains manager may adopt technical manuals that relate to technical requirements pertaining to the city's water, wastewater, reclaimed water, drainage, street, and other systems.

In order to align codes with the State Building Code, the requirements to updating the floodplain management ordinance made by the Office of Floodplain Management (OFM) for this Article are to Section 9.04.04 (b) (1) Fill is limited to the compacted amount needed inside the perimeter of a stem wall foundation in order to achieve a solid subsurface to pour a concrete slab to the elevation required by the Florida Building Code as modified by the City.

Findings and Recommendations

Findings: In 2021, the Florida Statute, sec. 553.73(4) was amended to provide that if a Florida Building Code (FBC) technical amendment is not adopted in accordance with the statute, then that action may be subject to a petition by a "substantially affected person." Therefore, a plain reading is that if a local amendment **is adopted in accordance with the statute**, that local FBC amendment are not subject to petition, even when those amendments reside in land development codes. The 2021 statute amendment adds subparagraph
(l), which states:

(l) If a local government adopts a regulation, law, ordinance, policy, amendment, or land use or zoning provision without using the process established in this subsection, and a substantially affected person considers such regulation, law, ordinance, policy, amendment, or land use or zoning provision to be a technical amendment to the Florida Building Code, then the substantially affected person may submit a petition to the Florida Building Commission for a nonbinding advisory opinion. If a substantially affected person submits a request in accordance with this paragraph, the Florida Building Commission shall issue a nonbinding advisory opinion stating whether or not the commission interprets the regulation, law, ordinance, policy, amendment, or land use or zoning provision as a technical amendment to the Florida Building Code. As used in this paragraph, the term "local government" means a county, municipality, special district, or political subdivision of the state.

Recommendation: Recommend to the City Commission to Adopt the Floodplain Management Ordinance with language provided by the Office of Floodplain Management (OFM), Florida Division of Emergency Management and with the recommendation from the Planning & Architectural Review Board to raise the minimum base flood elevation to a + three (3) feet.

PLANNING AND ARCHITECTURAL REVIEW BOARD MEETING MINUTES

Tuesday, February 04, 2025 at 5:30 PM

City Commission Chambers – 105 S. 2ND Street, Flagler Beach, FL 32136

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1. Call the meeting to order

Chair Johnston called the meeting to order at 5:30pm.

2. Pledge of Allegiance

Chair Johnston led the Pledge of Allegiance.

3. Roll Call / Determination of Quorum

Present: Chair Suzie Johnston, Boudie Estberg, Brenda Wotherspoon, Lisa Smith, Joann Soman, Vice-Chair Scott Chappuis, Paul Chestnut

Absent: None

Staff Present: City Attorney Drew Smith, City Planner Lupita McClenning and Secretary Michele Ficocello

4. Approval of Meeting Minutes

a. January 7, 2025

Vice-Chair Chappuis made a motion to approve the meeting minutes; Joann Soman seconded. Motion passed unanimously.

Brenda Wotherspoon's Form 8B is included in the minutes and submitted for the record.

5. Deletions and changes to the agenda

None

6. Old Business

None

7. New Business

a. ORDINANCE NO. 2025-XX: AN ORDINANCE BY THE CITY OF FLAGLER BEACH, FLORIDA, AMENDING THE FLAGLER BEACH CODE OF ORDINANCES, APPENDIX "A," LAND DEVELOPMENT REGULATIONS, TO SPECIFY ELEVATION OF MANUFACTURED HOMES IN FLOOD HAZARD AREAS; TO ADOPT AND REFORMAT LOCAL AMENDMENTS TO THE FLORIDA BUILDING CODE; PROVIDING FOR APPLICABILITY AND SEVERABILITY; AND PROVIDING FOR AN EFFECTIVE DATE.

An amendment to section 7, item a., page 36 of the agenda packet was provided to the Board prior to the meeting and is attached to the minutes. City Planner Lupita McClenning presented the item and staff report to the Board. Discussion ensued. Board comments included ISO rating and insurance rates related to the ordinance, threshold for damage in a natural disaster, Article 9 updates and eliminating duplication, aligning with city code and state code, Subdivision Design Standards in regards to double frontage, alleys counted as streets, NFI Building requirements, gutters and downspouts maintenance,

alleys considered rights-of-way, new home builds causing flooding on existing homes off alleys, manufactured home definition, raising minimum base flood elevation from a + two (2) feet to a + three (3) feet. Public comment was opened. No public comment was received.

Joann Soman made a motion to recommend approval of item 7a.; Paul Chestnut seconded the motion. Ms. McClenning inquired if the Board would consider including raising the minimum base flood elevation to a + three (3) feet in the motion to recommend approval. Joann Soman amended her motion to include raising the minimum base flood elevation to a + three (3) feet in the recommendation of approval for item 7a.; Paul Chestnut seconded the motion.

Roll call: Paul Chestnut, Yea; Vice-Chair Chappuis, Yea; Lisa Smith, Yea; Boudie Estberg, Yea; Joann Soman, Yea; Chair Johnston, Yea; Brenda Wotherspoon, Yea. Motion passed unanimously as amended.

8. Other Business

None

9. City Planner Report

City Planner Lupita McClenning provided an update to include a land development code rewrite status update, parking requirements in regards to fixed seating analysis, due date for DEO evaluation and appraisal report, a list of new legislation will be disseminated to the Board, the Comprehensive Plan Amendment due by January 2026, creating a Stakeholder Committee after adopting the Land Development Code, Gridics Software access, projects to be included on Gridics and a Code Enforcement update. Public comment was opened. Commissioner Jane Mealy's comments included legislative updates.

10. Board Comments

Brenda Wotherspoon announced this is her last Board Meeting, her term is up and she will not be reapplying. Ms. McClenning and the Board thanked Brenda for her service to the City. Joann Soman invited everyone to the Municipal Election Candidates Night hosted by the Flagler Women's Club, February 26, 2025, at 7:00pm.

11. Adjournment

Joann Soman made a motion to adjourn; Paul Chestnut seconded. Motion passed unanimously. Chair Johnston adjourned the meeting at 6:08pm.

FORM 8B MEMORANDUM OF VOTING CONFLICT FOR COUNTY, MUNICIPAL, AND OTHER LOCAL PUBLIC OFFICERS

LAST NAME—FIRST NAME—MIDDLE NAME	NAME OF BOARD, COUNCIL, COMMISSION, AUTHORITY, OR COMMITTEE
Witherspoon Brenda Kay	PAR Board
MAILING ADDRESS	THE BOARD, COUNCIL, COMMISSION, AUTHORITY OR COMMITTEE ON WHICH I SERVE IS A UNIT OF:
1182 S Central Ave	☐ CITY ☐ COUNTY ☐ OTHER LOCAL AGENCY
CITY / COUNTY	NAME OF POLITICAL SUBDIVISION:
Flagler Beach FL Flagler	N/A
DATE ON WHICH VOTE OCCURRED	MY POSITION IS:
	☐ ELECTIVE ☐ APPOINTIVE

WHO MUST FILE FORM 8B

This form is for use by any person serving at the county, city, or other local level of government on an appointed or elected board, council, commission, authority, or committee. It applies equally to members of advisory and non-advisory bodies who are presented with a voting conflict of interest under Section 112.3143, Florida Statutes.

Your responsibilities under the law when faced with voting on a measure in which you have a conflict of interest will vary greatly depending on whether you hold an elective or appointive position. For this reason, please pay close attention to the instructions on this form before completing the reverse side and filing the form.

INSTRUCTIONS FOR COMPLIANCE WITH SECTION 112.3143, FLORIDA STATUTES

A person holding elective or appointive county, municipal, or other local public office MUST ABSTAIN from voting on a measure which inures to his or her special private gain or loss. Each elected or appointed local officer also is prohibited from knowingly voting on a measure which inures to the special gain or loss of a principal (other than a government agency) by whom he or she is retained (including the parent organization or subsidiary of a corporate principal by which he or she is retained); to the special private gain or loss of a relative; or to the special private gain or loss of a business associate. Commissioners of community redevelopment agencies under Sec. 163.356 or 163.357, F.S., and officers of independent special tax districts elected on a one-acre, one-vote basis are not prohibited from voting in that capacity.

For purposes of this law, a "relative" includes only the officer's father, mother, son, daughter, husband, wife, brother, sister, father-in-law, mother-in-law, son-in-law, and daughter-in-law. A "business associate" means any person or entity engaged in or carrying on a business enterprise with the officer as a partner, joint venturer, coowner of property, or corporate shareholder (where the shares of the corporation are not listed on any national or regional stock exchange).

* * * * * * * * * * * * * * * * *

ELECTED OFFICERS:

In addition to abstaining from voting in the situations described above, you must disclose the conflict:

PRIOR TO THE VOTE BEING TAKEN by publicly stating to the assembly the nature of your interest in the measure on which you are abstaining from voting; *and*

WITHIN 15 DAYS AFTER THE VOTE OCCURS by completing and filing this form with the person responsible for recording the minutes of the meeting, who should incorporate the form in the minutes.

* * * * * * * * * * * * * * * * *

APPOINTED OFFICERS:

Although you must abstain from voting in the situations described above, you otherwise may participate in these matters. However, you must disclose the nature of the conflict before making any attempt to influence the decision, whether orally or in writing and whether made by you or at your direction.

IF YOU INTEND TO MAKE ANY ATTEMPT TO INFLUENCE THE DECISION PRIOR TO THE MEETING AT WHICH THE VOTE WILL BE TAKEN:

- You must complete and file this form (before making any attempt to influence the decision) with the person responsible for recording the minutes of the meeting, who will incorporate the form in the minutes. (Continued on other side)

APPOINTED OFFICERS (continued)

- A copy of the form must be provided immediately to the other members of the agency.
- The form must be read publicly at the next meeting after the form is filed.

IF YOU MAKE NO ATTEMPT TO INFLUENCE THE DECISION EXCEPT BY DISCUSSION AT THE MEETING:

- You must disclose orally the nature of your conflict in the measure before participating.
- You must complete the form and file it within 15 days after the vote occurs with the person responsible for recording the minutes of the meeting, who must incorporate the form in the minutes. A copy of the form must be provided immediately to the other members of the agency, and the form must be read publicly at the next meeting after the form is filed.

DISCLOSURE OF LOCAL OFFICER'S INTEREST

I, Brenda Kay Wotherspoon, hereby disclose that on 1-7, 20 25:

(a) A measure came or will come before my agency which (check one)

___ inured to my special private gain or loss;

___ inured to the special gain or loss of my business associate, _____;

___ inured to the special gain or loss of my relative, _____;

___ inured to the special gain or loss of _____, by whom I am retained; or

___ inured to the special gain or loss of _____, which is the parent organization or subsidiary of a principal which has retained me.

(b) The measure before my agency and the nature of my conflicting interest in the measure is as follows:

Live within 200 ft.

1-7-2025
Date Filed

Brenda Kay Wotherspoon
Signature

NOTICE: UNDER PROVISIONS OF FLORIDA STATUTES §112.317, A FAILURE TO MAKE ANY REQUIRED DISCLOSURE CONSTITUTES GROUNDS FOR AND MAY BE PUNISHED BY ONE OR MORE OF THE FOLLOWING: IMPEACHMENT, REMOVAL OR SUSPENSION FROM OFFICE OR EMPLOYMENT, DEMOTION, REDUCTION IN SALARY, REPRIMAND, OR A CIVIL PENALTY NOT TO EXCEED $10,000.

Sec. 5.05.00. Reserved ~~Stormwater Management.~~

~~**Sec. 5.05.01. Purpose and intent.**~~

~~The purpose of this section is to manage stormwater drainage within the City of Flagler Beach in order to maintain and enhance the public health, safety, and welfare through the control of runoff volume and treatment of stormwater runoff for the protection of surface water and groundwater quality, and the control and prevention of erosion, sedimentation, and flooding by providing standards for the design, construction, and operation of stormwater management systems in conformance with best overall management practices. This section is intended to enforce the goals, objectives, and policies of the comprehensive plan, and to be consistent with the applicable policies and regulations of regional, state and federal agencies regarding stormwater management.~~

~~(Ord. No. 2005-07, § 1, 4-28-05; Ord. No. 2007-12, § 6, 6-14-07)~~

~~**Sec. 5.05.02. Prohibitions and exemptions.**~~

~~Section 5.05.02.1 *Prohibitions.*~~

~~No person may develop or make any change in the use of land or construct a structure or change the size of a structure, except as exempted herein, without submission and approval of a stormwater management plan as provided herein. For the purpose of this section, the development may potentially alter or disrupt existing stormwater runoff patterns, and as such, will, unless exempted below, require submission and approval of a stormwater management plan prior to the commencement of construction, includes, but is not limited to:~~

1. ~~Clearing and/or drainage of land as an adjunct to construction.~~
2. ~~Clearing and/or draining of nonagricultural land for agricultural purposes.~~
3. ~~Converting agricultural lands to nonagricultural uses.~~
4. ~~Subdividing land.~~
5. ~~Replatting recorded subdivisions and the development of recorded and unrecorded subdivisions.~~
6. ~~Changing the use of land and/or the construction of a structure or a change in the size of one or more structures.~~
7. ~~Altering the shoreline or bank of any surface water body.~~
8. ~~The permanent (long period) lowering of the water table.~~
9. ~~Addition of impervious or semi-impervious area.~~

~~Section 5.05.02.2 *Exemptions.*~~

~~The following activities shall be exempt from this section unless as hereinafter required by the land development regulations:~~

1. ~~Single-family and duplex residence and accessory structures except for the Mirror Lake Watershed Overlay District.~~
2. ~~Any maintenance, alteration, renewal, use or improvement to an existing structure not changing or affecting rate or volume of stormwater runoff.~~

3. Bona fide agricultural zoning classifications, including forestry, except where an artificial drainage system will be used to increase the flow of surface water from the applicant's land.

4. Maintenance work performad on existing drainage canals for the purpose of public health and welfare.

5. Maintenance work on utility or transportation systems, provided such maintenance work does not alter the purpose and intent of the drainage system as constructed.

(Ord. No. 2005-07, § 1, 4-28-05; Ord. No. 2007-12, § 6, 6-14-07)

Sec. 5.05.03. Design standards.

Section 5.05.03.01 *Threshold categories.*

The review of stormwater management plans for all development projects shall be based upon the net increase in impervious surface resulting from the development and any cumulative increase due to development that has occurred within the previous two (2) years. All single-family and duplex residence structures in Mirror Lake Watershed Overlay District shall be considered as category II only. Category thresholds for the various limits of developments are as follows:

1. Category I—Net increase of impervious area of up to five hundred (500) square feet.

2. Category II—Net increase of impervious area between five hundred one (501) square feet and one thousand (1,000) square feet and all single-family and duplex residence structures within the Mirror Lake Watershed Overlay District.

3. Category III—Net increase of impervious area between one thousand one (1,001) square feet and four thousand (4,000) square feet of surfaces subject to vehicular traffic or five thousand (5,000) square feet of building of other surfaces.

4. Category IV—Net increase of impervious area exceeds four thousand (4,000) square feet of surfaces subject to vehicular traffic or five thousand (5,000) square feet of building or other surfaces.

Section 5.05.03.02 *Basic standards.*

All categories of development shall require the preparation of a stormwater management plan. Stormwater management system design shall conform with the following performance standards:

1. Stormwater runoff shall be subjected to best management practice prior to discharge into natural or artificial drainage systems. Best management practice shall mean a practice or combination of practices determined by the city to be the most effective, practical means of preventing or reducing the amount of pollution generated by the project to a level compatible with Florida water quality standards found in chapter 17-3, Florida Administrative Code.

2. No site alteration shall cause siltation of wetlands, pollution of downstream wetlands or reduce the natural retention or filtering capabilities of wetlands.

3. No site alteration shall allow water to become a health hazard or contribute to the breeding of mosquitoes.

4. All site alteration activities shall provide for such water retention and settling structures and flow attenuation devices as may be necessary to insure that the foregoing standards and requirements are met. No site alteration shall result in any net reduction of available floodplain storage.

5. Design of water retention and detention structures and flow attenuation devices shall be subject to the approval of the city pursuant to the standards hereof. Detention structures shall be designed to release runoff to the downstream drainage system over a period of time so as not to exceed the capacity of the existing downstream system. The design of water retention and detention structures and flow attenuation devices shall be in compliance with the standard construction details.

6. In order to maintain good water quality in stormwater management detention ponds and maximize the provision of fish and wildlife habitat, stormwater management systems with permanently wet detention ponds should be designed, operated and maintained so as to resemble a natural pond to the greatest extent practicable. A natural pond design should include: a littoral zone comprised of native emergent and submersed aquatic macrophytic vegetation; a deep open water limnetic zone free of rooted emergent and submersed vegetation; and, where feasible, an upland buffer of native trees, shrubs and understory vegetation.

7. A positive drainage system shall be provided which will not adversely impact downstream owners or adjacent lands, including rain gutter system on the structure as needed.

8. Where possible, natural vegetation shall be used as a component of the drainage system. The water table should not be manipulated so as to endanger natural vegetation beneficial to water quality unless natural vegetation can be replanted and survive with a lowered water table condition.

9. Runoff from higher adjacent lands shall be considered and provisions for conveyance of such runoff shall be included in the drainage plan.

10. Runoff shall be treated to remove oil and floatable solids before discharge from the site in a manner approved by the city.

11. Erosion by wind or water shall be prevented by the developer throughout the construction process.

12. Direct discharge to class II waters is prohibited. A workable filter system approved by the city must be provided prior to any discharge to class II waters.

13. For the purpose of this section, it is presumed that the lowering of the water table for the purpose of constructing detention/retention basins and for the purpose of permanently protecting road construction does not conflict with the stated objectives of this section if all of the following are met:

    a. The development site is not in an area known to the city, based on data collected and interpreted by the U.S. Geological Survey, the St. Johns River Water Management District, the city and other

professional investigators, as important to recharge or to prevention of discharge to the Floridan aquifer.

b. The proposed lowering of the water table shall be over no more than fifteen (15) percent of the site to a depth of five (5) feet below the surface of the existing undisturbed ground, or an equivalent volume, said area to be measured at the overflow elevation of the retention areas(s).

c. If ditches, underdrains or similar devices are used to lower the water table, the lateral volumetric effect will be calculated, and the volume will be deducted from that allowed for retention areas.

d. The high water table may be lowered up to two (2) feet below the undisturbed ground in the vicinity of roads for the purpose of protecting the sub-base and base of the roadway and/or for the purpose of preventing mosquito breeding in the roadside swales.

e. The lowering of the water table has no adverse effect on wetlands off site vegetation as defined herein.

f. The lowering of the water table does not increase flows to the detriment of neighboring lands.

14. For project sizes greater than one (1) acre of disturbed area, the applicant shall acquire permit coverage from the Florida Department of Environmental Protection, National Pollutant Discharge Elimination System program and provide proof of such to the city prior to construction.

Section 5.05.03.03 *Additional standards.*

1. Category II development—The minimum volume of retention to be provided shall be equivalent to one (1) inch of runoff over the entire project area and two (2) inches of runoff over the entire project area if within the Mirror Lake Watershed Overlay District. For certain soil conditions or ground water table conditions which do not permit the percolation of this volume within the five days following a storm event, the city may approve detention with filtration systems in lieu of retention.

2. Category III development—Stormwater management plan shall be prepared by a professional engineer or landscape architect licensed in the State of Florida and shall conform to:

a. Category II development requirements.

b. The discharge hydrograph produced for the developed or redeveloped site shall not exceed, in terms of peak flow and total volume, the hydrograph produced by conditions existing before development or redevelopment for a twenty-four-hour, twenty-five-year frequency storm, if this provision will be met through detention of the difference between said volumes, said volume difference shall be released over not less than a twenty-four-hour nor greater than a seventy-two-hour period of time. Runoff rates and volumes resulting from the project, in excess of existing amounts, shall be accommodated on-site. Off-site retention may be permitted if, in the opinion of the city, the recharge requirements of this section are met.

c. Peak discharge one hundred-year storm. The peak discharge resulting from a twenty-four-hour, one hundred-year frequency storm on the developed or

redeveloped site shall not exceed the peak discharge resulting from a one hundred-year frequency storm for existing conditions on the site for flood prone areas as determined by the city.

d. Runoff computations. Runoff computations shall be based on the most critical situation (rainfall duration, distribution and antecedent soil moisture condition) and conform to the methods described in the Florida Department of Transportation Drainage Manual, latest edition, and the St. Johns River Water Management District Regulation of Stormwater Management Systems.

3. Category IV development—City shall defer to permitting by St. Johns River Water Management District.

(Ord. No. 2005-07, § 1, 4-28-05; Ord. No. 2007-12, § 6, 6-14-07)

Sec. 5.05.04. Maintenance.

The installed system(s) required by this section shall be maintained by the owner except where the city specifically accepts a certain system for maintenance. The selection of critical areas and/or structures to be maintained by the city shall be recommended to the city commission by the department. All areas and/or structures to be maintained by the city must be conveyed to the city by plat or separate instrument and accepted by the city commission. The owner shall provide adequate easements with respect to system(s) to be maintained by the owner to permit the city to inspect and, if necessary, to take corrective action should the owner fail to maintain the system(s).

(Ord. No. 2005-07, § 1, 4-28-05; Ord. No. 2007-12, § 6, 6-14-07)

ORDINANCE NO. 2025-XX

AN ORDINANCE BY THE CITY OF FLAGLER BEACH AMENDING THE FLAGLER BEACH CODE OF ORDINANCES, APPENDIX "A," LAND DEVELOPMENT REGULATIONS, TO SPECIFY ELEVATION OF MANUFACTURED HOMES IN FLOOD HAZARD AREAS; TO ADOPT AND REFORMAT LOCAL AMENDMENTS TO THE FLORIDA BUILDING CODE; PROVIDING FOR APPLICABILITY AND SEVERABILITY; AND PROVIDING FOR AN EFFECTIVE DATE.

WHEREAS, the Legislature of the State of Florida has, in Chapter 166 – Municipalities, Florida Statutes, conferred upon local governments the authority to adopt regulations designed to promote the public health, safety, and general welfare of its citizenry; and

WHEREAS, the **City of Flagler Beach** participates in the National Flood Insurance Program and participates in the NFIP's Community Rating System, a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the minimum program requirements and achieved a CRS rating of Class **#6)**, making citizens who purchase NFIP flood insurance policies eligible for premium discounts; and

WHEREAS, in 2020 the NFIP Community Rating System established certain minimum prerequisites for communities to qualify for or maintain class ratings of Class 8 or better; and

WHEREAS, to satisfy the prerequisite and for the **City of Flagler Beach** to maintain the current CRS rating, all manufactured homes installed or replaced in special flood hazard areas must be elevated to or above at least the base flood elevation plus ~~1 foot~~, three (3) feet which necessitates modification of the existing requirements; and

WHEREAS, the **City Commission** determined that it is in the public interest to amend the floodplain management regulations to better protect manufactured homes and to continue participating in the Community Rating System at the current class rating.

WHEREAS, Chapter 553, Florida Statutes, allows for local administrative and technical amendments to the *Florida Building Code* that provide for more stringent requirements than those specified in the Code and allows adoption of local administrative and local technical amendments to the Florida Building Code to implement the National Flood Insurance Program and incentives; and

WHEREAS, the **City of Flagler Beach** previously adopted local amendments to the Florida Building Code and is reformatting those amendments; and

WHEREAS, the **City Commission** previously adopted local amendments to the Florida Building Code to (1) limit enclosures below elevated buildings in coastal high hazard areas and Coastal A Zones, (2) increase the minimum elevation requirements for nonresidential buildings and dwellings in coastal high hazard areas, and (3) require construction documents for dwellings to be prepared and sealed by registered design professionals, for buildings and structures in flood hazard areas for the purpose of participating in the National Flood Insurance Program's Community Rating System and, pursuant to section 553.73(5), F.S., and is reformatting those requirements to coordinate with the *Florida Building Code*; and

WHEREAS, the **City Commission** is adopting a requirement to increase the minimum elevation requirement for dwellings in all flood hazard areas for the purpose of participating in the National Flood Insurance Program's Community Rating System and, pursuant to section 553.73(5), F.S., is formatting that requirement to coordinate with the *Florida Building Code*; and

WHEREAS, the **City Commission** has determined that it is in the public interest to adopt the proposed local technical amendments to the *Florida Building Code,* and the proposed amendments are not more stringent than necessary to address the need identified, do not discriminate against materials, products or construction techniques of demonstrated capabilities, are in compliance with section 553.73(4), Florida Statutes.

NOW, THEREFORE, BE IT ORDAINED by the **City Commission** of the **City of Flagler Beach** that the **Code of Ordinances, Appendix" A," Land Development Regulations,** is amended as set forth in the following amendments.

SECTION 1. AMENDMENTS

Appendix "A," LAND DEVELOPMENT REGULATIONS OF THE CITY OF FLAGLER BEACH CODE OF ORDINANCES is hereby amended as follows (Note: additions are shown as underline text, deletions are shown as ~~strikethrough~~, and portions of the Code that remain unchanged and which are not reprinted here are show as ellipses (***)).

ARTICLE IV. ENVIRONMENTAL AND CULTURAL RESOURCE PROTECTION[1]

Sec. 4.07.00. Floodplain management.

Sec. 4.07.01. General.

(A) *Title.* These regulations shall be known as the "Floodplain Management Ordinance" of the city, hereinafter referred to as "this ~~article~~ section."

(B) *Scope.* The provisions of this ~~article~~ section shall apply to all development that is wholly within or partially within any flood hazard area, including but not limited to the subdivision of land; filling, grading, and other site improvements and utility installations; construction, alteration, remodeling, enlargement, improvement, replacement, repair, relocation or demolition of buildings, structures, and facilities that are exempt from the Florida Building Code; placement, installation, or replacement of manufactured homes and manufactured buildings; installation or replacement of tanks; placement of recreational vehicles; installation of swimming pools; and any other development.

(C) *Intent.* The purposes of this ~~article~~ section and the flood load and flood resistant construction requirements of the Florida Building Code are to establish minimum requirements to safeguard the public health, safety, and general welfare and to minimize public and private losses due to flooding through regulation of development in flood hazard areas to:

(1) Minimize unnecessary disruption of commerce, access and public service during times of flooding;

[1]Editor's note(s)—Ord. No. 2017-02, § 2, adopted May 11, 2017, amended the title of art. IV, to read as set out herein. Previously art. IV was titled "Resource Protection Standards."

(2) Require the use of appropriate construction practices in order to prevent or minimize future flood damage;

(3) Manage filling, grading, dredging, mining, paving, excavation, drilling operations, storage of equipment or materials, and other development which may increase flood damage or erosion potential;

(4) Manage the alteration of flood hazard areas, watercourses, and shorelines to minimize the impact of development on the natural and beneficial functions of the floodplain;

(5) Minimize damage to public and private facilities and utilities;

(6) Help maintain a stable tax base by providing for the sound use and development of flood hazard areas;

(7) Minimize the need for future expenditure of public funds for flood control projects and response to and recovery from flood events; and

(8) Meet the requirements of the National Flood Insurance Program for community participation as set forth in the Title 44 Code of Federal Regulations, Section 59.22.

(D) *Coordination with the Florida Building Code.* This ~~article~~ section is intended to be administered and enforced in conjunction with the Florida Building Code. Where cited, ASCE 24 refers to the edition of the standard that is referenced by the Florida Building Code.

(E) *Warning.* The degree of flood protection required by this ~~article~~ section and the Florida Building Code, as amended by the city, is considered the minimum reasonable for regulatory purposes and is based on scientific and engineering considerations. Larger floods can and will occur. Flood heights may be increased by man-made or natural causes. This ~~article~~ section does not imply that land outside of mapped special flood hazard areas, or that uses permitted within such flood hazard areas, will be free from flooding or flood damage. The flood hazard areas and base flood elevations contained in the flood insurance study and shown on flood insurance rate maps and the requirements of Title 44 Code of Federal Regulations, Sections 59 and 60 may be revised by the Federal Emergency Management Agency, requiring this community to revise these regulations to remain eligible for participation in the National Flood Insurance Program. No guaranty of vested use, existing use, or future use is implied or expressed by compliance with this ~~article~~ section.

(F) *Disclaimer of liability.* This ~~article~~ section shall not create liability on the part of the city commission or by any officer or employee thereof for any flood damage that results from reliance on this ~~article~~ section or any administrative decision lawfully made there under.

Sec. 4.07.02. Applicability.

(A) *General.* Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall be applicable.

(B) *Areas to which this ~~article~~ section applies.* This ~~article~~ section shall apply to all flood hazard areas within the city, as established in subsection (C).

(C) *Basis for establishing flood hazard areas.* The flood insurance study for Flagler County, Florida and Incorporated Areas dated ~~July 17, 2006~~ June 6, 2018, and for Volusia County, Florida and Incorporated Areas dated ~~February 19, 2014~~ September 29, 2017, and all subsequent amendments and revisions, and the accompanying flood insurance rate maps (FIRM), and all subsequent amendments and revisions to such maps, are adopted by reference as a part of this ~~article~~ section and shall serve as the minimum basis for

establishing flood hazard areas. Studies and maps that establish flood hazard areas are on file at Flagler Beach City Hall, located at 105 S. 2nd Street, Flagler Beach, FL, 32136.

(D) *Submission of additional data to establish flood hazard areas.* To establish flood hazard areas and base flood elevations, pursuant to Section ~~4.07~~ 4.07.05 the floodplain administrator may require submission of additional data. Where field surveyed topography prepared by a state licensed professional surveyor or digital topography accepted by the community indicates that ground elevations:

(1) Are below the closest applicable base flood elevation, even in areas not delineated as a special flood hazard area on a FIRM, the area shall be considered as flood hazard area and subject to the requirements of this ~~article~~ section and, as applicable, the requirements of the Florida Building Code.

(2) Are above the closest applicable base flood elevation, the area shall be regulated as special flood hazard area unless the applicant obtains a letter of map change that removes the area from the special flood hazard area.

(E) *Other laws.* The provisions of this ~~article~~ section shall not be deemed to nullify any provisions of local, state or federal law.

(F) *Abrogation and greater restrictions.* This ~~article~~ section supersedes any ordinance in effect for management of development in flood hazard areas. However, it is not intended to repeal or abrogate any existing ordinances including but not limited to land development regulations, zoning ordinances, stormwater management regulations, or the Florida Building Code. In the event of a conflict between this ~~article~~ section and any other ordinance, the more restrictive shall govern. This ~~article~~ section shall not impair any deed restriction, covenant or easement, but any land that is subject to such interests shall also be governed by this ~~article~~ section.

(G) *Interpretation.* In the interpretation and application of this ~~article~~ section, all provisions shall be:

(1) Considered as minimum requirements;

(2) Liberally construed in favor of the governing body; and

(3) Deemed neither to limit nor repeal any other powers granted under state statutes.

Sec. 4.07.03. Duties and powers of the floodplain administrator.

(A) *Designation.* The city engineer, or his designee is designated as the floodplain administrator. The floodplain administrator may delegate performance of certain duties to other employees.

(B) *General.* The floodplain administrator is authorized and directed to administer and enforce the provisions of this ~~article~~ section. The floodplain administrator shall have the authority to render interpretations of this ~~article~~ section consistent with the intent and purpose of this ~~article~~ section and may establish policies and procedures in order to clarify the application of its provisions. Such interpretations, policies, and procedures shall not have the effect of waiving requirements specifically provided in this ~~article~~ section without the granting of a variance pursuant to Section ~~4.05.07~~ 8.04.16(b).

(C) *Applications and permits.* The floodplain administrator, in coordination with other pertinent offices of the city, shall:

(1) Review applications and plans to determine whether proposed new development will be located in flood hazard areas;

(2) Review applications for modification of any existing development in flood hazard areas for compliance with the requirements of this ~~article~~ section;

(3) Interpret flood hazard area boundaries where such interpretation is necessary to determine the exact location of boundaries; a person contesting the determination shall have the opportunity to appeal the interpretation;

(4) Provide available flood elevation and flood hazard information;

(5) Determine whether additional flood hazard data shall be obtained from other sources or shall be developed by an applicant;

(6) Review applications to determine whether proposed development will be reasonably safe from flooding;

(7) Issue floodplain development permits or approvals for development other than buildings and structures that are subject to the Florida Building Code, including buildings, structures and facilities exempt from the Florida Building Code, when compliance with this ~~article~~ section is demonstrated, or disapprove the same in the event of noncompliance; and

(8) Coordinate with and provide comments to the building official to assure that applications, plan reviews, and inspections for buildings and structures in flood hazard areas comply with the applicable provisions of this ~~article~~ section.

(D) *Substantial improvement and substantial damage determinations.* For applications for building permits to improve buildings and structures, including alterations, movement, enlargement, replacement, repair, change of occupancy, additions, rehabilitations, renovations, substantial improvements, repairs of substantial damage, and any other improvement of or work on such buildings and structures, the floodplain administrator, in coordination with the building official, shall:

(1) Estimate the market value, or require the applicant to obtain an appraisal of the market value prepared by a qualified independent appraiser, of the building or structure before the start of construction of the proposed work; in the case of repair, the market value of the building or structure shall be the market value before the damage occurred and before any repairs are made;

(2) Compare the cost to perform the improvement, the cost to repair a damaged building to its pre-damaged condition, or the combined costs of improvements and repairs, if applicable, to the market value of the building or structure;

(3) Determine and document whether the proposed work constitutes substantial improvement or repair of substantial damage; and

(4) Notify the applicant if it is determined that the work constitutes substantial improvement or repair of substantial damage and that compliance with the flood resistant construction requirements of the Florida Building Code and this ~~article~~ section is required.

(E) *Modifications of the strict application of the requirements of the Florida Building Code.* The floodplain administrator shall review requests submitted to the building official that seek approval to modify the strict application of the flood load and flood resistant construction requirements of the Florida Building Code to determine whether such requests require the granting of a variance pursuant to Section ~~4.05.07~~ 8.04.16(b).

(F) *Notices and orders.* The floodplain administrator shall coordinate with appropriate local agencies for the issuance of all necessary notices or orders to ensure compliance with this ~~article~~ section.

(G) *Inspections.* The floodplain administrator shall make the required inspections as specified in Section ~~4.05.06~~ 4.07.06 for development that is not subject to the Florida Building Code, including buildings, structures and facilities exempt from the Florida Building Code. The floodplain administrator shall inspect flood hazard areas to determine if development is undertaken without issuance of a permit.

(H) *Other duties of the floodplain administrator.* The floodplain administrator shall have other duties, including but not limited to:

(1) Establish, in coordination with the building official, procedures for administering and documenting determinations of substantial improvement and substantial damage made pursuant to Section ~~4.05.03(D)~~ 4.07.03(D);

(2) Require applicants who submit hydrologic and hydraulic engineering analyses to support permit applications to submit to FEMA the data and information necessary to maintain the flood insurance rate maps if the analyses propose to change base flood elevations, or flood hazard area boundaries; such submissions shall be made within six (6) months of such data becoming available;

(3) Review required design certifications and documentation of elevations specified by this ~~article~~ section and the Florida Building Code and this ~~article~~ section to determine that such certifications and documentations are complete;

(4) Notify the Federal Emergency Management Agency when the corporate boundaries of the city are modified; and

(5) Advise applicants for new buildings and structures, including substantial improvements, which are located in any unit of the Coastal Barrier Resources System established by the Coastal Barrier Resources Act (Pub. L. 97-348) and the Coastal Barrier Improvement Act of 1990 (Pub. L. 101-591) that federal flood insurance is not available on such construction; areas subject to this limitation are identified on flood insurance rate maps as "Coastal Barrier Resource System Areas" and "Otherwise Protected Areas."

(I) *Floodplain management records.* Regardless of any limitation on the period required for retention of public records, the floodplain administrator shall maintain and permanently keep and make available for public inspection all records that are necessary for the administration of this ~~article~~ section and the flood resistant construction requirements of the Florida Building Code, including flood insurance rate maps; letters of map change; records of issuance of permits and denial of permits; determinations of whether proposed work constitutes substantial improvement or repair of substantial damage; required design certifications and documentation of elevations specified by the Florida Building Code and this ~~article~~ section; notifications to adjacent communities, FEMA, and the state related to alterations of watercourses; assurances that the flood carrying capacity of altered watercourses will be maintained; documentation related to appeals and variances, including justification for issuance or denial; and records of enforcement actions taken pursuant to this ~~article~~ section and the flood resistant construction requirements of the Florida Building Code. These records shall be available for public inspection at Flagler Beach City Hall, located at 105 S. 2nd Street, Flagler Beach, FL, 32136.

Sec. 4.07.04. Permits.

(A) *Permits required.* Any owner or owner's authorized agent (hereinafter "applicant") who intends to undertake any development activity within the scope of this ~~article~~ section, including buildings, structures and facilities exempt from the Florida Building Code, which is

wholly within or partially within any flood hazard area shall first make application to the floodplain administrator, and the building official if applicable, and shall obtain the required permit(s) and approval(s). No such permit or approval shall be issued until compliance with the requirements of this ~~article~~ section and all other applicable codes and regulations has been satisfied.

(B) *Floodplain development permits or approvals.* Floodplain development permits or approvals shall be issued pursuant to this ~~article~~ section for any development activities not subject to the requirements of the Florida Building Code, including buildings, structures and facilities exempt from the Florida Building Code. Depending on the nature and extent of proposed development that includes a building or structure, the floodplain administrator may determine that a floodplain development permit or approval is required in addition to a building permit.

(C) *Buildings, structures and facilities exempt from the Florida Building Code.* Pursuant to the requirements of federal regulation for participation in the National Flood Insurance Program (44 C.F.R. Sections 59 and 60), floodplain development permits or approvals shall be required for the following buildings, structures and facilities that are exempt from the Florida Building Code and any further exemptions provided by law, which are subject to the requirements of this ~~article~~ section:

(1) Railroads and ancillary facilities associated with the railroad.

(2) Nonresidential farm buildings on farms, as provided in F.S. § 604.50.

(3) Temporary buildings or sheds used exclusively for construction purposes.

(4) Mobile or modular structures used as temporary offices.

(5) Those structures or facilities of electric utilities, as defined in F.S. § 366.02, which are directly involved in the generation, transmission, or distribution of electricity.

(6) Chickees constructed by the Miccosukee Tribe of Indians of Florida or the Seminole Tribe of Florida. As used in this subsection, the term "chickee" means an open-sided wooden hut that has a thatched roof of palm or palmetto or other traditional materials, and that does not incorporate any electrical, plumbing, or other non-wood features.

(7) Family mausoleums not exceeding two hundred fifty (250) square feet in area which are prefabricated and assembled on site or preassembled and delivered on site and have walls, roofs, and a floor constructed of granite, marble, or reinforced concrete.

(8) Temporary housing provided by the department of corrections to any prisoner in the state correctional system.

(9) Structures identified in F.S. § 553.73(10)(k), are not exempt from the Florida Building Code if such structures are located in flood hazard areas established on flood insurance rate maps.

(D) *Application for a permit or approval.* To obtain a floodplain development permit or approval the applicant shall first file an application in writing on a form furnished by the city. The information provided shall:

(1) Identify and describe the development to be covered by the permit or approval.

(2) Describe the land on which the proposed development is to be conducted by legal description, street address or similar description that will readily identify and definitively locate the site.

(3) Indicate the use and occupancy for which the proposed development is intended.

(4) Be accompanied by a site plan or construction documents as specified in Section 4.07.05.

(5) State the valuation of the proposed work.

(6) Be signed by the applicant or the applicant's authorized agent.

(7) Give such other data and information as required by the Floodplain Administrator.

(E) *Validity of permit or approval.* The issuance of a floodplain development permit or approval pursuant to this ~~article~~ section shall not be construed to be a permit for, or approval of, any violation of this ~~article~~ section, the Florida Building Codes, or any other ordinance adopted by the city commission. The issuance of permits based on submitted applications, construction documents, and information shall not prevent the floodplain administrator from requiring the correction of errors and omissions.

(F) *Expiration.* A floodplain development permit or approval shall become invalid unless the work authorized by such permit is commenced within one hundred eighty (180) days after its issuance, or if the work authorized is suspended or abandoned for a period of one hundred eighty (180) days after the work commences. Extensions for periods of not more than one hundred eighty (180) days each shall be requested in writing and justifiable cause shall be demonstrated.

(G) *Suspension or revocation.* The floodplain administrator is authorized to suspend or revoke a floodplain development permit or approval if the permit was issued in error, on the basis of incorrect, inaccurate or incomplete information, or in violation of this ~~article~~ section or any other ordinance, regulation or requirement adopted by the city commission.

(H) *Other permits required.* Floodplain development permits and building permits shall include a condition that all other applicable state or federal permits be obtained before commencement of the permitted development, including but not limited to the following:

(1) The St. Johns River Water Management District; F.S. § 373.036.

(2) Florida Department of Health for onsite sewage treatment and disposal systems; F.S. § 381.0065 and Chapter 64E-6, F.A.C.

(3) Florida Department of Environmental Protection for construction, reconstruction, changes, or physical activities for shore protection or other activities seaward of the coastal construction control line; F.S. § 161.141.

(4) Florida Department of Environmental Protection for activities subject to the joint coastal permit; F.S. § 161.055.

(5) Florida Department of Environmental Protection for activities that affect wetlands and alter surface water flows, in conjunction with the U.S. Army Corps of Engineers; Section 404 of the Clean Water Act.

(6) Federal permits and approvals.

Sec. 4.07.05. Site plans and construction documents.

(A) *Information for development in flood hazard areas.* The site plan or construction documents for any development subject to the requirements of this ~~article~~ section shall be drawn to scale and shall include, as applicable to the proposed development:

(1) Delineation of flood hazard areas, flood zone(s), base flood elevation(s), and ground elevations if necessary for review of the proposed development.

(2) Location of the proposed activity and proposed structures, and locations of existing buildings and structures; in coastal high hazard areas, new buildings shall be located landward of the reach of mean high tide.

(3) Location, extent, amount, and proposed final grades of any filling, grading, or excavation.

(4) Where the placement of fill is proposed, the amount, type, and source of fill material; compaction specifications; a description of the intended purpose of the fill areas; evidence that the proposed fill areas are the minimum necessary to achieve the intended purpose; and documentation that compensatory storage is provided if required by Section 4.07.12(D)(3).

(5) Delineation of the coastal construction control line or notation that the site is seaward of the coastal construction control line, if applicable.

(6) Extent of any proposed alteration of sand dunes or mangrove stands, provided such alteration is approved by the state department of environmental protection.

The floodplain administrator is authorized to waive the submission of site plans, construction documents, and other data that are required by this ~~article~~ section but that are not required to be prepared by a registered design professional if it is found that the nature of the proposed development is such that the review of such submissions is not necessary to ascertain compliance with this ~~article~~ section.

(B) *Additional analyses and certifications.* For activities that propose to alter sand dunes or mangrove stands in coastal high hazard areas (zone V), the applicant shall provide an engineering analysis that demonstrates that the proposed alteration will not increase the potential for flood damage signed and sealed by a state licensed engineer for submission with the site plan and construction documents.

(C) *Submission of additional data.* When additional hydrologic, hydraulic or other engineering data, studies, and additional analyses are submitted to support an application, the applicant has the right to seek a letter of map change from FEMA to change the base flood elevations or change boundaries of flood hazard areas shown on FIRMs, and to submit such data to FEMA for such purposes. The analyses shall be prepared by a state licensed engineer in a format required by FEMA. Submittal requirements and processing fees shall be the responsibility of the applicant.

Sec. 4.07.06. Inspections.

(A) *General.* Development for which a floodplain development permit or approval is required shall be subject to inspection.

(B) *Development other than buildings and structures.* The floodplain administrator shall inspect all development to determine compliance with the requirements of this ~~article~~ section and the conditions of issued floodplain development permits or approvals.

(C) *Buildings, structures and facilities exempt from the Florida Building Code.* The floodplain administrator shall inspect buildings, structures and facilities exempt from the Florida Building Code to determine compliance with the requirements of this ~~article~~ section and the conditions of issued floodplain development permits or approvals.

(D) *Buildings, structures and facilities exempt from the Florida Building Code, lowest floor inspection.* Upon placement of the lowest floor, including basement, and prior to further vertical construction, the owner of a building, structure or facility exempt from the Florida Building Code, or the owner's authorized agent, shall submit to the floodplain administrator

the required elevation of the lowest floor, the certification of elevation of the lowest floor prepared and sealed by a state licensed professional surveyor.

(E) *Buildings, structures and facilities exempt from the Florida Building Code, final inspection.* As part of the final inspection, the owner or owner's authorized agent shall submit to the floodplain administrator a final certification of elevation of the lowest floor or final documentation of the height of the lowest floor above the highest adjacent grade; such certifications and documentations shall be prepared as specified in Section 4.07.06(D).

(F) *Manufactured homes.* The floodplain administrator shall inspect manufactured homes that are installed or replaced in flood hazard areas to determine compliance with the requirements of this ~~article~~ section and the conditions of the issued permit. Upon placement of a manufactured home, certification of the elevation of the bottom of the frame and lowest floor shall be submitted to the floodplain administrator.

Sec. 4.07.07. Variances and appeals.

Requests for variances from the strict application of this section and the strict application of the flood resistant construction requirements of the Florida Building Code are subject to the requirements of Section 8.04.16(b). Appeals of decisions or determinations made by the floodplain administrator are subject to Section 8.04.17(b).

~~(A) *General.* The city commission, after review and recommendation from the planning and architectural review board as established by the city, shall hear and decide on requests for appeals and requests for variances from the strict application of this article. Pursuant to F.S. § 553.73(5), the city commission shall hear and decide on requests for appeals and requests for variances from the strict application of the flood resistant construction requirements of the Florida Building Code. This section does not apply to Section 3109 of the Florida Building Code, Building.~~

~~(B) *Appeals.* The city commission shall hear and decide appeals when it is alleged there is an error in any requirement, decision, or determination made by the floodplain administrator in the administration and enforcement of this article. Any person aggrieved by the decision of the city commission may appeal such decision to the circuit court, as provided by state statutes.~~

~~(C) *Limitations on authority to grant variances.* The city commission shall base its decisions on variances on technical justifications submitted by applicants, the considerations for issuance in subsection (F), the conditions of issuance set forth in subsection (G), and the comments and recommendations of the floodplain administrator and the building official. The city commission has the right to attach such conditions as it deems necessary to further the purposes and objectives of this article.~~

~~(D) *Historic buildings.* A variance is authorized to be issued for the repair, improvement, or rehabilitation of a historic building that is determined eligible for the exception to the flood resistant construction requirements of the Florida Building Code, Existing Building, Chapter 11 Historic Buildings, upon a determination that the proposed repair, improvement, or rehabilitation will not preclude the building's continued designation as a historic building and the variance is the minimum necessary to preserve the historic character and design of the building. If the proposed work precludes the building's continued designation as a historic building, a variance shall not be granted and the building and any repair, improvement, and rehabilitation shall be subject to the requirements of the Florida Building Code.~~

~~(E) *Functionally dependent uses.* A variance is authorized to be issued for the construction or substantial improvement necessary for the conduct of a functionally dependent use, as~~

defined in this article, is the minimum necessary considering the flood hazard, and all due consideration has been given to use of methods and materials that minimize flood damage during occurrence of the base flood.

(F) *Considerations for issuance of variances.* In reviewing requests for variances, the city commission shall consider all technical evaluations, all relevant factors, all other applicable provisions of the Florida Building Code, this article, and the following:

(1) The danger that materials and debris may be swept onto other lands resulting in further injury or damage;

(2) The danger to life and property due to flooding or erosion damage;

(3) The susceptibility of the proposed development, including contents, to flood damage and the effect of such damage on current and future owners;

(4) The importance of the services provided by the proposed development to the community;

(5) The availability of alternate locations for the proposed development that are subject to lower risk of flooding or erosion;

(6) The compatibility of the proposed development with existing and anticipated development;

(7) The relationship of the proposed development to the comprehensive plan and floodplain management program for the area;

(8) The safety of access to the property in times of flooding for ordinary and emergency vehicles;

(9) The expected heights, velocity, duration, rate of rise and debris and sediment transport of the floodwaters and the effects of wave action, if applicable, expected at the site; and

(10) The costs of providing governmental services during and after flood conditions including maintenance and repair of public utilities and facilities such as sewer, gas, electrical and water systems, streets and bridges.

(G) *Conditions for issuance of variances.* Variances shall be issued only upon:

(1) Submission by the applicant, of a showing of good and sufficient cause that the unique characteristics of the size, configuration, or topography of the site limit compliance with any provision of this article or the required elevation standards;

(2) Determination by the city commission that:

(a) Failure to grant the variance would result in exceptional hardship due to the physical characteristics of the land that render the lot undevelopable; increased costs to satisfy the requirements or inconvenience do not constitute hardship;

(b) The granting of a variance will not result in increased flood heights, additional threats to public safety, extraordinary public expense, nor create nuisances, cause fraud on or victimization of the public or conflict with existing local laws and ordinances; and

(c) The variance is the minimum necessary, considering the flood hazard, to afford relief;

~~(3) Receipt of a signed statement by the applicant that the variance, if granted, shall be recorded in the office of the clerk of the court in such a manner that it appears in the chain of title of the affected parcel of land; and~~

~~(4) If the request is for a variance to allow construction of the lowest floor of a new building, or substantial improvement of a building, below the required elevation, a copy in the record of a written notice from the floodplain administrator to the applicant for the variance, specifying the difference between the base flood elevation and the proposed elevation of the lowest floor, stating that the cost of federal flood insurance will be commensurate with the increased risk resulting from the reduced floor elevation (up to amounts as high as twenty-five dollars ($25.00) for one hundred dollars ($100.00) of insurance coverage), and stating that construction below the base flood elevation increases risks to life and property.~~

Sec. 4.07.08. Violations.

(A) *Violations.* Any development that is not within the scope of the Florida Building Code but that is regulated by this ~~article~~ section that is performed without an issued permit, that is in conflict with an issued permit, or that does not fully comply with this ~~article~~ section, shall be deemed a violation of this ~~article~~ section. A building or structure without the documentation of elevation of the lowest floor, other required design certifications, or other evidence of compliance required by this ~~article~~ section or the Florida Building Code is presumed to be a violation until such time as that documentation is provided.

(B) *Authority.* For development that is not within the scope of the Florida Building Code but that is regulated by this ~~article~~ section and that is determined to be a violation, the floodplain administrator is authorized to serve notices of violation or stop work orders to owners of the property involved, to the owner's agent, or to the person or persons performing the work.

(C) *Unlawful continuance*. Any person who shall continue any work after having been served with a notice of violation or a stop work order, except such work as that person is directed to perform to remove or remedy a violation or unsafe condition, shall upon conviction thereof, be fined not more than five hundred dollars ($500.00) or imprisoned for not more than sixty (60) days, of both, and in addition shall pay all costs and expenses involved in the case. Each day such violation continues shall be considered a separate offense. Nothing herein contained shall prevent the city from taking such other lawful action as is necessary to prevent or remedy any violation.

Sec. 4.07.09. Definitions.

Unless otherwise expressly stated, the following words and terms shall, for the purposes of this ~~article~~ section, have the meanings shown in this section. Where terms are not defined in this ~~article~~ section and are defined in the Florida Building Code, such terms shall have the meanings ascribed to them in that code. Where terms are not defined in this ~~article~~ section or the Florida Building Code, such terms shall have ordinarily accepted meanings such as the context implies.

Alteration of a watercourse. A dam, impoundment, channel relocation, change in channel alignment, channelization, or change in cross-sectional area of the channel or the channel capacity, or any other form of modification which may alter, impede, retard or change the direction and/or velocity of the riverine flow of water during conditions of the base flood.

Appeal. A request for a review of the floodplain administrator's interpretation of any provision of this ~~article~~ section ~~or a request for a variance~~.

ASCE 24. A standard titled "Flood Resistant Design and Construction" that is referenced by the Florida Building Code. ASCE 24 is developed and published by the American Society of Civil Engineers, Reston, VA.

Base flood. A flood having a one (1) percent chance of being equaled or exceeded in any given year. [Also defined in FBC, B, Section 1612.2.] The base flood is commonly referred to as the "100-year flood" or the "one-percent-annual chance flood."

Base flood elevation. The elevation of the base flood, including wave height, relative to the National Geodetic Vertical Datum (NGVD), North American Vertical Datum (NAVD) or other datum specified on the flood insurance rate map (FIRM). [Also defined in FBC, B, Section 1612.2.]

Basement. The portion of a building having its floor subgrade (below ground level) on all sides. [Also defined in FBC, B, Section 1612.2.]

Coastal A zone. Flood hazard areas that have been delineated as subject to wave heights between one and one-half (1½) feet and three (3) feet. Such areas are seaward of the limit of moderate wave action shown on the flood insurance rate map.

Coastal construction control line. The line established by the state pursuant to F.S. § 161.053, and recorded in the official records of the community, which defines that portion of the beach-dune system subject to severe fluctuations based on a 100-year storm surge, storm waves or other predictable weather conditions.

Coastal high hazard area. A special flood hazard area extending from offshore to the inland limit of a primary frontal dune along an open coast and any other area subject to high velocity wave action from storms or seismic sources. Coastal high hazard areas are also referred to as "high hazard areas subject to high velocity wave action" or "V zones" and are designated on Flood Insurance Rate Maps (FIRM) as zone V1-V30, VE, or V. ~~[Note: The FBC, B defines and uses the term "flood hazard areas subject to high velocity wave action" and the FBC, R uses the term "coastal high hazard areas."]~~

Compensatory storage. Excavation within or directly contiguous to a flood hazard area, above the normal high groundwater table elevation and below the base flood elevation, of a volume equivalent to the volume of proposed fill (one (1) to one (1) ratio), provided to balance the effects of proposed fill on the flood hazard area (no net loss of floodplain storage volume).

Design flood. The flood associated with the greater of the following two (2) areas: [Also defined in FBC, B, Section 1612.2.]

(1) Area with a floodplain subject to a one (1) percent or greater chance of flooding in any year; or

(2) Area designated as a flood hazard area on the community's flood hazard map, or otherwise legally designated.

Design flood elevation. The elevation of the "design flood," including wave height, relative to the datum specified on the community's legally designated flood hazard map. In areas designated as zone AO, the design flood elevation shall be the elevation of the highest existing grade of the building's perimeter plus the depth number (in feet) specified on the flood hazard map. In areas designated as zone AO where the depth number is not specified on the map, the depth number shall be taken as being equal to two (2) feet. [Also defined in FBC, B, Section 1612.2.]

Development. Any man-made change to improved or unimproved real estate, including but not limited to, buildings or other structures, tanks, temporary structures, temporary or permanent storage of equipment or materials, mining, dredging, filling, grading, paving, excavations, drilling operations or any other land disturbing activities.

Encroachment. The placement of fill, excavation, buildings, permanent structures or other development into a flood hazard area which may impede or alter the flow capacity of riverine flood hazard areas.

Existing building and existing structure. Any buildings and structures for which the "start of construction" commenced before January 10, 1985. [Also defined in FBC, B, Section 1612.2.]

~~*Existing manufactured home park or subdivision.* A manufactured home park or subdivision for which the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including, at a minimum, the installation of utilities, the construction of streets, and either final site grading of the pouring of concrete pads) is completed before January 10, 1985.~~

~~*Expansion to an existing manufactured home park or subdivision.* The preparation of additional sites by the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads).~~

Federal Emergency Management Agency (FEMA). The federal agency that, in addition to carrying out other functions, administers the National Flood Insurance Program.

Flood or *flooding.* A general and temporary condition of partial or complete inundation of normally dry land from: [Also defined in FBC, B, Section 1612.2.]

(1) The overflow of inland or tidal waters.

(2) The unusual and rapid accumulation or runoff of surface waters from any source.

Flood damage-resistant materials. Any construction material capable of withstanding direct and prolonged contact with floodwaters without sustaining any damage that requires more than cosmetic repair. [Also defined in FBC, B, Section 1612.2.]

Flood hazard area. The greater of the following two (2) areas: [Also defined in FBC, B, Section 1612.2.]

(1) The area within a floodplain subject to a one (1) percent or greater chance of flooding in any year.

(2) The area designated as a flood hazard area on the community's flood hazard map, or otherwise legally designated.

Flood insurance rate map (FIRM). The official map of the community on which the Federal Emergency Management Agency has delineated both special flood hazard areas and the risk premium zones applicable to the community. [Also defined in FBC, B, Section 1612.2.]

Flood insurance study (FIS). The official report provided by the Federal Emergency Management Agency that contains the flood insurance rate map, the flood boundary and floodway map (if applicable), the water surface elevations of the base flood, and supporting technical data. [Also defined in FBC, B, Section 1612.2.]

Floodplain administrator. The office or position designated and charged with the administration and enforcement of this ~~article~~ section (may be referred to as the floodplain manager).

Floodplain development permit or approval. An official document or certificate issued by the community, or other evidence of approval or concurrence, which authorizes performance of specific development activities that are located in flood hazard areas and that are determined to be compliant with this ~~article~~ section.

Florida Building Code. The family of codes adopted by the Florida Building Commission, including: Florida Building Code, Building; Florida Building Code, Residential; Florida Building Code, Existing Building; Florida Building Code, Mechanical; Florida Building Code, Plumbing; Florida Building Code, Fuel Gas.

Functionally dependent use. A use which cannot perform its intended purpose unless it is located or carried out in close proximity to water, including only docking facilities, port facilities that are necessary for the loading and unloading of cargo or passengers, and ship building and ship repair facilities; the term does not include long-term storage or related manufacturing facilities.

Highest adjacent grade. The highest natural elevation of the ground surface prior to construction next to the proposed walls or foundation of a structure.

Historic structure. Any structure that is determined eligible for the exception to the flood hazard area requirements of the Florida Building Code, Existing Building, Chapter ~~11~~ 12 Historic Buildings.

Letter of map change (LOMC). An official determination issued by FEMA that amends or revises an effective flood insurance rate map or flood insurance study. Letters of map change include:

(1) *Letter of map amendment (LOMA).* An amendment based on technical data showing that a property was incorrectly included in a designated special flood hazard area. A LOMA amends the current effective flood insurance rate map and establishes that a specific property, portion of a property, or structure is not located in a special flood hazard area.

(2) *Letter of map revision (LOMR).* A revision based on technical data that may show changes to flood zones, flood elevations, special flood hazard area boundaries and floodway delineations, and other planimetric features.

(3) *Letter of map revision based on fill (LOMR-F).* A determination that a structure or parcel of land has been elevated by fill above the base flood elevation and is, therefore, no longer located within the special flood hazard area. In order to qualify for this determination, the fill must have been permitted and placed in accordance with the community's floodplain management regulations.

(4) *Conditional letter of map revision (CLOMR).* A formal review and comment as to whether a proposed flood protection project or other project complies with the minimum NFIP requirements for such projects with respect to delineation of special flood hazard areas. A CLOMR does not revise the effective flood insurance rate map or flood insurance study; upon submission and approval of certified as-built documentation, a letter of map revision may be issued by FEMA to revise the effective FIRM.

Light-duty truck. As defined in 40 C.F.R. 86.082-2, any motor vehicle rated at eight thousand five hundred (8,500) pounds gross vehicular weight rating or less which has a vehicular curb weight of six thousand (6,000) pounds or less and which has a basic vehicle frontal area of forty-five (45) square feet or less, which is:

(1) Designed primarily for purposes of transportation of property or is a derivation of such a vehicle, or

(2) Designed primarily for transportation of persons and has a capacity of more than twelve (12) persons; or

(3) Available with special features enabling off-street or off-highway operation and use.

Lowest floor. The lowest floor of the lowest enclosed area of a building or structure, including basement, but excluding any unfinished or flood-resistant enclosure, other than a basement, usable solely for vehicle parking, building access or limited storage provided that such enclosure is not built so as to render the structure in violation of the non-elevation requirements of the Florida Building Code or ASCE 24. [Also defined in FBC, B, Section 1612.2.]

Manufactured home. A structure, transportable in one (1) or more sections, which is eight (8) feet or more in width and greater than four hundred (400) square feet, and which is built on a permanent, integral chassis and is designed for use with or without a permanent foundation when attached to the required utilities. The term "manufactured home" does not include a "recreational vehicle" or "park trailer." [Also defined in 15C-1.0101, F.A.C.]

Manufactured home park or subdivision. A parcel (or contiguous parcels) of land divided into two (2) or more manufactured home lots for rent or sale.

Market value. ~~The price at which a property will change hands between a willing buyer and a willing seller, neither party being under compulsion to buy or sell and both having reasonable knowledge of relevant facts.~~ As used in this ~~article~~ section, the term refers to the market value of buildings and structures, excluding the land and other improvements on the parcel. Market value ~~may be established by a qualified independent appraiser,~~ is the actual cash value (like-kind replacement cost depreciated for age, wear and tear, neglect, and quality of construction) determined by a qualified independent appraiser, or tax assessment value adjusted to approximate market value by a factor provided by the county property appraiser.

New construction. For the purposes of administration of this ~~article~~ section and the flood resistant construction requirements of the Florida Building Code, structures for which the "start of construction" commenced on or after January 10, 1985, and includes any subsequent improvements to such structures.

~~*New manufactured home park or subdivision.* A manufactured home park or subdivision for which the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including at a minimum, the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads) is completed on or after January 10, 1985.~~

Park trailer. A transportable unit which has a body width not exceeding fourteen (14) feet and which is built on a single chassis and is designed to provide seasonal or temporary living quarters when connected to utilities necessary for operation of installed fixtures and appliances. [Defined in F.S. § 320.01]

Recreational vehicle. A vehicle, including a park trailer, which is: [See F.S. § 320.01]

(1) Built on a single chassis;

(2) Four hundred (400) square feet or less when measured at the largest horizontal projection;

(3) Designed to be self-propelled or permanently towable by a light duty truck; and

(4) Designed primarily not for use as a permanent dwelling but as temporary living quarters for recreational, camping, travel, or seasonal use.

Sand dunes. Naturally occurring accumulations of sand in ridges or mounds landward of the beach.

Special flood hazard area. An area in the floodplain subject to a one (1) percent or greater chance of flooding in any given year. Special flood hazard areas are shown on FIRMs as zone A, AO, A1-A30, AE, A99, AH, V1-V30, VE or V. [Also defined in FBC, B Section 1612.2.]

Start of construction. The date of issuance of permits for new construction and substantial improvements to existing structures, provided the actual start of construction, repair, reconstruction, rehabilitation, addition, placement, or other improvement is within one hundred eighty (180) days of the date of the issuance. The actual start of construction means either the first placement of permanent construction of a building (including a manufactured home) on a site, such as the pouring of slab or footings, the installation of piles, the construction of columns. Permanent

~~Permanent~~ construction does not include land preparation (such as clearing, grading, or filling), the installation of streets or walkways, excavation for a basement, footings, piers, or foundations, the erection of temporary forms or the installation of accessory buildings such as garages or sheds not occupied as dwelling units or not part of the main buildings. For a substantial improvement, the actual "start of construction" means the first alteration of any wall, ceiling, floor or other structural part of a building, whether or not that alteration affects the external dimensions of the building. [Also defined in FBC, B Section 1612.2.]

Substantial damage. Damage of any origin sustained by a building or structure whereby the cost of restoring the building or structure to its before-damaged condition would equal or exceed fifty (50) percent of the market value of the building or structure before the damage occurred.

Substantial improvement. Any repair, reconstruction, rehabilitation, addition, or other improvement of a building or structure, the cost of which equals or exceeds fifty (50) percent of the market value of the building or structure before the improvement or repair is started. If the structure has incurred substantial damage," any repairs are considered substantial improvement regardless of the actual repair work performed. The term does not, however, include any project for improvement of a building required to correct existing health, sanitary, or safety code violations identified by the building official and that are the minimum necessary to assure safe living conditions.

Variance. A grant of relief from the requirements of this ~~article~~ section, or the flood resistant construction requirements of the Florida Building Code, which permits construction in a manner that would not otherwise be permitted by this ~~ordinance~~ section or the Florida Building Code.

Watercourse. A river, creek, stream, channel or other topographic feature in, on, through, or over which water flows at least periodically.

Sec. 4.07.10. Buildings and structures.

(A) *Design and construction of buildings, structures and facilities exempt from the Florida Building Code.* Pursuant to Section 4.07.04(C), buildings, structures, and facilities that are exempt from the Florida Building Code, including substantial improvement or repair of substantial damage of such buildings, structures and facilities, shall be designed and constructed in accordance with the flood load and flood resistant construction requirements of ASCE 24. Structures exempt from the Florida Building Code that are not walled and roofed buildings shall comply with the requirements of Section 4.07.16.

(B) *Buildings and structures seaward of the coastal construction control line.* If extending, in whole or in part, seaward of the coastal construction control line and also located, in whole or in part, in a flood hazard area:

(1) Buildings and structures shall be designed and constructed to comply with the more restrictive applicable requirements of the Florida Building Code, Building Section 3109 and Section 1612 or Florida Building Code, Residential Section R322.

(2) Minor structures and non-habitable major structures as defined in F.S. § 161.54, shall be designed and constructed to comply with the intent and applicable provisions of this ~~article~~ section and ASCE 24.

(C) *Florida Building Code technical amendments.*

Technical amendments to the Florida Building Code that address design requirements for buildings in flood hazard areas are adopted in Section 5.00.10.

Sec. 4.07.11. Subdivisions.

(A) *Minimum requirements.* Subdivision proposals, including proposals for manufactured home parks and subdivisions, shall be reviewed to determine that:

(1) Such proposals are consistent with the need to minimize flood damage and will be reasonably safe from flooding;

(2) All public utilities and facilities such as sewer, gas, electric, communications, and water systems are located and constructed to minimize or eliminate flood damage; and

(3) Adequate drainage is provided to reduce exposure to flood hazards; in zones AH and AO, adequate drainage paths shall be provided to guide floodwaters around and away from proposed structures.

(B) *Subdivision plats.* Where any portion of proposed subdivisions, including manufactured home parks and subdivisions, lies within a flood hazard area, the following shall be required:

(1) Delineation of flood hazard areas, flood zones, and design flood elevations, as appropriate, shall be shown on preliminary plats;

(2) Compliance with the site improvement and utilities requirements of Section 4.07.12.

Sec. 4.07.12. Site improvement, utilities and limitations.

(A) *Minimum requirements.* All proposed new development shall be reviewed to determine that:

(1) Such proposals are consistent with the need to minimize flood damage and will be reasonably safe from flooding;

(2) All public utilities and facilities such as sewer, gas, electric, communications, and water systems are located and constructed to minimize or eliminate flood damage; and

(3) Adequate drainage is provided to reduce exposure to flood hazards; in zones AH and AO, adequate drainage paths shall be provided to guide floodwaters around and away from proposed structures.

(B) *Sanitary sewage facilities.* All new and replacement sanitary sewage facilities, private sewage treatment plants (including all pumping stations and collector systems), and on-site waste disposal systems shall be designed in accordance with the standards for onsite sewage treatment and disposal systems in Chapter 64E-6, F.A.C. and ASCE 24 Chapter 7 to minimize or eliminate infiltration of floodwaters into the facilities and discharge from the facilities into flood waters, and impairment of the facilities and systems.

(C) *Water supply facilities.* All new and replacement water supply facilities shall be designed in accordance with the water well construction standards in Chapter 62-532.500, F.A.C. and ASCE 24 Chapter 7 to minimize or eliminate infiltration of floodwaters into the systems.

(D) *Limitations on placement of fill.* Subject to the limitations of this ~~article~~ section:

(1) Fill shall be designed to be stable under conditions of flooding including rapid rise and rapid drawdown of floodwaters, prolonged inundation, and protection against flood-related erosion and scour.

(2) If intended to support buildings and structures (zone A only), fill shall comply with the requirements of the Florida Building Code.

(3) In special flood hazard areas (other than coastal high hazard areas and coastal A zones) and in the Mirror Lake Overlay District, if the placement of fill is proposed, compensatory storage shall be provided at a one (1) to one (1) ratio to minimize increases in flood levels. Activities exempt from this requirement include: seawalls, accessory structures, shoreline hardening, pool/patio construction, sidewalks and driveways, filled stemwall foundations, restoration earthwork due to erosion and scour, and other minor activities not exceeding a volume of fifty (50) cubic yards.

(4) In coastal high hazard areas (zone V) and coastal A zones, non-compacted fill may be used around buildings for landscaping, drainage and aesthetic purposes provided the fill will wash out during storm surge to minimize obstruction to the passage of waves and to minimize ramping effects or wave deflection. Applications for placement of non-compacted fill shall include an analysis by an engineer, architect, or soil scientist demonstrating that the following have been considered:

(a) Particle composition of the fill does not have a tendency for excessive natural compaction;

(b) Volume and distribution of fill will not cause wave deflection to adjacent properties; and

(c) The slope of fill will not cause wave run-up or ramping.

(E) *Limitations on sites in coastal high hazard areas (zone V).* In coastal high hazard areas, alteration of sand dunes and mangrove stands shall be permitted only if such alteration is approved by the state department of environmental protection and only if the engineering analysis required by Section 4.07.05(B)~~(4)~~ demonstrates that the proposed alteration will not increase the potential for flood damage. Construction or restoration of dunes under or around elevated buildings and structures shall comply with Section 4.07.16(E)(3).

Sec. 4.07.13. Manufactured homes.

(A) *General.* All manufactured homes installed in flood hazard areas shall be installed by an installer that is licensed pursuant to F.S. § 320.8249, and shall comply with the requirements of Chapter 15C-1, F.A.C. and the requirements of this ~~article~~ section. New manufactured homes and replacement manufactured homes shall not be installed in coastal high hazard areas except in an existing manufactured home parks or subdivisions. If located seaward of the coastal construction control line, all manufactured homes shall comply with the more restrictive of the applicable requirements.

(B) *Foundations.* All new manufactured homes and replacement manufactured homes installed in flood hazard areas shall be installed on permanent, reinforced foundations that:

(1) In flood hazard areas (zone A) other than coastal high hazard areas and coastal A zones, are designed in accordance with the foundation requirements of the Florida Building Code, Residential Section R322.2 and this ~~article~~ section.

(2) In coastal high hazard areas (zone V) and coastal A zones, are designed in accordance with the foundation requirements of the Florida Building Code, Residential Section R322.3 and this ~~article~~ section.

(C) *Anchoring.* All new manufactured homes and replacement manufactured homes shall be installed using methods and practices which minimize flood damage and shall be securely anchored to an adequately anchored foundation system to resist flotation, collapse or lateral movement. Methods of anchoring include, but are not limited to, use of over-the-top or frame ties to ground anchors. This anchoring requirement is in addition to applicable state and local anchoring requirements for wind resistance.

(D) *Elevation.* All manufactured homes that are placed, replaced, or substantially improved in flood hazard areas shall be elevated such that the bottom of the frame is at or above the base flood elevation plus three (3) feet. ~~Manufactured homes that are placed, replaced, or substantially improved shall comply with subsection (E) or (F), as applicable.~~

~~(E) *General elevation requirement.* Unless subject to the requirements of subsection (F), all manufactured homes that are placed, replaced, or substantially improved on sites located: (a) outside of a manufactured home park or subdivision; (b) in a new manufactured home park or subdivision; (c) in an expansion to an existing manufactured home park or subdivision; or (d) in an existing manufactured home park or subdivision upon which a manufactured home has incurred "substantial damage" as the result of a flood, shall be elevated such that the bottom of the frame is at or above the elevation required, as applicable to the flood hazard area, in the Florida Building Code, Residential Section R322.2 (zone A) or Section R322.3 (zone V).~~

~~(F) *Elevation requirement for certain existing manufactured home parks and subdivisions.* Manufactured homes that are not subject to subsection (E), including manufactured homes that are placed, replaced, or substantially improved on sites located in an existing manufactured home park or subdivision, unless on a site where substantial damage as result of flooding has occurred, shall be elevated such that either the:~~

~~(1) Bottom of the frame of the manufactured home is at or above the elevation required, as applicable to the flood hazard area, in the Florida Building Code, Residential Section R322.2 (Zone A) or Section R322.3 (zone V); or~~

~~(2) Bottom of the frame is supported by reinforced piers or other foundation elements of at least equivalent strength that are not less than 36 inches in height above grade.~~

(E) ~~(G)~~ *Enclosures.* Enclosed areas below elevated manufactured homes shall comply with the requirements of the Florida Building Code, Residential Section R322 for such enclosed areas, as applicable to the flood hazard area.

(F) ~~(H)~~ *Utility equipment.* Utility equipment that serves manufactured homes, including electric, heating, ventilation, plumbing, and air conditioning equipment and other service facilities, shall comply with the requirements of the Florida Building Code, Residential Section R322, as applicable to the flood hazard area.

Sec. 4.07.14. Recreational vehicles and park trailers.

(A) *Temporary placement.* Recreational vehicles and park trailers placed temporarily in flood hazard areas shall:

(1) Be on the site for fewer than one hundred eighty (180) consecutive days; or

(2) Be fully licensed and ready for highway use, which means the recreational vehicle or park model is on wheels or jacking system, is attached to the site only by quick-disconnect type utilities and security devices, and has no permanent attachments such as additions, rooms, stairs, decks and porches.

(B) *Permanent placement.* Recreational vehicles and park trailers that do not meet the limitations in subsection (A) for temporary placement shall meet the requirements of Section 4.07.13 for manufactured homes.

Sec. 4.07.15. Tanks.

(A) *Underground tanks.* Underground tanks in flood hazard areas shall be anchored to prevent flotation, collapse or lateral movement resulting from hydrodynamic and hydrostatic loads during conditions of the design flood, including the effects of buoyancy assuming the tank is empty.

(B) *Above-ground tanks, not elevated.* Above-ground tanks that do not meet the elevation requirements of subsection (C) shall:

(1) Be permitted in flood hazard areas (zone A) other than coastal high hazard areas, provided the tanks are anchored or otherwise designed and constructed to prevent flotation, collapse or lateral movement resulting from hydrodynamic and hydrostatic loads during conditions of the design flood, including the effects of buoyancy assuming the tank is empty and the effects of flood-borne debris.

(2) Not be permitted in coastal high hazard areas (zone V).

(C) *Above-ground tanks, elevated.* Above-ground tanks in flood hazard areas shall be attached to and elevated to or above the design flood elevation on a supporting structure that is designed to prevent flotation, collapse or lateral movement during conditions of the design flood. Tank-supporting structures shall meet the foundation requirements of the applicable flood hazard area.

(D) *Tank inlets and vents.* Tank inlets, fill openings, outlets and vents shall be:

(1) At or above the design flood elevation or fitted with covers designed to prevent the inflow of floodwater or outflow of the contents of the tanks during conditions of the design flood; and

(2) Anchored to prevent lateral movement resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy, during conditions of the design flood.

Sec. 4.07.16. Other development.

(A) *General requirements for other development.* All development, including man-made changes to improved or unimproved real estate for which specific provisions are not specified in this ~~article~~ section or the Florida Building Code, shall:

(1) Be located and constructed to minimize flood damage;

(2) Be anchored to prevent flotation, collapse or lateral movement resulting from hydrostatic loads, including the effects of buoyancy, during conditions of the design flood;

(3) Be constructed of flood damage-resistant materials; and

(4) Have mechanical, plumbing, and electrical systems above the design flood elevation, except that minimum electric service required to address life safety and electric code requirements is permitted below the design flood elevation provided it conforms to the provisions of the electrical part of building code for wet locations.

(B) *Concrete slabs used as parking pads, enclosure floors, landings, decks, walkways, patios and similar nonstructural uses in coastal high hazard areas (zone V) and coastal A zones.* In coastal high hazard areas and coastal A zones, concrete slabs used as parking pads,

enclosure floors, landings, decks, walkways, patios and similar nonstructural uses are permitted beneath or adjacent to buildings and structures provided the concrete slabs are designed and constructed to be:

(1) Structurally independent of the foundation system of the building or structure;

(2) Frangible and not reinforced, so as to minimize debris during flooding that is capable of causing significant damage to any structure; and

(3) Have a maximum slab thickness of not more than four (4) inches.

(C) *Decks and patios in coastal high hazard areas (zone V) and coastal A zones.* In addition to the requirements of the Florida Building Code, in coastal high hazard areas and coastal A zones decks and patios shall be located, designed, and constructed in compliance with the following:

(1) A deck that is structurally attached to a building or structure shall have the bottom of the lowest horizontal structural member at or above the design flood elevation and any supporting members that extend below the design flood elevation shall comply with the foundation requirements that apply to the building or structure, which shall be designed to accommodate any increased loads resulting from the attached deck.

(2) A deck or patio that is located below the design flood elevation shall be structurally independent from buildings or structures and their foundation systems, and shall be designed and constructed either to remain intact and in place during design flood conditions or to break apart into small pieces to minimize debris during flooding that is capable of causing structural damage to the building or structure or to adjacent buildings and structures.

(3) A deck or patio that has a vertical thickness of more than twelve (12) inches or that is constructed with more than the minimum amount of fill necessary for site drainage shall not be approved unless an analysis prepared by a qualified registered design professional demonstrates no harmful diversion of floodwaters or wave runup and wave reflection that would increase damage to the building or structure or to adjacent buildings and structures.

(4) A deck or patio that has a vertical thickness of twelve (12) inches or less and that is at natural grade or on nonstructural fill material that is similar to and compatible with local soils and is the minimum amount necessary for site drainage may be approved without requiring analysis of the impact on diversion of floodwaters or wave runup and wave reflection.

(D) *Other development in coastal high hazard areas (zone V) and coastal A zones.* In coastal high hazard areas and coastal A zones, development activities other than buildings and structures shall be permitted only if also authorized by the appropriate federal, state or local authority; if located outside the footprint of, and not structurally attached to, buildings and structures; and if analyses prepared by qualified registered design professionals demonstrate no harmful diversion of floodwaters or wave runup and wave reflection that would increase damage to adjacent buildings and structures. Such other development activities include but are not limited to:

(1) Bulkheads, seawalls, retaining walls, revetments, and similar erosion control structures;

(2) Solid fences and privacy walls, and fences prone to trapping debris, unless designed and constructed to fail under flood conditions less than the design flood or otherwise function to avoid obstruction of floodwaters; and

(3) On-site sewage treatment and disposal systems defined in 64E-6.002, F.A.C., as filled systems or mound systems.

(E) *Nonstructural fill in coastal high hazard areas (zone V) and coastal A zones.* In coastal high hazard areas and coastal A zones:

(1) Minor grading and the placement of minor quantities of nonstructural fill shall be permitted for landscaping and for drainage purposes under and around buildings.

(2) Nonstructural fill with finished slopes that are steeper than one (1) unit vertical to five (5) units horizontal shall be permitted only if an analysis prepared by a qualified registered design professional demonstrates no harmful diversion of floodwaters or wave runup and wave reflection that would increase damage to adjacent buildings and structures.

(3) Where authorized by the state department of environmental protection or applicable local approval, sand dune construction and restoration of sand dunes under or around elevated buildings are permitted without additional engineering analysis or certification of the diversion of floodwater or wave runup and wave reflection if the scale and location of the dune work is consistent with local beach-dune morphology and the vertical clearance is maintained between the top of the sand dune and the lowest horizontal structural member of the building.

ARTICLE V. DEVELOPMENT DESIGN AND IMPROVEMENT STANDARDS

Sec. 5.00.00. General.

* * *

Sec. 5.00.09. Reserved. ~~Administrative amendments to the Florida Building Code, Building.~~

~~107.6.1 *Building permits issued on the basis of an affidavit.* Pursuant to the requirements of federal regulation for participation in the National Flood Insurance Program (44 C.F.R. Sections 59 and 60), the authority granted to the Building Official to issue permits, to rely on inspections, and to accept plans and construction documents on the basis of affidavits and plans submitted pursuant to Section 105.14 and Section 107.6, shall not extend to the flood load and flood resistance construction requirements of the *Florida Building Code.*~~

~~117 VARIANCES IN FLOOD HAZARD AREAS~~

~~117.1 *Flood hazard areas.* Pursuant to section 553.73(5), F.S., the variance procedures adopted in the local floodplain management ordinance shall apply to requests submitted to the Building Official for variances to the provisions of Section 1612.4 of the *Florida Building Code, Building* or, as applicable, the provisions of R322 of the *Florida Building Code, Residential*. This section shall not apply to Section 3109 of the *Florida Building Code, Building.*~~

Sec. 5.00.10 Technical amendments to the Florida Building Code, Building.

(1) Minimum building elevations in flood hazard areas:

(a) The minimum elevation for buildings in flood hazard areas that are within the scope of the Florida Building Code, Building, shall be, as specified in ASCE 24, the base flood elevation plus two (2) feet, or the design flood elevation, whichever is higher.

(b) The minimum elevation for one- and two-family dwellings and townhouses in flood hazard areas that are within the scope of the Florida Building Code, Residential, shall be the base flood elevation plus two (2) feet or the design flood elevation, whichever is higher.

(2) Enclosures below elevated buildings in coastal high hazard areas and Coastal A Zones. In coastal high hazard areas and Coastal A Zones, enclosed areas below the elevation required in the building code shall not be partitioned or finished into separate rooms except for stairwells, ramps, and elevators and the access to enclosed areas shall be the minimum necessary to allow for the parking of vehicles (garage door) or limited storage of maintenance equipment used in connection with the premises (standard exterior door) or entry to the building (stairway or elevator).

(3) Construction documents for dwellings in flood hazard areas. Construction documents for dwellings in flood hazard areas shall include documentation that is prepared and sealed by a registered design professional that the foundation design accounts for flood loads.

~~*The previously adopted definitions of "Substantial Damage" and "Substantial Improvement" provided in Sec. 202, Florida Building Code, Building, are hereby amended as follows:*~~

~~*Substantial Damage.* Damage of any origin sustained by a structure whereby the cost of restoring the structure to its before-damaged condition would equal or exceed 50 percent of the market value of the structure before the damage occurred.~~

~~*Substantial Improvement.* Any repair, reconstruction, rehabilitation, addition, or other improvement of a building or structure, the cost of which equals or exceeds 50 percent of the market value of the building or structure before the improvement or repair is started. If the structure has incurred substantial damage," any repairs are considered substantial improvement regardless of the actual repair work performed. The term does not, however, include either:~~

~~1. Any project for improvement of a building required to correct existing health, sanitary, or safety code violations identified by the building official and that are the minimum necessary to assure safe living conditions.~~

~~2. Any alteration of a historic structure provided that the alteration will not preclude the structure's continued designation as a historic structure and the alteration is approved by variance issued pursuant to Section 117.~~

~~*Section 1612 of the Florida Building Code, Building, is hereby amended by the following:*~~

~~1612.4.1 *Additional requirements for enclosed areas.* In addition to the requirements of ASCE 24, in coastal high hazard areas (Zone V) enclosed areas below the design flood elevation shall not be partitioned or finished into separate rooms except for stairwells, ramps, and elevators and the access to enclosed areas shall be the minimum necessary to allow for the parking of vehicles (garage door) or limited storage of maintenance equipment used in connection with the premises (standard exterior door) or entry to the building (stairway or elevator).~~

~~1612.4.2 *Elevation requirements.* The minimum elevation requirements applicable in coastal high hazard areas and Coastal A Zones shall be as specified ASCE 24 or the base flood elevation plus 2 feet (610 mm), whichever is higher.~~

Sec. 5.00.11. Reserved. ~~Technical amendments to the Florida Building Code, Existing Building.~~

~~*The previously adopted definitions of "Substantial Damage" and "Substantial Improvement" provided in Sec. 202, Florida Building Code, Existing Building, are hereby amended as follows:*~~

~~*Substantial Damage.* Damage of any origin sustained by a structure whereby the cost of restoring the structure to its before-damaged condition would equal or exceed fifty (50) percent of the market value of the structure before the damage occurred.~~

~~*Substantial Improvement.* Any repair, reconstruction, rehabilitation, addition, or other improvement of a building or structure, the cost of which equals or exceeds 50 percent of the market value of the building or structure before the improvement or repair is started. If the structure has incurred substantial damage," any repairs are considered substantial improvement regardless of the actual repair work performed. The term does not, however, include either:~~

~~1. Any project for improvement of a building required to correct existing health, sanitary, or safety code violations identified by the building official and that are the minimum necessary to assure safe living conditions.~~

~~2. Any alteration of a historic structure provided that the alteration will not preclude the structure's continued designation as a historic structure and the alteration is approved by variance issued pursuant to Section 117.~~

Sec. 5.00.12. Reserved. ~~Technical amendments to the Florida Building Code, Residential.~~

~~R322.2 *Flood hazard areas (including A Zones).* All areas that have been determined to be prone to flooding but not subject to high-velocity wave action shall be designated as flood hazard areas. Flood hazard areas that have been delineated as subject to wave heights between 1.5 feet and 3 feet or otherwise designated by the jurisdiction shall be designated as Coastal A Zones and are subject to the requirements in Section R322.3. All buildings and structures constructed in whole or in part in flood hazard areas shall be designed and constructed in accordance with Sections R322.2.1 through R322.2.3.~~

~~R322.2.1 *Elevation requirements.*~~

~~1. Buildings and structures in flood hazard areas not designated as Coastal A Zones shall have the lowest floors elevated to or above the base flood elevation plus 1 foot or the design flood elevation.~~

~~2. Reserved.~~

~~3. In areas of shallow flooding (AO Zones), buildings and structures shall have the lowest floor (including basement) elevated at least as high above the highest adjacent grade as the depth number specified in feet on the FIRM, or at least 3 feet if a depth number is not specified.~~

~~4. Basement floors that are below grade on all sides shall be elevated to or above the base flood elevation plus 1 foot or the design flood elevation.~~

~~Exception: Enclosed areas below the design flood elevation, including basements whose floors are not below grade on all sides, shall meet the requirements of Section R322.2.2.~~

~~R322.2.3 *Foundation design and construction.* Foundations for all buildings and structures erected in flood hazard areas shall meet the requirements of Chapter 4 and the construction documents shall include documentation that is prepared and sealed by a registered design professional that the foundation design accounts for flood loads.~~

R322.3 *Coastal high-hazard areas (including V Zones and Coastal A Zones, where designated).* Areas that have been determined to be subject to wave heights in excess of 3 feet (914 mm) or subject to high-velocity wave action or wave-induced erosion shall be designated as coastal high-hazard areas. Flood hazard areas that have been delineated as subject to wave heights between 1.5 feet and 3 feet or otherwise designated by the jurisdiction shall be designated as Coastal A Zones. All buildings and structures constructed in whole or in part in coastal high-hazard areas and in Coastal A Zones, where designated, shall be designed and constructed in accordance with Sections R322.3.1 through R322.3.6.

R322.3.2 *Elevation requirements.*

1. All buildings and structures erected within coastal high-hazard areas and Coastal A Zones shall be elevated so that the lowest portion of all structural members supporting the lowest floor, with the exception of mat or raft foundations, piling, pile caps, columns, grade beams and bracing, is:

    1.1 Located at or above the base flood elevation plus 2 feet or the design flood elevation, whichever is higher, if the lowest horizontal structural member is oriented parallel to the direction of wave approach, where parallel shall mean less than or equal to 20 degrees (0.35 rad) from the direction of approach, or

    1.2 Located at the base flood elevation plus 3 feet or the design flood elevation, whichever is higher, if the lowest horizontal structural member is oriented perpendicular to the direction of wave approach, where perpendicular shall mean greater than 20 degrees (0.35 rad) from the direction of approach.

2. Basement floors that are below grade on all sides are prohibited.

3. The use of fill for structural support is prohibited.

4. Minor grading, and the placement of minor quantities of fill, shall be permitted for landscaping and for drainage purposes under and around buildings and for support of parking slabs, pool decks, patios and walkways.

Exception: Walls and partitions enclosing areas below the design flood elevation shall meet the requirements of Sections R322.3.4 and R322.3.5.

R322.3.3 *Foundations.* All buildings and structures erected in coastal high-hazard areas and Coastal A Zones, shall be supported on pilings or columns and shall be adequately anchored to such pilings or columns. The space below the elevated building shall be either free of obstruction or, if enclosed with walls, the walls shall meet the requirements of Section R322.3.4. Piling shall have adequate soil penetrations to resist the combined wave and wind loads (lateral and uplift). Water loading values used shall be those associated with the design flood. Wind loading values shall be those required by this code. Pile embedment shall include consideration of decreased resistance capacity caused by scour of soil strata surrounding the piling. Pile systems design and installation shall be certified in accordance with Section R322.3.6. Spread footing, mat, raft or other foundations that support columns shall not be permitted where soil investigations that are required in accordance with Section R401.4 indicate that soil material under the spread footing, mat, raft or other foundation is subject to scour or erosion from wave-velocity flow conditions. If permitted, spread footing, mat, raft or other foundations that support columns shall be designed in accordance with ASCE 24. Slabs, pools, pool decks and walkways shall be located and constructed to be structurally independent of buildings and structures and their foundations to prevent transfer of flood loads to the buildings and structures during conditions of flooding, scour or erosion from wave-velocity flow conditions, unless the buildings and structures and their foundation are designed to resist the additional flood load.

~~*Exception:* In Coastal A Zones, stem wall foundations supporting a floor system above and backfilled with soil or gravel to the underside of the floor system shall be permitted provided the foundations are designed to account for wave action, debris impact, erosion, and local scour. Where soils are susceptible to erosion and local scour, stem wall foundations shall have deep footings to account for the loss of soil.~~

~~R322.3.4 *Walls below design flood elevation.* Walls are not permitted below the elevated floor unless permitted in Section R322.3.4. Areas below the elevated floor are permitted to be surrounded with insect screening, open lattice, or decorative screening for aesthetic purposes, provided such materials are designed to break away under flood loads. Electrical, mechanical, and plumbing system components are not to be mounted on or penetrate through materials designed to break away under flood loads.~~

~~R322.3.5 *Enclosed areas below the design flood elevation.* Enclosed areas below the design flood elevation shall be used solely for parking of vehicles, building access or storage. Elevators are permitted below the design flood elevation provided flood loads acting on elevator shafts are accounted for in the foundation design.~~

* * *

Sec. 5.05.00. Reserved ~~Stormwater Management.~~

~~Sec. 5.05.01. Purpose and intent.~~

~~The purpose of this section is to manage stormwater drainage within the City of Flagler Beach in order to maintain and enhance the public health, safety, and welfare through the control of runoff volume and treatment of stormwater runoff for the protection of surface water and groundwater quality, and the control and prevention of erosion, sedimentation, and flooding by providing standards for the design, construction, and operation of stormwater management systems in conformance with best overall management practices. This section is intended to enforce the goals, objectives, and policies of the comprehensive plan, and to be consistent with the applicable policies and regulations of regional, state and federal agencies regarding stormwater management.~~

~~(Ord. No. 2005-07, § 1, 4-28-05; Ord. No. 2007-12, § 6, 6-14-07)~~

~~Sec. 5.05.02. Prohibitions and exemptions.~~

~~Section 5.05.02.1 *Prohibitions.*~~

~~No person may develop or make any change in the use of land or construct a structure or change the size of a structure, except as exempted herein, without submission and approval of a stormwater management plan as provided herein. For the purpose of this section, the development may potentially alter or disrupt existing stormwater runoff patterns, and as such, will, unless exempted below, require submission and approval of a stormwater management plan prior to the commencement of construction, includes, but is not limited to:~~

~~1. Clearing and/or drainage of land as an adjunct to construction.~~
~~2. Clearing and/or draining of nonagricultural land for agricultural purposes.~~
~~3. Converting agricultural lands to nonagricultural uses.~~
~~4. Subdividing land.~~

5. Replatting recorded subdivisions and the development of recorded and unrecorded subdivisions.
6. Changing the use of land and/or the construction of a structure or a change in the size of one or more structures.
7. Altering the shoreline or bank of any surface water body.
8. The permanent (long period) lowering of the water table.
9. Addition of impervious or semi-impervious area.

Section 5.05.02.2 *Exemptions.*

The following activities shall be exempt from this section unless as hereinafter required by the land development regulations:

1. Single-family and duplex residence and accessory structures except for the Mirror Lake Watershed Overlay District.
2. Any maintenance, alteration, renewal, use or improvement to an existing structure not changing or affecting rate or volume of stormwater runoff.
3. Bona fide agricultural zoning classifications, including forestry, except where an artificial drainage system will be used to increase the flow of surface water from the applicant's land.
4. Maintenance work performed on existing drainage canals for the purpose of public health and welfare.
5. Maintenance work on utility or transportation systems, provided such maintenance work does not alter the purpose and intent of the drainage system as constructed.

(Ord. No. 2005-07, § 1, 4-28-05; Ord. No. 2007-12, § 6, 6-14-07)

Sec. 5.05.03. Design standards.

Section 5.05.03.01 *Threshold categories.*

The review of stormwater management plans for all development projects shall be based upon the net increase in impervious surface resulting from the development and any cumulative increase due to development that has occurred within the previous two (2) years. All single-family and duplex residence structures in Mirror Lake Watershed Overlay District shall be considered as category II only. Category thresholds for the various limits of developments are as follows:

1. Category I—Net increase of impervious area of up to five hundred (500) square feet.
2. Category II—Net increase of impervious area between five hundred one (501) square feet and one thousand (1,000) square feet and all single-family and duplex residence structures within the Mirror Lake Watershed Overlay District.
3. Category III—Net increase of impervious area between one thousand one (1,001) square feet and four thousand (4,000) square feet of surfaces subject to vehicular traffic or five thousand (5,000) square feet of building of other surfaces.
4. Category IV—Net increase of impervious area exceeds four thousand (4,000) square feet of surfaces subject to vehicular traffic or five thousand (5,000) square feet of building or other surfaces.

Section 5.05.03.02 *Basic standards.*

~~All categories of development shall require the preparation of a stormwater management plan. Stormwater management system design shall conform with the following performance standards:~~

1. ~~Stormwater runoff shall be subjected to best management practice prior to discharge into natural or artificial drainage systems. Best management practice shall mean a practice or combination of practices determined by the city to be the most effective, practical means of preventing or reducing the amount of pollution generated by the project to a level compatible with Florida water quality standards found in chapter 17-3, Florida Administrative Code.~~
2. ~~No site alteration shall cause siltation of wetlands, pollution of downstream wetlands or reduce the natural retention or filtering capabilities of wetlands.~~
3. ~~No site alteration shall allow water to become a health hazard or contribute to the breeding of mosquitoes.~~
4. ~~All site alteration activities shall provide for such water retention and settling structures and flow attenuation devices as may be necessary to insure that the foregoing standards and requirements are met. No site alteration shall result in any net reduction of available floodplain storage.~~
5. ~~Design of water retention and detention structures and flow attenuation devices shall be subject to the approval of the city pursuant to the standards hereof. Detention structures shall be designed to release runoff to the downstream drainage system over a period of time so as not to exceed the capacity of the existing downstream system. The design of water retention and detention structures and flow attenuation devices shall be in compliance with the standard construction details.~~
6. ~~In order to maintain good water quality in stormwater management detention ponds and maximize the provision of fish and wildlife habitat, stormwater management systems with permanently wet detention ponds should be designed, operated and maintained so as to resemble a natural pond to the greatest extent practicable. A natural pond design should include: a littoral zone comprised of native emergent and submersed aquatic macrophytic vegetation; a deep open water limnetic zone free of rooted emergent and submersed vegetation; and, where feasible, an upland buffer of native trees, shrubs and understory vegetation.~~
7. ~~A positive drainage system shall be provided which will not adversely impact downstream owners or adjacent lands, including rain gutter system on the structure as needed.~~
8. ~~Where possible, natural vegetation shall be used as a component of the drainage system. The water table should not be manipulated so as to endanger natural vegetation beneficial to water quality unless natural vegetation can be replanted and survive with a lowered water table condition.~~
9. ~~Runoff from higher adjacent lands shall be considered and provisions for conveyance of such runoff shall be included in the drainage plan.~~
10. ~~Runoff shall be treated to remove oil and floatable solids before discharge from the site in a manner approved by the city.~~
11. ~~Erosion by wind or water shall be prevented by the developer throughout the construction process.~~

12. Direct discharge to class II waters is prohibited. A workable filter system approved by the city must be provided prior to any discharge to class II waters.
13. For the purpose of this section, it is presumed that the lowering of the water table for the purpose of constructing detention/retention basins and for the purpose of permanently protecting road construction does not conflict with the stated objectives of this section if all of the following are met:

    a. The development site is not in an area known to the city, based on data collected and interpreted by the U.S. Geological Survey, the St. Johns River Water Management District, the city and other professional investigators, as important to recharge or to prevention of discharge to the Floridan aquifer.

    b. The proposed lowering of the water table shall be over no more than fifteen (15) percent of the site to a depth of five (5) feet below the surface of the existing undisturbed ground, or an equivalent volume, said area to be measured at the overflow elevation of the retention areas(s).

    c. If ditches, underdrains or similar devices are used to lower the water table, the lateral volumetric effect will be calculated, and the volume will be deducted from that allowed for retention areas.

    d. The high water table may be lowered up to two (2) feet below the undisturbed ground in the vicinity of roads for the purpose of protecting the sub-base and base of the roadway and/or for the purpose of preventing mosquito breeding in the roadside swales.

    e. The lowering of the water table has no adverse effect on wetlands off site vegetation as defined herein.

    f. The lowering of the water table does not increase flows to the detriment of neighboring lands.

14. For project sizes greater than one (1) acre of disturbed area, the applicant shall acquire permit coverage from the Florida Department of Environmental Protection, National Pollutant Discharge Elimination System program and provide proof of such to the city prior to construction.

Section 5.05.03.03 *Additional standards.*

1. Category II development—The minimum volume of retention to be provided shall be equivalent to one (1) inch of runoff over the entire project area and two (2) inches of runoff over the entire project area if within the Mirror Lake Watershed Overlay District. For certain soil conditions or ground water table conditions which do not permit the percolation of this volume within the five days following a storm event, the city may approve detention with filtration systems in lieu of retention.

2. Category III development—Stormwater management plan shall be prepared by a professional engineer or landscape architect licensed in the State of Florida and shall conform to:

   a. Category II development requirements.
   b. The discharge hydrograph produced for the developed or redeveloped site shall not exceed, in terms of peak flow and total volume, the hydrograph produced by

conditions existing before development or redevelopment for a twenty-four-hour, twenty-five-year frequency storm, if this provision will be met through detention of the difference between said volumes, said volume difference shall be released over not less than a twenty-four-hour nor greater than a seventy-two-hour period of time. Runoff rates and volumes resulting from the project, in excess of existing amounts, shall be accommodated on-site. Off-site retention may be permitted if, in the opinion of the city, the recharge requirements of this section are met.

c. Peak discharge one hundred-year storm. The peak discharge resulting from a twenty-four-hour, one hundred-year frequency storm on the developed or redeveloped site shall not exceed the peak discharge resulting from a one hundred-year frequency storm for existing conditions on the site for flood prone areas as determined by the city.

d. Runoff computations. Runoff computations shall be based on the most critical situation (rainfall duration, distribution and antecedent soil moisture condition) and conform to the methods described in the Florida Department of Transportation Drainage Manual, latest edition, and the St. Johns River Water Management District Regulation of Stormwater Management Systems.

3. Category IV development—City shall defer to permitting by St. Johns River Water Management District.

(Ord. No. 2005-07, § 1, 4-28-05; Ord. No. 2007-12, § 6, 6-14-07)

Sec. 5.05.04. Maintenance.

The installed system(s) required by this section shall be maintained by the owner except where the city specifically accepts a certain system for maintenance. The selection of critical areas and/or structures to be maintained by the city shall be recommended to the city commission by the department. All areas and/or structures to be maintained by the city must be conveyed to the city by plat or separate instrument and accepted by the city commission. The owner shall provide adequate easements with respect to system(s) to be maintained by the owner to permit the city to inspect and, if necessary, to take corrective action should the owner fail to maintain the system(s).

(Ord. No. 2005-07, § 1, 4-28-05; Ord. No. 2007-12, § 6, 6-14-07)

ARTICLE VI. SUBDIVISIONS

Sec. 6.00.00. General.

* * *

Sec. 6.00.05. Reserved. ~~Minimum elevation.~~

~~The minimum average elevation of any building site in any subdivision in the city shall be in accordance with the requirements of Sections 05.00 Flood Damage Prevention through Section 06.05, Standards for areas of shallow flooding. The owner is hereby required to see that this minimum elevation is attained before any construction is commenced.~~

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ARTICLE VIII. ADMINISTRATION AND ENFORCEMENT

Sec. 8.00.00. General procedure.

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Sec. 8.04.16. Variances

(a) *General.* The planning and architectural review board shall recommend such variance from the terms of this ordinance as will not be contrary to the public interest and where, owing to special conditions a literal enforcement of the provisions of this ordinance will result in unnecessary and undue hardships. In order to recommend any variance from the terms of this ordinance the planning and architectural review board must and shall find each of the following criteria are met by the applicant, and the board's written findings shall be sent to the Commission:

1. That special conditions and circumstances exist which are peculiar to the land, structure or building involved and which are not applicable to other lands, structures or buildings in the same zoning district;
2. That the special conditions and circumstances do not result from the action of the applicant;
3. That granting the variance requested will not confer on the applicant any special privilege that is denied by this ordinance to other lands, buildings or structures in the same zoning district;
4. That literal interpretation of the provisions of this ordinance would deprive the applicant of rights commonly enjoyed by other properties in the same zoning district under the terms of this ordinance and would work unnecessary and undue hardship on the applicant;
5. That the variance granted is the minimum variance that will make possible the reasonable use of the land, building or structure;
6. That the grant of the variance will be in harmony with the general intent and purpose of this ordinance, and that such variance will not be injurious to the area involved or otherwise detrimental to the public welfare.

In recommending any variance, the planning and architectural review board may recommend appropriate conditions and safeguards in conformity with this ordinance. If adopted by the Commission, any violation of such conditions and safeguards, when made a part of the terms under which the variance is granted shall be deemed a violation of this ordinance. The planning and architectural review board may recommend a reasonable time limit within which the action

for which the variance is required shall be begun or completed or both. Under no circumstances except as permitted above shall the planning and architectural review board recommend a variance to permit use not generally or by special exception permitted in the zoning district involved or any use expressly or by implication prohibited by the terms of this ordinance in the zoning district. No nonconforming use of neighboring lands, structures or buildings in the same zoning district and no permitted use of lands, structures or buildings in other zoning districts shall be considered grounds for the granting of a variance. The City Commission shall apply the criteria set forth herein in making its quasi-judicial decision to grant or deny a variance and shall consider the recommendation made by the planning and architectural review board.

(b) *Flood hazard areas*

(1) The city commission, after review and recommendation from the planning and architectural review board as established by the city, shall hear and decide on requests for variances from the strict application of Article 4.07.00. Pursuant to F.S. § 553.73(5), the city commission shall hear and decide on requests for variances from the strict application of the flood resistant construction requirements of the Florida Building Code. This section does not apply to Section 3109 of the Florida Building Code, Building.

(2) The city commission shall base its decisions on variances on technical justifications submitted by applicants, the considerations for issuance in paragraph (5), the conditions of issuance set forth in paragraph (6) of this section, and the comments and recommendations of the floodplain administrator and the building official. The city commission has the right to attach such conditions as it deems necessary to further the purposes and objectives of this article.

(3) A variance is authorized to be issued for the repair, improvement, or rehabilitation of a historic building that is determined eligible for the exception to the flood resistant construction requirements of the Florida Building Code, Existing Building, Chapter 12 Historic Buildings, upon a determination that the proposed repair, improvement, or rehabilitation will not preclude the building's continued designation as a historic building and the variance is the minimum necessary to preserve the historic character and design of the building. If the proposed work precludes the building's continued designation as a historic building, a variance shall not be granted and the building and any repair, improvement, and rehabilitation shall be subject to the requirements of the Florida Building Code.

(4) A variance is authorized to be issued for the construction or substantial improvement necessary for the conduct of a functionally dependent use, as defined in this article, is the minimum necessary considering the flood hazard, and all due consideration has been given to use of methods and materials that minimize flood damage during occurrence of the base flood.

(5) In reviewing requests for variances, the city commission shall consider all technical evaluations, all relevant factors, all other applicable provisions of the Florida Building Code, this article, and the following considerations:

(a) The danger that materials and debris may be swept onto other lands resulting in further injury or damage;

(b) The danger to life and property due to flooding or erosion damage;

(c) The susceptibility of the proposed development, including contents, to flood damage and the effect of such damage on current and future owners;

(d) The importance of the services provided by the proposed development to the community;

(e) The availability of alternate locations for the proposed development that are subject to lower risk of flooding or erosion;

(f) The compatibility of the proposed development with existing and anticipated development;

(g) The relationship of the proposed development to the comprehensive plan and floodplain management program for the area;

(h) The safety of access to the property in times of flooding for ordinary and emergency vehicles;

(i) The expected heights, velocity, duration, rate of rise and debris and sediment transport of the floodwaters and the effects of wave action, if applicable, expected at the site; and

(j The costs of providing governmental services during and after flood conditions including maintenance and repair of public utilities and facilities such as sewer, gas, electrical and water systems, streets and bridges.

(6) Variances shall be issued only upon the following conditions:

(a) Submission by the applicant, of a showing of good and sufficient cause that the unique characteristics of the size, configuration, or topography of the site limit compliance with any provision of this article or the required elevation standards;

(b) Determination by the city commission that:

(i) Failure to grant the variance would result in exceptional hardship due to the physical characteristics of the land that render the lot undevelopable; increased costs to satisfy the requirements or inconvenience do not constitute hardship;

(ii) The granting of a variance will not result in increased flood heights, additional threats to public safety, extraordinary public expense, nor create nuisances, cause fraud on or victimization of the public or conflict with existing local laws and ordinances; and

(iii) The variance is the minimum necessary, considering the flood hazard, to afford relief;

(c) Receipt of a signed statement by the applicant that the variance, if granted, shall be recorded in the office of the clerk of the court in such a manner that it appears in the chain of title of the affected parcel of land; and

(d) If the request is for a variance to allow construction of the lowest floor of a new building, or substantial improvement of a building, below the required elevation, a copy in the record of a written notice from the floodplain administrator to the applicant for the variance, specifying the difference between the base flood elevation and the proposed elevation of the lowest floor, stating that the cost of federal flood insurance will be commensurate with the increased risk resulting from the reduced floor elevation (up to amounts as high as twenty-five dollars ($25.00) for one hundred dollars ($100.00) of insurance coverage), and stating that construction below the base flood elevation increases risks to life and property.

Sec. 8.04.17. Appeals.

(a) *General.* Any adverse decision made by the planning and architectural review board may be appealed by any person aggrieved or by any officer, board or commission of the City of Flagler Beach affected by such decision to the Flagler Beach City Commission.

1. Staying of work on premises: An appeal to the city commission stays all work on the premises and all proceedings in furtherance of the action appealed for, unless the official from whom the appeal was taken shall certify to the city commission, by reason of facts stated in the certificate, a stay would cause imminent peril to life or property. In such case, proceedings or work shall not be stayed except by a restraining order which may be granted to the city commission by a court of record on application, on notice to the officer from whom the appeal is taken and on due cause shown.
2. Procedure: Any person appealing any decision of an administrative official shall make such appeal within thirty (30) days after rendition of the order, requirement, decision or determination appealed from in writing to the city commission and file the same, and ten (10) copies thereof, with supporting facts and data with the city clerk. This does not, however, restrict the filing of a request for a special exception or variance by any person at any time as provided for elsewhere in this article.

Upon receipt of said appeal, the building official shall forthwith examine such appeal or request application and endorse his or her recommendation thereon together with all documents, plans, papers or other materials constituting the record upon which the action appealed was taken and transmit same to the city commission. At the hearing, any party may appear in person, or by agent or by attorney.

(b) *Flood hazard areas.* The city commission shall hear and decide appeals when it is alleged there is an error in any requirement, decision, or determination made by the floodplain administrator in the administration and enforcement of this Article 4.07.00. Any person aggrieved by the decision of the city commission may appeal such decision to the circuit court, as provided by state statutes.

ARTICLE IX. ENGINEERING DESIGN AND DEVELOPMENT

Sec. 9.01.00. General provisions.

Sec. 9.01.01. Purpose and intent.

The purpose of this section is to set forth engineering design regulations for residential and nonresidential uses as required in this Land Development Code. This section sets forth uniform regulations, requirements, and procedures to protect the health, safety, and welfare of the citizens and to assure quality of life to the citizens of the city. The floodplains manager may adopt technical manuals that relate to technical requirements pertaining to the city's water, wastewater, reclaimed water, drainage, street, and other systems.

Sec. 9.01.02. Applicability.

The design and construction requirements shall apply to:

(a) Nonresidential and residential subdivision projects (applies to subdivisions with private or public roadway dedications);

(b) Nonresidential and residential construction projects; and

(c) City and other public agency owned projects.

Sec. 9.01.03. General requirements.

(a) *Utility lines.*

(1) Utility lines for all new development projects shall be installed underground. Switchgear, pumps, transformers, and other appurtenances shall be allowed aboveground, but shall be shielded with landscaping as required in this Land Development Code. Connections from distribution lines, mains, and collectors in the public or utility rights-of-way or easements shall be placed underground.

(2) All redevelopment projects shall relocate existing on-site overhead utility lines underground, within project limits. The floodplains manager may allow exceptions to this requirement if it is determined that such relocation is not feasible based upon the unique configuration of the real property.

(3) For all new private and public development projects, underground communications conduit(s) shall be installed in accordance with city standards.

(b) *Traffic control devices.* All traffic control devices shall meet the more stringent requirements of all of the following: 1) the latest edition of the Manual of Uniform Traffic Control Devices, 2) Florida Department of Transportation Design Standards Road and Bridge Technical Specifications, 3) Florida Highway Administration Standard Highway Signs, and 4) Florida Department of Transportation Traffic Engineering and Operations Manuals.

Sec. 9.01.04. Construction plans submittal requirements.

(a) Construction plans and calculations shall be prepared, signed, and sealed by a Florida Licensed Professional Engineer or other Licensed Professional qualified in the appropriate field for which the construction plans and calculations are prepared. Plans and calculations shall be submitted for review in accordance with the city's development review process.

(b) The city shall establish submittal checklists relating to the required contents of all development review submittals. The checklists shall establish minimum requirements for the contents of construction plan and design document submittals. Additional information may be requested if the city believes the information is reasonably necessary in support of drainage analysis; including maps, charts, tables, graphs, photographs, narrative descriptions, additional calculations, explanations, and citations to support references as deemed appropriate to communicate the required information for reasonable evaluation of the site.

(c) Grading and drainage plans shall include existing and proposed contours at one-foot (min.) intervals with spot elevations as needed for clarity and to adequately depict drainage patterns.

(d) Topographic survey for half of right-of-way adjacent to project for full length of frontage, including existing driveways and right-of-way intersections within one hundred (100) feet of site, showing drainage structures, signage, and utilities.

(e) Section views of all proposed retention/detention ponds, swales, berms, etc. showing twenty-five-year stormwater elevation and top of bank elevation.

(f) Construction details for all proposed manholes, inlets, and other stormwater control structures.

(g) Location, size, length, and elevations of all proposed piping systems and related control structures.

(h) Erosion control plans shall be on a separate sheet with existing and proposed contours.

(i) Legends shown with all abbreviations and symbols identified.

(j) Copies of permits from all regulatory agencies having jurisdiction over the project (prior to commencement of construction).

(k) Phasing of development. The phasing of development is allowed as part of approval of a site plan or a subdivision preliminary plat in accordance with the following standards:

(1) Phasing of approved development shall be in keeping with an approved phasing plat that shows phase boundaries and describes included development and improvements.

(2) Each phase shall be designed and constructed to include all improvements and other aspects of development necessary to meet all requirements of the Code and all other applicable regulations.

Sec. 9.02.00. Platting requirements.

Sec. 9.02.01. Purpose.

The purpose of this section is to establish requirements for the subdivision of land in the city and to ensure compliance with F.S. Ch. 177.

Sec. 9.02.02. Subdivision design standards.

In addition to the requirements stated in other sections of this Code, subdivisions shall be designed according to the following:

(a) *Lots.* All lots shall conform to the dimensional, yard, and building setback requirements of the applicable zoning district development standards. In addition, the following requirements shall apply:

(1) *Width.* All lots shall have a minimum street frontage of twenty (20) feet, and those fronting on a curve shall meet the minimum lot width measured at the front setback line.

(2) *Depth.*

a. Lots along arterial streets shall be deep enough to accommodate the two required front yard setbacks.

b. Flag lots are prohibited unless approved as part of a Master Planned Development.

(3) *Orientation.* Residential lots shall be designed so vehicular ingress and egress to/from those individual lots is not provided from abutting limited access roadways or arterials.

(b) *Permanent reference markers.* A registered land surveyor shall install permanent reference monuments, permanent control points, and state plane coordinates in accordance with state laws and professional standards. These must be inspected by the second party surveyor to certify they have been set in the field prior to final plat approval or recording of the mylar.

Sec. 9.02.03. Easements.

(a) *Drainage easements.*

(1) Drainage easements of a width required for conveying and maintaining an adequate storm drainage system shall be provided. Minimum width for piped systems shall be fifteen (15) feet plus the pipe diameter, and fifteen (15) feet for open channels plus channel width, measured from top of bank to top of bank. Where deemed necessary by the floodplains manager, additional easements and increased width may be required along waterways, natural watercourses, canals, and drainage ways.

(2) Whenever a subdivision lies wholly or partly in any area for which the city has adopted a drainage plan, and is traversed by a natural or designed watercourse for which such plan requires a drainage easement or right-of-way, such easement or right-of-way shall be set forth on the preliminary and final plat and shall be dedicated to the city for public use.

(b) *[Stormwater storage facilities.]* Stormwater storage facilities shall be constructed to provide adequate access for maintenance. An access and maintenance easement of ten feet around the perimeter of wet ponds and five feet around the perimeter of dry ponds, measured from top of bank, shall be provided for detention facilities. Maximum grade for maintenance easement shall be ten percent.

(c) [*Stormwater management systems.*] Stormwater management systems must be designed to accommodate maintenance equipment access and to facilitate regular operational maintenance (such as underdrain replacement, unclogging filters, sediment removal, mowing, and vegetation control).

(d) *Utility easements.* Utility easements for both underground and aboveground facilities shall be provided where required by the city manager or designee. Such easements shall have a minimum width of ten feet and shall normally be laid out on property lines. In all cases, such easements shall be dedicated to the perpetual use of the public. Where lots abut along a common property line, the easement may be centered along said common property line.

(e) *Pedestrian paths and sidewalk easements.* Pedestrian easements or walkways shall be provided through the interior of lots where such easements are required by the city manager or designee. Pedestrian easements shall be at least eight (8) feet wide, or walkway width plus two feet, whichever is greater, and shall be laid out along the side or rear property lines. In all cases, such easements shall be dedicated to the perpetual use of the public.

(f) *Private easements.* Private easements (or spite strips) between the road and the subdivision boundary or between subdivision boundaries shall not be permitted unless conditions are established under which the adjacent parcel can be connected to the road or adjacent property.

(g) *Easements and right-of-way maintenance.* The city will maintain only those easements, rights-of-way, and public sites which it accepts for maintenance.

(h) *Vacation of easements.* An easement may be vacated by a replat of the plat in which the easement was dedicated, or via a resolution of the city commission, based on the best interests of the public. The only easements eligible for vacation by resolution are easements which have been previously dedicated and accepted, such as with the approval of a plat. The applicant must submit recommendation letters from utility companies; and a survey and legal description of the area to be vacated; and must show that the easement should be vacated due to utility reroute, non-use of the easement, or that the easement is no longer needed for public purposes. The city can vacate only "public" easements located within the city which are dedicated to the city or to the public. Upon receipt of a vacation request, the city clerk will publish a notice of public hearing, and shall notify property owners within the block where the easement is located of the public hearing by certified mail, return receipt

requested. In addition, the applicant must post the notice at each end of the easement to be vacated, not less than thirty (30) days prior to the public hearing. An affidavit of proof of posting must be submitted to the city clerk not less than seven (7) days prior to the hearing.

Sec. 9.02.04. Plat approval.

Prior to the city commission hearing for approval of a plat, the developer must submit all required documents, recording costs and fees, and:

(a) If infrastructure improvements have not been commenced, a surety bond guaranteeing funds to construct all subdivision public improvements must be provided for city commission. After approval, the mylar can be processed for recording; or

(b) If infrastructure improvements have commenced and are continuing in good faith, the final plat can go to city commission without a bond but the mylar will not be processed for recording until all infrastructure is complete, based on city approval of all final inspections in the site development permit, and the submittal of a maintenance bond.

Sec. 9.02.05. Performance surety for subdivisions and site plan construction projects.

At such time as the city agrees to accept the dedication of any public improvements, a performance guarantee in accordance with the standards in this section shall be required. To ensure completion of public infrastructure improvements that are required as part of an approved site plan or final plat (E.g., streets, sidewalks, stormwater management facilities, potable water facilities, wastewater facilities, and streetlights), the developer shall execute performance and maintenance sureties that guarantee the required improvements against all defects in workmanship and materials, including failure to construct or to continue to construct in accordance with approved plans and specifications.

(a) *Performance surety.*

(1) *Plat and site plan performance surety amount.* A plat or site plan surety must be in the form of a cash bond, performance bond, or letter of credit. The cost estimate amount of the surety shall be based on 120 percent of the sum of the following costs, as certified under seal by the project engineer of record:

a. Required subdivision public infrastructure improvements costs.
b. Costs of all required improvements relating to public road right-of-way.
c. Costs of all required off-site public infrastructure improvements.

The amount of surety is subject to approval by the floodplains manager.

(2) *Performance surety release.* Upon completion of all performance surety guaranteed improvements, applicable inspections, and acceptance by the city, performance sureties shall be released by the floodplains manager.

(b) *Maintenance surety.*

(1) *Plats and site plans with public improvements maintenance surety.* A maintenance surety for public improvements shall be submitted upon release of the performance surety. The maintenance surety provides a guarantee that the required improvements were completed without defects in workmanship and materials. The term of this guarantee shall be one year from the date of acceptance, unless the floodplains manager specifies a longer time frame.

(2) *Maintenance surety amount.* The amount of the maintenance surety shall be based on twenty (20) percent of the entire actual/present day costs of construction,

including the costs of materials and labor for installing the required public infrastructure improvements. Actual costs for installing required public infrastructure improvements shall be itemized by improvement type as certified under seal by the project engineer of record, and subject to approval by the floodplains manager.

(3) *Maintenance surety release.* The maintenance surety may be released no earlier than one year from the date of acceptance of the required improvements by the floodplains manager. This action must be initiated, in writing, by the developer.

Sec. 9.02.06. Compliance with design requirements.

All land development improvements shall comply with all the requirements of this Land Development Code, including those which contain design and construction information for the following:

(a) Horizontal and vertical dimensional design requirements.

(b) Roadway, parking, and vehicle access ways.

(c) Pedestrian pathways, sidewalks, and recreational trails.

(d) Storm drainage, potable water, reclaimed water, and sanitary sewer infrastructure improvements.

(e) Clearing, earthwork, and grading.

Sec. 9.03.00. Construction and inspection requirements.

Sec. 9.03.01. Purpose.

(a) The purpose of this section is to establish requirements for the inspection of the construction of all site development improvements on both residential and non-residential projects. The construction inspection procedures set forth in this chapter and in the City Technical Standards Manual ensure conformity of construction with approved development orders, this Land Development Code, and any conditions of approval.

(b) Separate construction inspection requirements for water and sewer improvements are established in part II of this chapter. Inspections shall be performed as required by the floodplains manager.

Sec. 9.03.02. Commencement of construction.

Commencement of construction or disturbance of land of any type is prohibited unless:

(a) A final development order is issued in conjunction with a site development permit or applicable building permits;

(b) All requisite federal, state, county, and city site work permits for the project are obtained. Certification by the engineer of record, along with copies of all required permits, may be required by the floodplains manager.

(c) A preconstruction meeting for the project is scheduled and held with the city, unless deemed unnecessary by the floodplains manager.

Sec. 9.03.03. Types of inspections.

(a) The following construction inspections shall be held during the course of the construction of the project infrastructure:

(1) Scheduled mandatory key checkpoint inspections.

(2) Scheduled or requested minor inspections and field conferences.

(3) Unscheduled site visits and inspections.

(4) Stormwater Pollution Prevention Plan (SWPPP) Inspections.

(5) All other inspections required by the governing contract for a specific project.

(6) Scheduled final inspection for punch list work.

(7) Scheduled re-inspection of punch list work.

(8) Scheduled final inspection walkthrough, as required prior to the developer submitting a request for the following:

a. Release of surety and acceptance by city of a maintenance bond.

b. Acknowledgement of completion of required subdivision improvements to allow final plat recordation.

c. Acceptance of roadways dedicated to the city.

Sec. 9.03.04. Privately owned bridges.

Privately owned bridges shall meet the design, construction, inspection, maintenance, and reporting criteria in accordance with the Florida Department of Transportation and federal standards.

Sec. 9.04.00. Stormwater management requirements.

Sec. 9.04.01. Purpose and intent.

The purpose of this section is to manage stormwater drainage within the City of Flagler Beach in order to maintain and enhance the public health, safety, and welfare through the control of runoff volume and treatment of stormwater runoff for the protection of surface water and groundwater quality, and the control and prevention of erosion, sedimentation, and flooding by providing standards for the design, construction, and operation of stormwater management systems in conformance with best overall management practices. This section is intended to enforce the goals, objectives, and policies of the comprehensive plan, and to be consistent with the applicable policies and regulations of regional, state and federal agencies regarding stormwater management.

The City of Flagler Beach will always consider reasonable alternatives to the design parameters specified in this chapter and as implemented by the city engineering office so long as it utilizes good engineering judgement, best practices, and is put forth by a licensed professional engineer licensed in the State of Florida.

Sec. 9.04.02. Stormwater design criteria.

The design concepts of a drainage system shall be consistent with sound engineering principles and practices and shall be consistent with applicable rules, regulations and policies of the St. Johns River Water Management District (SJRWMD) and the Florida Department of Environmental Protection (FDEP). In all instances, the drainage design calculations shall be submitted along with the engineering plans, preferably overlain on the Site Survey submitted at the permit application step. These drainage calculations shall consider all relevant information that would affect the stormwater management system including, but not limited to, the following: drainage basin characteristics, system hydraulics, operating conditions and other external

influences upstream and downstream from the stormwater system that may impact or be impacted by the proposed system.

The design and construction of detention facilities shall be in accordance with the criteria set forth herein. Detention is the concept of capturing stormwater and/or to slow the intensity of runoff so as to mitigate flooding. Water should be allowed to percolate into the ground so that all standing water is fully absorbed within a seventy-two-hour period after the rain event. Detention, in combination with appropriate grading, also helps to control runoff water from any one property flowing onto any adjacent property.

Sec. 9.04.03. Detention.

(a) Detention is defined as a constructed or natural structure, either raised or depressed, used to deter or slow down runoff water so that percolation into the ground is enhanced. Detention is required on all lots as is practical especially for single family and duplex residential uses lying within the special flood hazard area (SFHA). Good judgement and standard professional engineering best practices shall be used to determine what is or is not practical.

(b) Within applicable areas, residential single-family and two-family residences are required to detain stormwater over the entire portion of the property area. This includes protected areas such as wetlands, wetland buffer zones, utility easements, city rights-of-way, etc. This may be accomplished by natural or artificial drainage systems including but not limited to, swales, berms, pipes, French drains, other approved structures, or any combination of the above.

(c) Where practical, all development is required to have retention swales constructed within the rights-of-way (R-O-W) along the property lines adjoining paved roadways. These swales shall be 0.75 feet (nine (9) inches) deep with the center line of the swale located approximately seven (7) feet from the edge of pavement (EOP). They shall be finished with a suitable, one hundred (100) percent pervious material.

Sec. 9.04.04. Fill.

(a) Proposed fill shall be limited to the minimum amount of fill necessary to provide positive drainage flow and to abide by any applicable floodplain protection or building code regulations. Positive drainage shall be established on the grading plan. The city shall consider a thirty-three (33) percent maximum grade (1:3) or elevation of six (6) inches above side lot or front swale as the standards for positive drainage unless the existing grades dictate otherwise. At no point shall a lot or parcel be filled higher than the final average grade of any adjacent developed properties if original natural grade was not already higher that the adjacent developed properties. No fill shall be permitted on right-of-way areas except as required for driveway and culvert installation. Fill shall be defined as imported soil or material used to raise the grade of existing lands, excluding sod, gravel and other permeable materials used as ground cover.

(b) *AE SFHA flood zone.*

(1) Fill is limited to the compacted amount needed inside the perimeter of a stem wall foundation in order to achieve a solid subsurface to pour a concrete slab to the elevation <u>required by the Florida Building Code as modified by the City</u> ~~of the approved FFE~~.

(2) Additional fill is permissible to bring driveways and/or sidewalks to the approved elevations proposed on the site plan.

(3) Any additional fill is then limited to 50 cubic yards outside the building, driveway and sidewalk footprints, generally, not to exceed six (6) inches in overall grade change and with slopes constructed no greater than 3:1 slopes to meet adjacent property grades.

(4) Detention is required to keep runoff due to the development contained on the property.

(c) *X flood zone.*

(1) Fill is limited to the compacted amount needed inside the perimeter of a stem wall foundation in order to achieve a solid subsurface to pour a concrete slab to the elevation of the approved FFE.

(2) Fill is permitted, not necessarily limited to fifty (50) cubic yards, outside the building footprint, under the driveway(s), walkways, and other flatwork, sufficient to provide proper drainage away from structures and into onsite detention areas and R-O-W swales.

(3) Final grades generally shall not exceed six (6) inches in overall elevation change and constructed at no greater than 3:1 slopes to meet adjacent property grades.

Sec. 9.04.05. Illicit discharge, detection and elimination.

(a) *[Purpose.]* The purpose of this section is to provide for the health, safety, and general welfare of the citizens of Flagler Beach through the regulation of non-stormwater discharges to the storm drainage system to the maximum extent practicable as required by federal and state law. This section establishes minimum standards and methods for controlling the introduction of pollutants into the municipal separate storm sewer system (MS4) in order to comply with requirements of the National Pollutant Discharge Elimination System (NPDES) permit process.

(b) *Prohibition of illegal discharges.* No commercial business, resident or any other person shall discharge or cause to be discharged into the municipal storm drain system or watercourses any materials, including but not limited to pollutants or waters containing any pollutants that cause or contribute to a violation of applicable water quality standards, other than stormwater. The commencement, conduct or continuance of any illicit discharge to the storm drain system is prohibited except as described as follows:

(1) Discharges specified in writing by the city as being necessary to protect public health and safety.

(2) Dye testing is an allowable discharge, but requires a written notification to the city forty-eight (48) hours prior to the time of the test.

(3) The prohibition shall not apply to any non-stormwater discharge permitted under an NPDES permit, waiver, or waste discharge order issued to the discharger and administered under the authority of the Federal Environmental Protection Agency (EPA), provided that the discharger is in full compliance with all requirements of the permit, waiver, or order and other applicable laws and regulations, and provided that written approval has been granted for any discharge to the storm drain system.

(c) *Prohibition of illicit connections.* This prohibition expressly includes, without limitation, illicit connections made in the past, regardless of whether the connection was permissible under law or practices applicable or prevailing at the time of connection.

(1) The construction, use, maintenance or continued existence of illicit connections to the storm drain system is prohibited.

(2) A commercial business, resident or any other person is considered to be in violation of this section if the entity connects a line conveying sewage to the MS4, or allows such a connection to continue.

(3) A commercial business, resident or any other person commits an offense if that person reinstates MS4 access to premises terminated pursuant to this section without the prior approval by the city.

(d) *Suspension of access to a municipal storm sewer system.* The city may suspend access to the municipal storm sewer system if either one of the following situations occurs:

(1) *Suspension due to illicit discharges in emergency situations.* The city, without prior notice, may suspend MS4 discharge access to a person when such suspension is necessary to stop an actual or threatened discharge which presents or may present imminent and substantial danger to the environment, or to the health or welfare of persons, or to the MS4 or Waters of the United States. If the violator fails to comply with a suspension order issued in an emergency, the city may enter the property and take such steps as deemed necessary to prevent or minimize damage to the MS4 or Waters of the United States, or to minimize danger to persons. The person/violator shall be responsible to reimburse the city of their agent for all costs incurred from the corrective action.

(2) *Suspension due to the detection of illicit discharge.* Any commercial business, resident or any other person discharging to the MS4 in violation of this section may have their MS4 access terminated if such termination would abate or reduce an illicit discharge.

(e) *Industrial or construction activity discharges.* Any person subject to an industrial or construction activity NPDES stormwater discharge permit shall comply with all provisions of such permit. Proof of compliance with said permit may be required in a form acceptable to the City of Flagler Beach prior to the allowing of discharges to the MS4.

(f) *Monitoring of discharges.* The following regulations apply to all facilities that have stormwater discharges associated with industrial activity, including construction activity:

(1) The city shall be permitted to enter and inspect facilities subject to regulation under this section as often as may be necessary to determine compliance with this section. If a discharger has security measure in force which requires proper identification and clearance before entry into its premises, the discharger shall make the necessary arrangements to allow access to representatives of the city.

(2) Facility operators shall allow the city access to all parts of the premises for the purposes of inspection, sampling, examination and copying of records that must be kept under the conditions of an NPDES permit to discharge stormwater, and the performance of any additional duties as defined by state and federal law.

(3) The city has the right to require the discharger to install monitoring equipment as necessary. The facility's sampling and monitoring equipment shall be maintained at all times in a safe and proper operating condition by the discharger at its own expense. All devices used to measure stormwater flow and quality shall be calibrated to ensure their accuracy.

(4) The city shall have the right to set up on any permitted facility such devices as are necessary in the opinion of the city to conduct monitoring and/or sampling of the facility's stormwater discharge.

(5) Any temporary or permanent obstruction to safe and easy access to the facility to be inspected and/or sampled shall be promptly removed by the operator at the written or oral request of the city and shall not be replaced. The costs of clearing such access shall be borne by the operator.

(6) Unreasonable delays in allowing the city access to a permitted facility is a violation of a stormwater discharge permit and of this section. An operator of a facility with a NPDES permit to discharge stormwater associated with industrial activity commits an offense if the operator denies the city reasonable access to the permitted facility for the purpose of conducting any activity authorized or required by this section.

(7) If the city has been refused access to any part of the premises from which stormwater is discharged, and the city is able to demonstrate probable cause to believe that there may be a violation of this section, or that there is a need to inspect and/or sample as part of a routine inspection and sampling program designed to verify compliance with this section or any order issued hereunder, or to protect the overall public health, safety, and welfare of the community, then the city may seek issuance of a search warrant from any court of competent jurisdiction.

(g) *Requirement to prevent, control, and reduce stormwater pollutants by the use of best management practices (BMP's).* The City of Flagler Beach has adopted requirements identifying BMP's for any activity, operation, or facility which may cause or contribute to pollution or contamination of stormwater, the storm drain system, or waters of the U.S. The owner or operator of a commercial or industrial establishment shall provide, at their own expense, reasonable protection from accidental discharge of prohibited materials or other wastes into the MS4 or watercourses through the use of these structural and non-structural BMP's. Further, any person responsible for a property or premise, which is, or may be the source of an illicit discharge, may be required to implement, at said person' expense, additional structural and non-structural BMP's to prevent the further discharge of pollutants into the MS4. Compliance with all terms and conditions of a valid NPDES permit authorizing the discharge of stormwater associated with industrial activity, to the extent practicable, shall be deemed compliance with the provisions of this section. These BMP's shall be part of a Stormwater Pollution Prevention Plan (SWPPP) as necessary for compliance with requirements of the NPDES permit.

(h) *Watercourse protection.* Persons owning property through which a watercourse passes, or such person's lessee, shall keep and maintain that part of the watercourse within the property free of trash, debris, excessive vegetation, and other obstacles that would pollute, contaminate, or significantly reduce the flow of water through the watercourse. In addition, the owner or lessee shall maintain existing privately owned structures within or adjacent to a watercourse, so that such structures will not become a hazard to the use, function, or physical integrity of the watercourse.

(i) *Notification of spills.* Notwithstanding other requirements of law, as soon as any person responsible for a facility or operation, or responsible for emergency response for a facility or operation has information of any known or suspected release of materials which are resulting or may result in illegal discharges or pollutants discharging into stormwater, the storm drain system, or water of the Florida, said person shall take all necessary steps to ensure the discovery, containment, and cleanup of such release. In the event of such a release of hazardous materials said person shall immediately notify emergency response agencies of the occurrence via emergency dispatch services. In the event of a release of non-hazardous materials, said person shall notify the city in person or by phone or facsimile no later than the next business day. Notifications in person or by phone all be confirmed by written notice addressed and mailed to the city within three (3) business days of the phone notice. If the discharge of prohibited materials emanates from a commercial or industrial establishment, the owner or operator of such establishment shall also retain an on-site written record of the discharge and the actions taken to prevent is recurrence. Such records shall be retained for at least five years.

(j) *Enforcement.* Whenever the city finds that an owner/operator has violated a prohibition or failed to meet a requirement of this section, the city may order compliance by written notice of violation to the responsible owner/operator. Such notice may require without limitation:

(1) The performance of monitoring, analyses, and reporting;

(2) The elimination of illicit connections or discharges;

(3) That violating discharges, practices, or operations shall cease and desist;

(4) The abatement or remediation of storm water pollution or contamination hazards and the restoration of any affected property;

(5) Payment of a fine to cover administrative and remediation costs; and

(6) The implementation of source control or treatment BMPs.

If abatement of a violation and/or restoration of affected property is required, the notice shall set forth a deadline within which such remediation or restoration must be completed. Said notice shall further advise that, should the violator fail to remediate or restore within the established deadline, the work will be done by the city or the city's designee and the expense thereof shall be charged to the violator.

(k) *Appeal of notice of violation.* Any person receiving a Notice of Violation may appeal the determination of the city. Any person aggrieved by such notice of violation shall file an appeal application in accordance with the regulations stated in the Land Development Code.

(l) *Enforcement measures after appeal.* In the event of an appeal where the notice of violation has been upheld, the affected person has thirty (30) calendar days from the date the notice of violation was upheld to correct the violation as stated under the terms of the notice of violation. Failure to correct the violation as stated under the terms of the notice of violation within the previously state thirty (30) calendar days shall cause the city or representatives of the city to take any and all measures necessary to abate the violation and/or restore the property. It shall be unlawful for any person, owner, agent or person in possession of any premises to refuse to allow the city or representatives of the city to enter upon the premises for the purposes set forth above.

(m) *Cost of abatement of the violation.* Within fourteen (14) calendar days after abatement of the violation, the owner of the property will be notified of the cost of abatement, including administrative costs. The property owner may file a written protest objecting to the amount of the assessment within fourteen (14) calendar days. If the amount due is not paid within a timely manner as determined by the decision of the municipal authority or by the expiration of the time in which to file an appeal, the charges shall become a special assessment against the property and shall constitute a lien on the property for the amount of the assessment. Any person violating any of the provisions of this article shall become liable to the city.

(n) *Material management.* The purpose of this section is to promote good housekeeping practices that are designed to significantly reduce and control stormwater runoff pollution which runs into storm drains, treatment facilities and local waterways.

(Ord. No. 2023-01, § 2, 5-25-23)

Sec. 9.04.06. Material and waste management.

(a) The purpose of this section is to promote good housekeeping practices that are designed to significantly reduce and control stormwater runoff pollution which runs into storm drains, treatment facilities and local waterways during construction operations.

(b) *Construction sites:*

(1) Never dispose of any waste material into storm drains or sanitary sewers.

(2) Portable waste receptacles must be on the construction site and must be serviced on a regular basis.

(3) Ensure the disposal of scraps, waste, recyclables and surplus materials is in accordance with Federal regulations and local codes.

(4) Paint/solvent storage shall not be within fifty (50) feet of an environmentally sensitive area (ESA) and shall be enclosed in weather/leak proof storage facility. Frequently schedule the safe collection and removal of combustible waste.

(5) Fuel storage tanks shall be located seventy-five (75) feet or more from an ESA or storm drain and shall be in a state-approved leak proof container.

(6) All above ground tanks for fueling shall be secondarily contained.

(7) Construction site driveways can be installed with or without wheel washing stations, but must prevent construction site vehicle wheels from transporting soil and sediment off of construction site and onto roadways.

(8) All hazardous waste material will be disposed of in a manner specified by federal, state, local regulations and manufacturer's specifications.

(9) All on-site vehicles and tanks will be monitored for leaks and receive regular preventative maintenance to reduce the chance of leakage. Petroleum products shall be stored in tightly sealed containers, which are clearly labeled. Storage shall be at least seventy-five (75) feet from an ESA or storm drain.

(10) Any pesticide and herbicide usage shall be applied by a state licensed applicator.

(11) Fertilizers used shall be applied only in the minimum amount recommended by the manufacturer. If stored on-site, covered storage shall be provided. Any contents of any partially used bags of fertilizers shall be transferred to a sealable container.

(c) *Private property or residential property:*

(1) Herbicides shall not be applied within a minimum of twenty-five (25) feet from an ESA or stormwater drains, inlets or infiltration structures that have connection to a waterway.

(2) Pesticides shall not be applied or stored within a minimum of twenty-five (25) feet of an ESA or stormwater drains, inlets or infiltration structures that have connection to a waterway.

(3) Fertilizer shall not be applied or stored within a minimum of twenty-five (25) feet of an ESA or stormwater drains, inlets or infiltration structures that have connection to a waterway.

(4) Fuel and paint storage shall be in a weather and leak proof storage container not less than twenty-five (25) feet from an ESA or stormwater drains, inlets or infiltration structures that have connection to a waterway.

(5) Never pour toxic chemicals down any drain - this includes the drains inside of a house or other building as well as storm drains or gutters that lead to storm drains. Also never pour toxic chemicals on the ground where they can seep into the water table and eventually the aquifer or a stream. Some household chemicals that need to be disposed of properly include but not limited to:

a. Metal polish solvent;
b. Kitchen and bathroom cleaners;
c. Furniture polish;
d. Battery acid or batteries;
e. Automatic transmission fluid;
f. Brake fluid;
g. Car wax with solvent;
h. Paint (oil-based);
i. Paint thinner;
j. Turpentine and varnish;
k. Illicit discharge ordinance.

(d) *Public property:*

(1) Herbicides shall not be applied within a minimum of twenty-five (25) feet from an ESA or stormwater drains, inlets or infiltration structures that have connection to a waterway.

(2) Pesticides shall not be applied or stored within a minimum of twenty-five (25) feet of an ESA or stormwater drains, inlets or infiltration structures that have connection to a waterway.

(3) Fertilizer shall not be applied or stored within a minimum of twenty-five (25) feet of an ESA or stormwater drains, inlets or infiltration structures that have connection to a waterway.

(4) Any pesticide and herbicide usage shall be applied by a state-licensed applicator.

(5) Fuel and paint storage shall be contained in a weather proof and leak proof storage facility not less than twenty-five (25) feet from an ESA or stormwater drains, inlets or infiltration structures that have connection to a waterway.

Sec. 9.04.07. Erosion control.

(a) All technical requirements are covered in Detail M-16B, Contractor Requirements for Site Clearing, Grading, and Erosion Control Design and Construction Notes of the COFB Standard Details, Resolution No. 2018-30.

(b) Erosion control is required for all construction projects and may be achieved by a variety of methods using one or a combination of the following:

(1) *Silt fence.*

a. A silt fence is a temporary sediment control device used on construction sites to prevent the transport of materials off-site and to protect water quality in nearby streams, rivers, and lakes from loose soil in stormwater runoff. A typical fence consists of a piece of synthetic filter fabric (also called a geotextile) stretched between a series of wooden or metal fence stakes along a horizontal contour level. The stakes are installed on the downhill side of the fence, and the bottom edge of the fabric shall be trenched a minimum of four (4) inches into the soil and backfilled on the uphill side. The silt fence is not designed to concentrate or channel

stormwater. The silt fence is installed on a site before soil disturbance begins, and is placed down-slope from the disturbance area.

b. Silt fencing must be installed to prevent silt exfiltration. It shall be placed around the perimeter of any and all disturbed areas of construction.

c. The fence may be dismantled temporarily from time to time to allow for delivery of materials and equipment but must be put back in place and maintained each day until the site is ready for final grading and sodding. Failure to diligently maintain this fence in good condition will result in a warning and followed up by a stop work order until the silt fence is properly re-installed.

d. The height of the silt fence shall be between two (2) feet and three (3) feet above grade. A minimum of four (4) inches shall be either buried below grade or have the bottom flap folded over above grade covered with dirt to hold it in place. An extra strength filter fabric shall be attached to fence posts spaced no wider than ten (10) feet apart and driven at least one (1) foot into the ground. [See COFB Standard Construction Details.]

(2) *Berm.*

a. A berm is a level space, shelf, or raised barrier, typically made of compacted soil, separating two areas. They are used to control erosion and sedimentation by reducing the rate of surface runoff - they typically either reduce the velocity of the water, or direct water to areas that are less susceptible to erosion.

b. A typical berm is one (1) foot - two (2) feet high, a minimum shelf of one (1) foot wide, and has sides sloped at 3:1 (horizontal to vertical) maximum.

(3) *Swale.*

a. A swale is a shallow channel with gently sloping sides. It can be natural or man-made. Artificial swales are often infiltration basins, designed to manage water runoff, filter pollutants, and increase rainwater infiltration.

b. Swales are largely used either for managing water runoff from one property to another or to collect rain runoff water from road surfaces that helps mitigate flooding onto street-front properties.

c. Swales vary in size, width, and depth depending on their function.

d. Typical City of Flagler Beach street roadside swales have been established to be nine (9) inches in depth. [See COFB Standard Construction Details.]

(4) *French drain.*

a. A french drain is a trench filled with gravel or rock that may also contain a perforated pipe that redirects surface water and groundwater away from an area. A French drain can have perforated hollow pipes along the bottom to quickly vent water that seeps down through the upper gravel or rock. They are a good alternative to open ditches.

b. French drains may be very useful to help manage surface water in constricted areas like the narrow five-foot side setbacks on many of the city's properties. [See COFB Standard Construction Details.]

(5) *Hay bales.*

a. A temporary sediment barrier consisting of a row of entrenched and anchored straw bales. Used to intercept and detain small amounts of sediment from disturbed areas of limited extent to prevent sediment from leaving the site. Decreases the intensity of sheet flows and low-to-moderate level channel flows.

b. Bales should be placed in a single- or staggered-row, lengthwise on the contour, with ends of adjacent bales tightly abutting one another.

c. All bales should be either wire-bound or string-tied. Straw bales should be installed so that bindings are oriented around the sides rather than along the tops and bottoms of the bales in order to prevent deterioration of the bindings.

d. The barrier should be entrenched and backfilled. A trench should be excavated the width of a bale and the length of the proposed barrier to a minimum depth of four (4) inches. The trench must be deep enough to remove all grass and other material which might allow underflow. After the bales are staked and chinked (filled by wedging), the excavated soil should be backfilled against the barrier. Backfill soil should conform to the ground level on the downhill side and should be built up to four (4) inches against the uphill side of the barrier. [See COFB Standard Construction Details.]

(c) Where a cleared vacant lot is created through demolition, the owner must screen the property from adjacent streets, alleys, and public improvement areas by landscaping a perimeter buffer of three (3) feet with the exception of intersection visibility standards which are two and one-half (2.5) feet high maximum. All cleared vacant lots shall be covered with sod, grass, or other suitable pervious material approved for the property by the city designee. The ground cover shall be maintained and the property kept free of trash and debris. All improvements shall be completed within sixty (60) days of demolition.

(d) Where a lot or a portion of a lot has been improved by new construction, an addition, or some other activity that clears the lot of existing vegetation, at the end of such construction or improvements, all disturbed land shall be permanently stabilized by adding sod, grass, or other suitable pervious materials as described herein. All other elements of the construction notwithstanding, no certificate of occupancy shall be granted until such time as the above has been accomplished and passes the final site inspection.

(e) Gutters and downspouts.

(1) All roofs and existing gutters and downspouts shall be maintained to prevent damage to the structure and adjoining properties and public rights-of-way.

(2) Gutters and downspouts are recommended for new houses but required for new houses that meet the following criteria:

a. Have sloped roofs with a pitch greater than 3:12 (vertical to horizontal) or fourteen (14) degrees;

b. Has a neighboring house on either side yard where the facing walls are within ten (10) feet of each other;

c. The roof surface of the gable(s) or hip(s) slopes toward the side yard; and,

d. The eave of the roof is greater than one (1) foot.

(3) New houses that are constructed with gutters and downspouts, whether by choice or by virtue of the above conditions, must point all downspout outlets toward the front or rear yards and, at a minimum, discharge onto a splash block or into a side yard swale, subject to any additional requirements of this Code. No configuration of the downspout

outlets shall cause stormwater to be directed toward a neighboring side property where the facing walls are within (10) feet of each other.

(4) It is recommended that all downspout outlets be connected to a perforated corrugated plastic pipe that is:

a. Buried from eight (8) inches to twenty-four (24) inches below the finished grade;

b. Wrapped with a porous filter fabric;

c. Embedded in aggregate - pea gravel to larger pieces of river rock;

d. Positively sloped, minimum two (2) percent, away from the downspout outlet.

Sec. 9.04.08. Prohibitions and exemptions for stormwater management.

(a) *Prohibitions.* No person may develop or make any change in the use of land or construct a structure or change the size of a structure, except as exempted herein, without submission and approval of a stormwater management plan as provided herein. For the purpose of this section, the development may potentially alter or disrupt existing stormwater runoff patterns, and as such, will require the submission and approval of a stormwater management plan prior to the commencement of construction unless exempted in paragraph (b) below. This includes, but is not limited to:

(1) Clearing and/or drainage of land as an adjunct to construction.

(2) Subdividing land.

(3) Re-platting recorded subdivisions and the development of recorded and unrecorded subdivisions.

(4) Changing the use of land and/or the construction of a structure or a change in the size of one or more structures.

(5) Altering the shoreline or bank of any surface water body.

(6) The permanent (long period) lowering of the water table.

(7) Addition of impervious or pre-approved semi-impervious construction.

(8) Direct deposition of stormwater runoff into rights-of-way and/or alleyways.

(b) *Exemptions.* The following activities shall be exempt from this section (Section 8.00 [9.04.08]) unless as hereinafter required by the land development regulations:

(1) Any maintenance, alteration, renewal, use or improvement to an existing structure not changing or affecting the rate or volume of stormwater runoff and not disturbing existing ground surfaces.

(2) Maintenance work performed on existing drainage canals for the purpose of public health and welfare.

(3) Maintenance work on utility or transportation systems, provided such maintenance work does not alter the purpose and intent of the drainage system as constructed.

Sec. 9.04.09. Stormwater management design standards.

Table VIII-01 establishes categories of development and corresponding impervious area thresholds. The review of stormwater management plans for all development projects shall be based upon the net increase in impervious surface area resulting from the development and any cumulative increase due to development that has occurred within the previous two (2) years.

TABLE VIII-01

CATEGORY THRESHOLDS FOR THE VARIOUS LIMITS OF DEVELOPMENTS	
CATEGORY	NET INCREASE OF IMPERVIOUS AREA
Category I	Up to five hundred square feet (<500 sf)
Category II	Between five hundred one square feet and four thousand square feet of surfaces subject to vehicular traffic and/or (501 sf - 4,000 sf) Between five hundred one square feet and five thousand square feet of building or other surfaces (501 sf - 5,000 sf)
Category III	Exceeds four thousand square feet of surfaces subject to vehicular traffic (>4,000 sf) Exceeds five thousand square feet of building or other surfaces (>5,000 sf)

(a) *Standards for category 1.* All categories of development shall require the preparation of a stormwater plan that shows the intended direction of runoff flow. Stormwater management system designs shall conform to the following performance standards:

(1) Stormwater runoff shall be subjected to best management practices prior to discharge into natural or artificial drainage systems. Best management practice shall mean a practice or combination of practices determined by the city to be the most effective, practical means of preventing or reducing the amount of pollution generated by the project to a level compatible with Florida water quality standards found in the St. Johns River Water Management District, the Florida Department of Environmental Protection, and Chapter 17-3, Florida Administrative Code.

(2) Additional detention on lots is not required in developments that have a master stormwater/retention system constructed except to contain runoff from flowing onto adjacent properties.

(3) No site alteration shall cause siltation of wetlands, pollution of downstream wetlands or reduce the natural retention or filtering capabilities of wetlands.

(4) Silt fences or other approved erosion control methods shall be required at the perimeter of all proposed disturbed areas and shall be properly maintained until the final site construction is approved.

(5) No site alteration shall allow water to become a health hazard or contribute to the breeding of mosquitoes.

(6) All site alteration activities shall provide for such water detention and settling structures and flow attenuation devices as may be necessary to ensure that the foregoing standards and requirements are met. No site alteration shall result in any net reduction of available floodplain storage.

(7) Design of water detention structures and flow attenuation devices shall be subject to the approval of the city engineering office pursuant to the standards hereof. Detention structures shall be designed to release runoff to the downstream drainage system over a period of time so as not to exceed the capacity of the existing downstream system. The design of water detention structures and flow

attenuation devices shall be in compliance with the standard construction details found in the City of Flagler Beach Standard Construction Details.

(8) A positive drainage system shall be provided which will not adversely impact downstream owners or adjacent lands.

(9) Where possible, natural vegetation shall be used as a component of the drainage system. The water table should not be manipulated so as to endanger natural vegetation beneficial to water quality unless natural vegetation can be replanted and survive with a lowered water table condition.

(10) Runoff from higher adjacent lands shall be considered and provisions for conveyance of such runoff shall be included in the drainage plan.

(11) Runoff shall be treated to remove oil and floatable solids before discharge from the site in a manner approved by the city.

(12) Erosion by wind or water shall be prevented by the developer throughout the construction process.

(13) Direct discharge to class II waters (Shellfish Propagation or Harvesting) is prohibited. A workable filter system approved by the city must be provided prior to any discharge to class II waters.

(14) For the purpose of this section, it is presumed that the lowering of the water table for the purpose of constructing detention barriers and/or permanently protecting road construction does not conflict with the stated objectives of this section if all of the following are met:

a. Based on data collected and interpreted by the U.S. Geological Survey, the St. Johns River Water Management District (SJRWMD), the city and other professional investigators, as important to recharge or to prevent discharge into the Floridian aquifer;
b. With separate special approval by the city, the proposed lowering of the water table shall be over no more than fifteen (15) percent of the site to a depth of five (5) feet below the surface of the existing undisturbed ground, or an equivalent volume; said area to be measured at the overflow elevation of the detention barrier(s);
c. With separate special approval by the city, the high-water table may be lowered up to two (2) feet below the undisturbed ground in the vicinity of roads for the purpose of protecting the sub-base and base of the roadway and/or for the purpose of preventing mosquito breeding in the roadside swales;
d. The lowering of the water table has no adverse effect on wetlands off site vegetation as defined herein; and
e. The lowering of the water table does not increase flows to the detriment of neighboring lands.

(15) For project sizes greater than one (1) acre of disturbed area, the applicant shall acquire permit coverage from the SJRWMD, National Pollutant Discharge Elimination System program and provide proof of such to the city prior to construction.

(b) *Standards for category II.*

(1) Meet all conditions of category I plus: For certain soil conditions or ground water table conditions which do not permit the percolation of this volume within seventy-

two (72) hours following a storm event, the city shall approve detention with filtration.

(c) *Standards for category III.*

(1) Meet all conditions of categories I and II plus: The city shall defer to permitting by St. Johns River Water Management District.

(2) Stormwater management plans shall be prepared by a professional engineer or landscape architect licensed in the State of Florida and shall conform to:

a. The discharge hydrograph produced for the developed or redeveloped site shall not exceed, in terms of peak flow and total volume, the hydrograph produced by conditions existing before development or redevelopment for a twenty-four-hour, twenty-five-year frequency storm, if this provision will be met through detention of the difference between said volumes, said volume difference shall be released over not less than a twenty-four (24) hours nor greater than a seventy-two (72) hours period of time. Runoff rates and volumes resulting from the project, in excess of existing amounts, shall be accommodated on-site. Off-site retention may be permitted if, in the opinion of the city, the recharge requirements of this section are met.

b. The peak discharge resulting from a twenty-four-hour, one-hundred-year frequency storm on the developed or redeveloped site shall not exceed the peak discharge resulting from a one-hundred-year frequency storm for pre-construction/development conditions on the site for flood prone areas as determined by the city.

c. Runoff computations shall be based on the most critical situation (rainfall duration, distribution and antecedent soil moisture condition) and conform to the methods described in the Florida Department of Transportation Drainage Manual, latest edition, and the St. Johns River Water Management District Regulation of Stormwater Management Systems.

(d) *Maintenance of stormwater management facilities.* The installed system(s) required by this section shall be maintained by the owner except where the city specifically accepts a certain system for maintenance. All areas and/or structures planned to be maintained by the city must be conveyed to the city by plat or separate instrument and accepted by the city commission. The owner shall provide adequate easements for approval with respect to system(s) to be maintained by the owner to permit the city to inspect and, if necessary, to take corrective action should the owner fail to maintain the system(s).

(e) *Alternative stormwater management designs.* Alternative designs and construction methods, such as perforated pipe systems, above and below ground water storage tanks and cisterns, rain barrels, and similar techniques, may be approved for use at the discretion of the city engineering department if they are consistent with professional best practices.

SECTION 2. FISCAL IMPACT STATEMENT. In terms of design, plan application review, construction, and inspection of buildings and structures, the cost impact as an overall average is negligible in regard to the local technical amendments because all development has been subject to the requirements of the local floodplain management ordinance adopted for participation in the

National Flood Insurance Program. Therefore, in terms of lower potential for flood damage, there will be continued savings and benefits to consumers.

SECTION 3. APPLICABILITY.

For the purposes of jurisdictional applicability, this ordinance shall apply in the **City of Flagler Beach**. This ordinance shall apply to all applications for development in flood hazard areas submitted on or after the effective date of this ordinance.

SECTION 4. INCLUSION INTO THE CODE OF ORDINANCES.

It is the intent of the **City Commission** that the provisions of this ordinance shall become and be made a part of the **City of Flagler Beach Code of Ordinances**, and that the sections of this ordinance may be renumbered or re-lettered. The word “ordinance” may be changed to “section,” “article,” “regulation,” or such other appropriate word or phrase in order to accomplish such intentions.

SECTION 5. SEVERABILITY.

If any section, subsection, sentence, clause or phrase of this ordinance is, for any reason, declared by the courts to be unconstitutional or invalid, such decision shall not affect the validity of the ordinance as a whole, or any part thereof, other than the part so declared.

SECTION 6. EFFECTIVE DATE.

This ordinance shall take effect immediately upon adoption in accordance with the City of Flagler Beach Charter.

PASSED ON FIRST READING THIS _____ DAY OF _____, 2025.

PASSED AND ADOPTED THIS _____ DAY OF _____, 2025.

CITY OF FLAGLER BEACH, FLORIDA
CITY COMMISSION

_____
Patti King, Mayor

ATTEST:

_____
Penny Overstreet, City Clerk