Agenda Item #3K-1

PALM BEACH COUNTY
BOARD OF COUNTY COMMISSIONERS

AGENDA ITEM SUMMARY

Meeting Date:	**September 10, 2024**	**Consent [X]** **Public Hearing [ ]**	**Regular [ ]**
Department:	**Water Utilities Department**		

I. EXECUTIVE BRIEF

Motion and Title: Staff recommends motion to approve: a Contract for the Improvements to Lift Stations 980, 981, and 1051; Lift Station (LS) Rehabilitation Bid Package 1, LS 0637 (Project) with B & B Underground Construction Inc. (Contractor) in the amount of $4,845,427.

Summary: On May 1, 2024, the Palm Beach County Water Utilities Department (PBCWUD) received five (5) bids for the Project. Contractor was determined to be the lowest responsive and responsible bidder in the amount of $4,845,427. The Project provides for furnishing all materials, labor, supervision, equipment, supplies, fees, expertise, and services necessary to provide new or improved LS at four (4) locations. The major Project components include mechanical, electrical, and civil improvements including new pumps, control panels and appurtenances, discharge piping, wet well and manhole coating, new potable water services, and includes temporary bypass pumping.

The Project is partially funded in the amount of $250,000 by the State of Florida Department of Environmental Protection (FDEP) with funds from the U.S. Department of Treasury. On February 7, 2023, the Board of County Commissioners (BCC) approved the Standard Grant Agreement (R2023-0170) with FDEP for the LS 0637 hardening improvements. The Contract is exempt from Sections 2-80-.20-2-80.40 of Palm Beach County Code, the Equal Business Opportunity (EBO) program because it is funded by federal or state funds. Contractor is a Palm Beach County based company. The Project is included in the PBCWUD FY24 budget. (PBCWUD Project No. 21-059R) Districts 3 and 5 (MWJ)

Background and Justification: PBCWUD currently operates and maintains over 1000 LS. This Project is needed to restore the service life of the LS and improve the long term reliability, safety, and operability of PBCWUD's wastewater collection system. LS 980 and 981 need to be replaced/relocated for the safety of the Maintenance staff working on them. The existing stations shall be demolished or converted into a manhole with new gravity mains to divert the flow to the new LS location. LS 1051 will be rehabilitated and converted from a dry can type LS into a submersible LS. The discharge force main from LS 1051 will be modified to connect to the force main on the east side of Ponderosa Drive north of Palmetto Park Road. LS 0637 is one of 180 wastewater lift stations that were prioritized for rehabilitation. This station was also identified by Palm Beach County Zoning and Building Department as not meeting the Critical Facilities criteria of the Unified Land Development Code and needs to be raised to Federal Emergency Management Administration Base Flood Elevation plus three (3) feet.

Attachments:

1. Four (4) Originals of Contract for B & B Underground Construction, Inc.
2. Location Map
3. Bid Tabulation Sheet
4. Ebix Compliance Summary Report

Recommended By: Ali Bayat — 08/20/2024
Department Director — **Date**

Approved By: — 8/29/24
Assistant County Administrator — **Date**

II. FISCAL IMPACT ANALYSIS

A. Five Year Summary of Fiscal Impact:

Fiscal Years	2024	2025	2026	2027	2028
Capital Expenditures	$4,845,427	0	0	0	0
Operating Costs	0	0	0	0	0
External Revenues	($250,000)	0	0	0	0
Program Income (County)	0	0	0	0	0
In-Kind Match County	0	0	0	0	0
NET FISCAL IMPACT	$4,595,427	0	0	0	0
# ADDITIONAL FTE POSITIONS (Cumulative)	0	0	0	0	0

Budget Account No.: Fund 4011 Dept 721 Unit W031 Object 6546

Is Item Included in Current Budget? Yes X No ____

Is this item using Federal Funds? Yes X No ____

Is this item using State Funds? Yes ____ No X

Reporting Category N/A

B. Recommended Sources of Funds/Summary of Fiscal Impact:

One (1) time expenditure from user fees, connection fees and balance brought forward. Grant from the State of Florida Department of Environmental Protection (FDEP) with funds from the U.S. Department of Treasury.

C. Department Fiscal Review: for EB

III. REVIEW COMMENTS

A. OFMB Fiscal and/or Contract Development and Control Comments:

8/15/2024
OFMB 8/14 8/16

8/26/24
Contract Development and Control
8/23/24

B. Legal Sufficiency:

8/28/24
Assistant County Attorney

C. Other Department Review:

Department Director

This summary is not to be used as a basis for payment.

BOARD OF COUNTY COMMISSIONERS
PALM BEACH COUNTY, FLORIDA

CONFIDENTIAL
PBCWUD DOCUMENT
NOT FOR PUBLIC DISCLOSURE
In Accordance with:
FS Chapter 281.301
FS Chapter 119.071 (3) (b)
FS Chapter 153

Improvements to Lift Stations 980, 981, and 1051
Lift Station Rehabilitation Bid Package 1, LS0637

PBCWUD Project No. 21-059R

CONTRACT DOCUMENTS
BIDDING REQUIREMENTS, CONTRACT FORMS,
CONDITIONS OF THE CONTRACT, AND
TECHNICAL SPECIFICATIONS

Palm Beach County Water Utilities Department
8100 Forest Hill Boulevard
West Palm Beach, FL 33413
FAX: (561) 493-6113
E-Mail Address: duter@pbcwater.com

Bids will be received at the office of the Palm Beach County Water Utilities Department, Administration Building, located at 8100 Forest Hill Boulevard, West Palm Beach, Florida 33413 at the time and on the date specified in the Advertisement for Bids.

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BOARD OF COUNTY COMMISSIONERS
PALM BEACH COUNTY, FLORIDA

Improvements to Lift Stations 980, 981, and 1051
Lift Station Rehabilitation Bid Package 1, LS0637
PBCWUD Project No. 21-059R

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ADDENDUM NO. 1

PALM BEACH COUNTY WATER UTILITIES DEPARTMENT
IMPROVEMENTS TO LIFT STATIONS 980, 981, AND 1051;
LIFT STATION REHABILITATION BID PACKAGE 1 - LS0637
PROJECT NO. WUD 21-059R

TO ALL BIDDERS AND OTHERS CONCERNED:

Contractors submitting proposals for the above referenced project shall take note of the clarification to the Contract Drawings and Specifications that shall become a part of the contract documents.

BID DOCUMENTS (Due May 1, 2024)

Note: Bidder must acknowledge Receipt of Addendum on Bid Form - Page 3 of the Contract Documents.

Dated this 23rd day of April, 2024

Palm Beach County

Water Utilities Department

Deavon Uter, P.E.

PLEASE ACKNOWLEDGE RECEIPT OF ADDENDUM NO. 1 (PAGES AD1-1 – AD1-5) BY SIGNING BELOW – EMAIL to duter@pbcwater.com OR FAX TO 561-493-6104 IMMEDIATELY.

_____
Signature

_____
Title

_____
Company

GENERAL

1. The minutes of the pre-bid meeting are attached and are hereby made a part of the Contract Documents.

2. Attached for your records is a copy of the pre-bid meeting attendees list and current plan holders list.

3. The contractor shall patch/repair existing leak inside the lift station 0637 wetwell as per specification 099602 before applying corrosion barrier system.

4. There is an existing light pole near the northeast corner of lift station 0637, that is in conflict with the proposed driveway layout. The contractor shall relocate this existing light pole approximately 10 feet towards northwest, out of the proposed driveway. The relocation cost shall include a new traffic-rated handhole and additional wiring to the new pole location.

5. Construction Drawings will not be updated to reflect Directives of No.3 and No. 4 above.

REVISIONS TO FRONT END DOCUMENTS

1 - INSTRUCTIONS TO BIDDERS: Section 1.18 revised to remove participation percentages and correct the source of the federal funds.

REVISIONS TO DRAWINGS

1 - Replace Sheet D2 in the 21-059R Improv to LS980 981 1051; LS Rehab BP1-LS0637 - 980_981_1051 Construction Plans set with 21-059R Improv to LS980 981 1051; LS Rehab BP1-LS0637 - 980_981_1051 Construction Plans Sheet D-2

CONTRACTOR QUESTIONS/COMMENTS

1. I saw there is a MBE goal of 22.4% and WBE goal of 6.9%. Is there a mandatory MBE/WBE percentage to meet or is this just a goal?

   There is no SBE percentages associated with this bid, the percentages will be removed with Addendum 1. However the percentages shown are from a prior federal project, using percent goals similar to these may be good ways to satisfy 2 CFR 200.321(b)(1)-(5)

2. Confirming that there is NO longer a Buy America Requirement according to the Supplemental General Conditions.

   Supplemental General Conditions is correct, there is no BABA requirement.

3. What is the Engineer's Estimate/Budget?

   The Engineer's Opinion of Probable Construction Cost still remains $3,640,000.

4. Please list what changed from the previous bid.

   Changes include but is not limited to the removal of the BABA requirement, please, make sure the front end documents are read through.

5. If the bids come in over budget, will the bids be rejected again?

   The exceedance of the PBCWUD funding limits by 21-059 bid submittals were in our estimation, excessive. We have removed the Build America, Buy America Act (BABA) requirement from the project, as it does not apply. By removing BABA we expect the bids to come in more in-line with the funding limits and encourage more bidders to participate.

6. At what threshold over the estimate will this project not be awarded?

   There is no threshold below or over the estimate, each properly signed offer to do the work will be reviewed and evaluated by PBCWUD and the determination made to accept or not accept the offer, this is the process used on all bids.

7. Please revise sheet C-13 to include a match line to the continuation of the 4" line at the eastern portion of the forced main on this sheet.

   No Match Line required. C-14 is an enlargement of the intersection which shows the continuation of the east end of 12" DIP FM.

8. Similar question regarding the continuation of the 6” forced main at the southern portion on C-14.

   No Match Line required. C-14 is an enlargement of the intersection. The entire southern run of the 6” FM is captured on C-9 to C-13.

9. Please provide an estimate of the flow handled by each station in the scope of this contract for the purpose of designing the bypass system.

   The proposed operating condition, as permitted, are LS0637-300 gpm @ 158 FT, LS0980- 700 gpm@ 60 FT, LS0981- 800 gpm @ 72.5 FT, and LS1051- 250 gpm @ 140 FT. Specification Section 01 57 19, Wastewater Flow Control, specifies the performance requirements for the flow control system, which may vary based on the contractor's means and methods.

10. Please advise who is responsible to relocate the Fiber Optic cabling at locations shown on drawings.

    If it is necessary to relocate fiber optic lines the owner of the utility must be engaged to do so. However, this is a pressure pipe project it might behoove the contractor to navigate around encountered existing utilities.

11. Please advise who is responsible to relocate the irrigation piping at locations shown on drawings.

    Specification Section 01 11 00 1.4 N which indicates it is the Contractors responsibility at no additional cost to the Owner.

12. Please advise if bidders should carry the cost of uniformed police traffic directors for traffic control. If so, please include an allowance in the bid schedule as this is the best way to handle this type of expenses.

    The contractor is required to provide all MOT items required by the roadway agency having jurisdiction including MOT plans, permitting, MOT installation, MOT maintenance, and MOT removal. If uniformed police traffic directors are required as part of the MOT, then that cost should be included in the Contractor’s bid.

13. Please provide detail 52S as called out on drawing sheets C-2 and C-4.

    It is provided on D-2

14. Please indicate the point of transition from DIP to C-900 PVC at each station.

DIP under slab. Transition to PVC may occur after first fitting or valve outside of the slab.

15. Please advise if FL x FL spools can be field fabricated by using flange adapters by EBAA Series 1000 (see attached) or similar.

    EBAA Series 1000 not acceptable. Must be EBBA Series 2100 Megalug or equivalent per PBC approved products list appended to the specifications.

16. 4" to 6" Reducer I do not see on drawings but I see a 12" to 4" and a 12" to 6"; 12" to 16" I do not see on drawings but I see (3) 12 to 12 connections.

    For bid item nos. 28 and 29, the diameters given are the range of diameters of existing force mains to connect to. They are not a specific to a "4-inch force main connecting to a 6-inch force main" or "a 12-inch connecting to a 16-inch". Also, wet taps are separate line items and are not included in these quantities.

17. Do not see pay item for 15" gravity sewer and does the 15" gravity need to be installed with a drop bowl instead of the tee drop?

    The cost for the 15" gravity sewer main should be included in line item No. 7 for lift station 980 modifications as it connects from the existing wet well to the new wet well. Yes, there should be a drop bowl installed that meets specification section 33 32 11 requirements.

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ADDENDUM NO. 2

PALM BEACH COUNTY WATER UTILITIES DEPARTMENT
IMPROVEMENTS TO LIFT STATIONS 980, 981, AND 1051;
LIFT STATION REHABILITATION BID PACKAGE 1 - LS0637
PROJECT NO. WUD 21-059R

TO ALL BIDDERS AND OTHERS CONCERNED:

Contractors submitting proposals for the above referenced project shall take note of the clarification to the Contract Drawings and Specifications that shall become a part of the contract documents.

BID DOCUMENTS (Due May 1, 2024)

Note: Bidder must acknowledge Receipt of Addendum on Bid Form - Page 3 of the Contract Documents.

Dated this 23rd day of April, 2024

Palm Beach County

Water Utilities Department

Deavon Uter, P.E.

PLEASE ACKNOWLEDGE RECEIPT OF ADDENDUM NO. 2 (PAGES AD1-1 – AD1-3) BY SIGNING BELOW – EMAIL to duter@pbcwater.com OR FAX TO 561-493-6104 IMMEDIATELY.

_____
Signature

_____
Title

_____
Company

GENERAL

1. The minutes of the pre-bid meeting are attached and are hereby made a part of the Contract Documents. (This was left out of Addendum 1)

2. Attached for your records is a copy of the pre-bid meeting attendees list and current plan holders list. (This was left out of Addendum 1)

PALM BEACH COUNTY WATER UTILITIES DEPARTMENT
IMPROVEMENTS TO LIFT STATIONS 980, 981, AND 1051;
LIFT STATION REHABILITATION BID PACKAGE 1 - LS0637
PROJECT No. WUD 21-059R

Pre-Bid Meeting Minutes
Wednesday, April 10, 2024: 10:00 Am
8100 Forest Hill
Boulevard West Palm
Beach, Florida 33413
Operations and Maintenance Building Conference Room 55

ATTENDING:
Deavon Uter/Stantec/PBCWUD
Kerry Williams/Stantec/PBCWUD
Duane Palumbo/PBCWUD
Eduardo Duran/Mock Roos
Stephen Decker/B&B
Stephen Fowler/Holtz Consulting Engineers
Doug Wyckoff/Holland Pump
Mike Sweeny/Southern Underground
Dina Schmitt/Equipment Share
David O'Berry/Sunbelt Rentals
Jesus Lopez/Sunbelt Rentals
Elier Garcia/Essential Energy
Rodney Locke/DMR Construction
Chase Rogers/Hinterland Group

PREPARED BY: Kerry Williams/Stantec/PBCWUD

MEETING MINUTES:

PURPOSE OF PRE-BID MEETING:

This Pre-Bid Conference has been scheduled to acquaint the prime contractors and others with the Bid Documents for the Improvements to **Lift Stations 980, 981, and 1051; Lift Station Rehabilitation Bid Package 1 - LS0637** (Project).

WORK DESCRIPTION:

The Contract Time is 580 calendar days from Notice to Proceed for Substantial Completion. Final Completion shall be within 30 days of Substantial Completion. See Section 01 11 00, Summary of Work for project description and general requirements. Please note that funds for the reconstruction of LS 637 are derived from grants; therefore, the CONTRACTOR must comply with grant guidelines. Compensation to the CONTRACTOR shall be partially from grant funds. As such, the CONTRACTOR agrees that the provisions set forth in the grant will apply to any services or work performed or provided by the CONTRACTOR or its SUBCONTRACTORS under the Contract. The CONTRACTOR shall be obligated to comply with all applicable grant requirements, laws, and regulations. In the event of a conflict between the Grant Requirements and other provisions of the Invitation to Bid, the Grant Requirements will govern and prevail.

The principal features of this contract include furnishing all materials, labor, supervision, equipment, supplies, fees, expertise, and services necessary to provide new or improved lift stations at four (4) locations: LS0980, LS0981, LS1051, and LS0637. Work includes mechanical, electrical, and civil improvements including new pumps, control panels and appurtenances, discharge piping, wet well and manhole coating, new potable water services, and all work included in the Drawings and indicated in the Technical Specifications, including temporary bypass pumping. Engineer's opinion of probable construction cost is $3,640,000.

BID SUBMITTAL DATES:

Sealed Bids containing all the required Bid Documents will be received by the Board of County Commissioners, Palm Beach County, Florida, until **2:00 PM** on Wednesday, **May 1, 2024**, at the Palm Beach County Water Utilities Department, Administration Building (1st Floor Reception Desk) located at 8100 Forest Hill Boulevard, West Palm Beach, Florida.

As shown in Instruction to Bidders, Page 10 of the Contract Documents:

The following documents must be submitted in a sealed opaque envelope:

1. Bid Form
2. Attachment No. 1 – Bid Bond
3. Attachment No. 2 – List of Major Subcontractors
4. Attachment No. 3 – Trench Safety
5. *Attachment No. 4 – MBE/WBE Good Faith Efforts
   **Attachment No. 4 not required at time of bid submission*

Please submit one original and one copy of your Bid Documents.

BID OPENING:

Bids will be opened on or after **May 1, 2024** at **2:00 P.M**., in the Administration

Conference Room (Room 158) of the Administration Building of the Palm Beach County Water Utilities Department, 8100 Forest Hill Boulevard, West Palm Beach, Florida. Estimated date for the award of the Contract is September 2024.

BID BOND SECURITY:

A Bid Bond Security (in the form, at the Bidders option, cashier's check, certified check, money order or Bid Bond in favor of the County) in the amount of at least five percent (5%) of the bid price must be submitted with the bid. The bidders must use the Bid Bond form provided in the Contract Documents (See Attachment No.1 to Bid Form).

Equal Business Opportunity (EBO) Ordinance:

This project is partially federally funded through funds provided by U.S. Department of Treasury via the State of Florida Department of Environmental Protection.

Palm Beach County and the Florida Department of Environmental Protection supports diversity in its procurement program and requests that all contracting opportunities afforded by this Agreement embrace diversity enthusiastically. The award of contracts should reflect the full diversity of the citizens of the State. A list of minority-owned firms that could be offered contracting opportunities may be obtained by contacting the Florida State Purchasing Office of Supplier Diversity at (850) 487-0915 and the Palm Beach County Office of Equal Business Opportunity at (561) 616-6840.

In addition, bidders must take all necessary affirmative steps, as set forth in 2 CFR 200.321(b)(1)-(5), to assure that minority businesses, women's business enterprises, and labor surplus area firms are used when possible.

SUBCONTRACTOR:

The bid proposal requires that subcontractors be identified. The Owner/Engineer may require an experience statement for each subcontractor. Prime contractors must make sure all listed subcontractors are licensed to work in the state of Florida and/or Palm Beach County as applicable. Contractor shall complete Attachment No. 2 to Bid Form.

TRENCH SAFETY AFFIDAVIT

Contractor shall complete Attachment No. 3 to Bid Form.

EXAMINATION OF SITE:

Each bidder is responsible for necessary site investigations to determine all conditions and facilities needed to execute the work in accordance with the contract documents. Site visit meeting date and location:

1. Meeting Location, Wednesday, April 10, 2024
    a. 11:00 AM - LS0637: 4401 Emerald Vista Lake Worth , FL33461
    b. 12:00 PM – LS0980: 22870 65th Ave, Boca Raton, FL 33428

c. 12:15 PM – LS0981: 9780 Sandalfoot Blvd, Boca Raton, FL 33428
d. 12:45 PM –LS1051: 11565 Orange Blossom Ln, Boca Raton, FL 33428

PERMITS:

The Contractor is required to submit applications for, pay for, and secure a building department permit for each lift station address (demolition and construction) as appropriate.

PBCWUD has submitted for and obtained Palm Beach County Land Development Permit and a Florida Department of Health, Palm Beach County (Department) permit for the rehabilitation/construction of the lift stations as required.

Contractor will be responsible for submitting, obtaining, and paying for without reimbursement all necessary Maintenance of Traffic, temporary power, and dewatering permits based on the contractors means and methods. Also, cost of compliance with the regulations of public agencies having jurisdiction, including Safety and Health Requirements of the Occupational Safety and Health Administration of the U.S. Department of Labor (OSHA). The cost of these fees shall be included in each applicable bid line items on the Bid Schedule.

INTERPRETATION OF ADDENDA:

All questions must be submitted **in writing to Deavon Uter, P.E. at duter@pbcwater.com or Palm Beach County Water Utilities Department, 8100 Forest Hill Blvd., West Palm Beach, FL 33413.** When questions raised are deemed appropriate by the Engineer, they shall be answered in the form of Addenda. All Addenda so issued shall become a part of the Contract Documents. To receive consideration, such questions shall be submitted in writing to the Engineer not less than ten (10) calendar days (5:00 p.m., Sunday, April 21, 2024) before the established date for receipt of Bids. The Bidder shall acknowledge receipt of all Addenda on Bid Form-3.

LIQUIDATED DAMAGES:

The Contractor shall pay the $1,000.00 for each calendar day beyond the date specified for Substantial Completion. The Liquidated Damages rate is $500.00 per calendar day for each calendar day greater than thirty (30) days beyond the date certified for Substantial Completion.

BID PROPOSAL:

Contract Price is based on the Total Base Bid of bid Item No. 1 – 52 on Bid Form (Schedule of Bid Prices).

AWARD OF CONTRACT:

If the Contract is to be awarded, the Owner will give the Successful Bidder a notification letter within ninety (90) days after the date of the Bid opening. Contract will be executed within one hundred and fifty (150) days after the date of the bid opening.

PRE-CONSTRUCTION CONFERENCE:

A Pre-Construction Meeting will be held within 60 days after execution of the contract by the Board of County Commissioners. The Notice to Proceed will be issued at the Pre-Construction Meeting. The selected Contractor shall submit schedules and shop drawing documents at the Pre-Work Conference.

ESTIMATED SCHEDULE:

This Contract Time is 580 calendar days from Notice to Proceed for Substantial Completion. Final Completion shall be within 30 days of Substantial Completion. Note the following tentative schedule:

a. Bid Opening: May 1, 2024

b. Bid Award: September 10, 2024

c. Notice to Proceed: October 10, 2024

d. Substantial Completion: May 13, 2026

e. Final Completion: June 13, 2026

CONTRACTOR CONSTRUCTION MANAGER:

The Contractor shall designate in writing and keep on the site at all times during progress of work a technically qualified construction manager.

CONTRACTOR'S RESPONSIBILITIES:

- Prior to starting work, the Contractor shall familiarize himself with the location of all existing utilities and facilities within the work area and shall be

responsible for repair of any damage to these facilities created during the course of the work included herein.

- Contractor must keep the site as clean and safe as possible.
- The Contractor is responsible for dewatering during excavation and any trench wall stabilization required for the installation of piping. Contractor shall submit a proposed dewatering plan and method of disposal of dewatering discharge. The Contractor shall be responsible for obtaining any required dewatering permits.
- All required manufacturer testing and certification shall be included in the unit prices shown in the proposal and Contract. Density testing required for compacted backfilling, and concrete strength and materials testing required at the time of construction shall be arranged for by Contractor and paid for by the Contractor. Water quality monitoring testing required for the dewatering permit shall be arranged for by the Contractor and paid for by the Contractor.
- The Contractor's construction schedule shall be based upon the inclusion of at least 15 calendar days per calendar year, of inclement weather delays over the length of the contract
- Contractor shall be responsible for coordinating delivery, storage, inspections, warrantees, and guarantees of the equipment and or/materials.
- Work hours shall be 8:00 AM to 5:00 PM Monday through Friday, excluding legal holidays. Additional work days and hours may be requested for approval by the Owner.
- The draft Electronic Equipment Data Sheet file must be provided to the Owner for review no later than 30 calendar days prior to startup of the pumping station. The final Electronic Equipment Data Sheet file addressing the Owner's comments must be provided for the pumping station no later than 7 calendar days prior to startup.
- Portions of the work maybe in close proximity to overhead power wire. All coordination and scheduling with FP&L shall be included as part of the Contractor's means and methods under the appropriate Bid Item. Additional compensation will not be paid and days will not be allocated for delays that are caused by FPL and all coordination and scheduling with FPL.
- The maximum duration of any outage where complete bypass pumping is not available is 2 hours and shall occur during off-peak operating hours between the hours of 10:00 pm to 5:00 am.
- The Contractor is responsible for ensuring full compliance with all grant-related requirements and conditions.

COMMENTS:

Deavon Uter stated that the minutes of this meeting will be a part of the contract before reading through the entire pre-bid Agenda.

Question: Duane, do you want to say anything?

Answer: The documentation must be filled out properly, pay attention to the details, and list all subs on Schedule 1. Deavon Uter added that the OEBO requirement of Schedule 2 will not be strictly enforced for this project but it is good practice to complete them properly.

Question: There is a section of the grant agreement that still has the Build America Buy American Act (BABA) requirements. Yet, in your documents, you say the BABA requirement has been removed.

Answer: The BABA requirements no longer apply to the project. One of the reasons why we are rebidding the project is that we know the BABA requirement influenced the firms and how they bid or not bid at all. PBCWUD will take full responsibility for

Question: Does the contractor need to assist with Florida Power & Light?

Answer: PBCWUD will work with Contractor to coordinate with FPL.

MOST COMMON BIDDER'S MISTAKES

BID FORM

1. **Math errors**
2. **Unbalanced bid items**
3. **Total Base Bid on Bid Form-2 does not match Schedule of Bid Prices and/or SBE Schedules amounts**

ATTACHMENT NO. 1 - BID BOND

4. **Bond not submitted on County form**
5. **Officer titles not listed**
6. **Signatures not attested**

ATTACHMENT NO. 2 – OFFICE OF EQUAL BUSINESS OPPORTUNITY (OEBO) SCHEDULES

7. **Schedule 1 must include the Prime– whether or not Prime is SBE**
8. **Schedule 1 and Schedule 2 dollar amounts and percentages don't match**
9. **Schedule 1 and Schedule 2 forms not complete**

10. **Schedule 1 and Schedule 2 forms not signed and dated**
11. **Schedule 1 and Schedule 2 don't utilize Base Bid in calculations**
12. **Schedule 1 and Schedule 2 incorrect old forms submitted**

13. **Schedule 2 subcontractors not Palm Beach County or State certified**
14. **Schedule 2 subcontractor's certification is not for work listed (i.e. certified for paving but not striping)**
15. **Schedule 2 subcontractors not licensed for work listed**
16. **Schedule 1 incorrect Total Bid Price listed**

17. **Schedule 2 Item Descriptions and dollar amounts are missing**
18. **Schedule 2 discrepancy with price and Item Descriptions listed**
19. **Rounding of participation percentage on Sch. 1 and Sch. 2 (no**

rounding accepted) <u>ATTACHMENT NO. 3/3A – CERTFICATION OF</u>

<u>BUSINESS LOCATION</u>

20. **Attachment 3/3A not filled out**

properly or left blank <u>ATTACHMENT NO. 4 -</u>

<u>LIST OF SUBCONTRACTORS</u>

21. **Major subcontractor not listed (A major subcontractor is one that is expected to perform 5% or more of dollar amount of the bid or as listed on Attachment No. 4 to the bid form by the Engineer.)**
22. **Attachment 4 not complete**
23. **Listed subcontractors not licensed by State of Florida or PBC as required**
24. **Licenses are expired or inactive**
25. **Listed subcontractors not licensed for work listed**
26. **Off-site supplier listed instead of**

subcontractor <u>ATTACHMENT NO. 5 –</u>

<u>TRENCH SAFETY</u>

27. **Form not completely filled in and notarized**

THESE MISTAKES MAY CAUSE YOUR BID TO BE REJECTED AND DEEMED NON-RESPONSIVE.

PALM BEACH COUNTY WATER UTILITIES DEPARTMENT

ADVERTISEMENT FOR BID

Project Name: Improvements to Lift Stations 980, 981, and 1051
Lift Station Rehabilitation Bid Package 1, LS0637
PBCWUD Project No.: 21-059R

Sealed Bids containing all the required Bid Documents will be received by the Board of County Commissioners, Palm Beach County, Florida, until **2:00 PM** on **5/1/2024,** at the Palm Beach County Water Utilities Department, Administration Building (1st Floor Reception Desk) located at 8100 Forest Hill Boulevard, West Palm Beach, Florida. The Bid Documents received by this time will be opened the same day, **5/1/2024,** in accordance with the Invitation to Bid and Instructions to Bidders, at or after **2:00 PM** in the Administration Building, Conference Room (Room 158).

The bids will be for furnishing all materials, labor, supervision, equipment, supplies, fees, expertise, and services necessary to provide new or improved lift stations at four (4) locations. Work includes mechanical, electrical, and civil improvements including new pumps, control panels and appurtenances, discharge piping, wet well and manhole coating, new potable water services, and all work included in the Drawing and indicated in the Technical Specifications, including temporary bypass pumping.

All conditions and requirements for bid submission, consideration, and award are contained in the Bid Documents. The Bid Documents will be available to download free of charge beginning 4/2/2024. Please visit Palm Beach County's Vendor Self Service page to access the Bid Documents: https://pbcvssp.co.palm-beach.fl.us/webapp/vssp/AltSelfService. In order to do business with Palm Beach County, vendors are required to create a Vendor Registration Account OR activate an existing Vendor Registration Account through the Purchasing Department's Vendor Self Service (VSS) System, which can be accessed at https://pbcvssp.co.palm-beach.fl.us/webapp/vssp/AltSelfService. IF BIDDER INTENDS TO USE SUBCONTRACTORS, BIDDER MUST ALSO ENSURE THAT ALL SUBCONTRACTORS ARE REGISTERED AS VENDORS IN VSS. ALL SUBCONTRACTOR AGREEMENTS MUST INCLUDE A CONTRACTUAL PROVISION REQUIRING THAT THE SUBCONTRACTOR REGISTER IN VSS. COUNTY WILL NOT FINALIZE A CONTRACT AWARD UNTIL THE COUNTY HAS VERIFIED THAT THE BIDDER AND ALL OF ITS SUBCONTRACTORS ARE REGISTERED IN VSS. This will allow the County to notify you of upcoming solicitations. In addition, there may be certain documents necessary for submittal of a bid which are exempt from public disclosure. Bidders shall download and submit a Plan Holder Registration form (Bid Document attachment) to access these exempt documents. Registered Plan Holders will automatically receive notification of addenda and project updates.

The Bid Documents also may be obtained from **Palm Beach County Water Utilities Department,** 8100 Forest Hill Boulevard, West Palm Beach, FL 33413. A non-refundable service charge of **$150.00** per set of Bid Documents is required. Checks are to be made payable to "Palm Beach County Water Utilities Department." Partial sets will not be available. Bidders requiring Bid Documents mailed must provide an express mail account number to the PBCWUD Engineering Division. The bill will be charged to the recipient's account.

Bid Documents may also be examined at the following plan houses:

ConstructConnect (800) 364-2059
Dodge Data & Analytics, LLC (800) 393-6343
Construction Journal, Stuart (800) 785-5165

When Bid Documents are obtained through a plan house, Bidders must notify the Palm Beach County Water Utilities Department's Project Manager via e-mail in order to be registered to receive project addendums and communications.

Questions may be addressed in writing to **Deavon Uter, P.E.** at **duter@pbcwater.com** or **Palm Beach County Water Utilities Department, 8100 Forest Hill Blvd., West Palm Beach, FL 33413.**

This project is partially federally funded through funds provided by U.S. Department of Treasury via the State of Florida Department of Environmental Protection.

Palm Beach County and the Florida Department of Environmental Protection supports diversity in its procurement program and requests that all contracting opportunities afforded by this Agreement embrace diversity enthusiastically. The award of contracts should reflect the full diversity of the citizens of the State. A list of minority-owned firms that could be offered contracting opportunities may be obtained by contacting the Florida State Purchasing Office of Supplier Diversity at (850) 487-0915 and the Palm Beach County Office of Equal Business Opportunity at (561) 616-6840.

In addition, bidders must take all necessary affirmative steps, as set forth in 2 CFR 200.321(b)(1)-(5), to assure that minority businesses, women's business enterprises, and labor surplus area firms are used when possible.

At the time of bid submission each bidder, and all identified subcontractors, must possess all professional licenses or certifications required by the State of Florida and/or Palm Beach County, as applicable, for the purpose of performing the specified work.

Bid proposals must be submitted on the forms provided by Palm Beach County and accompanied by a bid bond security in favor of Palm Beach County in the amount of not less than five percent (5%) of the bid price. A Performance Bond (100%) and Payment Bond (100%) will be required of the successful bidder within fourteen calendar days of notification from County.

Bidders are invited to attend a non-mandatory pre-bid conference to be held on **4/10/2024** at **10:00 AM** at the address listed below. A non-mandatory site visit will be scheduled at the conclusion of this conference. Attendance at this pre-bid conference is recommended and encouraged.

Palm Beach County
Water Utilities Operations and Maintenance Building
8100 Forest Hill Blvd., Room 55
West Palm Beach, FL 33413

The Board of County Commissioners reserves the right to waive any bid irregularities, informalities, or technical deficiencies and to reject any and all bids.

This Notice given on 3/31/2024 by the PALM BEACH COUNTY WATER UTILITIES DEPARTMENT.

BY: _____
Deputy Director, Palm Beach County Water Utilities Department

PRINTED NAME: Krystin Berntsen PE, PMP

ATTEST:

BOARD OF COUNTY COMMISSIONERS
PALM BEACH COUNTY, FLORIDA
BY: MARIA SACHS, MAYOR

PUBLISH: Palm Beach Post
3/31/2024

END OF SECTION

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INVITATION TO BID

Project Name: Improvements to Lift Stations 980, 981, and 1051
Lift Station Rehabilitation Bid Package 1, LS0637
PBCWUD Project Number: 21-059R

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This project is partially federally funded through funds provided by U.S. Department of Treasury via the State of Florida Department of Environmental Protection.

Palm Beach County and the Florida Department of Environmental Protection supports diversity in its procurement program and requests that all contracting opportunities afforded by this Agreement embrace diversity enthusiastically. The award of contracts should reflect the full diversity of the citizens of the State. A list of minority-owned firms that could be offered contracting opportunities may be obtained by contacting the Florida State Purchasing Office of Supplier Diversity at (850) 487-0915 and the Palm Beach County Office of Equal Business Opportunity at (561) 616-6840.

In addition, bidders must take all necessary affirmative steps, as set forth in 2 CFR 200.321(b)(1)-(5), to assure that minority businesses, women's business enterprises, and labor surplus area firms are used when possible.

At the time of bid submission each bidder, and all identified subcontractors, must be properly certified and licensed in the State of Florida and/or Palm Beach County, as applicable, for the purpose of performing the specified work.

Bid proposals must be submitted on the forms provided by Palm Beach County and accompanied by a bid bond security in the form of a certified check, cashier's check, money order or a bid bond in favor of Palm Beach County in the amount of not less than five percent (5%) of the bid price. A Performance Bond (100%) and a Payment Bond (100%) will be required of the successful bidder within 14 calendar days of notification from County. All bid documents must be submitted in sealed envelopes as described in the INSTRUCTIONS TO BIDDERS.

Bidders are invited to attend a non-mandatory pre-bid conference to be held on **4/10/2024,** at **10:00 AM,** at the address listed below. A site visit will be scheduled at the conclusion of this conference. Attendance at this pre-bid conference is recommended and encouraged.

Palm Beach County
Water Utilities Operations and Maintenance Building
8100 Forest Hill Blvd., Room 55
West Palm Beach, FL 33413

In accordance with F.S. 287.133 (2) (a), persons and affiliates who have been placed on the convicted vendor list may not submit bids, contract with, or perform work (as a contractor, supplier, subcontractor or consultant) with any public entity (i.e. Palm Beach County) in excess of Ten Thousand dollars (or such other amount as may be hereafter established by the Florida Division of Purchasing in accordance with F.S. 287.017) for a period of 36 months from the date of being placed on the convicted vendor list.

The Board of County Commissioners reserves the right to waive any bid irregularities, informalities, or technical deficiencies and to reject any and all bids.

END OF SECTION

PALM BEACH COUNTY

INSTRUCTIONS TO BIDDERS

PBCWUD Project No.: 21-059R

SECTION DESCRIPTIONS

1. DEFINITIONS
2. LICENSES, BUSINESS TAX RECEIPTS, POLICY REGARDING SUBCONTRACTORS
3. BIDDER'S REPRESENTATIONS
4. BIDDING DOCUMENTS
5. BIDDING PROCEDURE
6. CONSIDERATION OF BIDS AND AWARD OF CONTRACT
7. TIME
8. VOLUNTARY PARTNERING
9. PUBLIC BID DISCLOSURE COMPLIANCE
10. CONSTRUCTION INCENTIVE PROGRAM
11. LIQUIDATED DAMAGES
12. LOBBYIST REGISTRATION ORDINANCE - CONE OF SILENCE
13. LIVING WAGE ORDINANCE
14. CRIMINAL HISTORY RECORDS CHECK ORDINANCE
15. DEPARTMENT SPECIFIC INSTRUCTIONS
16. PALM BEACH COUNTY OFFICE OF THE INSPECTOR GENERAL
17. NOTIFICATIONS
18. E-VERIFY – EMPLOYMENT ELIGIBILITY
19. REQUIRED USE OF LABOR COMPLIANCE REPORTING SYSTEM (LCRS)

1.0 Definitions

1.1 **Addenda** are written or graphic instruments issued by the County via the Department prior to the submission of bids which modify or interpret the bidding documents by additions, deletions, clarifications, or corrections or other type of modifications. Addenda will become part of the Contract Documents when the Contract is executed. Bidders, upon receiving addenda, shall insert same into the Bidding documents and are required to acknowledge receipt of all addenda on the Bid Form.

1.2 **A Bid Alternate Item** is an amount stated in the Bid to be added to or deducted from the amount of the Base Bid if the corresponding change in the work, as described in the Bidding Documents, is accepted by the County.

1.3 The **Base Bid** is the sum stated in the Bid for which the Bidder offers to perform the work described in the Bidding Documents as the base, to which work may be added or from which work may be deducted for sums stated in Alternate Bid Items.

1.4 A **Bid** is a complete and properly signed offer to do the work or designated portion thereof, for the sums stipulated therein, submitted in accordance with the Bidding Documents. When combined with the completed, signed, sealed Attachments and required information, also referred to as Sealed Bid.

1.5 **Bid Schedule** – The Bidder's cost proposal for Work items.

1.6 The term **Bidder** means one who submits a Bid directly to the County, as distinguished from a sub-bidder who submits a bid to a Bidder.

1.7 **Bid Documents or Bidding Documents** include the Invitation to Bid, Instructions to Bidders, the Bid Form and Attachments, Bid Bond and Forms, the Contract conditions (General, Supplemental, and Special, if included), technical specifications, drawings, exhibits thereto and any Addenda issued prior to the date designated for receipt of bids.

1.8 The **Contract Documents** for bidding and execution of the awarded Work consist of the following:

1. Bidding Requirements - Invitation to Bid, Instructions to Bidders, Bid Form and Attachments, and Bid Bonds
2. Contract Forms - Contract, Performance Bond, Payment Bond, and Form of Guarantee
3. Contract Conditions - General Conditions, Supplemental Conditions, and Special Conditions, if included.
4. Appendices
5. Technical Specifications
6. Addenda
7. Drawings/Plans
8. Permits
9. Sealed Bid

10. Amendment(s), Work Supplement(s), Work Directive(s)

11. Required Contractor Submittals related to the Work

1.9 The term **Contractor** shall mean the person or entity who is the successful bidder and who executes a contract with Palm Beach County and who is identified in the Contract and is referred to throughout the Contract Documents. Contractor may mean the Contractor or his authorized representative, as the contract context requires.

1.10 The term **County or Owner** shall mean the Board of County Commissioners of Palm Beach County, Florida.

1.11 The term **Day or Days** shall mean a calendar day or calendar days. A calendar day begins at 12:00:00 midnight and ends 24 hours later at 11:59:59 p.m.

1.12 The term **Department** shall mean the Palm Beach County Water Utilities Department, 8100 Forest Hill Boulevard, West Palm Beach, FL 33413, Telephone No. (561) 493-6000.

1.13 **Front-end Loading** – This occurs when a Bidder submits a relatively high price on items which are normally completed, or substantially completed, in the early phases of the Work.

1.14 **Invitation for Bid (IFB)** – A competitive bid process advertised by the County requesting sealed Bids from bidders for a project with detailed specifications. A formal Bid opening is scheduled.

1.15 **Local Preference** - In accordance with the Palm Beach County Local Preference Ordinance, as amended, preference shall be given to: (1) those bidders having a permanent place of business in Palm Beach County ("County"); and, (2) those bidders having a permanent place of business in the Glades providing goods or services to be utilized in the Glades. To receive a local preference, bidders must have a permanent place of business in the County or in the Glades, as applicable, prior to the County's issuance of any solicitation.

1.16 A **Lump Sum and Unit Price Bid** is the sum stated in the Bid for which the Bidder offers to perform the work described in the Bidding Documents containing lump sum and unit price work items. For the purpose of determining the Base Bid amount on a Lump Sum and Unit Price Bid, the unit price costs multiplied by the estimated quantities contained in the Bidding Documents and the lump sum shall be added together.

1.17 **Palm Beach County** is a political subdivision of the State of Florida, as represented by its Board of County Commissioners (hereinafter called "County"). Where the word "approval" is mentioned, "approval" shall mean action by the Board of County Commissioners, or designated representative.

1.18 **S/M/WBE** – This project is partially federally funded through funds provided by U.S. Department of Treasury via the State of Florida Department of Environmental Protection. Bidders must take all necessary affirmative steps, as set forth in 2 CFR 200.321(b)(1)-(5), to assure that minority businesses, women's business enterprises, and labor surplus area firms are used when possible.

1.19 **Unbalanced Bid Item** – Bid items in which the lump sum or unit prices are not in line with industry standards or averages for the items. For a Bid to be balanced, each item must carry its proportionate share of direct cost, overhead and profit.

1.20 The term **Work** as used herein refers to the construction and services required by the Contract Documents and include all labor, materials, equipment, and services provided by the Contractor to fulfill the Contractor's obligations.

2.0 Licenses, Business Tax Receipts, Policy Regarding Subcontractors

2.1 Bidders and their proposed subcontractors of any tier regulated by the Florida Construction Industry Licensing Board or the Construction Industry Licensing Board of Palm Beach County shall be properly qualified and licensed/certified by the appropriate Board or Boards as required by Florida Statute Chapter 489, or Special Act, Laws of Florida Chapter 67-1876 prior to the time of submission of the bid. State of Florida Contractor's Registration/License or numbers or Palm Beach County Certificate Numbers must be listed at the applicable places on the Bid Form. Any bid, which is submitted by a contractor who fails to comply with this section at the time the bid is submitted, or which lists a subcontractor who is not in compliance with this section at the time the bid is submitted, shall be rejected as non-responsive.

2.2 The Contractor, subcontractors of any tier, and specialty contractors must have a valid Palm Beach County business tax receipt at the time of bid submission, except where provisions of F.S. 205.065 apply.

2.3 It is Palm Beach County's policy to discourage contractors from seeking new subcontractor or supplier pricing after the opening of bids of a County contract, which practice is sometimes known as bid or subcontractor shopping. In order to facilitate this policy, Bidders are required to identify, in the Bid Documents, the major subcontractors which Bidder, as the contractor, intends to use to perform the contract.

2.3.1 No Contractor, having been awarded any contract based upon the Contractor's response to an invitation to bid, request for proposal, request for qualifications, or other solicitation for competitive selection wherein the Contractor listed the subcontractors which the Contractor intended to use in performing such contract, shall replace any subcontractor listed in the Contractor's response to such request without having first demonstrated good cause, acceptable to the County in its sole discretion. The replacement of any SBE subcontractor shall also conform to the requirements of the County's SBE Ordinance and paragraph 5.3.8 of these Instructions to Bidders.

2.3.2 No Contractor, having been awarded any contract based upon the Contractor's response to an invitation to bid, request for proposal, request for qualifications, or other solicitation for competitive selection wherein the Contractor listed the elements of work which the Contractor intended to perform with its own forces, shall perform such work with a subcontractor without having first demonstrated good cause, acceptable to the County in its sole discretion, for utilizing such subcontractor.

2.3.3 Contractor agrees that neither the County's acceptance nor rejection of the Contractor's request to replace or add any subcontractor shall give rise to any liability of any kind on the part of the County.

2.3.4 No bidder, including subcontractors, will be considered responsible if it had recently failed to satisfactorily carry out any previous contract with Palm Beach County. Contractor shall not employ any Subcontractor, Supplier or other person or organization, whether initially or as a substitute, against whom County or Engineer may have reasonable objection.

3.0 Bidder's Representations

3.1 Each Bidder by making its Bid represents that:

3.1.1 Bidder has satisfied itself, by personal examination of the location of the proposed Work and by thorough examination of the Bid Documents, that Bidder understands all requirements of the Work. In addition, Bidder has, to the extent Bidder determined to be necessary, satisfied itself regarding the accuracy of the estimate of the quantities of the Work to be done; and shall not at any time after the submission of a Bid dispute or complain of such estimate nor the nature or amount of Work to be performed. Bidder is familiar with, and certifies that all work shall comply with all Federal, State and Local laws, ordinances, rules and regulations that in any way affect the cost, progress or performance of the Work. Failure of a Bidder to be familiar with applicable laws, ordinances, rules and regulations will in no way relieve Bidder from the responsibility of complying with the applicable laws, ordinances, rules and regulations.

3.1.2 The County will make available to any Bidder on request copies of such reports and drawings that are referenced in the Bid Documents. Those reports and drawings are not part of the Contract Documents, but the Bidder is entitled to review the technical data contained therein for general information purposes only. County does not represent that the conditions reflected in such reports and drawings are the conditions which contractor will experience, but are based on best information available to the County.

3.1.3 Bidder assumes responsibility for having determined to its satisfaction, prior to the submission of its Bid, 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 execution of the Work, the general and local conditions and all other matters which can in any way affect the Work of this Project. The prices established for the Work to be done will reflect all costs pertaining to the Work.

3.1.4 By submission of its Bid, each Bidder affirms that it has, at its own expense, performed any additional examinations, investigations, explorations, tests, or studies and obtained any additional information and data which pertain to the physical conditions (surface, subsurface and underground utilities) at or contiguous to the Site or otherwise, prior to Bidding which may affect the cost, progress or performance of the Work and which the Bidder deems necessary to determine its Bid for performing the Work in accordance with the time, price, and other terms and conditions of the Bid Documents and/or it has satisfied itself with respect to such conditions and it shall make no claims against the County or the Engineer if on carrying out the Work it finds that the actual conditions do not conform to those indicated.

3.1.5 On request, the County will provide each Bidder access to the Site to conduct such investigations and tests, as each Bidder deems necessary for submission of its Bid. Bidder shall schedule such access in advance with the County by contacting the Department. Upon completion of such additional field investigations and tests, each Bidder shall completely restore disturbed areas to a condition equal to or better than the conditions which existed prior to performance of the additional field investigations and tests.

3.1.6 The lands upon which the Work is to be performed, rights-of-way, and easements for access thereto and other lands designated for use by the Contractor in performing the Work are identified in the Bid Documents. All additional lands and access thereto required for temporary construction facilities or storage of materials, equipment and supplies are to be provided by the Contractor. Easements for permanent structures or permanent changes in existing structures are to be obtained and paid for by the County, unless otherwise provided in the Contract Documents.

3.1.7 The submission of a Bid will constitute an incontrovertible representation by the Bidder that the Bidder has complied with every requirement of these Instructions to Bidders, that, without exception, the Bid is premised upon performing the Work required by the Bid Documents and that such means, methods, techniques, sequences, or procedures of construction as may be indicated in or

required by the Bid Documents are sufficient in scope and detail to indicate and convey an understanding of all terms and conditions for performance of the Work.

3.1.8 The Bidder shall not be entitled to any additional compensation or time extensions based upon alleged differing conditions that in the opinion of the Engineer and/or the County should have been reasonably anticipated by the Bidder.

3.1.9 The Bidder understands and agrees that the quantities of work or material stated in unit price items are supplied only to give an indication of the general scope of the Work and the County does not expressly or by implication agree that the actual quantity of the Work or material will correspond therewith. The County reserves the right after award to increase or decrease the quantity of any unit price item of the bid quantity, without a change in the unit price, and reserves the right to delete any bid item, in its entirety, or to add additional bid items up to and including an aggregate total amount not to exceed fifteen percent (15%) of the contract price.

3.1.10 Scrutinized Companies (when contract value is greater than $1 million)

As provided in F.S. 287.135, by entering into this Contract or performing any work in furtherance hereof, the CONTRACTOR certifies that it, its affiliates, suppliers, subcontractors and consultants who will perform hereunder, have not been placed on the Scrutinized Companies that boycott Israel List, or is engaged in a boycott of Israel, pursuant to F.S. 215.4725.

When contract value is greater than $1 million: As provided in F.S. 287.135, by entering into this Contract or performing any work in furtherance hereof, the CONTRACTOR certifies that it, its affiliates, suppliers, subcontractors and consultants who will perform hereunder, have not been placed on the Scrutinized Companies With Activities in Sudan List or Scrutinized Companies With Activities in The Iran Petroleum Energy Sector List created pursuant to F.S. 215.473 or is engaged in business operations in Cuba or Syria.

If the County determines, using credible information available to the public, that a false certification has been submitted by CONTRACTOR, this Contract may be terminated and a civil penalty equal to the greater of $2 million or twice the amount of this Contract shall be imposed, pursuant to F.S. 287.135. Said certification must also be submitted at the time of Contract renewal, if applicable.

3.2 As provided in Florida Statute 287.133(2)(a) a person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a bid on a contract to provide any goods or services to a public entity, may not submit a bid on a contract with a public entity for the construction or repair of a public building or public work, may not submit bids on leases of real property to a public entity, may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with any public entity, and may not transact business with any public entity in excess of the threshold amount provided in FF.S. 287.017 for CATEGORY TWO for a period of 36 months from the date of being placed on the convicted vendor list. By entering into this contract or performing any work in furtherance hereof, the contractor certifies that it, its affiliates, suppliers, subcontractors and consultants who will perform hereunder have not been placed on the convicted vendor list maintained by the State of Florida Department of Management Services within the 36 months immediately preceding the date hereof. This notice is required by F.S. 287.133 (3) (a).

3.3 The undersigned does hereby declare that it is the only person or persons interested in said Bid; that it is a genuine Bid not made in the interest of or on behalf of any undisclosed person, firm or corporation and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation; that it is made without any connection with any person submitting another Bid for the same Contract; that this Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid; that the Bid is in all respects fair and without collusion, fraud, or

mental reservations; that no official of the County or any person in the employ of the County is directly or indirectly interested in said Bid or in the supplies of Work to which it relates, or in any portion of the profits thereof; and that Bidder has not sought by collusion to obtain for itself any advantage over any other Bidder or over the County.

3.4 Local Preference – "Local Preference is not applicable to this solicitation"

3.5 Glades Local Preference – "Glades Local Preference is not applicable to this solicitation"

3.6 Commercial Non-Discrimination. The Bidder represents and warrants that it will comply with the County's Commercial Nondiscrimination Policy as described in Resolution 2017-1770 as amended. As part of such compliance, the Bidder shall not discriminate on the basis of race, color, national origin, religion, ancestry, sex, age, marital status, familial status, sexual orientation, gender identity or expression, disability, or genetic information in the solicitation, selection, hiring or commercial treatment of subcontractors, vendors, suppliers, or commercial customers, nor shall the Bidder retaliate against any person for reporting instances of such discrimination. The Bidder shall provide equal opportunity for subcontractors, vendors and suppliers to participate in all of its public sector and private sector subcontracting and supply opportunities, provided that nothing contained in this clause shall prohibit or limit otherwise lawful efforts to remedy the effects of marketplace discrimination that have occurred or are occurring in the County's relevant marketplace in Palm Beach County. The Bidder understands and agrees that a material violation of this clause shall be considered a material breach of any resulting contract and may result in termination of the contract, disqualification or debarment of the Bidder from participating in County contracts, or other sanctions. This clause is not enforceable by or for the benefit of, and creates no obligation to, any third party.

All subcontractor agreements shall include a commercial non-discrimination clause.

3.7 VSS Registration Required. In order to do business with Palm Beach County, vendors are required to create a Vendor Registration Account OR activate an existing Vendor Registration Account through the Purchasing Department's Vendor Self Service (VSS) system, which can be accessed at https://pbcvssp.co.palm-beach.fl.us/webapp/vssp/AltSelfService. IF BIDDER INTENDS TO USE SUBCONTRACTORS, BIDDER MUST ALSO ENSURE THAT ALL SUBCONTRACTORS ARE REGISTERED AS VENDORS IN VSS. ALL SUBCONTRACTOR AGREEMENTS MUST INCLUDE A CONTRACTUAL PROVISION REQUIRING THAT THE SUBCONTRACTOR REGISTER IN VSS. COUNTY WILL NOT FINALIZE A CONTRACT AWARD UNTIL THE COUNTY HAS VERIFIED THAT THE BIDDER AND ALL OF ITS SUBCONTRACTORS ARE REGISTERED IN VSS.

3.8 **Prohibition against Considering Social, Political or Ideological Interests in Government Contracting - F.S. 287.05701.** Bidders are hereby notified of the provisions of section 287.05701, Florida Statutes, as amended, that the County will not request documentation of or consider a Bidder's social, political, or ideological interests when determining if the Bidder is a responsible Bidder. Bidders are further notified that the County's governing body may not give preference to a Bidder based on the Bidder's social, political, or ideological interests.

4.0 Bidding Documents

4.1 Copies

4.1.1 Bidders may obtain complete sets of the Bidding Documents by methods as indicated in the Invitation to Bid.

4.1.2 Bidders shall use complete sets of Bidding Documents in preparing Bids; the County assumes no responsibility for errors or misinterpretations resulting from the use of incomplete or illegible sets of Bidding Documents.

4.1.3 The County, by making copies of the Bidding Documents available on the above terms, does so only for the purpose of obtaining Bids on the work and does not confer a license or grant for any other use. All information contained in the Bidding Documents is the sole property of the County and any unauthorized use is prohibited by law.

4.2 Interpretation or Correction of Bidding Documents

4.2.1 Bidders shall promptly notify the County in writing of any ambiguity, inconsistency or error, which is discoverable upon examination of the Bidding Documents or of the site and local conditions.

4.2.2 Bidders requiring clarification or interpretation of the Bidding Documents shall make a written request which shall reach the Department at the name and address listed in the Invitation to Bid at least ten calendar days prior to the date for receipt of Bids. Bidders requesting clarification or interpretation of the Bidding Documents shall supply the Department with all information requested by the Department which the Department requires to issue a clarification or interpretation. A bidder finding discrepancies, errors, and/or omissions or having doubt as to the intent of the technical portions of the Bid Documents, or having questions relative to bidding requirements, bidder qualifications and contract award shall at once notify the Department.. The Department, in its sole discretion, shall determine if a clarification or interpretation of the Bidding Documents is required.

4.2.3 Any interpretation, clarification, correction, or change of the Bidding Documents will be made only by Addendum. Written instructions regarding discrepancies, omissions or unclear intents shall be sent to all Bidders who have received bid documents from Palm Beach County. Interpretations, corrections or changes to the Bidding Documents made in any other manner will not be binding, and Bidders shall not rely upon such interpretations, corrections and changes.

4.2.4 Governing Order of Contract Documents - The Contract Documents include various divisions, sections and conditions which are essential parts for the work to be provided by the successful Bidder. A requirement occurring in one is as binding as though occurring in all. They are intended to be complementary and to describe and provide for a complete work. In case of discrepancy, the following precedence will govern the interpretation of the Contract Documents prior to award of the contract.

1. Contract
2. Addenda
3. Instructions to Bidders
4. General Conditions
5. Federal Requirements Technical Specifications/Drawings/Plans
6. Bid Documents

After award, Work Supplements, supplemental agreements, and revisions to plans and specifications will take precedence over any of the above**. In case of discrepancy among technical specifications, drawings, and plans, the most restrictive requirements shall govern.** Detailed plans shall have precedence over general plans. In the event that any conflicts cannot be resolved by reference to this Governing Order of Contract Documents provision, then County shall resolve the conflict in any manner which is acceptable to County and which comports with the overall intent of the Contract Documents.

4.2.5 Whenever reference is made to actions being performed with respect to dates and times set forth in the Invitation to Bid, such reference shall always be interpreted as including, by inference, “or as may be modified by pre-bid addenda”.

4.3 Addenda

4.3.1 Addenda will be mailed, delivered, e-mailed, or faxed to all who are known by the Department to have received a complete set of Bidding Documents.

4.3.2 Copies of Addenda will be made available for inspection at the Department where Bidding Documents are on file for that purpose.

4.3.3 No Addenda will be issued later than five work days prior to the date for receipt of Bids except an Addendum withdrawing the request for Bids, one which includes postponement of the date for receipt of Bids, one whose content is limited to the listing of additional approved manufacturers and substitutions, or one which contains minor clarifications or changes.

4.3.4 Prior to submission of its Bid, each Bidder shall ascertain that it has received all Addenda issued. The Bidder shall acknowledge receipt of all addenda by completing the acknowledgment space provided on the Bid Form.

5.0 Bidding Procedure

5.1 Form and Style of Bids

5.1.1 Bids shall be submitted on forms furnished by the County. Changes or additions to the Bid, recapitulations or changes in the work bid upon, alternative proposals, or any other modifications of the Bid Form, Attachments to the Bid Form, or the Bid Documents, which are not specifically called for in the Bid Documents may result in the County's rejection of the bid as non-responsive to the Invitation to Bid.

5.1.2 All blanks on the Bid Form and enclosures to the Bid Form shall be filled in by typed text or manually printed in ink.

5.1.3 In the event there are unit price bid items provided in the Bid Form and the "amount" indicated for a unit price bid item does not equal the product of the unit price and quantity, the unit price shall govern and the amount will be corrected accordingly. In the event there is more than one bid item in the Bid Form and the total indicated therein does not agree with the sum of the prices bid for the individual items, the prices bid on the individual items shall govern and the total for the schedule will be corrected accordingly. Where so indicated by the make-up of the Bid Form, sums shall be expressed in both words and figures, and in case of discrepancy between the two, the amount written in words shall govern.

5.1.4 Any interlineation, alteration or erasure must be initialed, in ink, by the signer of the Bid Form.

5.1.5 All requested Bid Alternate Items shall be bid. If no change in the Base Bid is required, enter "No Change.”

5.1.6 The Bidder shall provide on Attachment No. 2 to the Bid Form, the names and license or certificate numbers of major subcontractors who will perform that portion of work which will be performed by subcontractors. A major subcontractor is one that is expected to perform more than 5% of the dollar amount of the bid or as listed on Attachment No. 2 to the bid form by the Engineer.

5.1.7 Each page of the Bid Form and Attachments to the Bid Form shall include, where requested, the legal name of the Bidder. The Bid Form shall also contain a statement whether the Bidder is a sole proprietor, a partnership, a corporation, or some other legal entity, and shall be signed by the person or persons legally authorized to bind the Bidder to a contract.

5.1.8 In the event a Bid is submitted by two or more Bidders as a joint venture, such Bid shall be submitted in strict accordance with all applicable laws of the State of Florida, State Contractor License Law, and Rules and Regulations of the State Contractor's Board. The joint venture and all legal entities comprising the joint venture shall be jointly and severally liable and shall be required to submit and sign the Bid Form, execute the Bid Bond as listed Principals, and, if awarded the Contract, shall be required to execute the Contract and Performance and Payment Bonds as listed Principals and provide insurance evidencing the joint venture and all legal entities as the insured.

5.1.9 No person, firm or corporation shall be allowed to submit, or have an interest in, more than one Bid for the same work unless alternate bids are specifically called for. A person, firm or corporation that has submitted a sub-bid to a Bidder is not, however, disqualified from submitting a sub-bid or quoting prices to other Bidders or submitting a prime Bid.

5.1.10 The following forms, together, comprises a Bid and must be submitted at the times identified in 5.4:

BID DOCUMENTS (Due 5/1/2024 by 2:00 PM))

BID FORM	
ATTACHMENT NO. 1	BID BONDS
ATTACHMENT NO. 2	LIST OF MAJOR SUBCONTRACTORS
ATTACHMENT NO. 3	TRENCH SAFETY

Omission of any of these attachments from the bid submission, or failure to properly complete any portion of the required forms, or failure to deliver the attachments at or before the times specified in paragraph 5.4 may be cause to reject the entire Bid.

5.2 Bid Security, Project Bonds, Insurance, and Indemnity

5.2.1 Each Bid shall be accompanied by a BID SECURITY (in the form of, at Bidder's option, cashier's check, certified check, money order or Bid Bond in favor of the County) in the amount of at least five percent (5%) of the bid price pledging that the Bidder will within fourteen (14) days after Notification from County, enter into a contract with the County on the terms stated in its Bid and will furnish bonds as described hereunder covering the faithful performance of the Contract and the payment of all obligations arising thereunder. Should the Bidder refuse to enter into such Contract or fail to furnish the required bonds and insurance, the amount of the bid security shall be forfeited to the County as liquidated damages, not as penalty. If a Bidder fails to execute a Contract for the project, the Bidder may be suspended or debarred from bidding on future projects for a period of two (2) years, in accordance with the Palm Beach County Purchasing Ordinance. The County may further pursue any and all remedies available against the Contractor for damages resulting from its failure to enter into a contract.

5.2.2 The bid bond shall be written on the Bid Bond form, included as part of the Bidding Documents, and the attorney-in-fact who executes the bond on behalf of the surety must be licensed to do business in the State of Florida and shall affix to the bond a certified and current copy of his power of attorney. If a bid bond is submitted on a form other than that provided, such submission shall result in the bid being declared non-responsive. Checks and money orders shall be made payable to Palm Beach County Board of County Commissioners.

5.2.3 The County will have the right to retain the bid security of Bidders to whom an award is being, or may be, considered until either (a) the Contract has been executed and the bonds and insurance have been furnished, or (b) the specified time has elapsed so that Bids may be withdrawn, or (c) all Bids have been rejected.

5.2.4 Bond Requirements

5.2.4.1 The Bidder shall furnish bonds covering the faithful performance of the Contract and the payment of all obligations arising thereunder in such form and amount as the County may prescribe. Bonds may be secured through the Bidder's usual sources provided the Surety must be authorized to do business in the State of Florida.

5.2.4.2 Prior to execution of a Contract, and not later than fourteen (14) calendar days after Notification from Owner, the successful Bidder shall furnish contract bonds to the Department, on the forms provided in the bidding documents, as follows:

1. Public Construction Bond in the Amount of 100% of the Contract Price.

2. Form of Guarantee

Such Performance and Payment Bonds shall incorporate by reference all of the terms and conditions of the Contract Documents, including but not limited to the Contractor and Surety's obligation for liquidated damages as well as Surety's acknowledgment regarding any and all provisions addressing or regarding "no damages for delay", as provided for in the General Conditions.

5.2.4.3 The Surety Company, in addition to the above requirements, shall be currently listed with the United States Department of Treasury for an amount greater than the contract amount. The Contractor, at the time of his execution of the contract, shall provide, with his Contract Bonds, a copy of the Surety Company's current valid Certificate of Authority issued by the United States Department of the Treasury under SS 31, U.S.C. 9304-9308.

5.2.4.4 The bonds and guarantees shall be written on the forms included in the Contract Documents provided by the Department.

5.2.4.5 The Bidder shall require the attorney-in-fact who executes the required bonds on behalf of the Surety to affix thereto a certified and current copy of his Power of Attorney, reflecting his/her authority as Power of Attorney, which must be valid in the State of Florida.

5.2.4.6 As soon as possible after award of the contract, successful bidder shall deliver to County a certified copy of the recorded Payment and Performance bonds. **No payment will be made for work performed under this contract until a certified copy of the appropriate bond(s) has been delivered to County.**

5.2.5 Insurance Requirements - Prior to execution of a Contract and not later than fourteen (14) calendar days after Notification from County, the successful Bidder shall furnish to the Department certificates of insurance evidencing the existence of current valid, and binding insurance policies for the limits and coverage in accordance with the requirements delineated in the General Conditions, where such insurance is to be provided by Contractor, or as otherwise modified within the Contract Documents, together with a declaration of deductible amounts applicable to each type of insurance provided, acceptable to County.

5.3 Equal Business Opportunity Program – **Not applicable to this solicitation**

5.4 Timing of Submission of Bid Documents

5.4.1 The following Bid Documents must be submitted by the date and time specified for the submission of bids in the Invitation to Bid. Submission of these documents after the date or time specified in the Invitation for Bid will result in the documents being rejected and returned to the bidder:

1. Bid Form
2. Bid Bond - Attachment No. 1 To Bid Form
3. List of Major Subcontractors - Attachment No. 2 To Bid Form
4. Trench Safety - Attachment No. 3 To Bid Form
5. MBE/WBE GOOD FAITH EFFORTS - Attachment No. 4 To Bid Form**

****Attachment No. 4 is not required at time of Bid submission. This form must be completed by the successful bidder and returned to the County after contract award.**

5.5 Submission of Bids

5.5.1 The **Bid Documents (Due 5/1/2024 by 2:00 PM)** package shall be enclosed in a sealed opaque envelope addressed as follows:

PBCWUD Project Number: 21-059R
Contractor's **Bid Documents** for Improvements to Lift Stations 980, 981, and 1051 Lift Station Rehabilitation Bid Package 1, LS0637
Water Utilities Department
Administration Building
8100 Forest Hill Boulevard
West Palm Beach, Florida 33413

No responsibility will be attached to the County for premature opening of or failure to open a bid not properly identified. If the bid is sent by mail, the sealed envelope shall be enclosed in a separate mailing with the notation "SEALED BID ENCLOSED" on the face thereof.

5.5.2 Bids, including those sent by mail, must be received and deposited at the designated location prior to the time and date for receipt of Bids indicated in the Invitation to Bid, or any extension thereof made by Addendum. Bids received after the time and date for receipt of Bids will be returned unopened.

5.5.3 The Bidder shall assume full responsibility for timely delivery at the location designated for receipt of Bids.

5.5.4 Oral, telephonic, fax, e-mail, or telegraphic Bids are invalid and will not receive consideration.

5.6 Modification or Withdrawal of Bid

5.6.1 A Bid may not be modified, withdrawn, or canceled by the Bidder for the period after opening of Bids as stipulated on the Bid Form and each Bidder so agrees in submitting his Bid.

5.6.2 Prior to the time and date designated for submission of the Bid Documents, any Bid submitted may be modified or withdrawn by notice to the party receiving Bids at the place and prior to the time designated for submission of the Bid Documents. Such notice shall be in writing over the signature of the Bidder and received by the Department before the date and time set for submission of the Bid Documents; and it shall be worded so as not to reveal the amount of the original Bid.

5.6.3 Withdrawn Bids may be resubmitted up to the time designated for the submission of the Bid Documents provided that the resubmitted bid is fully in conformance with these Instructions to Bidders.

5.6.4 Bid security shall be in an amount sufficient for the Bid as modified or resubmitted.

6.0 Consideration of Bids and Award of Contract

6.1 Opening of Bids - The Bids received on time will be opened publicly and will be read aloud at the time and location specified.

6.2 Rejection of Bids - The Board of Palm Beach County Commissioners reserves the right to reject any and all Bids, and/or to re-advertise, to waive any irregularities, informalities or technicalities therein, to negotiate Contract terms with the successful Bidder, to disregard all non-conforming, non-responsive, unbalanced or conditional Bids, or to accept any Bid which in the County's sole judgment will best serve the public interest. County reserves the right to cancel the award of any Contract at any time before the execution of said Contract by all parties without any liability against the County. In consideration of the County's evaluation of submitted Bids, the Bidder, by submitting its Bid, expressly waives any claim to damages or legal remedy, of any kind whatsoever, in the event the County exercises its rights provided for in this subsection.

6.3 Award of Contract

6.3.1 Award will be made to the lowest, responsive, responsible Bidder. To be considered responsive, the Bid must conform in all respects to the conditions of the Invitation to Bid, to the Instructions to Bidders, Palm Beach County Code Sections 2-51 through 2-54, as amended and to Florida law. To demonstrate qualifications to perform the Work, each Bidder must be prepared to submit within two (2) days of the County's request, the. Post Bid Information identified in Appendix B to the General Conditions. Each Bidder must, upon request, provide evidence that, as of the date of execution of the contract, Bidder, and the listed subcontractors, were qualified to do business in the State of Florida and Palm Beach County.

6.3.2 Bid tabulations with recommended awardees, will be posted at the location where bids were opened, for review by interested parties, prior to award by the Board of County Commissioners, and will remain posted for a minimum period of five (5) business days. All bidders will receive a copy

of the bid posting by e-mail or fax. Failure to file a protest to the Director of Purchasing during the five (5) business day period following initial posting shall constitute a waiver of proceedings under Chapter 2, Article II, Section 2-55 of the Palm Beach County Code.

6.3.3 The County of Palm Beach, in accordance with Title VII of the Civil Rights Act of 1964, affirmatively ensures that in any contract entered into pursuant to the Invitation to Bid, any SBE will be afforded full opportunity to submit bids and will not be discriminated against on the grounds of race, color, or national origin in consideration of award.

6.3.4 The dollar amount for award of this Contract shall be the Total Base Bid for the items noted on the Bid Form. Palm Beach County reserves the option to award or re-bid alternates in any sequence or at any time deemed to be in the best interest of the County.

6.3.4.1 The amounts for each bid alternate shall constitute an ongoing and open offer and the prices stated in the bid proposal shall be maintained for a minimum period of one year, or the duration of the contract whichever is shorter. If the County opts to accept an alternate within the time frame identified above but after the time at which such activity fits into the Contractor's approved schedule so as to cause a time or monetary impact, the cost of the alternate can be adjusted accordingly. However, in no instance shall the Contractor be entitled to extend home office overhead costs as a result of the County exercising this option.

6.3.5 Bids which are determined by the County to be unbalanced bids or which contain unbalanced line item pricing when compared to competitor's bids for the same item and standard industry prices, and which significantly deviate from the County's determination of acceptable line item pricing, may be rejected by the County in accordance with established County procedures. The County has a formal, written policy against front end loaded projects. A copy of this policy is available upon request.

6.4 Disqualification of Bidders - Any of the following causes is considered sufficient to disqualify a Bidder, and reject its proposal.

1. Interest by the same person in more than one bid as a bidder.
2. Collusion among or between bidders.
3. Unbalanced bids; that is bids in which the price bid is out of all proportion to the other bids received.
4. Lack of responsibility on the part of the Bidders. (For example, no bidder would be considered responsible if it had recently failed to satisfactorily carry out any previous contract with Palm Beach County).
5. Lack of experience or capital on the part of the Bidder. Evidence of experience, ability, financial standing and machinery available may be required of any bidder.
6. Substantial evidence of bad character or dishonesty.
7. Lack of current applicable certification and/or license for the purpose of performing the specified work.
8. Any cause listed under Section 2-56 of the Palm Beach County Code as amended.
9. History of unsuccessful claims asserted by Bidder against public owners in the State of Florida, such as to establish a trend of improperly asserted claims.
10. An incomplete bid.
11. Using a different bid bond form or incomplete bid surety.
12. Any other cause which, as a matter of law renders the Bid non-responsive or non-responsible.

7.0 Time - Time is of the essence in all contract documents. The successful Bidder, shall enter into a Contract with the County, shall commence the work to be performed under the Contract on the date

set by the County in the written notice to proceed, and shall continue the work with due diligence and shall agree to complete the entire work as specified in the Bid Form.

8.0 Voluntary Partnering - The objective of partnering is to establish a partnership charter and action plan between the County and Contractor to identify and achieve reciprocal goals. This partnership will not change the legal relationship of the parties to the Contract nor relieve either party from any of the terms of the Contract. This partnership will be bilateral in make-up and only if participation is desired by the Contractor. Any cost associated with developing this partnership must be agreed to by both parties, in writing and will be shared equally.

If both the County and Contractor agree to partnering, the County's representative and the Contractor's representative will meet and plan a partnering development seminar/team building workshop. At this planning session, arrangements will be made to select a facilitator, determine workshop attendees, and develop an agenda and location. Participants shall include the Architect/Engineer and key project personnel, representatives of the subcontractors, utilities, regulatory agencies and others will be invited. Management personnel consisting of the Director-level head of the Division or Department and a Corporate Officer or other person representing ownership of the Contractor, and of the Architect/Engineer of Record shall also participate in the partnering workshop and its implementation.

Follow-up workshops may be held throughout the duration of the Contract as agreed to by the County and Contractor.

9.0 Public Bid Disclosure Compliance - All fees including, but not limited to, certificate of occupancy permit fees and inspection fees payable by the Contractor to the County by virtue of this project will be waived by the County. Permits and fees which are required by the State of Florida or any state agency or by any other governmental agency are not waived. The requirement that all contractors and subcontractors of any tier be properly licensed or certified is not waived and no fees required to be paid by any contractor or subcontractor related to licensing and certification are being waived. All contractors and subcontractors, identified in the bid documents, who work in trades required to be licensed or certified by the Palm Beach County Construction Industry Licensing Board are required to have such licenses or certificates in place at the time of bid submission.

10.0 Cost Savings Incentive - The Costs Savings Incentive provisions of General Condition 74 **are not** in effect for this Contract.

11.0 Liquidated Damages - If the Bid Form indicates that liquidated damages apply to this contract then they will be assessed at the rate(s) set forth in the Bid Form. County and Contractor agree that time is of the essence in the performance of this contract and agree that the damages which County will suffer in the event that Contractor finishes this project after the completion dates set forth in this Contract are certain but will be difficult, if not impossible, to quantify. Therefore, Contractor and County agree that the rate(s) set forth on the bid form are a reasonable estimate of the amount of damages which County will suffer in the event Contractor does not timely complete the Contract. Contractor and County agree that these liquidated damages shall be assessed as damages, as provided in the Contract Documents, and that they are not, and shall never be considered to be, a penalty.

12.0 Lobbyist Registration Ordinance – Cone of Silence.

5.1 The Palm Beach County Lobbyist Registration Ordinance Palm Beach County Code Section 2-351, *et seq*, is hereinafter referred to in this Section as the Ordinance. The Ordinance includes a "Cone of Silence" provision that prohibits any communication, except written communication, regarding any Competitive Solicitation between:

1. Any Person or Person's representative seeking an award from such competitive solicitation; and

2. Any County Commissioner or Commissioner's staff, or any Employee authorized to act on behalf of the Commission to award a particular contract.

5.2 For the purposes of this Section, a Person's representative shall include but not be limited to the Person's employee, partner, officer, director, consultant, lobbyist, or any actual or potential subcontractor or consultant of the Person.

5.3 The Cone of Silence shall be in effect as of the deadline to submit the proposal, bid, or other response to a competitive solicitation. Each Request for Proposal, Request for Qualification, bid, or any other competitive solicitation shall provide notice of Cone of Silence requirements and refer to this Ordinance.

5.4 The provisions of this Ordinance shall not apply to oral communications at any public proceeding, including pre-bid conferences, oral presentations before selection committees, contract negotiations during any public meeting, presentations made to the Board, and protest hearings. Further, the Cone of Silence shall not apply to contract negotiations between any Employee and the intended awardee, any dispute resolution process following the filing of a protest between the Person filing the protest and any Employee, or any written correspondence at any time with any Employee, County Commissioner, or Advisory Board Member or selection committee member, unless specifically prohibited by the applicable competitive solicitation process.

5.5 The Cone of Silence shall not apply to any purchases made in an amount less than the competitive bid threshold set forth in the Palm Beach County Purchasing Ordinance (Palm Beach County Code Chapter 2, Article III, Division 2, Part A, Section 2.51, et seq.).

5.6 The Cone of Silence shall terminate at the time the Board, or a County Department authorized to act on behalf of the Board, awards or approves a contract, rejects all bids or responses, or otherwise takes action which ends the solicitation process.

13.0 Living Wage Ordinance

13.1 The Palm Beach County Living Wage Ordinance (Ordinance 2003-004) went into effect for all construction contracts issued on or after October 1, 2003. The ordinance requires the County and its construction contractors and subcontractors to pay a living wage of $ 14.83 per hour (effective October 1, 2023 through September 30, 2024).

13.2 This ordinance shall apply to all construction contracts exceeding $100,000 in value that are not subject to the Davis-Bacon Act or any related act or amendments that require Davis-Bacon wage rates.

13.3 The ordinance shall apply to construction related services meaning any service, other than a professional service as defined by the Palm Beach County Purchasing Ordinance, consisting of work or labor performed directly upon the site of work and directly related to construction.

13.4 Before entering into any construction contract, the General Contractor must provide a certificate to the Water Utilities Department stating that if awarded the contract, they will pay each employee no less than the living wage. Subcontractors must provide the certificate to the General Contractor, who shall forward to the Water Utilities Department.

13.5 The contractor shall post a copy of the following statement at the work site in a prominent place where it can easily be seen by the employees: "NOTICE TO EMPLOYEES: If you are employed to provide certain services to Palm Beach County, your employer may be required by Palm Beach County law to pay you at least $14.83 per hour as of October 1, 2023. If you are not paid this hourly rate, contact your supervisor or lawyer." The preceding statement shall be printed in English, Spanish, and

Creole, and shall be printed with black lettering on letter-size, white paper using Times New Roman 14-point font, Courier new 14-point font, or Arial 14-point font. Posting requirements will not be required if the employer attaches a copy of the preceding statement to the employee's first paycheck, and to subsequent paychecks at least every six (6) months thereafter. General Contractors shall forward a copy of the requirements of this ordinance to any person or business submitting a bid for a subcontract.

13.6 Every six (6) months the General Contractor shall certify and file with the Water Utilities Department, certification that all employees who worked on each construction contract during the preceding six (6) month period were paid the living wage in compliance with the ordinance. The Water Utilities Department has the right to request records of living wage pay. Contractors shall maintain records for 3 years.

14.0 Criminal History Records Check Ordinance

14.1 The CONTRACTOR, CONTRACTOR'S employees, or subcontractors of CONTRACTOR and employees of subcontractors shall comply with Palm Beach County Code, Section 2-371 - 2-377, the Palm Beach County Criminal History Records Check Ordinance ("Ordinance"), for unescorted access to critical facilities ("Critical Facilities") or criminal justice information facilities ("CJI Facilities") are required under this contract to enter a "critical facility," as identified in Resolution R-2003-1274, as amended. The CONTRACTOR shall comply with the provisions of Chapter 2, Article IX of the Palm Beach County Code ("Criminal History Records Check" section). The CONTRACTOR acknowledges and agrees that all employees and subcontractors who are to enter a "critical facility" will be subject to a fingerprint based criminal history records check. Although COUNTY agrees to pay for all applicable FDLE/FBI fees required for criminal history record checks, the CONTRACTOR is solely responsible for the financial, schedule, and/or staffing implications associated in complying with this section of the Palm Beach County Code of this Ordinance. Further, the CONTRACTOR acknowledges that its Contract price includes any and all direct or indirect costs associated with compliance with this Ordinance, except for the applicable FDLE/FBI fees that shall be paid by the COUNTY.

14.2 This Contract may include sites and/or buildings which have been designated as either "critical facilities" or "criminal justice information facilities" pursuant to the Ordinance and Resolution R2003-1274, as amended. COUNTY staff representing the COUNTY department will contact the CONTRACTOR(S) and provide specific instructions for meeting the requirements of this Ordinance. Individuals passing the background check will be issued a badge. The CONTRACTOR shall make every effort to collect the badges of its employees and its subcontractors' employees upon conclusion of the contract and return them to the COUNTY. If the CONTRACTOR or its subcontractor(s) terminates an employee who has been issued a badge, the CONTRACTOR must notify the COUNTY within two (2) hours. At the time of termination, the CONTRACTOR shall retrieve the badge and shall return it to the COUNTY in a timely manner.

14.3 The COUNTY reserves the right to suspend the CONTRACTOR if the CONTRACTOR 1) does not comply with the requirements of County Code Section 2-371 - 2-377, as amended; 2) does not contact the COUNTY regarding a terminated CONTRACTOR employee or subcontractor employee within the stated time; or 3) fails to make a good faith effort in attempting to comply with the badge retrieval policy.

15.0 Department Specific Instructions

15.1 During the course of the Project, Contractor can expect to receive and agrees to execute, when required, certain project related documents in a form substantially similar to those attached as Appendix A to the General Conditions.

15.2 The Department may require the submission of the Post-Bid Information pursuant to section 6.3.1 of these Instructions to Bidders to be submitted in substantially the form attached as Appendix B to the General Conditions. The Department may, in its sole discretion, require more or less information than the information required by Appendix B and Contractor agrees to provide such information as Department may require.

15.3 Bidder acknowledges that Palm Beach County reserves the right to institute, by Work Supplement, a program to take advantage of the sales and use tax exemption for county furnished materials in accordance with the term and conditions of the Special Conditions to the Contract between the parties and agrees to participate in the tax savings program, at no cost to the County, if utilized by the County.

16.0 Palm Beach County Office of the Inspector General

Palm Beach County has established the Office of the Inspector General, Palm Beach County Code, Section 2-421 – 2-440, as may be amended. The Inspector General's authority includes but is not limited to the power to review past, present and proposed County contracts, transactions, accounts and records, to require the production of records, and audit, investigate, monitor, and inspect the activities of the contractor, its officers, agents, employees, and lobbyists in order to ensure compliance with contract specifications and detect corruption and fraud. All contractors and parties doing business with the County and receiving County funds shall fully cooperate with the Inspector General including receiving access to records relating to Bid or any resulting contract.

17.0 Notifications

All bidders are requested to submit a valid email address and fax number for the purposes of receiving notification of bid posting and other pertinent information. The email address and fax number shall be included in the bid form.

18.0 E-Verify - Employment Eligibility

CONTRACTOR warrants and represents that it is in compliance with section 448.095, Florida Statutes, as may be amended, and that it: (1) is registered with the E-Verify System (E-Verify.gov), and beginning January 1, 2021, uses the E-Verify System to electronically verify the employment eligibility of all newly hired workers; and (2) has verified that all of CONTRACTOR's subcontractors performing the duties and obligations of this CONTRACT are registered with the E-Verify System, and beginning January 1, 2021, use the E-Verify System to electronically verify the employment eligibility of all newly hired workers.

CONTRACTOR shall obtain from each of its subcontractors an affidavit stating that the subcontractor does not employ, contract with, or subcontract with an Unauthorized Alien, as that term is defined in section 448.095(1)(k), Florida Statutes, as may be amended. CONTRACTOR shall maintain a copy of any such affidavit from a subcontractor for, at a minimum, the duration of the subcontract and any extension thereof. This provision shall not supersede any provision of this CONTRACT which requires a longer retention period.

COUNTY shall terminate this CONTRACT if it has a good faith belief that CONTRACTOR has knowingly violated Section 448.09(1), Florida Statutes, as may be amended. If COUNTY has a good faith belief that CONTRACTOR's subcontractor has knowingly violated section 448.09(1), Florida Statutes, as may be amended, COUNTY shall notify CONTRACTOR to terminate its contract with the subcontractor and

CONTRACTOR shall immediately terminate its contract with the subcontractor. If COUNTY terminates this CONTRACT pursuant to the above, CONTRACTOR shall be barred from being awarded a future contract by COUNTY for a period of one (1) year from the date on which this CONTRACT was terminated. In the event of such contract termination, CONTRACTOR shall also be liable for any additional costs incurred by COUNTY as a result of the termination.

END OF SECTION

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ORIGINAL

PALM BEACH COUNTY

BID FORM AND ATTACHMENTS

PBCWUD Project No.: 21-059R

Project Name: Improvements to Lift Stations 980, 981, and 1051
Lift Station Rehabilitation Bid Package 1, LS0637

SECTION DESCRIPTION

1.0 BID FORM

2.0 BID BOND - Attachment No. 1

3.0 LIST OF SUBCONTRACTORS - Attachment No. 2

4.0 TRENCH SAFETY - Attachment No. 3

5.0 MBE/WBE Good Faith Efforts - Attachment No. 4*
***Not required at time of Bid submission**

BID FORM

PBCWUD PROJECT NO.: **21-059R**
DATE: 1 May 2024

To: Palm Beach County Board of County Commissioners
Water Utilities Department
8100 Forest Hill Boulevard
West Palm Beach, Florida 33413

From (Name of Bidding Firm): B&B Underground Construction Inc.
Address: 4050 Westgate Avnenue,
STE 110
West Palm Beach, Florida 33409

1.1 Having carefully examined the Bid Documents and Drawings for the Project **entitled Improvements to Lift Stations 980, 981, and 1051Lift Station Rehabilitation Bid Package 1, LS0637** , PBCWUD PROJECT NO.: **21-059R** as well as the premises and conditions affecting the work, and confirming that the site was visited, as required, by

Stephen Decker (Print Name) on 23 April 2024 (Date)

the undersigned hereby declares that no person or persons, firm or corporation, other than the undersigned, are interested in this proposal as principals, and that this proposal is made without collusion with any person, firm, or corporation, and we have carefully and to our full satisfaction examined the Bid Documents, and that we have made a full examination of the location of the proposed work and the source of supply of materials, and we hereby agree to furnish and pay for all materials, labor, supervision, equipment, supplies, fees, expertise, and services necessary to fully complete all work in accordance with all requirements of the Bid Documents and in accordance with all applicable codes and governing regulations within the time limit specified in this proposal for the following Base Bid.

Price: Four Million Eight Hundred Forty Five Thousand Four Hundred Twenty Seven and 00/100 Dollars
(written out)

($ 4,845,427.00) which sum is hereinafter referred to as the (numeric) "Base Bid".

1.2 The undersigned acknowledges that it has included with its Bid the required Bid Security for not less than five percent (5%) of the total amount of its Base Bid.

1.3 Bidder shall be bound by the terms of its Bid Proposal for a period of one hundred fifty (150) calendar days from the date of the bid opening and may not withdraw its Bid within that time period. If the County issues a Notice of Award Recommendation within the above 150-day period, then the Bidder will be bound by the Bid Proposal as submitted. If the County fails to issue a Notice of Award Recommendation within the above identified 150-day period, the Bidder will not be required to honor its Bid Proposal unless otherwise agreed to by both parties. Absent the filing of a bid protest, the County anticipates, but does not guarantee, that: (a) Contract approval by the County will occur within ninety (90) calendar days after the Notice of Award Recommendation; and (b) written notice to proceed will occur within sixty (60) calendar days after Contract approval by the County.

1.4 It is agreed that the undersigned has received all addenda complete as issued by the County and that related costs are included in the bid submitted. The undersigned acknowledges receipt of said addenda as follows:

Addendum # 1 dated 04/23/24 Addendum # _____ dated _____
Addendum # 2 dated 4/23/24 Addendum # _____ dated _____

1.5 Time is of the essence. The undersigned Bidder agrees that, if awarded the Contract hereunder, it shall commence the work to be performed under the Contract on the date set by the County in its written notice to proceed, continuing the work with diligence and shall Substantially Complete all work under this contract in not more than 580 calendar days. Final completion shall be within 30 calendar days of Substantial Completion. The undersigned agrees that, if awarded the Contract, it will complete said separable portions of work in accordance with such date. Substantial Completion is defined in the General Conditions.

1.5.1 Should the Contractor (or in the event of a default, its Surety) fail to achieve Substantial Completion by the contractually established date, the County will suffer damages, the amount of which is difficult if not impossible to ascertain, and the County shall be entitled to Liquidated Damages as specified for each calendar day beyond the Contractual end date, until certification of Substantial Completion and acceptance has been given by the County. The Liquidated Damages rate is **$1,000.00** per calendar day through the date of certification of Substantial Completion.

Should the Contractor (or in the event of a default, his Surety) fail to achieve Final Completion within 30 calendar days from the date of Substantial Completion, the County will suffer damages, the amount of which is difficult if not impossible to ascertain, and the County shall be entitled to Liquidated Damages as specified for each calendar day greater than thirty beyond the date certified for Substantial Completion. The Liquidated Damages rate is $500.00 per calendar day.

Liquidated Damages due the County may be deducted from payments due the Contractor, or may be collected directly from the Contractor or his surety or sureties. The liability of the Contractor and its Surety or Sureties for delay damages shall be joint and several. These provisions for liquidated damages shall not prevent the County, in case of the Contractor's default, from terminating the right of the Contractor to proceed as provided in General Conditions.

1.6 The Costs Savings Incentive provisions of the General Conditions **21-059R** in effect for this Contract.

1.7 If the undersigned is notified of the acceptance of this bid, the Bidder agrees to execute within fourteen (14) calendar days, a Contract for the above work, complete with all required insurance certificates and bond forms, and any resolutions or other documentation the department may reasonably require. The undersigned further agrees to furnish a sufficient and satisfactory bond on the form herein provided, in the sum of not less than 100% of the contract price of the work as indicated by the contract prices shown herein.

1.9 The undersigned does hereby declare that the Bid covers all expenses of every kind incidental to the completion of said Work and the Contract therefore, including all claims that may arise through damages or other causes whatsoever. The undersigned does hereby declare that it shall make no claim on account of any variation from any estimate in the quantities of Work to be done, nor on account of any misunderstanding or misconception of the nature of the Work to be done or the grounds, subsurface conditions, or place where the Work is to be done.

1.10 ENCLOSURES:

ATTACHMENT NO. 1 BID BOND
ATTACHMENT NO. 2 LIST OF SUBCONTRACTORS
ATTACHMENT NO. 3 TRENCH SAFETY

- MBE/WBE GOOD FAITH EFFORTS**

****Not required at time of Bid submission****

1.11. Commercial Non-Discrimination Certification. The undersigned Bidder hereby certifies and agrees that the following information is correct: In preparing its response on this Solicitation, the Bidder has considered all proposals submitted from qualified, potential Subcontractors and suppliers, and has not engaged in "discrimination" as defined in the County's Commercial Nondiscrimination Policy as set forth in Resolution 2017-1770 as amended, to wit: discrimination in the solicitation, selection or commercial treatment of any Subcontractor, vendor, supplier or commercial customer on the basis of race, color, national origin, religion, ancestry, sex, age, marital status, familial status, sexual orientation, gender identity or expression, disability, or genetic information, or on the basis of any otherwise unlawful use of characteristics regarding the vendor's, supplier's or commercial customer's employees or owners; provided that nothing in this policy shall be construed to prohibit or limit otherwise lawful efforts to remedy the effects of discrimination that have occurred or are occurring in the County's relevant marketplace of Palm Beach County. Without limiting the foregoing, "discrimination" also includes retaliating against any person or other entity for reporting any incident of "discrimination." Without limiting any other provision of the solicitation, it is understood and agreed that, if this certification is false, such false certification will constitute grounds for the County to reject the bid submitted by the Bidder for this Solicitation, and to terminate any contract awarded based on the response. As part of its bid, the Bidder shall provide to the County a list of all instances within the immediate past four (4) years where there has been a final adjudicated determination in a legal or administrative proceeding in the State of Florida that the Bidder discriminated against its Subcontractors, vendors, suppliers or commercial customers, and a description of the status or resolution of that complaint, including any remedial action taken. As a condition of submitting a bid to the County, the Bidder agrees to comply with the County's Commercial Nondiscrimination Policy as described in Resolution 2017-1770 as amended.

Respectfully Submitted,

B & B UNDERGROUND CONSTRUCTION Inc
(Name of Bidding Firm)

4050 WESTGATE AVE, STE 110, WEST PALM BEACH, FL 33409
(Address)

561 249 0341
(Phone)

Sdecker@bbconst.com
(Email Address)

By: _____
(Authorized Signature)

PRESIDENT
(Title)

STEPHEN DECKER
(Print Name)

STATE OF FLORIDA
COUNTY OF PALM BEACH

LAURA DEMILLO
Notary Public - State of Florida
Commission # HH 120510
My Comm. Expires May 19, 2025
Bonded through National Notary Assn.

The foregoing instrument was acknowledged before me by means of ☒ physical presence or ☐ online notarization, this 1 day of MAY, 2024, by STEPHEN DECKER, who is ☒ personally known to me or ☐ has produced _____ as identification.

Laura DeMillo

(Signature of Notary Public – State of Florida)

_____

(Print, Type, or Stamp Commissioned Name of Notary Public)

Above Bidder is:

(X) Corporation ( ) Partnership/Joint Venture ( ) Sole Proprietorship
( ) Other (Please Specify_____)

CONTRACTOR DATA:

Bidder's License or Certificate
Number (as applicable): CGC 1523248

Contractor's Federal Tax No: 47-2946266

SCHEDULE OF BID PRICES

PBCWUD Project No.: 21-059R
Project Name: Improvements to Lift Stations 980, 981, and 1051Lift Station Rehabilitation Bid Package 1, LS0637

Item No.	Item Description	Quantity	Unit	Unit Price	Total
1	Mobilization (2.5% of Bid Price)	1	LS	$90,000.00	90,000.00
2	Demobilization (1% of Bid Price)	1	LS	45,000.00	45,000.00
3	Construction Survey	1	LS	10,000.00	10,000.00
4	Preconstruction Video Taping	1	LS	15,000.00	15,000.00
5	Record Drawings	1	LS	25,000.00	25,000.00
6	Maintenance of Traffic	1	LS	50,000.00	50,000.00
7	Lift Station 980	1	LS	917,750.00	917,750.00
8	Lift Station 981	1	LS	895,250.00	895,250.00
9	Lift Station 1051	1	LS	786,500.00	786,500.00
10	4" PVC C-900 Push-On Joint Force Main (36"-60" Cover)	35	LF	50.00	1,750.00
11	6" PVC C-900 Push-On Joint Force Main (36"-60" Cover)	2400	LF	60.00	144,000.00
12	8" PVC C-900 Push-On Joint Force Main (36"-60" Cover)	210	LF	70.00	14,700.00
13	12" PVC C-900 Push-On Joint Force Main (36"-60" Cover)	380	LF	80.00	30,400.00
14	6" DIP Force Main	200	LF	95.00	19,000.00
15	8" DIP Force Main	50	LF	100.00	5,000.00
16	12" DIP Force Main	65	LF	110.00	7,150.00
17	Ductile Iron Fittings for Wastewater Force Main	3.00	Tons	33,800.00	101,400.00
18	4" Mechanical Joint Restraint for DIP/PVC/HDPE	11	EA	100.00	1,100.00
19	6" Mechanical Joint Restraint for DIP/PVC/HDPE	52	EA	130.00	6,760.00
20	8" Mechanical Joint Restraint for DIP/PVC/HDPE	27	EA	150.00	4,050.00
21	12" Mechanical Joint Restraint for DIP/PVC/HDPE	52	EA	280.00	14,560.00
22	Pressure Pipe Bell Restraint For 6" DIP/PVC (Split Design)	13	EA	400.00	5,200.00
23	Pressure Pipe Bell Restraint For 8" DIP/PVC (Split Design)	11	EA	550.00	6,050.00
24	Pressure Pipe Bell Restraint for 12" DIP/PVC (Split Design)	6	EA	750.00	4,500.00
25	6" Gate Valve (FL or MJ)	2	EA	2500.00	5,000.00
26	12" Gate Valve (FL or MJ)	5	EA	6400.00	32,000.00
27	2" Air Release Valve W/Manhole for Wastewater Main	2	EA	18300.00	36,600.00
28	4" to 6" Diameter Connection to Existing Wastewater Force Main (Joint Restraint for existing pipe to be included if required)	1	EA	20,000.00	20,000.00
29	12" to 16" Diameter Connection to Existing Wastewater Force Main (Joint Restraint for existing pipe to be included if required)	3	EA	25,000.00	75,000.00
30	10" X 4" Tapping Sleeve W/ 4" Gate Valve and Valve Box	1	EA	11,700.00	11,700.00
31	8" X 6" Tapping Sleeve W/ 6" Gate Valve and Valve Box	1	EA	8,947.00	8,947.00
32	12" X 8" Tapping Sleeve W/ 8" Gate Valve and Valve Box	1	EA	14,800.00	14,800.00
33	Pigging Receiving/Sending Station	2	EA	8,500.00	17,000.00
34	12" PVC Sanitary Sewer Main	140	LF	350.00	49,000.00
35	4' Diameter Sanitary Sewer Manhole 8' to 15.9' deep w/ Ring, Cover and Approved Corrosion Barrier System	2	EA	25,000.00	50,000.00

36	24" HDPE Storm Sewer	40	LF	300.00	12,000.00
37	Type 'C' Storm Inlet w/ 1' Sump	1	EA	7000.00	7,000.00
38	4' Dia. Storm Manhole	1	EA	11000.00	11,000.00
39	Grouting/Deactivation of Existing 4" Pipe	40	LF	5.00	200.00
40	Grouting/Deactivation of Existing 6" Pipe	4300	LF	7.00	30,100.00
41	Grouting/Deactivation of Existing 8" Pipe	190	LF	16.00	3,040.00
42	Grouting/Deactivation of Existing 12" Pipe	350	LF	20.00	7000.00
43	Asphalt Mill and Resurface 1"	4400	SY	30.00	132,000.00
44	Asphalt Roadway Reconstruction	625	SY	80.00	50,000.00
45	Asphalt Driveway Removal & Restoration (up to 2.5" thick)	90	SY	100.00	9,000.00
46	Asphalt Sidewalk Removal & Restoration	75	SY	100.00	7,500.00
47	Concrete Sidewalk Removal & Restoration (up to 4.0" thick)	45	SY	120.00	5,400.00
48	Concrete Curb and Gutter Removal & Restoration	170	LF	65.00	11,050.00
49	Sod Replacement (Bahia)	3100	SY	9.00	27,900.00
50	Root Barrier (20 ft per Tree)	29	EA	1080.00	31320.00
51	Miscellaneous Landscaping Restoration	1	LS	50,000.00	50,000.00
52	Lift Station 637	1	LS	930,750.00	930,750.00
				Total	4845427.00

This bid will be Lump Sum. The Bidder agrees to furnish and pay for all materials necessary to complete all of the Work in accordance with all requirements of the Contract Documents and in accordance with all applicable codes and governing regulations, within the time limit specified. Bidder assumes all costs, delays and risks associated with all conditions or occurrences which cause or might cause an increase in Bidder's costs to complete the Work or which cause or might cause delays in Bidder's prosecution of the Work.

TOTAL BID IN WORDS INCLUDING DOLLARS AND CENTS:

Four Million Eight Hundred Forty Five Thousand Four Hundred Twenty Seven and no/100 Dollars

The Total Base Bid Price is to be written in numerical figures above. In case of discrepancies or errors, the unit price shown above for each bid item shall govern and the corrected Total Bid Price shall be calculated as such. Total Bid Price is to be shown in both words and figures. In case of discrepancies, the amount shown in words will govern.

ATTACHMENT NO. 1 TO BID FORM

PBCWUD PROJECT NO.: 21-059R

PROJECT NAME: Improvements to Lift Stations 980, 981, and 1051 Lift Station Rehabilitation Bid Package 1, LS0637

DATE: 5/1/2024

BID BOND

STATE OF FLORIDA

COUNTY OF PALM BEACH

KNOW ALL MEN THESE PRESENT: That we, B&B Underground Construction, Inc. (hereinafter called "Principal"), and Westfield Insurance Company (hereinafter called "Surety") are held and firmly bound unto Palm Beach County, a Political Subdivision in the State of Florida, (hereinafter called "County") 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 will and truly to be made, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly be these presents;

WHEREAS, the "Principal" contemplates submitting or has submitted a bid to the Board of County Commissioners, Palm Beach County, Florida, for furnishing and paying for all necessary labor materials, equipment, machinery, tools, apparatus, services, all state workmen's compensation and unemployment compensation taxes incurred in the performance of the Contract, means of transportation for and complete Construction of: Improvements to Lift Stations 980, 981, and 1051Lift Station Rehabilitation Bid Package 1, LS0637 (PBCWUD Project No.: 21-059R) in the County of Palm Beach, State of Florida; and

WHEREAS, it was a condition precedent to the submission of said bid that a certified check cashier's check, money order or bid bond in the amount of five percent (5%) of the base bid be submitted with said bid as a guarantee that the bidder would, if given a Notification from County, enter into a written contract with the County, and furnish performance and payment bonds, each in an amount equal to one hundred (100%) of the total Contract, within fourteen (14) consecutive calendar days after the County issues the Notification from County

NOW THEREFORE, THE CONDITIONS OF THIS OBLIGATION ARE SUCH that, if the bid of the "Principal" herein is accepted and said "Principal", within fourteen (14) consecutive calendar days after written notice being given of such acceptance, (I) enter into a written contract with the County and (ii) furnishes performance and payment bonds, each in the amount equal to one hundred percent (100%) of the total contract amount and in a form satisfactory to the County, then this obligation shall be void. If the Principal fails to complete (i) and (ii) above, the sum herein stated shall be due and payable to the "County", and the "Surety" herein agrees to pay said sum immediately upon demand of the "County", in good and lawful money of the United States of America, as liquidated damages for failure of said "Principal".

IN WITNESS WHEREOF, the said B&B Underground Construction, Inc. as "Principal" herein, has caused these presents to be signed in its name, by its President, and attested by its Secretary, under the corporate seal, and the said Westfield Insurance Company as "Surety" herein, has caused these presents to be signed in its name, by its Agent & Attorney-in-Fact, and attested by its corporate Seal, this 5th day of April, 2024.

(All bid bonds shall use this form except for certified cashier's check)

IN WITNESS WHEREOF, the said B&B Underground Construction, Inc. as "Principal" herein, has caused these presents to be signed in its name, by its President, and attested by its , under the corporate seal, and the Westfield Insurance Company "Surety" herein, has caused these presents to be signed in its name, by its Agent & Attorney-in-Fact, and attested by its corporate Seal, this 5th day of April, 2024.

(All bid bonds shall use this form except for certified cashier's check)

ATTEST:

(Signature)

(Print Name)

(SEAL)

B&B Underground Construction, Inc.
(Contractor Name)

By:

Stephen Decker
(Print Name)

Title: President

Address 4050 Westgate Ave., Suite 110
West Palm Beach, FL 33409

ATTEST:

(Signature)

Arthur K. Broder
(Print Name)

(SEAL)

Westfield Insurance Company
(Surety Name)

By:

Michael P. Broder
(Print Name)

Title: Agent & Attorney-in-Fact

Address 6191 Orange Drive, #6159E, Davie, FL 33314

(Bidder to attach valid Bonding Company Power of Attorney)

General
Power
of Attorney

CERTIFIED COPY

POWER NO. **0992212 00**

Westfield Insurance Co.
Westfield National Insurance Co.
Ohio Farmers Insurance Co.

Westfield Center, Ohio

Know All Men by These Presents, That WESTFIELD INSURANCE COMPANY, WESTFIELD NATIONAL INSURANCE COMPANY and OHIO FARMERS INSURANCE COMPANY, corporations, hereinafter referred to individually as a "Company" and collectively as "Companies," duly organized and existing under the laws of the State of Ohio, and having its principal office in Westfield Center, Medina County, Ohio, do by these presents make, constitute and appoint

ARTHUR K. BRODER, MICHAEL P. BRODER, JOINTLY OR SEVERALLY

of **DAVIE** and State of **FL** its true and lawful Attorney(s)-in-Fact, with full power and authority hereby conferred in its name, place and stead, to execute, acknowledge and deliver **any and all bonds, recognizances, undertakings, or other instruments or contracts of suretyship.**

LIMITATION: THIS POWER OF ATTORNEY CANNOT BE USED TO EXECUTE NOTE GUARANTEE, MORTGAGE DEFICIENCY, MORTGAGE GUARANTEE, OR BANK DEPOSITORY BONDS.

and to bind any of the Companies thereby as fully and to the same extent as if such bonds were signed by the President, sealed with the corporate seal of the applicable Company and duly attested by its Secretary, hereby ratifying and confirming all that the said Attorney(s)-in-Fact may do in the premises. Said appointment is made under and by authority of the following resolution adopted by the Board of Directors of each of the WESTFIELD INSURANCE COMPANY, WESTFIELD NATIONAL INSURANCE COMPANY and OHIO FARMERS INSURANCE COMPANY:

"Be It Resolved, that the President, any Senior Executive, any Secretary or any Fidelity & Surety Operations Executive or other Executive shall be and is hereby vested with full power and authority to appoint any one or more suitable persons as Attorney(s)-in-Fact to represent and act for and on behalf of the Company subject to the following provisions:

The Attorney-in-Fact. may be given full power and authority for and in the name of and on behalf of the Company, to execute, acknowledge and deliver, any and all bonds, recognizances, contracts, agreements of indemnity and other conditional or obligatory undertakings and any and all notices and documents canceling or terminating the Company's liability thereunder, and any such instruments so executed by any such Attorney-in-Fact shall be as binding upon the Company as if signed by the President and sealed and attested by the Corporate Secretary."

"Be it Further Resolved, that the signature of any such designated person and the seal of the Company heretofore or hereafter affixed to any power of attorney or any certificate relating thereto by facsimile, and any power of attorney or certificate bearing facsimile signatures or facsimile seal shall be valid and binding upon the Company with respect to any bond or undertaking to which it is attached." (Each adopted at a meeting held on February 8, 2000).

In Witness Whereof, WESTFIELD INSURANCE COMPANY, WESTFIELD NATIONAL INSURANCE COMPANY and OHIO FARMERS INSURANCE COMPANY have caused these presents to be signed by their **National Surety Leader and Senior Executive** and their corporate seals to be hereto affixed this **21st** day of **MARCH** A.D., **2014** .

Corporate Seals Affixed

WESTFIELD INSURANCE COMPANY
WESTFIELD NATIONAL INSURANCE COMPANY
OHIO FARMERS INSURANCE COMPANY

By: Dennis P. Baus

Dennis P. Baus, *National Surety Leader and Senior Executive*

State of Ohio
County of Medina ss.:

On this **21st** day of **MARCH** A.D., **2014** , before me personally came **Dennis P. Baus** to me known, who, being by me duly sworn, did depose and say, that he resides in **Wooster, Ohio;** that he is **National Surety Leader and Senior Executive** of WESTFIELD INSURANCE COMPANY, WESTFIELD NATIONAL INSURANCE COMPANY and OHIO FARMERS INSURANCE COMPANY, the companies described in and which executed the above instrument; that he knows the seals of said Companies; that the seals affixed to said instrument are such corporate seals; that they were so affixed by order of the Boards of Directors of said Companies; and that he signed his name thereto by like order.

Notarial Seal Affixed

David A. Kotnik

David A. Kotnik, Attorney at Law, *Notary Public.*
My Commission Does Not Expire (Sec. 147.03 Ohio Revised Code).

State of Ohio
County of Medina ss.:

I, **Frank A. Carrino,** Secretary of WESTFIELD INSURANCE COMPANY, WESTFIELD NATIONAL INSURANCE COMPANY and OHIO FARMERS INSURANCE COMPANY, do hereby certify that the above and foregoing is a true and correct copy of a Power of Attorney, executed by said Companies, which is still in full force and effect; and furthermore, the resolutions of the Boards of Directors, set out in the Power of Attorney are in full force and effect.

In Witness Whereof, I have hereunto set my hand and affixed the seals of said Companies at Westfield Center, Ohio, this 5th day of April A.D., 2024

Frank A Carrino Secretary

Frank A. Carrino, *Secretary*

BPOAC2 (combined) (06-02)

ATTACHMENT NO. 2 TO BID FORM

LIST OF MAJOR SUBCONTRACTORS

PBCWUD PROJECT NUMBER: 21-059R

PROJECT NAME: Improvements to Lift Stations 980, 981, and 1051 Lift Station Rehabilitation Bid Package 1, LS0637

DATE: 1 MAY 2024

A list of major subcontractors to be utilized on the project shall be provided herein. Refer to Instructions to Bidders, Paragraph 5.1.6. The Contractor shall complete all information (Trade, Subcontractor, License/Certificate Number) in all categories that apply. Suppliers or off-site fabricators are not to be listed.

The purpose of this list is to discourage "sub-shopping" in general, to verify appropriate licenses and to provide a basis for the implementation of the substitution provisions of this Contract (Instructions to Bidder 2.3). The receipt of this Attachment in no way constitutes approval or disapproval by the County of any subcontractor listed. Failure to furnish all information may result in rejection of bid.

The Engineer has estimated the following are the major subcontractors to be used if the undersigned is awarded the contract.

TRADE	SUBCONTRACTOR	LICENSE/CERTIFICATE NO.
ELECTRICAL	ENERGY EFFICIENT ELECTRICAL	EC 0001096

Bidding Contractor: B&B UNDERGROUND CONSTRUCTION INC

ATTACHMENT NO. 3 TO BID FORM

TRENCH SAFETY AFFIDAVIT

PBCWUD PROJECT NO.: 21-059R

PROJECT NAME: Improvements to Lift Stations 980, 981, and 1051 Lift Station Rehabilitation Bid Package 1, LS0637

DATE: 1 MAY 2024

FAILURE TOCOMPLETE THIS FORM SHALL RESULT IN THE BID BEING DECLARED NONRESPONSIVE.

B&B Underground Const. (NAME OF CONTRACTOR) hereby provides written assurance that the Trench Safety Standards identified in the Occupational Safety & Health Administration's Excavation Safety Standards, (OSHA) 29 C.F.R. 1926.650-653 and 29 C.F.R. 1910.146 will be adhered to during trench excavation in accordance with Florida Statute 553.60 through 553.64 inclusive (1990), "Trench Safety Act".

The undersigned 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" as summarized below: (Attached additional sheets as necessary)

Schedule Item	Trench Safety Measure (Slope, Trench Shield, etc.)	Cost (Per Linear ft. of trench, or per sq. ft. of shoring)
7	SHEETING	$ 4.00
8	SHEETING	$ 4.00
34	TRENCH SHIELD	$ 2.80
	TOTAL	10.80

(Signature) 1 MAY 2024 (Date)

STEPHEN DECKER (Print Name) PRESIDENT. (Title)

STATE OF FLORIDA
COUNTY OF PALM BEACH

The foregoing instrument was acknowledged before me by means of ☒ physical presence or ☐ online notarization, this 1 day of MAY 2024, by STEPHEN DECKER, who is ☒ personally known to me or ☐ has produced _____ as identification.

LAURA DEMILLO
Notary Public - State of Florida
Commission # HH 120510
My Comm. Expires May 19, 2025
Bonded through National Notary Assn.

Laura DeMillo
(Signature of Notary Public -- State of Florida)

(Print, Type, or Stamp Commissioned Name of Notary Public)

ATTACHMENT NO. 4 TO BID FORM

MBE/WBE Good Faith Efforts

PBCWUD PROJECT NUMBER: 21-059R

PROJECT NAME: Improvements to Lift Stations 980, 981, and 1051
Lift Station Rehabilitation Bid Package 1, LS0637

Attachment No. 4 is not required at time of Bid submission. This form must be completed by the successful bidder and returned to the County after contract award.

In accordance with the requirements for federally funded projects Federal regulation 2CFR 200.321(b) refers to contracting with minority firms, women's business enterprise and labor surplus area firms. **The contractor shall list the affirmative steps taken to utilize minority firms, women's business enterprises, and labor surplus area firms. Please answer the questions below and attach all documentation**

1. Were qualified small and minority businesses and women's business enterprises included on solicitation lists?

   Small Business Enterprises were included in this bid process.

2. List actions taken to solicit small and minority businesses, and women's business:

   B&B Underground Construction is an approved SBE Vendor for Palm Beach County Energy Efficient is an approved SBE Vendor for Palm Beach County

3. Was dividing the work and/or supplies into smaller tasks or quantities to permit maximum participation by small and minority business, and women's business enterprises considered?

   Not required

4. Were the services and assistance of the Minority Business Development Agency of the Department of Commerce utilized?

   No

END OF SECTION

ADDENDUM NO. 1

PALM BEACH COUNTY WATER UTILITIES DEPARTMENT
IMPROVEMENTS TO LIFT STATIONS 980, 981, AND 1051;
LIFT STATION REHABILITATION BID PACKAGE 1 - LS0637
PROJECT NO. WUD 21-059R

TO ALL BIDDERS AND OTHERS CONCERNED:

Contractors submitting proposals for the above referenced project shall take note of the clarification to the Contract Drawings and Specifications that shall become a part of the contract documents.

BID DOCUMENTS (Due May 1, 2024)

Note: Bidder must acknowledge Receipt of Addendum on Bid Form - Page 3 of the Contract Documents.

Dated this 23rd day of April, 2024

Palm Beach County
Water Utilities Department

Deavon Uter, P.E.

PLEASE ACKNOWLEDGE RECEIPT OF ADDENDUM NO. 1 (PAGES AD1-1 – AD1-3) BY SIGNING BELOW – EMAIL to duter@pbcwater.com OR FAX TO 561-493-6104 IMMEDIATELY.

Signature

PRESIDENT
Title

B & B UNDERGROUND CONSTRUCTION INC
Company

ADDENDUM NO. 2

PALM BEACH COUNTY WATER UTILITIES DEPARTMENT
IMPROVEMENTS TO LIFT STATIONS 980, 981, AND 1051;
LIFT STATION REHABILITATION BID PACKAGE 1 - LS0637
PROJECT NO. WUD 21-059R

TO ALL BIDDERS AND OTHERS CONCERNED:

Contractors submitting proposals for the above referenced project shall take note of the clarification to the Contract Drawings and Specifications that shall become a part of the contract documents.

BID DOCUMENTS (Due May 1, 2024)

Note: Bidder must acknowledge Receipt of Addendum on Bid Form - Page 3 of the Contract Documents.

Dated this 23rd day of April, 2024

Palm Beach County

Water Utilities Department

Deavon Uter, P.E.

PLEASE ACKNOWLEDGE RECEIPT OF ADDENDUM NO. 2 (PAGES AD1-1 – AD1-3) BY SIGNING BELOW – EMAIL to duter@pbcwater.com OR FAX TO 561-493-6104 IMMEDIATELY.

Signature

President
Title

BPB Underground Construction Inc
Company

Palm Beach County
Office of Equal Business Opportunity

Certifies That

B&B Underground Construction, Inc.

Vendor # **VS0000005945**

is a Small Business Enterprise (SBE) as prescribed by section 2-80.21 - 2.80.30 of the Palm Beach County Code for a three year period from

June 02, 2023 to June 01, 2026

The following services and/or products are covered under this certification:

Boring, Drilling, Testing, and Soundings, Including Concrete Coring; Construction, Curb and Gutter Including Maintenance, Repair and Removal Service; Maintenance and Repair, Highway and Road, Including Removal of Asphalt, Concrete, Bitumens, etc.; Maintenance and Repair, Sewer and Storm Drain, Including Removal; Maintenance and Repair, Street (Major and Residential); Maintenance and Repair, Utility/Underground Projects; Maintenance and Repair, Water System, Main and Service Line

Allen Gray, Manager
06/02/2023

PALM BEACH COUNTY • FLORIDA

Palm Beach County Board of County Commissioners

Gregg K. Weiss, Mayor
Maria Sachs, Vice Mayor
Maria G. Marino
Michael A. Barnett
Marci Woodward
Sara Baxter
Mack Bernard

County Administrator
Verdenia C. Baker

ANNE M. GANNON
CONSTITUTIONAL TAX COLLECTOR
Serving Palm Beach County
Serving *you.*

P.O. Box 3353, West Palm Beach, FL 33402-3353
www.pbctax.com Tel: (561) 355-2264

LOCATED AT
4050 WESTGATE AVE Ste 110
WEST PALM BEACH, FL 33409

TYPE OF BUSINESS	OWNER	CERTIFICATION #	RECEIPT #/DATE PAID	AMT PAID	BILL #
GENERAL CONTRACTOR	DECKER STEPHEN	CGC1523248	B23.658923 07/12/2023	$27.50	B40148299

This document is valid only when receipted by the Tax Collector's Office.

B AND B UNDERGROUND CONTRUCTION INC
B AND B UNDERGROUND CONSTRUCTION INC
4050 WESTGATE AVE STE 110
WEST PALM BEACH FL 33409-4732

7 - 1417

STATE OF FLORIDA
PALM BEACH COUNTY
2023 / 2024 LOCAL BUSINESS TAX RECEIPT
LBTR Number: 2016090160
EXPIRES: 09/30/2024

This receipt grants the privilege of engaging in or managing any business profession or occupation within its jurisdiction and MUST be conspicuously displayed at the place of business and in such a manner as to be open to the view of the public.

WEST PALM BEACH, FL 33409

Business Detail

Business Name:	B AND B UNDERGROUND CONTRUCTION INC	Tax Year:	2019
Trade Name:	B AND B UNDERGROUND CONSTRUCTION INC	License Number:	2016090160
Phone Number:	561-249-0341	Lic. Status:	Active
New Business:	04/01/2015	Certificate:	CGC1523248
Business Type:	GENERAL CONTRACTOR (23-0051)	Cert. Issued:	08/20/2018
Number of Units:	1	NAICS:	23-0051

Memo:
REQUIRED: SUBMIT CURRENT VALID COPY OF CILB OR DBPR STATE CERTIFICATION, LICENSE, OR EXEMPTION FOR RENEWAL

Tax Information

Bill Number	Due Date	Bill Year	Tax	Penalty/Fee	Interest	Total Due
B40170070	9/30/2018	2019	$0.00	$0.00	$0.00	$0.00
		Total Due:	**$0.00**	**$0.00**	**$0.00**	**$0.00**

Tax Payment

Bill Year	Bill Number	Receipt Number	Amount Paid	Last Paid	Paid By
2019	B40170070	B18.512676	$27.50	8/17/2018	

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

DECKER, STEPHEN D

B&B UNDERGROUND CONSTRUCTION INC
4050 WESTGATE AVE STE 110
WEST PALM BEACH FL 33409

LICENSE NUMBER: CGC1523248

EXPIRATION DATE: AUGUST 31, 2024

Always verify licenses online at MyFloridaLicense.com

Do not alter this document in any form.

This is your license. It is unlawful for anyone other than the licensee to use this document.

STATE OF FLORIDA
DEPARTMENT OF BUSINESS AND PROFESSIONAL REGULATION

2601 BLAIR STONE ROAD
TALLAHASSEE FL 32399-0783

Congratulations! With this license you become one of the nearly one million Floridians licensed by the Department of Business and Professional Regulation. Our professionals and businesses range from architects to yacht brokers, from boxers to barbeque restaurants, and they keep Florida's economy strong.

Every day we work to improve the way we do business in order to serve you better. For information about our services, please log onto www.myfloridalicense.com. There you can find more information about our divisions and the regulations that impact you, subscribe to department newsletters and learn more about the Department's initiatives.

Our mission at the Department is: License Efficiently, Regulate Fairly. We constantly strive to serve you better so that you can serve your customers. Thank you for doing business in Florida, and congratulations on your new license!

Florida dbpr STATE OF FLORIDA DEPARTMENT OF BUSINESS AND PROFESSIONAL REGULATION

CGC1523248 ISSUED: 09/13/2022
CERTIFIED GENERAL CONTRACTOR
DECKER, STEPHEN D
B&B UNDERGROUND CONSTRUCTION INC

Signature
LICENSED UNDER CHAPTER 489, FLORIDA STATUTES
EXPIRATION DATE: AUGUST 31, 2024

Ron DeSantis, Governor — Melanie S. Griffin, Secretary

STATE OF FLORIDA
DEPARTMENT OF BUSINESS AND PROFESSIONAL REGULATION
CONSTRUCTION INDUSTRY LICENSING BOARD

LICENSE NUMBER: CGC1523248 **EXPIRATION DATE: AUGUST 31, 2024**

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

DECKER, STEPHEN D
B&B UNDERGROUND CONSTRUCTION INC
4050 WESTGATE AVE STE 110
WEST PALM BEACH FL 33409

ISSUED: 09/13/2022

Always verify licenses online at MyFloridaLicense.com
Do not alter this document in any form.
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ACORD®

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)
03/20/2023

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 Brown & Brown of Florida, Inc. 1661 Worthington Rd Ste 175 West Palm Beach FL 33409	CONTACT NAME: Brian Schroeder PHONE (A/C, No, Ext): (561) 686-2266 FAX (A/C, No): (561) 686-2313 E-MAIL ADDRESS: Brian.Schroeder@bbrown.com		
	INSURER(S) AFFORDING COVERAGE		NAIC #
	INSURER A : The Travelers Indemnity Company of America		25666
INSURED B&B Underground Construction, Inc 4050 Westgate Ave #110 West Palm Beach FL 33409	INSURER B : The Phoenix Insurance Company		25623
	INSURER C : Travelers Property Casualty Company of America		25674
	INSURER D : Bridgefield Casualty Insurance Company		10335
	INSURER E : Federal Insurance Company		20281
	INSURER F :		

COVERAGES CERTIFICATE NUMBER: 22-23 Master COI 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	[X] COMMERCIAL GENERAL LIABILITY [ ] CLAIMS-MADE [X] OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: [ ] POLICY [X] PRO-JECT [ ] LOC [ ] OTHER:	Y		DT-CO-6P945262-TIA-23	03/20/2023	03/20/2024	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 $ 500,000 $ 10,000 $ 1,000,000 $ 2,000,000 $ 2,000,000 $
B	AUTOMOBILE LIABILITY [X] ANY AUTO [ ] OWNED AUTOS ONLY [ ] SCHEDULED AUTOS [ ] HIRED AUTOS ONLY [ ] NON-OWNED AUTOS ONLY	Y		810-6P81753A-23-26-G	03/20/2023	03/20/2024	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident) $	$ 1,000,000 $ $ $ $
C	[X] UMBRELLA LIAB [X] OCCUR [ ] EXCESS LIAB [ ] CLAIMS-MADE [ ] DED [X] RETENTION $ 10,000	Y		CUP-1S229607-23-26	03/20/2023	03/20/2024	EACH OCCURRENCE AGGREGATE $	$ 2,000,000 $ 2,000,000 $
D	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) Y/N [N] If yes, describe under DESCRIPTION OF OPERATIONS below	N/A		0196-50601-000	03/20/2023	03/20/2024	[X] 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
E	Equipment Floater			4547-15-13	03/20/2023	03/20/2024	Scheduled Leased/Rented	$62,225 $250,000

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

CERTIFICATE HOLDER

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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B & B UNDERGROUND CONSTRUCTION, INC.
4050 WESTGATE AVE., SUITE 110
WEST PALM BEACH, FL 33409

COMPLETED PROJECTS LIST

	PROJECT NAME	OWNER	CONTACT	CONTACT NUMBER	PROJECT VALUE	COMPLETION DATE	% COMPLETED
1	MISC. LIFT STATION IMPROVMENTS	EAST ALABAMA WATER & SEWER DISTRICT CHAIRMAN TERRELL BISHOP	TIM JOHNSON	334-364-0057	$ 737,179.00	Aug-13	100%
2	SOUTH LAWN WATER MAIN PH.II	WATER WORK BOARD OF MONTGOMERY ALABAMA	THOMAS MORGAN	334-206-1600	$ 741,462.52	Dec-13	100%
3	COUNTRY CLUB WATERMAIN	SEMINOLE COUNTY	ROBERT BRADLEY	407-665-0000	$ 1,239,000.00	Aug-13	100%
4	TONEY PENNA SANITARY SEWER	LOXAHATCHEE RIVER DISTRICT	CLINTON YERKES	561-747-5700	$ 156,700.00	Sep-13	100%
5	WEST 36TH STREET IMPROVEMENTS	CITY OF RIVIERA BEACH	TERRENCE BAILEY	561-845-4185	$ 417,500.00	Jan-14	100%
6	WEST 13TH STREET IMPROVEMENTS	CITY OF RIVIERA BEACH	TERRENCE BAILEY	561-845-4185	$ 1,693,500.00	Sep-14	100%
7	RAW WATER MAIN FOR PW-9 AND PW-10	PBC BOARD OF COUNTY COMMISSIONERS		561-493-6000	$ 422,306.25	Jul-14	100%
8	NORTH LAKE IDA AREA WATER MAIN	CITY OF DELRAY BEACH		561-243-7000	$ 389,085.00	May-14	100%
9	DELRAY SHORES WATER MAIN	CITY OF DELRAY BEACH		561-243-7000	$ 727,266.00	Aug-14	100%
10	RAW WATERMAIN FOR WELL 16	CITY OF LAKE WORTH		561-586-1674	$ 569,445.00	Aug-14	100%
11	14TH,15TH CRESTWOOD IMPROVEMENTS	CITY OF LAKE WORTH		561-586-1674	$ 1,176,045.00	Jan-15	100%
12	PENCE PARK LIFT STATION	CITY OF BOYNTON BEACH		561-742-6310	$ 1,178,500.00	Jun-15	100%
13	BLOCK ISLAND WATER MAIN	VILLAGE OF WELLINGTON		561-791-4055	$ 1,405,000.00	May-15	100%
14	OCEAN COVE FORCE MAIN	LOXAHATCHEE RIVER DISTRICT		561-747-5700	$ 187,000.00	Apr-15	100%
15	LIFT STATION IMPROVEMENTS 2015	LOXAHATCHEE RIVER DISTRICT		561-747-5700	$ 198,000.00	Sep-15	100%
16	SOUTH WEST BELLE GLADE WATER	CITY OF BELLE GLADE			$ 4,169,146.00	Jul-16	100%
17	120th AVENUE SOUTH, WELLINGTON	JW CHEATHAM, LLC			$ 172,503.05	Jul-16	100%
18	N.BOOSTER PUMP STATION	CITY OF LAKE WORTH	JULIE PARHAM	561-586-1798	$ 119,000.00	Aug-16	100%

19	JUPITER PLANTATION FORCE MAIN	LOXAHATCHEE RIVER DISTRICT		561-747-5700	$	105,000.00	Aug-16	100%
20	20" RECLAIMED FORCEMAIN	CITY OF BOCA RATON	LAUREN BURACK	561-338-7329	$	223,750.00	Sep-16	100%
21	STRATFORD WATERMAIN	VILLAGE OF WELLINGTON	JONATHAN REINSVOLD	561-409-2000	$	2,851,764.40	Oct-16	100%
22	TROPICAL DRIVE AND BARTON ROAD IMPROVEMENTS	CITY OF LAKE WORTH	JULIE PARHAM	561-586-1798	$	2,298,500.00	Apr-17	100%
23	LIFT STATION 1609 GRAVITY SEWER AND WATERMAIN	CITY OF LAKE WORTH	JULIE PARHAM	561-586-1798	$	408,500.00	Apr-17	100%
24	8TH AVENUE SOUTH WATERMAIN	CITY OF LAKE WORTH	JULIE PARHAM	561-586-1798	$	338,500.00	Jan-17	100%
25	6TH & 7 STREET DRAINAGE	CITY OF RIVIERA BEACH	TERRENCE BAILEY	561-548-3472	$	829,417.00	Aug-17	100%
26	12" WATER MAIN INTERCONNECT	CITY OF BOCA RATON	LAUREN BURACK		$	233,000.00	Jul-17	100%
27	2" WATERMAIN REPLACEMENT PH 2	CITY OF LAKE WORTH	JULIE PARHAM	561-586-1798	$	4,310,681.53	Sep-18	100%
28	WASTEWATER PUMP STATIONS 16 AND 33	CITY OF LAKE WORTH	JULIE PARHAM	561-586-1798	$	226,700.00	Oct-18	100%
29	NW 1ST AVE WATER AND FORCEMAIN SOUTH BAY	PALM BEACH COUNTY WATER UTILITIES			$	1,482,000.00	Aug-18	100%
30	FEDERAL GARDENS - 11TH TO 14TH STREET RIVIERA BEACH	CITY OF RIVIERA BEACH	TERRENCE BAILEY	561-845-4180	$	5,598,234.25	Oct-18	100%
31	2" WATER MAIN REPLACE. PH III	CITY OF LAKE WORTH	JULIE PARHAM	561-586-1798	$	3,455,350.35	Sep-19	100%
32	NEIGHBORHOOD ROAD PROGRAM DIST.3,YEAR 2	CITY OF LAKE WORTH	JULIE PARHAM	561-586-1798	$	1,869,294.00	Oct-18	100%
33	EASTPOINTE FORCEMAIN IMPROVEMENTS LAKE WORTH	SEACOAST UTILITY AUTHORITY	BRENT WEIDENHAMER	561-627-2900	$	98,600.00	Oct-18	100%
34	WELLINGTON REGIONAL HOSPITAL WATER SERVICE	VILLAGE OF WELLINGTON	ANJULI PANSE	561-791-4145	$	64,059.00	Jan-19	100%
35	RUNYON VILLAGE WATER & WASTEWATER SYSTEM	PALM BEACH COUNTY WATER UTILITIES		561-493-6000	$	719,505.00	Nov-19	100%
36	NEIGHBORHOOD ROAD PROGRAM DISTRICT 1 ROADWAY/WATER	CITY OF LAKE WORTH	JULIE PARHAM	561-586-1798	$	4,875,660.00	Dec-19	100%
37	2 INCH WATERMAIN REPLACEMENT PHASE IV	CITY OF LAKE WORTH	JULIE PARHAM	561-586-1798	$	3,996,660.00	May-20	100%
38	CD03 WYNNEWWOD ACRES IMP. PHASE 2 WUD 15-102	PALM BEACH COUNTY WATER UTILITIES		561-493-6000	$	2,675,611.25	Jul-20	100%
39	WASTEWATER PUMP STATION 15 & 21	CITY OF LAKE WORTH	JULIE PARHAM	561-586-1798	$	440,518.00	Mar-20	100%

40	WASTEWATER PUMP STATION 12 & 14	CITY OF LAKE WORTH	JULIE PARHAM	561-586-1798	$	862,280.00	Jan-21	100%
41	SUNSET LOUNGE WEST PALM BEACH	COOPER CONSTRUCTION, INC.	JACKIE COOPER		$	781,000.00	Oct-22	100%
42	GARDEN ROAD FROM SOUTH OF FDOT CANAL TO BLUE HERON BLVD	PALM BEACH COUNTY WATER UTILITIES			$	667,440.00	Jul-21	100%
43	WOODLAND PARK SEWER IMPROVEMENTS							
44	PENN PARK WATER IMPROVEMENTS	TOWN OF JUPITER	AMANDA BARNES		$	2,363,148.00	Mar-22	100%
45	WINTER HAVEN POLLARD ROAD WATERMAIN, FORCEMAIN AND RECLAIMED WATERMAIN	CITY OF WINTER HAVEN	STEVE RHEINER		$	8,211,163.00	Jul-23	100%
46	NEIGHBORHOOD ROAD PROGRAM YEAR 4 DISTRICT 1	CITY OF LAKE WORTH BEACH	JULIE PARHAM	561-586-1798	$	2,661,587.00	Mar-23	100%
47	LIFT STATION 19 FORCEMAIN REPLACEMENT	SEACOAST UTILITY AUTHORITY	BRENT WEIDENHAMER	561-627-2900	$	221,841.00	Mar-23	100%
48	CASING UNDER A1A AT OCEAN INLET PARK	PALM BEACH COUNTY ENVIRONMENTAL RESOURCE MANAGEMENT	MICHAEL EVANS		$	385,225.00	Feb-23	100%
49	TOWN OF SOUTH PALM BEACH EMERGENCY SEWER FORCEMAIN REPAIRS	TOWN OF SOUTH PALM BEACH	ROBERT KELLOG		$	59,520.00	Mar-23	100%
50	DEL PRADO ELEMENTARY SCHOOL IMPROVEMENTS	COOPER CONSTRUCTION	JACKIE COOPER		$	243,470.00	Aug-23	100%
51	LIFT STATION 118 IMPROVEMENTS	CITY OF WINTER HAVEN	KERI SORENSON		$	858,999.10	Aug-23	100%
					$	70,535,625.70		

PROJECTS UNDER CONTRACT / CONSTRUCTION 2023

	PALM BEACH SHORES WATERMAIN IMPROVEMENTS	CITY OF RIVIERA BEACH	MIKE LOWE		$	2,581,791.47		95%
	LIFT STATION REHABILITATION FLORIDA MANGO, WATERSIDE, WOODHAVEN	VILLAGE OF PALM SPRINGS	ANDREW KLAUSNER		$	1,226,795.00		20%
	PROSPERITY VILLAGE COTTAGE HOMES SITE WORK	WEST PALM BEACH HOUSING AUTHORITY	LISA MAXWELL		$	658,468.48		65%
	LAKESIDE GARDENS STORMWATER UTILITY IMPROVEMENTS PHASE 2	CITY OF BOYNTON BEACH	ANGELA PRYMAS		$	2,894,601.43		50%
	WATERMAIN CROSSING OF NORTHLAKE BLVD AND C17 CANAL	SEACOAST UTILITY AUTHORITY	BRENT WEIDENHAMER		$	639,838.53		100%
	CENTURY VILLAGE WATERMAIN IMPROVEMENTS	PALM BEACH COUNTY WATER UTILITIES	RALPH ESTIME	561-493-6144	$	2,990,765.00		5%

HARMONY MASTER LIFT STATION	CITY OF WINTER HAVEN	STEVE RHEINER		$	7,978,041.00	0%
WATERMAIN IMPROVEMENTS PROJECTS 1 AND 4	VILLAGE OF TEQUESTA	MARJORIE CRAIG		$	2,070,965.00	0%
HIGHVIEW ROAD DRAINAGE IMPROVEMENTS	PALM BEACH COUNTY ENGINEERING	PATRICK AYALA		$	698,935.00	0%
MURRY HILLS WATER SERVICE CONVERSIONS	CITY OF LAKE WORTH BEACH	JULIE PARHAM	561-586-1798	$	196,503.00	0%

B&B Underground Construction
4050 Westgate Avenue
West Palm Beach, FL 33409

EQUIPMENT LIST

Year / Make	Model / Type	Vin / Serial #	B&B I.D.
Excavators			
Komatsu	PC300	A85179	TBH-8
John Deere	225C	FF225CX500096	TBH-9
Cat	325CL	BFE00468	TBH-10
Cat	303.5	DCH00384	TBH-11
John Deere	50D	FF050DX244240	TBH-12
2006 Link Belt 130k	Hydraulic Excavator	K1J6-1269	TBH-17
Cat	308 CR	14K42S220	TBH-1
Dozers			
John Deere	650H	T0650HX910882	DZ-5
Graders			
Cat	135H	3YK00367	RG-3
Rollers			
Ingersol Rand	SD70D	149587	RRS-2
Cat	CB224C	3AL01197	RRS-5
Cat	CB224D	8RZ00231	RRS-6
DynaPac	Steel Wheel	175161	RSS-1
Combinations			
John Deere	410E 4X4	T0410EX833303	RTBH-2
Tractors			
New Holland	3930	007670B	BT-1
New Holland	345D	A445063	BT-3
Directional Drills			
Ditch Witch	JT5	DW526S433	DD-1
Asphalt Spreader			
GEHL 2012	1448	GH31961	SP-1

B&B Underground Construction
4050 Westgate Avenue
West Palm Beach, FL 33409

EQUIPMENT LIST

Year / Make	Model / Type	Vin / Serial #	B&B I.D.
Foremans Trucks			
2002 Ford	F-250 4X4 7.3 4dr	IFTNW21F62EB92517	PT-21
2003 Ford	F-250 4X4 7.3 extcab	IFTNX21F43EB22531	PT-22
2003 Chevrolet	1500 4X4 5.3 extcab	IGCEK19T23E231511	PT-23
2003 Chevrolet	1500 4X4 5.3 extcab	IGCEK19T53E357149	PT-24
2006 GMC	1500 4X4 V-6 gas 2dr	1GTEK14X16Z112226	PT-30
2007 GMC	1500 4X4 5.3 extcab	1GTEK19Z57Z158136	PT-31
2007 GMC	Sierra 2500HD 4X4 4 dr	1GTHK23647F536613	Joey
2014 Chevy	1500 Silverado Gas	3GCPCSEC2EG129509	Steve
2001 Ford	F-450 Dually 4X4 7.3 4dr	1FDXW47F91EA36381	F-450
2003	F-350	1FDWWW37F83EB05795	JESUS
Misc Trucks			
2001 Ford	450	1FDXX47P64EC42462	MT-1
Dump Trucks & Tractors			
2003 Mack	RD6885 Dump Tr 18yd	IM2P267C63M066976	DT-70
2005 Mack	CV713 Dump Tr 18yd	IM2AG11C85M027389	DT-90
2005 Mack	CV713 Dump Tr 18yd	1M2AG11C45M027390	DT-100
2002 Mack	CL-700 Tri Axle	IM2AD62C71M011716	LB-1
1999 GMC	WATER TRUCK	1GDM7H1C1XJ501287	WT-1
Trailers			
2003 ASPT	Ditch Witch Trailer	1DS00060017P1647	T-2
2005 LMT	Gooseneck Trl hooked to F-450	5L8GF242751001353	T-3
2003 IRDO	2 axle black bobcat trailor	5FEHS20223C009969	T-4
2003 ASPT	Water pressure test Trailer	FLT9001SS	T-5
2004 CAWE	Carolina 2 axle dually pintle Red	1C9DP302041803109	T-6
1996 Fontaine	Low-Boy Trailer	4LF456346V3504674	T-9
Loaders			
Cat	928G	6XR02501	LDR-7
Cat	938G	4YS02102	LDR-8
John Deere	544H	DW544HX585789	LDR-11
John Deere	544J	DW544JZ595347	LDR-12
John Deere	544H	DW544HX587059	LDR-14
New Holland	Skid Steer		
Cat	Roller Attachment		VA-2
Cat	BA18 Broom Attachment	AZN01942	BA-1
Komatsu	CK30-1	A30025 25424	B-3

Ron DeSantis, Governor

Melanie S. Griffin,Secretary

STATE OF FLORIDA

BOARD OF PROFESSIONAL ENGINEERS

THE PROFESSIONAL ENGINEER HEREIN IS LICENSED UNDER THE
PROVISIONS OF CHAPTER 471, FLORIDA STATUTES

DECKER, STEPHEN D.

4050 WESTGATE AVENUE
SUITE 110
WEST PALM BEACH FL 33409

LICENSE NUMBER: PE57422

EXPIRATION DATE: FEBRUARY 28, 2025

Always verify licenses online at MyFloridaLicense.com

Do not alter this document in any form.

This is your license. It is unlawful for anyone other than the licensee to use this document.

CONTRACT

THIS CONTRACT, made and entered into this _____ day of _____, 20__, between PALM BEACH COUNTY, a political subdivision of the State of Florida, hereinafter referred to as the "County" and B&B Underground Construction Inc, hereinafter referred to as the "CONTRACTOR".

WITNESSETH:

That the said Contractor having been awarded the contract for the:

Improvements to Lift Stations 980, 981, and 1051
Lift Station Rehabilitation Bid Package 1, LS0637

PBCWUD Project No.: 21-059R

in accordance with the Bid therefore and for and in consideration of the promises and of the covenants and agreements, and of the payments herein specified, to be made and performed by the Contractor and the County, the Contractor hereby covenants and agrees to and with the County to undertake and execute all of the said named work, in a good, substantial and workmanlike manner, and to furnish and pay for all materials, labor, supervision, equipment, supplies, fees, expertise, and services necessary to fully complete all work in accordance with all requirements of the Contract Documents and in accordance with all Federal, State, and local laws, rules, and regulations, within the time limit specified in the Bid Form. The Contract Documents consist of the following documents which are incorporated herein by reference.

A - Invitation to Bid, Instructions to Bidders, Bid Form and Attachments 1 through 4.
B - Completed Bonds and, Guarantee .
C - General Conditions.
D. Federally Funded Project Forms.
E - Technical Specifications.
F - Addenda.
G - Drawings.

Contractor agrees to accept as full compensation for the satisfactory performance of this Contract the sum of $ $4,845,427.00 . The prices named in the Bid are for the completed work and all expense, direct or indirect, connected with the proper execution of the work and of maintaining the same until it is accepted by the Board of County Commissioners. It is understood that the Contractor holds and will maintain current appropriate certification and/or license for the purpose of performing the specified work pursuant to this Contract. The time limit for the Substantial Completion of all work under this contract shall be as stated in the Bid Form. The date fixing the beginning of this period upon the calendar shall be established and stated in the Notice to Proceed.

Counterparts: This Agreement, including the exhibits referenced herein, may be executed in one or more counterparts all of which shall constitute collectively but one and the same Agreement. The County

may execute the Agreement through electronic or manual means. Consultant shall execute the Agreement by manual means only, unless the County provides otherwise.

IN WITNESS WHEREOF, the Board of County Commissioners of Palm Beach County, Florida, has made and executed this Contract on behalf of the said County and caused the seal of the said County to be affixed hereto, and the Contractor has hereunto set his hand and seal the day and year written. The Contractor represents that it is authorized to execute this contract on behalf of itself and its Surety.

ATTEST:
JOSEPH ABRUZZO
CLERK AND COMPTROLLER

_____

PALM BEACH COUNTY, FLORIDA, A
Political Subdivision of the State of Florida
BOARD OF COUNTY COMMISSIONERS

By: _____
Maria Sachs, Mayor

APPROVED AS TO FORM AND LEGAL SUFFICIENCY

_____
Assistant County Attorney

APPROVED AS TO TERMS AND CONDITIONS

_____
Ali Bayat, PE, PMP
Director, Palm Beach County Water Utilities Department

'CONTRACTOR'

By: B&B Underground Construction Inc
(Corporate Name)

a Florida corporation
(insert state of corporation)

_____
(witness signature)

Gerardo Cacique
(print witness name)

By: _____
(signatory)

_____
(witness signature)

Stephen Decker
(print signatory's name)

Karen Gonzalez
(print witness name)

President
(print title)

(Corporate Seal)

August 13, 2024
(date)

4050 Westgate Ave, Suite 110
(Contractor's Official Address)

West Palm Beach, FL 33409
(Contractor's City, State, Zip Code)



BRODER & COMPANY
6191 Orange Drive. #61596
Davie. fl 33314

6/19/2024

Palm Beach County

RE: B&B Underground Construction Inc.
Project: Improvements to Lift Stations 980, 981 and 1051
Bond No: 422187H

To Whom It May Concern:

PLEASE ACCEPT THIS LETTER AS OUR CONSENT OF SURETY ON BEHALF OF B&B Underground Construction, Inc., Contractor and Westfield Insurance Company, as Surety for acceptance of Palm Beach County to date the above referenced Power of Attorney and Performance & Payment Bonds.

Very truly yours,

Michael P. Broder
Agent & Attorney-in-Fact
Westfield Insurance Company

CONTRACT PERFORMANCE BOND

BOND NUMBER: 422187H

BOND AMOUNT: $4,845,427.00

CONTRACT AMOUNT: $4,845,427.00

CONTRACTOR'S NAME: B&B Underground Construction Inc.

CONTRACTOR'S ADDRESS: 4050 Westgate Ave., Suite 110, West Palm Beach, FL 33409

CONTRACTOR'S PHONE: 561-249-0341

SURETY COMPANY: Westfield Insurance Company

SURETY'S ADDRESS: One Park Circle, Westfield Center, OH 44251

OWNER'S NAME: PALM BEACH COUNTY

OWNER'S ADDRESS: 8100 Forest Hill Boulevard
West Palm Beach, FL 33413

OWNER'S PHONE: (561) 493-6000

DESCRIPTION OF WORK: The bids will be furnishing all materials, labor, supervision, equipment, supplies, fees, expertise, and services necessary to provide new or improved lift stations at four (4) locations. Work includes mechanical, electrical, and civil improvements including new pumps, control panels and appurtenances, discharge piping, wet well and manhole coating, new potable water services, and all work included in the Drawing and indicated in the Technical Specifications, including temporary bypass pumping.

PROJECT LOCATION: Palm Beach County Department Zones 2 and 4

LEGAL DESCRIPTION: (Lift Station and Property Control Numbers):
LS0637 - 00-43-44-30-20-015-0010
LS0980 -00-42-47-30-26-001-0000
LS0981 - 00-42-43-27-05-081-0994
LS1051 - 00-41-47-26-12-007-0090

CONTRACT PERFORMANCE BOND

BY THIS BOND, we, B&B Underground Construction, Inc., as Principal and Westfield Insurance Company, a Corporation, as Surety, whose address is One Park Circle, Westfield Center, OH 44251, are bound to the Palm Beach County Board of County Commissioners, hereinafter called COUNTY, for the sum of $4,845,427.00, for payment of which we bind ourselves, our heirs, personal representatives, successors, and assigns, jointly and severally.

THE CONDITION OF THIS BOND is that if Principal:

1. Performs the Contract dated _____, _____between Principal and COUNTY, for construction of **Improvements to Lift Stations 980, 981, and 1051; Lift Station Rehabilitation Bid Package 1, LS0637** Contract No. **21-059R**, the Contract being made a part of this bond by reference, in the time and in the manner prescribed in the Contract and;

2. Pays COUNTY all loss, damages, expenses, costs, and attorney's fees, including appellate proceedings, the COUNTY sustains because of a default by Principal under the Contract and;

3. Performs the guarantee of all-work and materials furnished under the Contract for the time specified in the Contract;

then this bond is void; otherwise it remains in full force. Whenever Principal shall be, and declared by COUNTY to be in default under the Contract, the COUNTY having performed COUNTY'S obligations thereunder, the Surety may promptly remedy the default or shall promptly: (1) Complete the Contract in accordance with its terms and conditions; or (2) Obtain a bid or bids for completing the Contract in accordance with its terms and conditions, and upon determination by Surety of the lowest responsible bidder, or, if the COUNTY elects, upon determination by the COUNTY and the Surety jointly of the lowest responsible bidder, arrange for a contract between such bidder and COUNTY, and make available as the work progresses (even though there should be a default or a succession of defaults under the Contract or Contracts of completion arranged under this Paragraph) sufficient funds to pay the costs of completion, less the balance of the Contract price; but not exceeding, including other costs and damages for which the Surety may be liable hereunder, the amount set forth in the first paragraph hereof. The term "balance of the Contract price" as used in this paragraph, shall mean the total amount payable by COUNTY to Principal under the Contract and any amendments thereto, less the amount properly paid by COUNTY to Principal.

Any changes in or under the Contract Documents and compliance or noncompliance with any formalities connected with the Contract or the changes does not affect Surety's obligation under this bond. Any increase in the total contract amount as authorized by the COUNTY shall accordingly increase the Surety's obligation by the same dollar amount of said increase. The Principal shall be responsible for notification to Surety of all such changes.

Surety expressly acknowledges its obligations and liabilities for liquidated damages suffered by COUNTY under the provisions of the Contract Documents.

See subsection (2) of Section 255.05, Florida Statutes as amended for the notice and time limitations for claimants.

Dated on _____

PRINCIPAL: B&B Underground Construction Inc.

By: _____
Signature

Stephen Decker, President
Title

(SEAL)

Address: 4050 Westgate Ave., Suite 110

West Palm Beach, FL 33409

_____
Attest as to the signature of Principal

Sec.
Title

SURETY: Westfield Insurance Company

By: _____
Signature

Michael P. Broder, Agent & Attorney-in-Fact
Title

(SEAL)

_____
Attest as the signature of Surety

Arthur K. Broder, Agent
Title

Address: One Park Circle

Westfield Center, OH 44251

NOTE: Date of Bond must not be prior to date of Contract. If Contractor is a Partnership, all partners must execute bond.

IMPORTANT: Surety companies executing bonds must appear and remain on the U.S. Treasury Department's most current list (Federal Register), during construction, guarantee and warranty periods, and be authorized to transact business in the State of Florida.

CONTRACT PAYMENT BOND

BOND NUMBER: 422187H

BOND AMOUNT: $4,845,427.00

CONTRACT AMOUNT: $4,845,427.00

CONTRACTOR'S NAME: B&B Underground Construction, Inc.

CONTRACTOR'S ADDRESS: 4050 Westgate Ave., Suite 110, West Palm Beach, FL 33409

CONTRACTOR'S PHONE: 561-249-0341

SURETY COMPANY: Westfield Insurance Company

SURETY'S ADDRESS: One Park Circle, Westfield Center, OH 44251

OWNER'S NAME: PALM BEACH COUNTY

OWNER'S ADDRESS: 8100 Forest Hill Boulevard
West Palm Beach, FL 33413

OWNER'S PHONE: (561) 493-6000

DESCRIPTION OF WORK: The bids will be furnishing all materials, labor, supervision, equipment, supplies, fees, expertise, and services necessary to provide new or improved lift stations at four (4) locations. Work includes mechanical, electrical, and civil improvements including new pumps, control panels and appurtenances, discharge piping, wet well and manhole coating, new potable water services, and all work included in the Drawing and indicated in the Technical Specifications, including temporary bypass pumping.

PROJECT LOCATION: Palm Beach County Department Zones 2 and 4

LEGAL DESCRIPTION: (Lift Station and Property Control Numbers):
LS0637 - 00-43-44-30-20-015-0010
LS0980 -00-42-47-30-26-001-0000
LS0981 - 00-42-43-27-05-081-0994
LS1051 - 00-41-47-26-12-007-0090

CONTRACT PAYMENT BOND

BY THIS BOND, WE, B&B Underground Construction Inc., as Principal and Westfield Insurance Company, a Corporation, as Surety, whose address is One Park Circle, Westfield Center, OH 44251, are bound to the Palm Beach County Board of County Commissioners, hereinafter called COUNTY, in the sum of $4,845,427.00, for payment 'of which we bind ourselves, our heirs, personal representatives, successors, and assigns, jointly and severally.

THE CONDITION OF THIS BOND is that if Principal:

1. Promptly makes payment to all claimants and lienors supplying Principal with labor, materials and suppliers, used directly or indirectly by Principal in the prosecution of the work provided for in the Contract dated _____, _____, between Principal and COUNTY for construction of **Improvements to Lift Stations 980, 981, and 1051; Lift Station Rehabilitation Bid Package 1, LS0637**, Contract No. **21-059R** the Contract being made a part of this bond by reference, in the time and in the manner prescribed in the Contract, and;

2. Pays COUNTY all losses, damages, expenses, costs, and attorney's fees, including appellate proceedings, the COUNTY sustains because of a default by Principal under the Contract; then this bond is void; otherwise it remains in full force.

Any changes in or under the Contract Documents and compliance or noncompliance with any formalities connected with the Contract or the changes, does not affect Surety's obligation under this bond. Any increase in the total contract amount as authorized by the COUNTY shall accordingly increase the Surety's obligation by the same dollar amount of said increase. The Principal shall be responsible for notification to Surety of all such changes.

See Section 713.23, Florida Statutes as amended for the notice and time limitations for claimants.

Dated on _____

PRINCIPAL: B&B Underground Construction Inc.

By: _____
Signature

Stephen Decker, President
Title

(SEAL)

Address: 4050 Westgate Ave., Suite 110

West Palm Beach, FL 33409

_____
Attest as to the signature of Principal

Sec.
Title

SURETY: Westfield Insurance Company

By: _____
Signature

Michael P. Broder, Agent & Attorney-in-Fact
Title

(SEAL)

_____
Attest as the signature of Surety

Arthur K. Broder, Agent
Title

Address: One Park Circle

Westfield Center, OH 44251

NOTE: Date of Bond must not be prior to date of Contract. If Contractor is a Partnership, all partners must execute bond.

IMPORTANT: Surety companies executing bonds must appear and remain on the U.S. Treasury Department's most current list (Federal Register), during construction, guarantee and warranty periods, and be authorized to transact business in the State of Florida.

FORM OF GUARANTEE

GUARANTEE FOR (Contractor and Surety Name) B&B Underground Construction Inc.
Westfield Insurance Company

We the undersigned hereby guarantee that the **Improvements to Lift Stations 980, 981, and 1051; Lift Station Rehabilitation Bid Package 1, LS0637 , PBCWUD Project No. 21-059R,** Palm Beach County, Florida, which we have constructed and bonded, has been done in accordance with the plans and specifications; that the work constructed will fulfill the requirements of the guaranties included in the Contract Documents. We agree to repair or replace any or all of our work, together with any work of others which may be damaged in so doing, that may prove to be defective in the workmanship or materials within a period of one year from the date of Final Completion of all of the above named work by the County of Palm Beach, State of Florida, without any expense whatsoever to said County of Palm Beach, ordinary wear and tear and unusual abuse or neglect excepted by the County. The date of Final Completion shall be the date set forth on the fully executed and acknowledged Contractor's Certification of Final Completion form. When correction work is started, it shall be carried through to completion.

In the event of our failure to acknowledge notice, and commence corrections of defective work within five (5) calendar days after being notified in writing by the Board of County Commissioners, Palm Beach County, Florida, we, collectively or separately, do hereby authorize Palm Beach County to proceed to have said defects repaired and made good at our expense and we will honor and pay the costs and charges therefore upon demand.

County and Contractor agree that the provisions of Florida Statute Chapter 558 shall not apply to this Contract/Agreement.

SEAL AND NOTARIAL ACKNOWLEDGMENT OF SURETY

Countersigned Resident Agent in Florida:

Michael P. Broder
(Agent)

By _____
(Signature)

B&B Underground Construction Inc. (Seal)
(Contractor)

By: _____
(Signature) Stephen Decker, President

Westfield Insurance Company (Seal)
(Surety)

By: _____
(Signature)
Michael P. Broder, Agent & Attorney-in-Fact

END OF SECTION

General
Power
of Attorney

CERTIFIED COPY

POWER NO. **0992212 00**

Westfield Insurance Co.
Westfield National Insurance Co.
Ohio Farmers Insurance Co.

Westfield Center, Ohio

Know All Men by These Presents, That WESTFIELD INSURANCE COMPANY, WESTFIELD NATIONAL INSURANCE COMPANY and OHIO FARMERS INSURANCE COMPANY, corporations, hereinafter referred to individually as a "Company" and collectively as "Companies," duly organized and existing under the laws of the State of Ohio, and having its principal office in Westfield Center, Medina County, Ohio, do by these presents make, constitute and appoint

ARTHUR K. BRODER, MICHAEL P. BRODER, JOINTLY OR SEVERALLY

of **DAVIE** and State of **FL** its true and lawful Attorney(s)-in-Fact, with full power and authority hereby conferred in its name, place and stead, to execute, acknowledge and deliver **any and all bonds, recognizances, undertakings, or other instruments or contracts of suretyship-** - - -

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 07/08/2024

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:** Christian Clark
Brown & Brown Insurance Services, Inc. 1661 Worthington Rd Ste 175 West Palm Beach FL 33409	**PHONE (A/C, No, Ext):** (561) 686-2266 **FAX (A/C, No):** (561) 686-2313 **E-MAIL ADDRESS:** Christian.Clark@bbrown.com
INSURED B&B Underground Construction, Inc 4050 Westgate Ave #110 West Palm Beach 33409	**INSURER(S) AFFORDING COVERAGE** — **NAIC #** **INSURER A:** The Travelers Indemnity Company of America — 25666 **INSURER B:** The Phoenix Insurance Company — 25623 **INSURER C:** Travelers Property Casualty Company of America — 25674 **INSURER D:** Bridgefield Casualty Insurance Company — 10335 **INSURER E:** Federal Insurance Company — 20281 **INSURER F:**

COVERAGES **CERTIFICATE NUMBER:** 24-25 Cert **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	[X] COMMERCIAL GENERAL LIABILITY [ ] CLAIMS-MADE [X] OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: [X] POLICY [ ] PRO-JECT [ ] LOC [ ] OTHER:	Y		DT-CO-6P945262-TIA-24	03/20/2024	03/20/2025	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG Property damage-single	$ 1,000,000 $ 500,000 $ 10,000 $ 1,000,000 $ 2,000,000 $ 2,000,000 $
B	AUTOMOBILE LIABILITY [X] ANY AUTO [ ] OWNED AUTOS ONLY [ ] SCHEDULED AUTOS [ ] HIRED AUTOS ONLY [ ] NON-OWNED AUTOS ONLY			810-6P81753A-24-26-G	03/20/2024	03/20/2025	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident) Medical payments	$ 1,000,000 $ $ $ $ 2,000
C	[X] UMBRELLA LIAB [ ] OCCUR [ ] EXCESS LIAB [ ] CLAIMS-MADE [ ] DED [X] RETENTION $ 10,000			CUP-1S229607-24-26	03/20/2024	03/20/2025	EACH OCCURRENCE AGGREGATE 	$ 2,000,000 $ 2,000,000 $
D	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) Y/N: N If yes, describe under DESCRIPTION OF OPERATIONS below	N/A	Y	0196-50601-000	03/20/2024	03/20/2025	[X] 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
E	Equipment Floater	Y	Y	000045471513	03/20/2024	03/20/2025	Scheduled Equipment Lease/Rented Deductible	$356,255 $300,000 $1,000

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

Project No. PBCWUD 21-059, Improvements to Lift Stations 980, 981, and 1051; Lift Rehabilitation Bid Package 1, LS0637 .
Palm Beach County, Board of County Commissioners, a political subdivision of the State of Florida named as additional insured under the terms of this policy. In addition, Palm Beach County Water Utilities Department, its officers, directors, agents and employees are hereby named as additional insured under the terms of this policy for and employees are hereby named as additional insured under the terms of this policy for the improvements to Lift Stations 980, 981, and 1051; Lift Station Rehabilitation Bid Package 1, LS0637, Project No. PBCWUD 21-059R. Workers Compensation includes a waiver of subrogation in favor of the additional insured. Palm Beach County, Board of County Commissioners, a political subdivision of the State of Florida are named additional insured and loss payee with respect to the inland marine/transit.

CERTIFICATE HOLDER

Palm Beach County Water Utilities Department
Director Utilities Engineering
8100 Forest Hill Blvd
West Palm Beach FL 33413

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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ADDITIONAL COVERAGES

Ref #	Description	Coverage Code	Form No.	Edition Date
	Employee Benefits Aggregate	EBAGG		

Limit 1	Limit 2	Limit 3	Deductible Amount	Deductible Type	Premium
2,000,000	2,000,000				

Ref #	Description	Coverage Code	Form No.	Edition Date
	Uninsured motorist BI split limit	UMISP		

Limit 1	Limit 2	Limit 3	Deductible Amount	Deductible Type	Premium
1,000,000					

Ref #	Description	Coverage Code	Form No.	Edition Date
	PIP-Basic	PIP		

Limit 1	Limit 2	Limit 3	Deductible Amount	Deductible Type	Premium
10,000					

Ref #	Description	Coverage Code	Form No.	Edition Date
	Safety Certification Cr	SCRTC		

Limit 1	Limit 2	Limit 3	Deductible Amount	Deductible Type	Premium

Ref #	Description	Coverage Code	Form No.	Edition Date
	Drug Free Cr	DRFC		

Limit 1	Limit 2	Limit 3	Deductible Amount	Deductible Type	Premium

Ref #	Description	Coverage Code	Form No.	Edition Date

Limit 1	Limit 2	Limit 3	Deductible Amount	Deductible Type	Premium

Ref #	Description	Coverage Code	Form No.	Edition Date

Limit 1	Limit 2	Limit 3	Deductible Amount	Deductible Type	Premium

Ref #	Description	Coverage Code	Form No.	Edition Date

Limit 1	Limit 2	Limit 3	Deductible Amount	Deductible Type	Premium

Ref #	Description	Coverage Code	Form No.	Edition Date

Limit 1	Limit 2	Limit 3	Deductible Amount	Deductible Type	Premium

Ref #	Description	Coverage Code	Form No.	Edition Date

Limit 1	Limit 2	Limit 3	Deductible Amount	Deductible Type	Premium

Ref #	Description	Coverage Code	Form No.	Edition Date

Limit 1	Limit 2	Limit 3	Deductible Amount	Deductible Type	Premium

OFADTLCV

Copyright 2001, AMS Services, Inc.

AGENCY CUSTOMER ID: 00255218

LOC #:

ADDITIONAL REMARKS SCHEDULE

Page ____ of ____

AGENCY	NAMED INSURED
Brown & Brown Insurance Services, Inc.	B&B Underground Construction, 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

Pollution - 08/15/23-08/15/24 - Illinois Union Insurance Company - NAIC: 27960 - $1,000,000 Each Pollution Condition, $2,000,000 General Aggregate, $2,500 Retention

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GENERAL CONDITIONS

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1. Definitions

Wherever the words or terms defined in this section or pronouns used in their stead occur in the Specifications or other Contract Documents, they shall have the meanings herein given.

"Addendum" - A written explanation, interpretation, change, correction, addition, deletion, or modification of the Contract Documents issued in writing by the Engineer prior to opening the Bids.

“Alternative Dispute Resolution” or “ADR” – A dispute resolution process to resolve issues related to the Project. Unless a specific ADR process is required herein or by Laws and Regulations, the parties may agree to the format of the ADR procedure.

"Application for Payment" - The form furnished by the County which is to be used by the Contractor to request progress or final payment and which includes such supporting documentation as is required by the Contract Documents.

"Bonds" - Bid, Performance and Payment Bonds, and other instruments which protect against loss due to inability, failure or refusal of the Contractor to perform the Work specified in the Contract Documents.

"Change Order" - A document recommended by the Engineer, which is signed by the Contractor and the County and authorizes an addition, deletion, or revision in the Work, or an adjustment in the Contract Price or the Contract Time, issued on or after execution of Contract.

“Contractor” – As designated in Contract.

"Construction Manager" - The construction manager is an employee of the Contractor who shall be in attendance at the project site during performance of the Work and shall represent the Contractor. Communications given to the construction manager or decisions made by the construction manager shall be as binding as if given to or made by the Contractor. Important communications or decisions shall be confirmed in writing. Other communications or decisions shall be similarly confirmed on written request in each case.

“Contract” - The written agreement between the County and the Contractor covering the Work to be performed; when other documents are attached to the Agreement they become part of the Contract. The Contract is also referred to as the Agreement.

"Contract Price" - The total monies payable by the County to the Contractor under the terms and conditions of the Contract Documents.

"Contract Time" - The number of successive calendar days stated in the Contract Documents for the completion of the Work.

"County" - Palm Beach County Board of County Commissioners, Palm Beach County, Florida.

"Defective Work" - Work that is unsatisfactory, faulty, or deficient; or that does not conform to the Contract Documents; or that does not meet the requirements of any inspection, reference standard, test, or approval referred to in the Contract Documents; or Work that has been damaged prior to the Engineer's recommendation of final payment.

"Drawings" - The drawings, plans, maps, profiles, diagrams, and other graphic representations which show the character, location, nature, extent and scope of the Work to be performed, which have been prepared and approved by the Engineer, and which are considered a part of the Contract Documents.

"Effective Date of the Contract " - The date indicated in the Contract on which it was executed, but if no such date is indicated it means the date on which the Contract is signed and delivered by the last of the two parties to sign and deliver.

"Engineer" **– PALM BEACH COUNTY WATER UTILITIES DEPARTMENT** and its authorized agents, inspectors or representatives acting within the scope of duties entrusted to them by the County.

"Field Order" - An order by the Engineer that does not impact the cost or time of performance of the Work.

“Final Acceptance” – The date the project is finally accepted by the Board of County Commissioners or their designee.

"General Requirements" - Division 1 of the Technical Specifications.

"Inclement Weather" – A normal work day during which the Contractor was unable to perform critical path work for a continuous period of more than four (4) hours during that day.

"Inspector" - The inspector shall be in attendance at the project site during performance of the Work and shall report to, and be under the direct supervision of, the Resident Engineer or Resident Project Representative. The inspector shall have no authority to permit deviation from or to modify any of the provisions of the Drawings or Specifications without the written permission or instruction of the Engineer.

"Laws and Regulations; Laws or Regulations" - Laws, rules codes, regulations, ordinances and/or orders promulgated by a lawfully constituted body authorized to issue such Laws and Regulations. “

"Normal Working Hours" - Normal working hours shall consist of forty (40) hours per week with no more than eight (8) hours per day.

"Notice to Proceed" - The written notice issued by the County, or its authorized agents, to the Contractor authorizing the Contractor to proceed with the Work and establishing the date of commencement of the Contract Time.

"Partial Utilization" - Placing a portion of the Work in service for the purpose for which it is intended (or a related purpose) before reaching Substantial Completion for all the Work.

"Project" - The entire construction to be performed as provided in the Contract Documents.

"Resident Engineer" - (Same definition as for Resident Project Representative hereinafter).

"Resident Project Representative" - The resident project representative shall be in attendance at the project site during performance of the Work and shall represent the Engineer. Communications given to the resident project representative or decisions made by the resident project representative shall be as binding as if given to or made by the Engineer. Important communications or decisions shall be confirmed in writing. Other communications or decisions shall be similarly confirmed or requested in writing in each case.

"Shop Drawings" - All drawings, diagrams, illustrations, schedules, and other data which are specifically prepared by or on behalf of the Contractor to illustrate some portion of the Work, and all illustrations, brochures, standard schedules, performance charts, instructions, diagrams and other information prepared by a supplier and submitted by the Contractor to illustrate material or equipment for some portion of the Work.

"Specifications" - (Same definition as for Technical Specifications hereinafter).

"Subcontractor" - An individual, firm, or corporation having a direct contract with the Contractor or with any other Subcontractor for the performance of a part of the Work at the Site.

"Substantial Completion" - The date as determined by the Engineer, as evidenced by the Engineer's definitive Certificate of Substantial Completion, when the construction of the entire Project (or a specified part thereof) is sufficiently completed, in accordance with the Contract Documents, so that the entire Project (or a specified **part**) can be utilized for the purposes for which it is intended. When the entire Project is considered to be Substantially Complete, this does not constitute Final Acceptance or Final Completion of the entire Project.

"Supplier" - A manufacturer, fabricator, provider, distributor, materialman or vendor.

"Technical Specifications" - Those portions of the Contract Documents consisting of the General Requirements and written technical descriptions of materials, equipment, products, supplies, manufactured articles, standards and the execution of the Work.

“Unbalanced Bid Items” – Bid items in which the unit prices are not in line with industry standards or averages for the items. In order for a bid to be balanced each item must carry its proportionate share of direct cost, overhead, and profit. Unbalanced items which are installed and billed at the beginning of a project also result in “front-end loading.”

"Underground Utilities" - All pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasement containing such facilities which have been installed underground to furnish any of the following services or materials: water, sewage and drainage removal, electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, traffic, or other control systems.

“Work Order or Work Authorization” - A document which, when executed by the County and Contractor, becomes a part of the Contract Documents and specifies the scope of work, duration, total price, liquidated damages, and schedule for a specific project to be constructed by Contractor in accordance with the terms of the contract document.

"Work Directive" - A written directive to the Contractor, issued on or after the Effective Date of the Contract, signed by the County and recommended by the Engineer, ordering an addition, deletion or revision in the Work in response to an emergency or in the case of an inability to agree upon the amount of compensation of a requested change. The Contractor shall proceed upon receipt of a Work Directive to complete the work on a "cost plus" basis in accordance with Article 44, Paragraph A.3.C. A Work Directive may not change the Contract Price or Contract Time, but is evidence that the parties expect that the change directed or documented by a Work Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price and/or Contract Time.

"Written Amendment" - A written amendment of the Contract Documents, signed by the County and the Contractor on or after the Effective Date of the Contract and normally dealing with the non-engineering or non-technical rather than strictly work-related aspects of the Contract Documents.

2. Preliminary Matters

When the Contractor delivers the signed Contracts to the County, the Contractor shall also deliver to the County such Bonds and Insurance Policies, Certificates or other documents as the Contractor may be required to furnish in accordance with the Contract Documents.

The County will furnish to the Contractor three (3) copies of the Contract Documents. Additional quantities of the Contract Documents will be furnished at reproduction cost.

The County and the Contractor in Section 8 of the Instructions to Bidders have the option to mutually agree to implement a partnering cooperative approach to problem solving.

3. Before Starting Construction

The Contractor shall submit to the Engineer for review those documents identified in the General Requirements of the Technical Specifications. Before undertaking each part of the Work, the Contractor shall carefully study and compare the Contract Documents and check and verify pertinent figures shown thereon and all applicable field measurements. The Contractor shall notify the Engineer, in writing, of all conflicts, errors, inconsistencies, or omissions which he may discover; and obtain specific instructions in writing from the Engineer before proceeding with any part of the Work affected thereby. The Contractor shall not take advantage of any apparent error or omission which may be found in the Contract Documents, but the Engineer shall be entitled to make such corrections therein and interpretations thereof, as he may deem necessary for the fulfillment of their intent. The Contractor shall be responsible for all errors in construction which could have been avoided by such examination and notification and shall correct at his own expense all Work improperly constructed through failure to notify the Engineer and request specific instructions.

4. Pre-construction Conference

Following the execution of the Contract and prior to start of construction, a pre-construction conference will be scheduled by the Engineer, which must be attended by the Contractor. This conference will be held to review the above schedules, to establish procedures for handling shop drawings and other submissions, and to establish a working understanding between the Parties as to the Project. This conference may include representatives of the Engineer, County, local utilities, regulatory agencies, other contractors performing work in the area for the County, and any other party that may be deemed as necessary for the orderly performance of the Contract. However, this does not relieve the Contractor of the responsibility of contacting local utilities and any other necessary agencies or contractors.

5. Intent and Amending Contract Documents

A. Intent

The Contract Documents comprise the entire Contract between the County and Contractor concerning the Work. The Contract Documents are complementary, so that any Work exhibited in the one shall be executed just as if it has been set forth in all, in order that the Work shall be completed in every respect according to the complete design or designs as decided and determined by the Engineer.

It is the intent of the Contract Documents to describe the Work, functionally complete, to be constructed in accordance with the Contract Documents. Any work, materials, or equipment that may reasonably be inferred from the Contract Documents as being required to produce the intended result shall be supplied whether or not specifically called for.

In the event of a conflict, omission, error or discrepancy in the Contract Documents the Contractor shall promptly notify the Engineer. In resolving conflicts resulting from errors or discrepancies in any of the Contract Documents, the order of precedence shall be as set forth in Section 4.2.4 of the Instructions to Bidders.

The captions or subtitles of the several Articles and Divisions of these Contract Documents constitute no part of the context hereof, but are only labels to assist in locating and reading the provisions hereof.

From time to time during the progress of the Work, the Engineer may furnish supplementary drawings attached to a Change Order, a Field Order, a work Directive, or as a response to the Contractor's request for additional information, as he determines necessary to show changes or define the Work in more detail, and these also shall be considered as part of the Contract Documents.

B. Amending and Supplementing the Contract Documents

1. The Contract Documents may be amended to provide for additions, deletions and revisions in the Work or to modify the terms and conditions thereof in one or more of the following ways:

   a. A Formal Written Amendment
   b. A Change Order
   c. A Field Order
   d. A work Directive

   As indicated in Articles 44 and 49, Contract Price and Contract Time may only be changed by a Change Order.

2. In addition, the requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, in one or more of the following ways:

   a. A Field Order
   b. The Engineer's approval of a Shop Drawing or Sample, provided that Contractor has called such variation or deviation from the contract requirements to the attention of Engineer in a writing in accordance with GC 72, which specifically identifies the change.
   c. The Engineer's written interpretation or clarification of the Intent of the Contract Documents.

6. Reuse of Documents

Neither the Contractor, nor any Subcontractor or Supplier, nor any other person or organization performing or furnishing any of the Work under a Contract with the County shall have or acquire any title to or ownership rights in any of the Drawings, Technical Specifications, or other documents (or copies of any thereof) prepared by the Engineer for use on the Work, and they shall not reuse any of them on extensions of the project or any other project without prior written consent of the County and the Engineer.

7. Occupying Private Land

The County shall furnish, as indicated in the Contract Documents, the Lands upon which the work is to be performed, Rights-of-way and easements for access thereto, and such other lands which are designated for the use of the Contractor. These Lands are shown on the Contract Drawings and it is the Contractor's Responsibility to perform the work within the legally described Limits of the Lands. The Contractor shall provide for all additional Lands and access thereto required for temporary Construction facilities or storage of equipment and materials.

The Contractor shall not (except after written consent from the proper parties) enter or occupy with personnel, tools, equipment or materials, any land outside the rights-of-way or property of the County. Upon request of the County, the Contractor shall give a copy of the written consent to the Engineer.

8. Work in State and County Rights-of-Way and Easements

When the Work involves the installation of sanitary sewers, storm sewers, drains, water mains, manholes, underground structures, or other disturbances of existing features in or across streets, rights-of-way, easements, or other property, the Contractor shall (as the Work progresses) promptly back-fill, compact, grade and otherwise restore the disturbed area to a basic condition which will permit resumption of pedestrian or vehicular traffic and any other critical activity or function consistent with the original use of the land. Unsightly mounds of earth, large stones, boulders, and debris shall be removed so that the site presents a neat appearance.

9. Work Adjacent to Telephone, Power, Water, Sewer, Drainage Cable TV and Gas Company Structures

In all cases where Work is to be performed near utilities including telephone, power, water, sewer, drainage, cable TV, or gas company facilities, the Contractor shall provide written notification to the respective companies of the areas in which Work is to be performed, prior to the actual performance of any Work in these areas, and shall take all actions necessary to protect such facilities from damage.

10. Use of Public Streets

The use of public streets and alleys shall be such as to provide a minimum of inconvenience to the public and to other vehicular and non-vehicular traffic. Any earth or excavated material spilled from trucks shall be removed by the Contractor and the streets cleaned to the satisfaction of the Engineer and the County Engineering Department, the Florida Department of Transportation, or other local agency having jurisdiction, as applicable.

11. Subsurface Investigation

In the preparation of the Contract Documents, the Engineer has relied on the reports and tests of subsurface conditions taken at the job site. Such reports are not guaranteed as to their accuracy or completeness and are not part of the Contract Documents.

The County and the Engineer do not warrant or guarantee the accuracy or correctness of this material with respect to actual subsurface conditions.

The Contractor shall be responsible for having determined to his satisfaction, prior to the submission of his Proposal, 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 ground water conditions, the character of equipment and facilities needed preliminary to and during the execution 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.

12. Obstructions

The information and data shown or indicated in the Contract Documents with respect to existing underground utilities at or contiguous to the site and reports of prior property ownership of the site are based on information and data furnished to the County or the Engineer by the owners of such Underground Utilities or others. The County and the Engineer are not responsible for the accuracy or completeness of any such information or data, and the Contractor shall have full responsibility for reviewing and checking all such information and data, for locating all Underground Utilities shown or indicated in the Contract Documents, for coordination of the Work with the owners of such Underground Utilities during construction, for the safety and protection thereof and repairing any damage thereto

resulting from the Work, the cost of which will be considered as having been included in the Contract Price.

All water pipes, sanitary sewers, storm drains, force mains, gas mains, or other pipe, telephone or power cables or conduits, pipe or conduit casings, curbs, sidewalks, service lines and all other obstructions, whether or not shown, shall be temporarily removed from or supported across all excavations. Where it is necessary to temporarily interrupt services, the Contractor shall notify the Owner or occupant of such facilities, both before the interruption and again immediately before service is resumed. Before disconnecting any pipes or cables, the Contractor shall obtain permission from their owner, or shall make suitable arrangements for their disconnection by their owner. The Contractor shall be responsible for any damage to any such pipes, conduits or cables, and shall restore them to service promptly as soon as the Work has progressed past the point involved. Approximate locations of known water, sanitary, drainage, natural gas, power, telephone and cable TV installations along the route of new pipelines or in the vicinity of new work are shown, but are to be verified in the field by the Contractor prior to performing the Work. The Contractor shall uncover these pipes, ducts, cables, etc., carefully, by hand, prior to installing his Work. Any discrepancies or differences found shall be immediately brought to the attention of the Engineer in order that necessary changes may be made to permit installation of the Work.

13. Dimensions of Existing Structures

Where the dimensions and locations of existing structures are of critical importance in the installation or connection of new work, the Contractor shall verify such dimensions and locations in the field before the fabrication of any materials or equipment which is dependent on the correctness of such information.

14. Elevation Datum

Datum is shown on the project plans. All elevations on the Drawings or referred to in the Specifications refer to this datum.

15. Work to Conform

During its progress and on its completion, all Work shall conform truly to the lines, levels, and grades indicated on the Drawings or given by the Engineer and shall be built in a thoroughly substantial and workmanlike manner, in accordance with the Contract Documents and the written instructions or written directions given from time to time by the Engineer. In no case shall any Work in excess of the requirements of the Contract documents be paid for unless so approved in writing by an appropriately executed change order, work directive or written amendment.

All Work done without written instructions having been given by the Engineer, done without proper lines or levels, or done during the absence of the Engineer, or his agent, will not be estimated or paid for except when such Work is authorized in writing by an appropriately executed change order, work Directive or written amendment. Work so done may be ordered uncovered or taken down, removed and replaced entirely at the Contractor's expense.

16. Location of Proposed Work

Piping and structures to be installed by contractor, will be located substantially as indicated on the Drawings, but the right is reserved by the County, acting through the Engineer, to make such modifications in location as may be found desirable to avoid interference with existing structures or for other reasons. Where fittings, etc., are noted on the Drawings, such notation is for the Contractor's convenience and does not relieve the Contractor from laying and jointing different or additional items where required without additional compensation.

17. Bonds

The successful Bidder shall, upon delivery of the executed Contract to the County, deposit with the County a Performance and a Payment Bond, on the forms included in these documents, providing for the satisfactory completion of the Work and providing security for payment of all persons performing labor in connection with this Contract. Such bond shall be furnished in an amount equal to 100% of the amount of the Contract award as security for the faithful performance and payment of all Contractors' obligations under the Contract Documents and shall be recorded by Contractor in the public records of Palm Beach County. The form and conditions of the Bond and the Surety shall be acceptable to the County. As soon as possible after award of the contract, successful bidder shall deliver to County a certified copy of the recorded Performance and Payment Bonds or, when applicable, the recorded Payment and Performance bonds. **No payment will be made for work performed under this contract until a certified copy of the appropriate bond(s) has been delivered to County.**

The bond shall be written by a Surety Company of recognized standing, licensed to do business in the State of Florida, and having a resident agent in the State of Florida. The Surety Company shall hold a current certificate of authority as acceptable surety on Federal Bonds in accordance with U.S. Department of Treasury, Fiscal Service, Bureau of Government Financial Operations, Circular 570, current revision, entitled, "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies". The bond shall be executed by an Attorney-in-Fact for the Surety Company with a certified copy of his Power of Attorney attached to the Bonds.

The bonding limit of the Surety Company shall not exceed the limits indicated in the U.S. Department of Treasury listing unless the Surety Company submits a "reinsurance agreement form" indicating the amount above the bonding limit is insured by another Surety Company also on the U.S. Department of Treasury listing.

If the Surety Company on any Bond furnished to the County is declared, upon notification of the Insurance Agent, as bankrupt or becomes insolvent or its right or license to do business is terminated in the State of Florida, or it ceases to meet any of the requirements stated herein, the Contractor shall within ten (10) working days thereafter substitute another Bond and Surety Company at no cost to the County, both of which must be acceptable to the County. If the project is declared more than 90% complete by the Engineer and the County at the time of the Surety's bankruptcy or insolvency, the Contractor may, at the County's option, obtain a Maintenance Bond in the amount of 100% of the project cost, for the one (1) year warranty period after project completion. The Maintenance Bond shall be submitted on the form provided by the County and shall comply with all of the requirements for Performance and Payment Bonds stated herein.

Failure by the Contractor to substitute satisfactory Bonds under this section shall result in any or all of the following actions by the County:

1. Withholding of all applications for payment until satisfactory bonds are received and accepted, and/or;

2. Default in the Contract and cancellation as provided for in the Contract's default clause, and/or;

3. Suspension of the Contractor's name from the County's bid list for a period of not less than three (3) years from the date of Surety or Contract default.

18. Contractor's Insurance

Unless otherwise specified in this Contract or granted by County's Risk Management Department, the Contractor shall, at its sole expense, maintain in full force and effect at all times during the life of this contract or the performance of work hereunder, insurance coverage as described herein at limits, including endorsements, set forth in the Insurance Coverage & Limit Table below. Contractor shall deliver to Owner Certificate(s) of insurance evidencing that such policies are in full force and effect, not later than fourteen (14) calendar days after receipt of Notification of Intent to Award, but in any event, prior to execution of the Contract by Owner and prior to commencement of work on the project. Such certificate(s) shall adhere in every respect to the conditions set forth herein.

The requirement contained herein as to types and limits, as well as County's approval of insurance coverage to be maintained by Contractor are not intended to and shall not in any manner limit or qualify the liabilities and obligations assumed by Contractor under the Contract.

COMMERCIAL GENERAL LIABILITY Contractor shall agree to maintain a standard ISO version Commercial General Liability policy form, or its equivalent providing coverage for, but not be limited to, Bodily Injury and Property Damage, Premises/Operations, Products/Completed Operations, Independent Contractors, Contractual Liability, Broad Form Property Damage, X-C-U Coverages (if applicable), Severability of Interest including Cross Liability, and be in accordance with all of the limits, terms and conditions set forth herein. Contractor agrees this coverage shall be provided on a primary basis.

BUSINESS AUTOMOBILE LIABILITY Contractor shall agree to maintain a standard ISO version Business Automobile Liability coverage form, or its equivalent, providing coverage for all owned, non-owned and hired automobiles, and in accordance with all of the limits, terms and conditions set forth herein. Contractor agrees this coverage shall be provided on a primary basis. Notwithstanding the foregoing, should the Contractor not own any automobiles, the business auto liability requirement shall be amended to allow the Contractor to agree to maintain only Hired & Non-Owned Auto Liability. This amended coverage requirement may be satisfied by way of endorsement to the Commercial General Liability, or separate Business Auto Coverage form.

WORKER'S COMPENSATION & EMPLOYER'S LIABILITY Contractor shall agree to maintain Worker's Compensation Insurance & Employers Liability, including Federal Act endorsement for U.S. Longshoremen's and Harbor Workers Act when any work is on or contiguous to navigable bodies of U.S. waterways and ways adjoining, covering all of its employees on the work site. This coverage shall be accordance with all of the limits, terms and conditions set forth herein. Exemptions for a Contractor in or doing work in the Construction Industry, or proof of worker's compensation coverage provided by an employee leasing arrangement shall not satisfy this requirement. If any work is sublet Contractor shall require all subcontractors to similarly comply with this requirement unless such subcontractors' employees are covered by Contractor's Worker's Compensation insurance policy. Contractor agrees this coverage shall be provided on a primary basis.

ADDITIONAL REQUIRED INSURANCE WHEN WORK INVOLVES: The Contractor shall agree to maintain the following additional required insurance coverages with respect to any work involving property, operations, or type of equipment for which each insurance coverages described below have been designed specifically to provide coverage for:

WATERCRAFT LIABILITY With respect to any of the work hereunder involving watercraft owned, hired, or borrowed, the Contractor shall agree to maintain Protection and Indemnity, or similar Watercraft Liability. Coverage shall be included either way of endorsement under the Commercial General Liability or by separate watercraft liability insurance and be in accordance with all of the limits, terms and conditions set forth herein. Contractor agrees this coverage shall be provided on a primary basis.

AIRCRAFT LIABILITY With respect to any of the work involving (fixed wing or helicopter) aircraft owned, hired, or borrowed, the Contractor shall agree to maintain Aircraft Liability. Passenger Liability shall be include when persons other than the pilot and crew are occupying the aircraft. Coverage shall be in accordance with all of the limits, terms and conditions set forth herein. Contractor agrees this coverage shall be provided on a primary basis.

BUILDER'S RISK With respect to any of the work involving the construction of real property (buildings and improvements other than buildings) during the construction project, the Contractor shall maintain Builders Risk insurance providing coverage for the entire work at the project site, and will also cover portions of work located away from the site but intended for use at the site, and will also cover portions of the work in transit. Coverage shall be written on a All-Risk, Replacement Cost, and Completed Value Form basis in an amount at least equal to the projected completed value of the project as well as subsequent modifications of that sum. If a sublimit applies to the perils of wind or flood, the sublimit shall not be less than 25% of the projected completed value of the project. The deductible shall not exceed $10,000, nor shall a wind percentage deductible, when applicable, exceed five percent (5%).

Partial Occupancy or use of the work shall not commence until insurance company or companies providing insurance as required have consented to such partial occupancy or use. Contractor shall take reasonable steps to notify and obtain consent of the insurance company or companies, and agree to take no action, other than upon mutual consent, with respect to occupancy or use of the work that could lead to cancellation, lapse, or reduction of insurance.

The coverage shall be kept in force until Substantial Completion has been obtained, or until no one but the County has any property interest in the project, or until Contractor and County mutually consent to the termination, whichever occurs first. The Contractor agrees and understands the County shall not provide any Builder’s Risk insurance on behalf of Contractor for loss or damage to work, or to any other property of owned, hired, or borrowed by the Contractor. In addition, the Contractor agrees that they shall be responsible for all policy deductibles.

INLAND MARINE/TRANSIT INSURANCE. With respect to property with values in excess of $100,000 which is rigged, hauled or situated at the site pending installation, the Contractor shall agree to maintain inland marine property/transit insurance provided the coverage is not afforded by a Builders Risk policy. Coverage shall be provided in accordance with all of the limits, terms and conditions set forth herein. Contractor agrees this coverage shall be provided on a primary basis. The coverage shall be kept in force until Substantial Completion has been obtained, or until no one but the County has any property interest in the project, or until Contractor and County mutually consent to the termination, whichever occurs first. The Contractor agrees and understands the County shall not provide any inland marine or transit insurance on behalf of Contractor for loss or damage to work, or to any other property of owned, hired, or borrowed by the Contractor. In addition, the Contractor agrees that they shall be responsible for all policy deductibles.

SATISFYING LIMITS UNDER AN UMBRELLA POLICY: If necessary, the Contractor may satisfy the minimum limits required above for either Commercial General Liability, Business Auto Liability, and Employer's Liability coverage under an Umbrella or Excess Liability. The underlying limits may be set at the minimum amounts required by the Umbrella or Excess Liability provided the combined limits meet at least the minimum limit for each required policy. The Umbrella or Excess Liability shall have an Annual Aggregate at a limit not less than two (2) times the highest per occurrence minimum limit required above for any of the required coverages. The County shall be specifically endorsed as an "Additional Insured" on the Umbrella or Excess Liability, unless the Umbrella or Excess Liability provides continuous coverage to the underlying policies on a complete “Follow-Form" basis without exceptions and stated as such on the Certificate of Insurance.

ADDITIONAL INSURED The Contractor agrees to endorse the County as an Additional Insured on each insurance policies required to be maintained by the Contractor, except for Worker's Compensation

and Business Auto Liability. The CG 2026 Additional Insured - Designated Person or Organization endorsement, or its equivalent, shall be endorsed to the Commercial General Liability. Other policies, when required, such as for watercraft, aircraft, builder's risk or transit insurance, shall provide a standard Additional Insured endorsement offered by the insurer providing coverage with respect to liability arising out of the operations of the Contractor. The endorsement shall read "Palm Beach County Board of County Commissioners". The Contractor shall agree the Additional Insured endorsements provide coverage on a primary basis. Endorsement shall be in accordance with all of the limits, terms and conditions set forth herein.

LOSS PAYEE The Contractor shall agree to endorse the County as a Loss Payee on the Builder's Risk and Inland Marine/Transit Insurance, when required to be maintained by the Contractor. The Loss Payee endorsement shall read "Palm Beach County Board of County Commissioners." Endorsement shall be in accordance with all of the limits, terms and conditions set forth herein. The Contractor shall agree the Loss Payee endorsement provides coverage on a primary basis.

WAIVER OF SUBROGATION The Contractor shall agree by entering into this Contract to a Waiver of Subrogation for each required policy providing coverage during the life of this Contract. When required by the insurer or should a policy condition not permit an Insured to enter into an pre-loss agreement to waive subrogation without an endorsement, then the Contractor shall agree to notify the insurer and request the policy be endorsed with a Waiver of Transfer of Rights of Recovery Against Others, or its equivalent. This Waiver of Subrogation requirement shall not apply to any policy, which a condition to the policy specifically prohibits such an endorsement, or voids coverage should the insured enter into such an agreement on a pre-loss basis. The Waiver of Subrogation shall be in accordance with all of the limits, terms and conditions set forth herein.

RIGHT TO REVIEW & ADJUST The Contractor shall agree, notwithstanding the foregoing, the County, by and through its Risk Management Department, in cooperation with the Department, reserves the right to periodically review, reject or accept all required policies of insurance, including limits, coverages, or endorsements, hereunder from time to time throughout the life of this Contract. Furthermore, the County reserves the right to review and reject any insurer providing coverage because of poor financial condition or because it is not operating legally. In such event, County shall provide Contractor written notice of such adjusted limits and Contractor shall agree to comply within thirty (30) days of receipt thereof and to be responsible for any premium revisions as a result of any such reasonable adjustment.

NO REPRESENTATION OF COVERAGE ADEQUACY: The coverages and limits identified in the table have been determined to protect primarily interests of the County only, and the Contractor agrees in no way should the coverages and limits in the table be relied upon when assessing the extent or determining appropriate types and limits of coverage to protect the Contractor against any loss exposures, whether as a result of the construction project or otherwise.

CERTIFICATE OF INSURANCE Certificates of Insurance must provide clear evidence that Contractor's Insurance Policies contain the minimum limits of coverage and terms and conditions set forth herein. A minimum thirty (30) day endeavor to notify due to cancellation or non-renewal of coverage shall be identified on the Certificate.

In the event the County is notified that a required insurance coverage will cancel or non-renewed during the period of this Contract, the Contractor shall agree to furnish at least thirty (30) days prior to the expiration of such insurance, an additional certificate of insurance as proof that equal and like coverage for the balance of the period of the Contract and any extension thereof is in effect. Contractor shall agree not continue to work pursuant to this Contract unless all required insurance remains in effect. The County shall have the right, but not the obligation, of prohibiting Contractor or any subcontractor from entering the project site until such certificates or other evidence that insurance has been placed in complete compliance with these requirements is received and accepted by the County. The County reserves the right to withhold payment, but not the obligation, to Contractor until coverage is reinstated.

If the Contractor fails to maintain the insurance as set forth herein, the County shall have the right, but not the obligation, to purchase said insurance at Contractor's expense.

ADDITIONAL REQUIREMENTS FOR CERTIFICATES OF INSURANCE

1. Shall clearly identify Palm Beach County, a political subdivision of the State of Florida, its officers, agents and employees as Additional Insured for all required insurance coverages, except Workers Compensation and Business Auto Liability.

2. Shall clearly indicate project name and project number to which it applies.

3. Shall clearly indicate a minimum ten (10) day endeavor to notify requirement in the event of cancellation or non-renewal of coverage.

4. Evidence of renewal coverage must be provided at least fourteen (14) days in advance of any policy that may expire during the term of this Contract.

5. Shall clearly identify Palm Beach County, Board of County Commissioners endorsed as a Loss Payee on the Builders Risk and any Inland Marine coverages.

6. Contractor shall deliver original Certificate(s) of Insurance to the following Certificate Holder address:

   Palm Beach County
   Water Utilities Department
   Director Utilities Engineering
   8100 Forest Hill Boulevard
   West Palm Beach, FL 33413

   The County will correspond directly with Contractor to convey insurance deficiencies, policy renewal requests and any other insurance documentation needed in order to establish full compliance with the insurance requirements of the contract. In the event that County elects to utilize a third-party for insurance tracking, County will provide notice to Contractor of said election and relevant address information.

DEDUCTIBLES, COINSURANCE PENALTIES, & SELF-INSURED RETENTION The Contractor shall agree to be fully and solely responsible for any costs or expenses as a result of a coverage deductible, coinsurance penalty, or self-insured retention; including any loss not covered because of the operation of such deductible, coinsurance penalty, or self-insured retention.

SUBCONTRACTOR'S INSURANCE: The Contractor shall agree to cause each subcontractor employed by Contractor to purchase and maintain insurance of the type specified herein, unless the Contractor's insurance provides coverage on behalf of the subcontractor. When requested by the County, the Contractor shall agree to obtain and furnish copies of certificates of insurance evidencing coverage for each subcontractor.

INSURANCE COVERAGE & TABLE The Contractor shall agree to maintain the coverages, endorsements, and limits of liability in accordance with and set forth by the Insurance Coverage & Table below:

INSURANCE COVERAGE & LIMIT TABLE			
TYPE OF COVERAGE	**CONTRACTS LESS THAN $500,000**	**CONTRACTS $500,000 OR MORE**	**COVERAGE REQUIRED THIS CONTRACT**
COMMERCIAL GENERAL LIABILITY: Limit of Liability not less than: Additional Insured endorsement required:	$500,000 per occurrence Yes	$1,000,000 per occurrence Yes	Yes
COMPREHENSIVE AUTO LIABILITY: Limit of Liability not less than:	$500,000 per occurrence	$1,000,000 per occurrence	Yes
WORKERS COMPENSATION & EMPLOYER'S LIABILITY: Coverage not less than: Employers Liability Limits:	Statutory $100/500/100		Yes
WATERCRAFT LIABILITY: *Limit of Liability not less than:* *Additional Insured endorsement required:*	*$5,000,000* *per occurrence* *Yes*		No
AIRCRAFT LIABILITY: When used to carry passengers (excluding aircraft's crew) coverage for Passenger Liability not less than: Additional Insured endorsement required:	$1,000,000 per passenger Yes		No
INLAND MARINE/TRANSIT COVERAGE: Limit not less than: Additional Insured & Loss Payee endorsements required:	Highest value exposed during the construction project. Yes		Yes

INSURANCE COVERAGE & LIMIT TABLE		
BUILDERS RISK: Limit not less than: Endorsement to waive coverage termination from Occupancy Clause. Endorsement cover until final acceptance of the project by Certificate of Occupancy by the Owner. Additional Insured & Loss Payee endorsements required:	The total project completed construction value as well as subsequent modifications to that sum. Yes Yes Yes	No

19. Contractor's Responsibility

The Contractor shall supervise 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. The County and the Contractor have agreed to use a partnering cooperative approach to problem solving (See Instruction to Bidders 8.0). The Contractor shall be solely and wholly responsible for the means, methods, techniques, sequences, and procedures of construction and safety precautions and programs incidental thereto. The Contractor shall be responsible to see that the finished Work complies accurately with the Contract Documents and for the good condition of the Work and materials until Final Acceptance by the County. The Contractor shall bear all losses resulting on account of the weather, fire, the elements, or other causes of every kind or nature prior to Final Acceptance.

The Contractor shall designate in writing and keep on the Work site at all times during progress of the Work, a technically qualified construction manager, who shall not be replaced without prior written notice to the County and the Engineer. The construction manager shall be the Contractor's representative at the site and shall have full authority to act on behalf of the Contractor. All communications given to the construction manager shall be as binding as if given to the Contractor. The Contractor shall issue all its communications to the County through the Engineer.

The Contractor's construction manager shall be present at the site of the Work at all times while Work is in progress. Failure to observe this requirement shall be considered as suspension of the Work by the Contractor until such time as a construction manager is again present at the site.

All materials shall be supplied and the Work shall be done in accordance with the rules, requirements, regulations and directives of various Building Departments and such other State, County, or City Departments having jurisdiction over the same and in accordance with the requirements of the representatives of the mortgagee or mortgagees, if any, or any other governmental bureau, agency, or department interested in this job either directly or indirectly. Contractor shall be responsible for making himself aware of any laws or ordinances which may affect Contractor’s access to the project, the times of day when Contractor may perform the work, or in any other way affect Contractor’s performance of the Work. County will not be liable to Contractor for any action of any other governmental or private entity or agency which impacts Contractor’s costs or schedule for completing the Work.

Except as otherwise provided in this Article, the Contractor shall receive no additional compensation for overtime work, i.e., work in excess of eight (8) hours in any one calendar day or forty (40) hours in any one calendar week, even though such overtime work may be required under emergency conditions and

may be ordered by the Engineer in writing. Additional compensation will be paid to the Contractor for overtime work only in the event extra work is ordered by the Engineer and the change order specifically authorizes the use of overtime work and then only to such extent as overtime wages are regularly being paid by the Contractor for overtime work of a similar nature in the same locality.

All costs of field observations, inspection and testing performed by the Engineer during overtime work by the Contractor which is allowed solely for the convenience of the Contractor shall be borne by the Contractor, based upon Engineer's salary rates plus fringe benefits, overhead, profit and indirect costs in accordance with the terms of the Engineer's Contract with the County. The County shall have the authority to deduct the cost of all such inspection and testing from any partial payments otherwise due to the Contractor.

Unless otherwise specified in the Contract Documents, the Contractor shall furnish and assume full responsibility for all materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, drainage, sanitary facilities, and all other facilities and incidentals necessary for the furnishing, performance, testing, start-up, and Final Completion of the Work. In emergencies affecting the safety or protection of persons or the Work or property at the site or adjacent thereto, Contractor, without special instruction or authorization from Engineer or County, 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. If Engineer determines that a change in the Contract Documents is required because of the action taken in response to an emergency, a Work Directive or Change Order will be issued to document the consequences of the changes or variations.

20. Discontinuance of Construction

The Contractor agrees and guarantees to perform the above mentioned Work in accordance with the terms stated herein, irrespective of any strikes, lockouts, or stoppages, and the Contractor shall not employ men, means, materials, or equipment which may cause strikes, work stoppages, or any disturbances by workmen employed by the Contractor.

In the event the County is prevented from proceeding with any or all of this Work as stated in this Contract, due to a declaration of war, or national emergency, by the United States government, whereas the construction of the type contracted for herein is specifically prohibited by statute or governmental edict, or due to the stoppage of construction caused by any governmental agency, State, City, Town, or County regulations, orders, restrictions, or due to circumstances beyond the County's control, then the County herein reserves the right to either suspend the Work to be done for an indefinite period of time or to cancel this Contract outright by giving notice by registered mail of such intention to the Contractor herein. In the event of any conditions above mentioned occurring after the Work herein has already been commenced, then the County herein shall be liable for only the cancellation or suspension without the addition of prospective profits or other charges whatsoever.

21. Guarantee

The Contractor guarantees that the Work and service to be performed under the Contract and all workmanship, materials, and equipment performed, furnished, used, or installed in the Work shall be free from defects and flaws, and shall be performed and furnished in strict accordance with the Contract Documents; that the strength of all parts of all manufactured equipment shall be adequate and as specified; and that performance test requirements of the Contract shall be fulfilled. The Contractor shall remedy all defects in the Work and shall repair, correct, or replace all damage to the other Work, persons

or property resulting from failures covered by the guarantee. The guarantee shall remain in effect for one (1) year from the date of final acceptance unless a longer period is specified. The County shall give notice of observed defects with reasonable promptness. Unremedied defects identified for correction during the guarantee period but remaining after its expiration shall be considered as part of the obligations of the guarantee. Defects in material, workmanship, or equipment which are remedied as a result of obligations of the guarantee shall subject the remedied portion of the Work to an extended guarantee period of one (1) year after the defect has been remedied. The Surety shall be bound with and for the Contractor in the Contractor's faithful observance of the guarantee.

22. Field Layout of Work

All Work under this Contract shall be constructed in accordance with the lines and grades shown on the Contract Drawings or as approved by the Engineer in writing. Elevation of existing ground, structures and appurtenances are believed to be reasonably correct but are not guaranteed to be absolute and therefore are presented only as an approximation.

All survey work for construction control purposes shall be made by a land surveyor registered in the State of Florida with demonstrated experience in the project area who shall be employed by the Contractor at his expense. The Contractor shall establish all base lines for the location of the principal component parts of the Work together with permanent benchmarks and temporary bench marks adjacent to the Work. Based upon the information provided by the Contract Drawings, the Contractor shall develop and make all detail surveys necessary for construction including establishment or construction of grid coordinates as shown on the Contract Drawings, location of property boundaries, stakes for all working points, lines and elevations.

The Contractor shall have the responsibility to carefully preserve all benchmarks, reference points and stakes. In case of destruction thereof by the Contractor resulting from his negligence, or for any other reason, he shall be held liable for any expense and damage resulting there from and shall be responsible for any mistakes that may be caused by the unnecessary loss or disturbance of such bench marks, reference points and stakes. Existing or new control points, property markers, and monuments that will be established or are destroyed during the normal causes of construction shall be re-established by the Contractor; and all reference ties recorded shall be furnished to the Engineer. All computations necessary to establish the exact position of the Work shall be made and preserved by the Contractor.

23. Specifications

Where any materials, articles, items, equipment, or processes are specified by one or more trade or brand names, the substitution of unnamed materials, articles, items, equipment, or processes will be allowed. Where the words "equivalent", "proper", "equal to", or "or Equal" are used, they shall be understood to mean that the referred to materials, items, equipment, articles or processes shall be the equivalent of, or equal to some other materials, items, equipment, articles or processes in the opinion or judgment of the Engineer. Unless otherwise specified, all materials, items, equipment, articles or processes shall be the best of their respective kinds and shall be in all cases, fully equal to samples acceptable to the Engineer. Even though the words "or equal" or other such expressions may be used in the Specifications, unless a substitute is accepted in writing by the Engineer, the Engineer shall have the right to require the use of such specifically designated material, equipment, items, articles or processes named in the Specifications.

24. Handling and Distribution

The Contractor shall, at his own expense, handle, haul and distribute all materials and all surplus materials on the different portions of the Work, as necessary. Suitable and adequate storage room for materials and equipment shall be furnished until the Final Acceptance of the Work.

Storage charges and demurrage charges by transportation companies and vendors, which result from delays in handling, shall be borne by the Contractor.

25. Storage of Materials

Suitable storage facilities shall be furnished by the Contractor. All materials, supplies and equipment intended for use in the Work shall be stored by the Contractor in accordance with the recommendations of the associated manufacturer or supplier to prevent damage from exposure, contamination by foreign substances, or vandalism. The Engineer may refuse to accept, or sample for testing, materials, supplies, or equipment that have been improperly stored. Materials, supplies and equipment found unfit for use shall not be incorporated in the Work and shall immediately be removed from the construction or storage site and replaced at no cost to the County.

Should the Contractor build temporary structures for housing workers, tools, machinery and supplies, they shall be permitted only at places acceptable under Local codes, Ordinances, Laws, Rules, and Regulations, and their surroundings shall be maintained at all times in a satisfactory and sanitary manner. On or before the completion of the Work, all such structure shall be removed in their entirety, together with all rubbish and trash, at the expense of the Contractor.

The Contractor shall, at its own expense, handle, haul and distribute all materials and all surplus materials on the different portions of the Work, as necessary. Suitable and adequate storage room for materials and equipment shall be furnished until the Final Acceptance of the Work.

Storage charges and demurrage charges by transportation companies and vendors, which result from delays in handling, shall be borne by the Contractor.

26. Salvaged Materials

In the absence of special provisions to the Contract, salvaged materials, equipment or supplies that occur are the property of the County and shall be stored as directed by the Engineer, or shall be properly disposed of by the Contractor at his sole cost, if directed by the Engineer.

27. Subcontracts

As soon as practical after execution of the Contract, the Contractor shall notify the Engineer and request approval in writing, of the use of subcontractors proposed for the Work and shall not employ any that the Engineer may, within a reasonable time, determine are not performing the work in strict conformance with the Contract Documents, or approved changes thereto.

The Contractor agrees that he is as fully responsible to the County for the acts and omissions of his subcontractors and of persons either directly or indirectly employed by them, as he is for the acts and omissions of persons directly employed by him.

Nothing contained in the Contract Documents shall create any contractual relation between any subcontractor and the County.
The Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the Work to bind subcontractors to the Contractor by the terms of the General Conditions, the Supplemental General Conditions and other Contract Documents insofar as applicable to the Work of subcontractors, and to give the Contractor the same power as regards to terminating any subcontract that the County may exercise over the Contractor under any provision of the Contract Documents. The Contractor shall only Contract with bondable Subcontractors if the Subcontractor is performing work that represents more than 15% of the Work.

28. Permits

The Contractor shall, obtain all necessary permits, licenses, royalties, inspections and certificates pertaining to the Work and shall comply with all Federal, State, Municipal and local laws, ordinances, rules, regulations, orders, notices and requirements, whether or not provided by the Drawings, Specifications, General Conditions or other parts of the Contract Documents without additional charge or expense to the County and shall also be responsible for and correct at its own cost and expense, any violations thereof resulting from and in connection with its performance of the Work.

29. Employees

All labor described in these Specifications or indicated on the Drawings and the Work specified or indicated shall be executed in a thoroughly substantial and workmanlike manner by mechanics skilled in the applicable trades.

Any person employed on the Work who fails, refuses or neglects to obey the instructions of the Construction Manager in anything relating to this Work, or who appears to the Construction Manager to be disorderly, intoxicated, insubordinate, unfaithful or incompetent, shall upon the order of said Construction Manager, be at once discharged and not again employed in any part of the Work. Any interference with, or abuse or threatening conduct toward the Engineer or his inspectors by the Contractor or his employees or agents, shall be authority for the County to annul the Contract and re-let the Work. No intoxicating substance shall be allowed on the Work.

30. Florida Products and Labor

The Contractor's attention is called to Section 255.04, Florida Statutes, which requires that on public building contracts, Florida products and labor shall be used wherever price and quality are equal.

31. Equal Employment Opportunity

The Contractor warrants and represents that all of its employees or applicants for employment are treated equally without regard to race, color, religion, disability, sex, age, national origin, ancestry, marital status, familial status, sexual orientation, gender identity or expression, or genetic information. Such action shall include but not be limited to the following: employment, upgrading, demotion, or transfer; recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of this nondiscrimination clause.

32. Sanitary Regulations

The Contractor shall provide adequate sanitary conveniences for the use of those employed on the Work. Such conveniences shall be made available when the first employees arrive on the Work, shall be properly secluded from public observation, and shall be constructed and maintained in suitable numbers and at such points and in such a manner as may be required by Local codes, Ordinances, Laws, Rules and Regulations.

The Contractor shall maintain the sanitary facilities in a satisfactory and sanitary condition at all times and shall enforce their use. He shall prohibit the committing of nuisances on the site of the Work, on the lands of the County, or on adjacent property.

The County and the Engineer shall have the right to inspect any building or other facility erected, maintained, or used by the Contractor, to determine compliance with these Sanitary Regulations.

33. Taxes

The Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by the Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

34. Contractor's Use of Premises

The Contractor's use of the project site shall be limited to its construction operations, including on-site storage of materials, on-site fabrication facilities, and field offices.

35. Accident Prevention

No laborer or mechanic employed in the performance of this Project shall be required to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to his health or safety as determined under construction safety and health standards promulgated by the Secretary of Labor.

The Contractor shall appoint a qualified and experienced safety representative and shall exercise proper caution at all times for the protection of persons and property and shall be responsible for all damage to persons or property, either on or off the work site, which occur as a result of his prosecution of the Work. The safety provisions of applicable laws and building and construction codes shall be observed and the Contractor shall take or cause to be taken such additional safety and health measures as the Local Public Agency involved may determine to be reasonably necessary. Machinery, equipment and all hazards shall be guarded in accordance with the safety provisions of the "Manual of Accident Prevention in Construction" as published by the Associated General Contractors of America, Inc., to the extent that such provisions are not in conflict with applicable laws.

The Contractor shall maintain an accurate record of all cases of death, occupational disease, or injury requiring medical attention or causing loss of time from work, arising out of and in the course of employment on Work under the Contract. The Contractor shall promptly furnish the Local Public Agency with reports concerning these matters.

The Contractor shall indemnify and save harmless the County and the Engineer from any claims for damages resulting from property damage, personal injury and/or death suffered or alleged to have been suffered by any person as a result of any Work conducted under this Contract.

36. Precautions During Adverse Weather

During adverse weather, and against the possibility thereof, the Contractor shall take all necessary precautions to insure that the Work shall be done in a good and workmanlike condition and is satisfactory in all respects. When required, protection shall be provided by the use of tarpaulins, wood and building paper shelters, or other acceptable means. The Contractor shall be responsible for all changes caused by adverse weather, including unusually high winds and water levels and he shall take such precautions and procure such additional insurance as he deems prudent.

The Contractor may suspend construction operations at any time when, in his judgment, the conditions are unsuitable or the proper precautions are not being taken, whatever the weather or water level conditions may be, in any season.

37. Indemnification

Contractor shall indemnify and hold harmless the County, its officers and employees, from liabilities, damages, losses and costs, including, but not limited to, reasonable attorney's fees, to the extent

caused by the negligence, recklessness, or intentional wrongful misconduct of the Contractor and persons employed or utilized by the Contractor in the performance of this contract.

38. Non-assignable

This Contract, any monies due hereunder, or any part thereof, shall not be assigned, transferred, or sublet by Contractor, nor shall County be liable to any assignee or transferee, or sublease, without the written consent of the County, and without consent to the assignment, transfer, or sublease, the County shall not release or discharge Contractor from any obligation hereunder. County shall not consider its approval to an assignment unless the Surety on the Contract Performance and Payment Bonds has informed the County in writing that it consents to the assignment.

39. Venue

This Contract shall be governed by the laws of the State of Florida as now and hereafter in force. The venue for actions arising out of this Contract shall be in a state court of competent jurisdiction located in Palm Beach County, Florida.

40. Confidentiality

In the performance of the Work, the Contractor may be exposed to the confidential information of the County and others. The Contractor shall not disclose to anyone not employed by the County nor use, except on behalf of the County, any such confidential information acquired by it in the performance of the Work except as authorized by the County in writing and, regardless of the term of this Contract, the Contractor shall be bound by this obligation until such time as said confidential information shall become part of the public domain. Information regarding all aspects of the County's business and information concerning the Work (either directly or indirectly disclosed to it or developed by it in the performance of the Work) shall be presumed to be confidential except to the extent that same shall have been published or otherwise made freely available to the general public without restriction. The Contractor also agrees that it will not disclose to the County any information it holds subject to any obligation or confidence to any third persons or parties.

41. Work by Others

The County may perform additional Work related to the Project by itself, or he may let other direct contracts which shall contain General Conditions similar to these. The Contractor shall afford the other contractors who are parties to such direct contracts (or the County, if it is performing the additional work himself), reasonable opportunity for the introduction and storage of materials and equipment and the execution of the Work, and shall properly connect and coordinate his Work with theirs.

If any part of the Contractor's Work depends on proper execution or results upon the Work of any such other contractor (or County), the Contractor shall inspect and promptly report to the Engineer, in writing, any defects or deficiencies in such Work that render it unsuitable for such proper execution and results. His failure to so report shall constitute an acceptance of the other Work as fit and proper for the reception of his Work except as to defects and deficiencies, which may appear in the other Work after the execution of the Work under this Contract.

The Contractor shall do all cutting, fitting and patching of his Work that may be required to make its several parts come together properly and fit it to receive or be received by such other Work. The Contractor shall not endanger any Work of others by cutting, excavating or otherwise altering their Work and will only cut or alter their Work with the written consent of the Engineer and of the other contractors whose Work will be affected.

If the performance of additional Work by other contractors or the County is not noted in the Contract Documents prior to the execution of the Contract, written notice thereof shall be given to the Contractor by the Engineer prior to starting any such additional Work.

42. Engineer's Responsibility

The supervision of the execution of this Contract is vested wholly in the Contractor. The orders, instructions, directions, or requests of the County are to be given through the County's Engineer. The County's Engineer shall transmit them promptly to the Contractor as coming from the County and originating in the County. The Contractor shall designate a representative to receive such instructions, directions or requests in his absence and, failing to do so, will be held responsible for the execution of them.

The Engineer shall have the authority to suspend the Work wholly or in part for such period or periods as may be deemed necessary due to failure on the part of the Contractor to carry out orders given to perform any or all provisions of the Contract. This right of the Engineer to stop the Work shall not give rise to any duty on the part of the Engineer to exercise this right for the benefit of the Contractor or any other party. The Contractor shall not suspend the Work and shall not remove any equipment, tools, lumber or other materials without the written permission of the County's Engineer.

The County's Engineer shall have free access to the materials and the Work at all times for measuring or observing the same, and the Contractor shall afford him all necessary facilities and assistance for so doing.

After written authorization to proceed with the Work, the Engineer shall:

1. Make visits to the site at intervals appropriate to the various stages of construction to observe the progress and quality of the executed Work and to determine, in general, if the Work is proceeding in accordance with the Contract Documents; not be responsible for the construction means, methods, procedures, techniques and sequences of construction and will not be responsible for the Contractor's failure to perform the construction Work in accordance with the Contract Documents; not be responsible for safety precautions and procedures in connection with the Work; and during such visits and on the basis of on-site observations, as an experienced and qualified design professional, will keep the County informed of the progress of the Work, will endeavor to guard the County against defects and deficiencies in the Work of the Contractor and may reject Work as failing to conform to the Contract Documents.

2. Issue with reasonable promptness such written clarifications or interpretations of the requirements of the Contract Documents (in the form of Drawings or otherwise) as the Engineer may determine necessary, which shall be consistent with or reasonably inferable from the overall intent of the Contract Documents.

3. Review samples, catalog data, schedules, shop drawings, laboratory, shop and mill tests of materials and equipment and other data, which the Contractor is required to submit, only for conformance with the design concept of the project and compliance with the information given by the Contract Documents, and assemble written guarantees, which are required by the Contract Documents.

4. Consult with and advise the County, act as the County's representative at the project site, issue all instructions of the County to the Contractor and prepare routine change orders as required.

5. Based on on-site observations, as an experienced and qualified design professional and on the review of the Contractor's applications for payment, determine the amount owing to the Contractor and approve in writing payment to the Contractor in such amounts; such approvals of payment to constitute a representation to the County, based on such observations and review of data comprising such applications, that the Work has progressed to the point indicated and that, to the best of its knowledge, information and belief, the quality of the Work is in accordance with the Contract Documents, subject to the results of any subsequent tests called for in the Contract Documents and any qualifications stated in the approval. Such partial and final payments will be as specified elsewhere herein except as modified in this paragraph.

6. Conduct, in the company of the County, a final inspection and an "eleventh month inspection" of the Project for conformance with the design concept of the project and compliance with the information given by the Contract Documents, and recommend to the County, in writing, acceptance of the Project for ownership and final payment to the Contractor in accordance with Article 59 "Final Payment and Acceptance."

The Engineer will be the initial interpreter of the requirements of the Contract Documents.

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). The Engineer has agreed to participate in the use of a partnering cooperative approach to problem solving.

Neither the Engineer's authority to act under this Article or other provisions of the Contract Documents nor any decision made by the Engineer, in good faith either to exercise or not exercise such authority, shall give rise to any duty or responsibility of the Engineer to the Contractor, any Subcontractor, any Supplier, any Surety, or any other person or organization performing any of the Work.

Whenever in the Contract Documents the terms "as ordered", "as directed", "as required", "as allowed", "as reviewed", "as approved", or terms of the like effect or import are used, or the adjectives "reasonable", "suitable", "acceptable", "proper", or "satisfactory" or adjectives of the like effect or import are used to describe a requirement, direction, review, or judgment of the Engineer as to the Work, it is intended that such requirements, direction, review, or judgment will be solely to evaluate the Work for compliance with the Contract Documents, unless there is a specific statement indicating otherwise. The use of any such term or adjective shall not be effective to assign to the Engineer any duty or authority to undertake responsibility.

The authority and duties of the resident project representative are limited to examining the material furnished, observing the Work done, and reporting their findings to the Engineer. The Engineer does not underwrite, guarantee or insure the Work done by the Contractor. It is the Contractor's responsibility to perform the Work in all details in accordance with the Contract Documents. Failure by the Engineer or by any inspectors or other representatives of the County engaged in on-site observation to discover defects or deficiencies in the Work of the Contractor shall never, under any circumstances, relieve the Contractor from his liability to the County. Inspectors shall have no authority to permit deviations from or to modify any of the provisions of the Drawings or Specifications without the written permission or instruction of the Engineer.

The Engineer, his representatives, employees, or any resident project representative in employment of the Engineer shall have no authority to supervise, direct, expedite or otherwise control and instruct or order the Contractor or his employees in the fulfillment of the Contractor's obligation. The County's instructions, orders, directions and/or orders to the Contractor shall be given only through the Engineer, or his employees.

The Engineer shall have the authority to disapprove or reject work which the Engineer believes to be defective or that the Engineer believes will not produce a completed project that conforms to the Contract Documents or that will prejudice the integrity of the construction of the completed Project as a functioning whole as indicated by the Contract Documents. The Engineer shall also have the authority to require special inspections or testing of the Work as provided in Article **51** of these specifications, whether the Work is fabricated, installed or completed.

If any Work (including the Work of subcontractors) that is to be inspected, tested or approved is covered without written concurrence of the Engineer, it must, if requested by the Engineer, be uncovered for observation. Such uncovering shall be at the Contractor's sole expense unless the Contractor has given the Engineer timely notice of the Contractor's intention to perform such test or to cover the same and the Engineer has not acted with five (5) days in response to such notice.

If any Work is covered contrary to the written request of the Engineer, it must, if requested by the Engineer, be uncovered for the Engineer's observation and replaced at the Contractor's sole expense.

If the Engineer considers it necessary or advisable that covered Work be observed by the Engineer or inspected or tested by others, the Contractor, at the Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection or testing as the Engineer may require, that portion of the Work in question, furnishing all necessary labor, material and equipment. If it is found that such Work is defective, the Contractor shall bear all direct, indirect and consequential costs and damages of such uncovering, exposure, observation, inspection and testing and of satisfactory re-construction, including but not limited to fees and charges of engineers, attorneys and other professionals. However if such Work is found not to be defective, the Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to such uncovering, exposure, observation, inspection, testing and re-construction; and if the parties are unable to agree as to the amount or extent thereof, the Contractor may make a claim as provided in Articles **44** and **49**.

The payment of any compensation, regardless of its character or form, or the giving of any gratuity, or the granting of any valuable favor, directly or indirectly, by the Contractor to any project representative, is strictly prohibited and any such act on the part of the Contractor will constitute a violation of the Contract.

43. Changes in the Work

Without invalidating the Contract and without notice to any Surety, County may, at any time or from time to time, order additions, deletions, or revisions in the Work; these will be authorized by a Written Amendment, a Change Order, or a Work Directive Change. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).

If County and Contractor are unable to agree on the extent, if any, of an increase or decrease in the Contract Price or an extension or shortening of the Contract Time that should be allowed as a result of a Work Directive Change, a claim may be made thereof as provided in Article **44** or Article **49**.

Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Time with respect to any Work performed that is not required by the Contract Documents as amended, modified and supplemented as provided, except in the case of an emergency as provided in Article **19**.

County and Contractor shall execute appropriate Change Orders (or Written Amendments) covering:

A. Changes in the Work which are ordered by County, or are required because of acceptance of defective work under Article **51** or correcting defective Work under Article **53**, or are agreed to in writing by the parties;

B. Changes in the Contract Price or Contract Time which are agreed to in writing by the parties; and,

C. Changes in the Contract Price or Contract Time which embody the substance of any written decision rendered by Engineer pursuant to ADR, provided that, in lieu of executing any such Change Order, Contractor or County may litigate any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such ADR and litigations, Contractor shall carry on with the Work and adhere to the Progress Schedule as provided in Article **49.**

If notice 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 Time) is required by the provisions of any Bond to be given to a Surety, the giving of any such notice will be Contractor's responsibility, and the amount of each applicable Bond will be adjusted accordingly.

All changes to the contract must comply to Palm Beach County Board of County Commissioners Resolution R-89-633, any revisions thereto and any other policies enacted by the Board of County Commissioners in relation to contract changes.

44. Change of Contract Price

A. General

1. The Contract price constitutes the total compensation (subject to adjustments authorized in writing) payable to Contractor for performing the Work. All duties, responsibilities and obligations assigned to or undertaken by Contractor shall be at his expense without change in the Contract Price.

2. The Contract Price may only be changed by a Change Order. Any claim for an increase or decrease in the Contract Price shall be based on written notice delivered by the party making the claim to the other party and to the Engineer promptly (but in no event later than thirty (30) days) after occurrence of the event giving rise to the claim and stating the general nature of the claim. Notice of the amount of the claim with supporting data shall be delivered within sixty (60) days after such occurrence (unless the Engineer allows an additional period of time to ascertain more accurate data in support of the claim) and shall be accompanied by claimant's written statement that the amount claimed covers all known amounts (direct, indirect and consequential) to which the claimant is entitled as a result of the occurrence of said event. Any claim for adjustment in the Contract Price may be determined by ADR if County and Contractor cannot otherwise agree on the amount involved. No claim for an adjustment in the Contract Price will be valid if not submitted in accordance with this Article.

3. The value of any Work covered by a Change Order or of any claim for an increase or decrease in the Contract Price shall be determined in one of the following ways:

   a. Where the Work involved is covered by unit prices contained in the Contract Documents, by application of unit prices to the quantities of the items involved.

   b. By mutual acceptance of a lump sum (which may include an allowance for overhead and profit not necessarily in accordance with paragraph C.1.

c. On the basis of the Cost of the Work (determined as provided in paragraphs B.1 and B.2) plus a Contractor's Fee for overhead and profit (determined as provided in paragraphs C.1 and C.2).

B. Cost of the Work

1. The term Cost of the Work means the sum of all costs necessarily incurred and paid by Contractor in the proper performance of the Work. Except as otherwise may be agreed to in writing by County, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall include only the following items and shall not include any of the costs itemized in paragraph B.2.

a. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by County and Contractor. Payroll costs for employees not employed full time in 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 compensation, excise and payroll taxes, worker's or workmen's compensation, health and retirement benefits, bonuses, sick leave, vacation pay and holiday pay applicable thereto. Such employees shall include superintendents and foremen at the site. The expenses of performing Work after regular working hours, on Saturday, Sunday or legal holidays, shall be included in the above to the extent authorized by the County.

b. Costs of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and supplier's field services required in connection therewith.

c. Payments made by Contractor to the Subcontractors for Work performed by Subcontractors.

d. Cost of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys and accountants) employed for services specifically related to the Work.

e. Supplemental costs including the following:

(i) The proportion of necessary transportation, travel and subsistence expenses of Contractor's employees incurred in the discharge of duties connected with the Work.

(ii) Costs, 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 costs less market value of such items used but not consumed which remain the property of Contractor.

(iii) Rentals of all construction equipment and machinery and the parts thereof whether rented from Contractor or others. The rental of any such equipment, machinery or parts shall cease when the use thereof is no longer necessary for completion of the Work or any portion thereof for which the equipment, machinery or parts are specifically required.

For special equipment and machinery such as power driven pumps, concrete mixers, trucks, front-end loaders, backhoes, and tractors, or other equipment required for the

economical performance of the authorized Work, the Contractor shall receive payment based on the weekly rate divided by 40 to arrive at an hourly cost. The weekly rate shall be from the latest edition of the Rental Rate Blue Book for Construction Equipment, published by Equipment Guide Book Co., reduced by twenty-five percent (25%). Equipment cost shall be calculated based upon the actual time used on the Work. If said Work requires the use of machinery not on the Work or not to be used on the Work, the cost of transportation, not exceeding a distance of one hundred (100) miles, of such machinery to and from the Work shall be added to the fair rental rate; provided, however, that this shall not apply to machinery or equipment already required to be furnished under the terms of the Contract.

(iv) Sales, consumer, use or similar taxes related to the Work, and for which Contractor is liable, imposed by Laws and Regulations.

(v) The cost of utilities, fuel and sanitary facilities at the site.

(vi) Minor expenses such as telegrams long distance phone calls, telephone service at the site, expressage and similar petty cash items in connection with the Work.

(vii) Cost of premiums for additional Bonds and insurance required because of changes in the Work and for premiums for property insurance coverage within the limits of the deductible amounts established by County in accordance with Article 18.

2. The term Cost of Work shall not include any of the following:

a. Payroll costs and other compensation of Contractor's officers, executives, principals (or partnerships and sole proprietorships), general managers, engineers, architects, estimators, attorneys, surveyors, auditors, accountants, purchasing and contract agents, expediters, timekeepers, clerks and other personnel employed by Contractor whether at the site or in Contractor's principal office or a branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in paragraph B.1.a or specifically covered by paragraph B.1.d, all of which are considered administrative costs covered by the Contractor's fee.

b. Expenses of Contractor's principal and branch offices other than Contractor's office at the site.

c. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.

d. Cost of premiums for all Bonds and for all insurance whether or not Contractor is required by the Contract Documents to purchase and maintain the same (except for the cost of premiums covered by subparagraph B.1.e.vii above.

e. Costs due to the negligence of Contractor, any subcontractor, or anyone directly or indirectly employed by any of them or for those acts any of them may be liable for, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied and making good any damage to property.

f. Other overhead or general expense costs of any kind and the costs of any items not specifically and expressly included in paragraph B.1.

C. Contractor's Fee

1. The Contractor's Fee allowed for overhead and profit shall be determined as follows:

   a. A mutually acceptable fixed fee, or if none can be agreed upon, a fee based on the following percentages of the various portions of the Cost of the Work:

      (i) For costs incurred under paragraphs B.1.a and B.1.b, the Contractor's Fee shall be fifteen percent (15%).

      (ii) For costs incurred under paragraph B.1.c, the Contractor's Fee shall be five percent (5%); and if a subcontract is on the basis of Cost of the Work plus a Fee, the maximum allowable fee to Contractor on account of overhead and profit of all subcontractors shall be fifteen percent (15%).

      (iii) No fee shall be payable on the basis of costs itemized under paragraph B.1.d, B.1.e, and B.2.

      (iv) The amount of credit to be allowed by Contractor to County for any such change which results in a net decrease in cost will be the amount of the actual net decrease plus a deduction in Contractor's Fee by an amount equal to ten percent (10%) of the net decrease; and,

      (v) 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 C.1.b.i through C.1.b.iv, inclusive.

2. Whenever the cost of any Work is to be determined pursuant to paragraph B.1 or B.2, Contractor will submit in a form acceptable to the Engineer an itemized cost breakdown together with supporting data.

3. 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 established unit prices for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Contract. The estimated quantities of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by Contractor will be made by Engineer. 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.

   Where 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 Contract and there is not a corresponding adjustment with respect to any other item of Work and if Contractor believes that Contractor has incurred additional expense as a result thereof, Contractor may make a claim for an increase in the Contract Price which may be resolved by ADR if the parties are unable to agree as to the amount of any such increase.

45. Change Procedures

A. Minor Changes:

The Engineer will advise the Contractor, in writing, of minor changes in the Work not involving an adjustment to Contract Price or Contract Time by issuance of a Field Order.

B. Other Changes:

1. The County, through its Engineer may, at any time, without notice to the surety, by written order designated or indicated to be a change order, make any change in the Work within the general scope of the Contract, including but not limited to changes:

   a. In the Specifications (including drawings and designs);
   b. In the time, method or manner of performance of the Work;
   c. In the County furnished facilities, equipment, materials, services, or site; or
   d. Directing acceleration in the performance of the Work.

2. Any other written order (which terms as used in this paragraph shall include direction, instruction, interpretation, or determination) from the County, which causes any change, shall be treated as a change order under this clause, provided that the Contractor gives the County written notice not later than ten (10) days after the occurrence of the event giving rise to the claim but prior to incurring any expense stating the date, circumstances, and source of the order and that the Contractor regards the order as a Change Order.

3. Except as provided in this Article, no order, statement, or conduct of the County shall be treated as a change under this clause or entitle the Contractor to an equitable adjustment, and this Article shall not allow, nor be construed to allow, a claim otherwise disallowed by the Contract Documents.

4. If any change under this clause causes an increase or decrease in the Contractor's cost of, or the time required for, the performance of any part of the Work under this Contract, whether or not changed by any order, an equitable adjustment shall be made and the Contract modified in writing accordingly; provided however, that no claim for any change under Paragraph 2 above shall be allowed for any costs unless the Contractor gives written notice as herein required.

5. If the Contractor intends to assert a claim for an equitable adjustment under this clause, it must, within thirty (30) days after receipt of a written Change Order under Paragraph 1 above or the furnishing of a written notice under Paragraph 2 above, submit to the County a written statement setting forth the general nature and monetary extent of such claim, unless this period is extended by the County. The statement of claim hereunder may be included in the notice under Paragraph 2 above.

6. No claim by the Contractor for an equitable adjustment hereunder shall be allowed if asserted after final payment under this Contract.

46. Omitted Work

The County may, at any time, by a written order, without notice to the Sureties, require the omission of such Contract Work as it may find necessary or desirable. An order for omission of Work shall be valid only by an executable change order. All Work so ordered must be omitted by the Contractor. The amount by which the Contract Price shall be reduced shall be determined as follows:

a. By such applicable unit prices, or rates for work of a similar nature or character as set forth in the Contract; or,

b. By the appropriate lump sum price set forth in the Contract; or,

c. By the reasonable and fair estimated cost of such omitted Work as determined by the Contractor and the Engineer, and approved by the County.

47. Changes Not to Affect Bonds

It is distinctly agreed and understood that any changes made in the Contract Documents for Work associated with this Project (whether such changes increase or decrease the amount thereof) or any change in the manner or time of payments or time of performance made by the County to the Contractor shall in no way annul, release or affect the liability and surety on the Bonds given by the Contractor.

If notice of any change is required to be given to a Surety by the provisions of any Bond, the giving of any such notice will be the Contractor's responsibility, and the amount of each applicable Bond shall be adjusted accordingly.

48. Continuing the Work

Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with County. If the Contractor and County are unable to agree, all such disputes may be referred to ADR or litigation. No Work shall be delayed or postponed pending resolution of any disputes or disagreements except as the Contractor and County agree in writing otherwise and County shall continue to make payments in accordance with the Contract Documents.

49. Change of Contract Time/No Damages for Delay

The Contract Time may only be changed by a Change Order. Any claim for an extension of the Contract Time shall be based on written notice delivered by the Contractor to the Engineer promptly (but in no event later than 10 days) after the occurrence of the event giving rise to the claim and stating the general nature of the claim. Notice of the extent of the claim with supporting data shall be delivered within thirty (30) days after such occurrence (unless the Engineer allows, in writing, an additional period of time to ascertain more accurate data in support of the claim) and shall be accompanied by the Contractor's written statement that the adjustment claimed is the entire adjustment to which the Contractor has reason to believe it is entitled as a result of the occurrence of said event. All claims for adjustment in the Contract Time shall be determined by the Engineer in accordance with Article **42** if County and Contractor cannot otherwise agree. No claim for an adjustment in the Contract Time shall be valid if not submitted as previously specified above.

The Contract Time will be extended in an amount equal to time lost due to delays beyond the control of Contractor if a claim is made as provided in this Article. Such delays shall include, but not be limited to, acts or neglect by County or others performing additional Work as contemplated by Article **41**, or to fires, floods, labor disputes, epidemics, abnormal weather conditions (Article **50**) or acts of God.

Pursuant to the Contract's float-sharing requirements, no time extensions will be granted until a delay occurs that impacts the project's critical path, consumes all available float, and extends the work beyond the Contract completion date.

NO DAMAGES FOR DELAY: The Contractor shall not be entitled to, and hereby waives, any and all damages which it may suffer by reason of Act of God, unforeseen condition, delay, acceleration, cardinal changes, loss of efficiency, or any other impacts to the Work or time of performance, and further hereby waives all damages which it may suffer by reason of these events, including, but not limited to lost profits, overhead (whether determined by the Eichleay Formula or otherwise), increased insurance costs, loss of bonding capacity or lost profits on alternate or unperformed contracts, supervision, or home office expense. Contractor hereby affirms that the extension of time granted herein is the Contractor's sole and exclusive remedy. Apart from extension of time, no payment of claim for damages

shall be made to the Contractor as compensation for damages for any delays or hindrances from any cause whatsoever in the progress of the Work whether such delay is avoidable or unavoidable.

50. Extension of Time on Account of Weather/Inclement Weather

If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be submitted within five (5) days of occurrence and shall be documented by data substantiating that weather conditions where the contractor was unable to perform work, for the period of time required for completion of the Work and could not have been reasonably anticipated and that weather conditions had an adverse effect on the scheduled construction.

The Contractor's construction schedule shall be based upon the inclusion of at least fifteen (15) calendar days per calendar year, of inclement weather delays to be prorated over the length of the contract. Further, the contractor has the responsibility to take reasonable precautions to mitigate the impact of unfavorable weather conditions.

Failure by the contractor to comply with the proper notice or to supply substantial data within the time limit will result in the contractor waiving its claim for weather delay.

51. Materials, Samples and Inspections

Unless otherwise indicated on the Drawings or specified elsewhere, only new materials and equipment shall be incorporated in the Work. All materials and equipment furnished by the Contractor to be incorporated in the Work shall be subject to inspection by the Engineer. No material shall be processed for, fabricated for, or delivered to the Site without prior acceptance from the Engineer.

If not required by the Proposal, as soon as possible after the formal execution of the Contract, the Contractor shall submit to the Engineer, the names and addresses of the manufacturers and suppliers of all materials and equipment he proposes to incorporate into the Work. When shop and supplemental drawings are required as specified below, such information shall be submitted prior to the submission of the drawings so that the Engineer may consider the manufacturer, and/or the supplier, to be acceptable or unacceptable, as to his or their ability to furnish a product meeting the Specifications, subject to final acceptance of the particular material or equipment. As requested, the Contractor shall also submit data relating to the material and equipment he proposes to incorporate into the Work, in sufficient detail to enable the Engineer to identify the particular product in question and to form an opinion as to its conformity to the Contract requirements. Such data shall be submitted in a manner similar to that specified for shop drawings.

Facilities and labor for the handling and inspection of all materials and equipment shall be furnished by the Contractor. Defective materials and equipment shall be removed immediately from the site of the Work. The Engineer will make arrangements for, and the County shall pay for soil density tests wherever and whenever the Engineer desires. If the results of a density test indicate that compaction is less than that specified in the Specifications, the Contractor shall reimburse the County for the full cost of the test.

If the Engineer so requires, either prior to 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 requirements of the Contract Documents. Such samples, including concrete test cylinders, shall be furnished, taken, stored, packed, and shipped as directed, at the expense of the Contractor. The Contractor shall, at his own expense, furnish acceptable molds for making concrete test cylinders. Except as otherwise specified, the County will make arrangements for, and pay for, the tests.

All samples shall be packed so as to reach their destination in good condition, and shall be labeled to indicate the material represented, the name of the building or Work and location of which the material

is intended, and the name of the Contractor submitting the sample. To ensure consideration of samples, the Contractor shall notify the Engineer by letter that the samples have been shipped and shall properly describe the samples in the letter. In no case shall the original letter of notification be enclosed with the samples.

The Contractor shall submit data and samples, or place his orders, sufficiently early to permit consideration, inspection, testing, and acceptance before the materials and equipment are needed for incorporation in the Work. Delay resulting from his failure to do so shall not be used as the basis of a claim against the County or the Engineer.

When required, the Contractor shall furnish to the Engineer triplicate sworn copies of manufacturer's shop or mill tests (or reports from independent testing laboratories) relative to materials and concrete data.

After the samples, data, etc., are considered acceptable to the Engineer, the materials and equipment used on the Work shall correspond therewith.

If the Work is defective, or the Contractor fails to perform the Work in such a way that the completed Work will conform with the Contract Documents, the County may order the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of the County to stop the Work, or the right of the Engineer to make this recommendation to the County, shall not give rise to any duty on the part of the County or the Engineer to exercise this right for the benefit of the Contractor or any other party.

If required by the Engineer, the Contractor shall promptly either correct all defective Work, whether or not fabricated, installed, or completed, or, if the Work has been rejected by the Engineer, remove it from the site and replace it with non-defective Work. The Contractor shall bear all direct, indirect, and consequential costs of such correction or removal, including but not limited to fees and charges of engineers, architects, attorneys, and other professionals made necessary thereby.

If, instead of requiring correction or removal and replacement of defective Work, County, and, prior to Engineer's recommendation of final payment, also Engineer, prefers to accept the Work, County may do so. Contractor shall bear all direct, indirect and consequential costs attributable to County's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness and to include but not be limited to fees and charges of engineers, architects, attorneys and other professionals). If any such acceptance occurs prior to Engineer's recommendation of Final Payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and County shall be entitled to an appropriate decrease in the Contract Price, and, if the parties are unable to agree as to the amount thereof, County may make claim as provided in Article **44**. If the acceptance occurs after such recommendation, an appropriate amount will be paid by the Contractor to the County.

52. Inspection of Work Away From the Site

If Work to be done away from the construction site is to be inspected on behalf of the County during its fabrication, manufacture, or testing, or before shipment, the Contractor shall give notice to the Engineer of the place and time where such fabrication, manufacture, testing or shipping is to be done. Such notice shall be in writing and delivered to the Engineer in ample time so that the necessary arrangements for the inspection can be made.

53. One Year Correction Period

If within one (1) year after the date of Final Acceptance or such longer period of time as may be prescribed by Laws or Regulations or by the terms of any applicable special guarantee required by the Contract Documents, any Work which is found to be defective, the Contractor shall promptly, without

cost to the County, and in accordance with the County's written notification, either correct such defective Work, or, if it has been rejected by the County, remove it from the site and replace it with non-defective Work. If the Contractor does not promptly comply with such notification, or in an emergency where delay would cause serious risk of loss or damage, the County may have the defective Work corrected or the rejected Work removed and replaced, and all direct, indirect, and consequential costs of such removal and replacement including but not limited to fees and charges of engineers, architects, attorneys and other professionals will be paid by the Contractor.

If, instead of requiring correction or removal and replacement of defective Work, the County prefers to accept the Work, the County may do so. The Contractor shall bear all direct, indirect, and consequential costs attributable to the County's evaluation of and determination to accept such defective Work. If any such acceptance occurs prior to final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work, and the County shall be entitled to an appropriate decrease in the Contract Price. If the acceptance occurs after final payment, an appropriate amount will be paid by the Contractor to the County, as determined by the Engineer.

54. Progress Payment Procedures

The Contractor shall prepare a schedule of values by phases of work to show a breakdown of the Contract Sum corresponding to the payment request breakdown and progress schedule line items. The schedule of values must also show dollar value for each unit of work scheduled. Change Orders shall be added as separate line items. The schedule of values shall be submitted to the County and Architect/Engineer of Record for review and approval prior to “Commencement of Work.”

Unless specifically included as a line item in the bid proposal form, “mobilization” will not be considered a line item.

For lump sum projects the General Conditions costs will be considered as a line item for the following items (break down required).

1. Contractor’s field office personnel (full-time on-site).
2. Construction office and storage facilities.
3. Utilities required to sustain field office and sanitary facilities.
4. Electrical power and water for construction.
5. Bonds and insurance.

Progress Payments for General Conditions will be based on the percentage of work completed to date, except Bonds and Insurance which may be requested in full. Separate payments for shop drawings and deposits for materials will not be allowed. Prior to initial payment request, the following must be submitted and approved by the Architect/Engineer of Record and Palm Beach County Capital Improvements Division.

1. List of principal subcontractors and suppliers.
2. Schedule of values.
3. Shop drawing log.
4. Project schedule.

The Contractor will prepare and submit three (3) original copies of monthly invoices for work completed during the one month period. Pay Applications shall be submitted in the format and wording of the form contained in Appendix A. All information must be complete for the pay application to be accepted. County’s account number(s) for the project will be given at the Pre-Construction meeting and will be placed at the top right hand corner of each application. These payment applications will be reviewed by all the parties in attendance at the monthly pay application meetings. Prior to formal submission of the Application, the Contractor shall submit a rough draft plus two extra copies for the County and

Architect/Engineer of Record to review. Submit four (4) final approved copies to the Architect/Engineer of Record, whose approval is required prior to submission to the County.

If the pay estimate and support data are not approved, the Contractor is required to submit new, revised or missing information according to the County's instructions. Otherwise, the Contractor shall prepare and submit to County an invoice in accordance with the estimate as approved. County will pay Contractor, in accordance with Local Government Prompt Payment Act (FS 218.70). Retainage, in the amount of 5%, will be withheld on the calculated value of any work, with the exception of stored materials which may be paid at the supplier's invoiced cost. At Contactor's request and with consent of Contractor's Surety, after 50% completion of the work has been achieved, the County will implement a reduction in retainage to 5% of all future pay requests. When retainage is reduced, Contractor may withhold more than 5% retainage from subcontractors or suppliers only when done in accordance with the provisions of the Local Government Prompt Payment Act, may not request such withheld funds from the County, and will be required to certify compliance with FS 218.70 *et seq* on each subsequent pay application. Notwithstanding the foregoing, in no instance can the amount retained be less than the value of County's good faith claims plus the value of the work the County determines remains to be put in place or required to be performed as remedial activities. For purposes of this section, 50% completion shall be that point in time when A/E determines that half of the Work required by the Contract has been completed. In no event shall the Work be determined to be 50% complete before the County has paid 50% of the Contract amount and 50% of the Contract time has expired.

In the event any dispute with respect to any payment or pay request cannot be resolved between the Contractor and County's project staff, Contractor may, in accordance with the alternative dispute resolution requirements of Florida Statute section 218.72, et seq, demand in writing a meeting with and review by the Water Utilities Department Director. In the absence of the Water Utilities Department Director, the Water Utilities Department Deputy Director may conduct the meeting and review. Such meeting and review shall occur within ten (10) business days of receipt by County of Contractor's written demand. The Water Utilities Department Director, or Deputy Director, shall issue a written decision on the dispute within ten (10) business days of such meeting. This decision shall be deemed the County's final decision for the purposes of the Local Government Prompt Payment Act.

Each application for payment shall be accompanied by the following:

1. A notarized "Affidavit of Disbursement of Previous Periodic Payments to Subcontractors" from the General Contractor for the portion of work up to the date of that particular pay application.
2. SBE-M/WBE Construction Activity Report (Schedule 3).
3. SBE-M/WBE Payment Certification (Schedule 4).
4. A County approved construction schedule update.

55. Partial Utilization

The County shall have the right to utilize or place into service any item of equipment or other usable portion of the Work prior to substantial completion of all of the Work. Whenever the County plans to exercise said right, the Contractor shall be notified in writing by the County, identifying the specific portion or portions of the Work to be so utilized or otherwise placed into service. If the Contractor agrees that such part of the Work is substantially complete and is capable of being partially utilized, The Contractor shall certify to the County and the Engineer that such part of the Work is substantially complete and request the Engineer to issue a Certificate of Substantial Completion for that part of the Work. If the Engineer does not consider that part of the Work to be substantially complete, the Engineer shall notify the County and the Contractor in writing of the reasons why. If the Engineer considers that part of the Work to be substantially complete, the Engineer shall so recommend in writing to the County.

It shall be understood by the Contractor that until such written notification of the certification of substantial completion of that part of the Work is issued by the Engineer, all responsibility for care and

maintenance of all items or portions of the Work to be partially utilized shall be borne by the Contractor. Upon issuance of said written notice of partial utilization, the County will accept responsibility for the protection and maintenance of all such items or portions of the Work described in the written notice.

The Contractor shall retain full responsibility for satisfactory completion of the Work, regardless of whether a portion thereof has been partially utilized by the County, and the Contractor's one (1) year correction period shall commence only after the date of Final Acceptance of the Work.

56. Substantial Completion

When the Contractor considers the entire Work ready for its intended use, the Contractor shall notify the County and the Engineer in writing that the Work is substantially complete and request that the Engineer prepare a Certificate of Substantial Completion**.** Within the time allowed by F.S. 218.70 and in accordance with the County, the Engineer and the Contractor shall make an inspection of the Work to determine the status of completion. If the Engineer does not consider the Work substantially complete, the Engineer shall notify the Contractor in writing stating the reasons. If the Engineer considers the Work to be substantially complete, the Engineer will prepare and deliver to the County for its execution and recordation the Certificate of Substantial Completion signed by the Engineer and Contractor, which shall fix the Date of Substantial Completion. At the discretion of the County, the County may withhold one and one-half times the value of outstanding uncompleted items and corrective work on the incomplete punch list. All such Work shall be completed or corrected to the satisfaction of the County within the time stated on the punch list; otherwise the Contractor does hereby waive any and all claims to all monies withheld by the County to cover the value of all such uncompleted or uncorrected items.

57. Final Application for Payment

After the Contractor has completed all correction Work referred to in Article 56 "Substantial Completion", and on the final punch lists, or any other punch lists which have been completed, and the Contractor has delivered all maintenance and operating instructions, schedules, guarantees, Bonds, certificates of inspection, marked-up record documents (as provided in these General Conditions) and other documents, all as required by the Contract Documents, and has given the Engineer written notice that the Work has been completed in conformity with the Drawings and Specifications and any approved changes thereto, the Contractor may make application for final payment following the procedure for progress payments in Article 54 "Applications for Progress Payments." The Final Application for Payment shall be accompanied by all documentation called for in the Contract Documents, including but not limited to the following on forms provided by the County:

1. Contractor's Certification of Final Completion

2. Consent of Surety for Final Payment (Payment Bond)

The Contractor shall also submit complete and legally effective releases or waivers (satisfactory to the County) of all liens and "Notices to Owner" arising out of or filed in connection with the Work.

58. Record Documents

The Contractor shall keep one (1) record copy of all Specifications, Drawings, Addenda, modifications and shop drawings at the site in good order and clearly annotated to show all changes made during the construction process. These shall be available to the Engineer for inspection and reference and shall be delivered to him upon completion of the Project, prior to Application for Final Payment.

59. Final Payment and Acceptance

Upon receipt of written notice from the Contractor that the Work has been completed in conformity with the Drawings and Specifications and any approved changes thereto, and receipt of the Final Application for Payment and accompanying documentation, the County's Engineer shall promptly examine the Work and, making such tests as he may deem proper and using all of the care and judgment normally exercised in the examination of completed Work by a properly qualified and experienced Professional Engineer, shall satisfy himself that the Contractor's statement appears to be correct and the Contractor's other obligations under the Contract Documents have been fulfilled. He shall then inform the County in writing that he has examined the Work and that it appears, to the best of his knowledge and belief, to conform to the Contract Drawings, Specifications and any approved Change Orders, that the Contractors other obligations under the Contract Documents have been fulfilled, and that he therefore recommends acceptance of the Work for ownership and Final Payment to the Contractor. However, it is agreed by the County and the Contractor that such statement by the County's Engineer does not in any way relieve the Contractor from his responsibility to deliver a fully completed job in a good and workmanlike condition, and does not render the Engineer or the County liable for any faulty Work done or defective materials or equipment used by the Contractor.

The County's Engineer will then make a final estimate of the value of all Work done and deduct all previous payments which have been made. The County's Engineer will report such estimate to the County together with his recommendation as to the acceptance of the Work or his findings as to any deficiencies therein. After receipt and acceptance by the County of the properly executed Final Warranty of Title and within sixty (60) days after approval of the Engineer's estimate and recommendation to the County, the County will make final payment to the Contractor of the Amount remaining after deducting all prior payments and all amounts to be kept or retained under the provisions of the Contract Documents, including the following items:

1. Liquidated Damages, as applicable.

2. At the discretion of the County, two times the value of outstanding items of correction Work or "punch list" items indicated on the Certificate of Substantial Completion, "final punch list", or any other "punch list" as being yet uncompleted or uncorrected, as applicable. All such Work shall be completed or corrected to the satisfaction of the County within the time stated on the Certificate of Substantial Completion, or on the "final punch list", or any other "punch list", otherwise the Contractor does hereby waive any and all claims to all monies withheld by the County to cover the value of all such uncompleted or uncorrected items.

All prior estimates are subject to correction in the final estimate.

60. Contractor's Continuing Obligation

The Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. Neither recommendation of any Progress or Final Payment by the Engineer, nor the issuance of a Certificate of Substantial completion nor any payment by the County to the Contractor under the Contract Documents, for any use or occupancy of the Work or any part thereof by the County, nor any act of acceptance by the County, nor any failure to do so, nor any review of a Shop Drawing or sample submittals, will constitute an acceptance of Work not in conformance with the Contract Documents or a release of the Contractor's obligation to perform the Work in accordance with the Contract Documents.

61. Final Payment Terminates Liability of County

Final Payment is defined as the last Progress Payment made to the Contractor for earned funds, less retainage as applicable, less deductions listed in Article 59 "Final Payment and Acceptance". The acceptance of the Final Payment referred to in Article 59, shall be a full release of the County and its

agents from any and all claims of liability to the Contractor for anything done or furnished for, or relating to, the Work or for any act or neglect of the County, or of any person relating to or affecting the Work, except demands against the County for the remainder, if any, of the amounts kept or retained under the provisions of Article 59.

62. County's Right to Terminate

(a) If at any time there shall be filed by or against the Contractor in any court, a petition in bankruptcy or insolvency or for reorganization or for the appointment of a receiver or trustee of all or a portion of the Contractor's property, and within thirty (30) days there from the Contractor fails to secure a discharge thereof, or if the Contractor makes an assignment for the benefit of creditors or petitions for or enters into an agreement or arrangement with its creditors, or if the Contractor admits in writing an inability to pay its debts generally as they become due, or if the Contractor persistently fails 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 established under the General Requirements of the Technical Specifications as revised from time to time), or if Contractor disregards Laws or Regulations of any public body having jurisdiction, or if Contractor disregards the authority of the Engineer, or if Contractor otherwise violates in any substantial way any provisions of the Contract Documents, then the County by giving seven (7) days prior written notice of any such default to the Contractor and without prejudice to any other remedy it may have, may terminate the employment of the Contractor, exclude Contractor from the site, and take possession of the Work and all or some of the Contractor's materials, tools, equipment and appliances and use the same to the full extent they could be used by the Contractor (without liability to the Contractor for trespass or conversion), incorporate in the Work all materials and equipment stored at the site or for which County has paid Contractor but which are stored elsewhere and complete the Work by such means as the County deems expedient. In such case, the Contractor shall not be entitled to receive any further payment until the Work is finished. If the unpaid balance of the Contract Sum shall exceed (1) the expense of completing the Work including compensation for additional managerial and administrative services, plus (2) the County's indirect and consequential losses and damages because of the Contractor's default, including but not limited to fees and charges of Engineers, Architects, Attorneys and other professionals and court costs, such excess shall be paid to the Contractor. If such expense, plus the County’s losses and damages shall exceed such unpaid balance, the Contractor shall pay the difference to the County promptly on demand. Such costs incurred by the County shall be approved as to reasonableness by the Engineer and incorporated into a Change Order, but when exercising any rights or remedies under this paragraph, County shall not be required to obtain the lowest price for the Work performed.

(b) The County may terminate this Contract without cause by giving written notice to the Contractor, and in such event, the County will pay the Contractor for that portion of the Contract Sum, less the aggregate of previous payments, allocable to the Work completed as of the Date of Termination. The County also will reimburse the Contractor for all costs necessarily incurred for organizing and carrying out the stoppage of the Work and paid directly by the Contractor, not including overhead, general expenses or profit. The County will not be responsible to reimburse the Contractor for any continuing contractual commitments to subcontractors or material suppliers or penalties or damages for canceling such contractual commitments inasmuch as the Contractor shall make all subcontracts and other commitments subject to this provision. County will not be liable for, and Contractor hereby waives, any claim for lost prospective profits, economic losses, or other consequential damages.

(c) In the event of termination by the County, the County may require the Contractor promptly to assign to it all or some subcontracts, construction, plant, materials, tools, equipment, appliances, rental agreements, and any other commitments which the County, in its sole discretion, chooses to take by assignment, and in such event the Contractor shall promptly execute and deliver to the County written assignments of the same.

(d) In the event that any termination under subparagraph (a) above is determined to have been effectuated without proper or sufficient cause, then such termination shall be deemed to have been a termination for convenience under subparagraph (b) above.

63. County Remedies

If the Contractor defaults or neglects to carry out any of his obligations under this Contract, including but not limited to the provisions of the General Requirements of the Technical Specifications, or should liens be filed, bills of sale, conditional bills of sale, chattel mortgages, assignments of this Contract, or orders for the payment of money for materials or labor or either, or should the Contractor become insolvent or bankrupt, the County shall have the right, in addition to any other rights and remedies provided herein or by law, to perform and furnish through itself and/or through others any such labor or materials for the Work and to deduct the costs thereof from any money due or to become due to the Contractor for all or any portion of the Work; enter upon the premises and take possession, for the purpose of completing the Work, all equipment, scaffolds, tools, appliances, and any other items thereon, and to employ any person or persons to complete the Work and provide all labor services, materials, equipment, and other items required. In case of such termination of the employment of the Contractor, Contractor shall not be entitled to receive any further payment under this Contract; however, if the unpaid balance of the amount to be paid under this Contract shall exceed the cost and expense incurred by the County in completing the Work, such excess shall be paid by the County to the Contractor; but, if such cost and expense shall exceed the unpaid balance, the Contractor shall promptly pay the difference to the County on demand. Said cost and expense shall include not only the cost of completing the Work to the satisfaction of the County and of performing and furnishing all labor, services, materials, equipment, and other items required; but all losses, damages, costs and expenses including attorney's fees sustained, incurred, or suffered by reason of or resulting from the Contractor's default, or by reason of litigation over this Contract.

No provision of this Contract is intended to, or shall be construed to, create any third party beneficiary or to provide any rights to any person or entity not a party to this Contract, including but not limited to any citizen or employees of the County and/or Contractor.

64. Contractor's Right to Terminate or Stop Work

This Contract may be terminated by the CONTRACTOR upon sixty (60) days' prior written notice to the COUNTY in the event of substantial failure by the COUNTY to perform in accordance with the terms of this Contract through no fault of the CONTRACTOR. It may also be terminated, in whole or in part, by the COUNTY, with cause upon five (5) business days' written notice to the CONTRACTOR or without cause upon ten (10) business days' written notice to the CONTRACTOR. Unless the CONTRACTOR is in breach of this Contract, the CONTRACTOR shall be paid for services rendered to the COUNTY'S satisfaction through the date of termination. After receipt of a Termination Notice, except as otherwise directed by the COUNTY, in writing, the CONTRACTOR shall:

A. Stop work on the date and to the extent specified.

B. Terminate and settle all orders and subcontracts relating to the performance of the terminated work.

C. Transfer all work in process, completed work, and other materials related to the terminated work to the COUNTY.

D. Continue and complete all parts of the work that have not been terminated.

65. Title to Materials Found on the Work

The County reserves the right to retain title to all suitable soils, stone, sand, gravel, and other materials (as determined suitable by the Engineer) developed and obtained from excavations and other operations connected with the Work. Unless otherwise specified in the Contract Documents, neither the Contractor nor any subcontractor shall have any right, title, or interest in or to any such materials.

The Contractor will be permitted to use any such suitable materials in the Work, without charge, provided that such materials meet the requirements of the Contract Documents.

66. Right to Audit

The County shall have the right to audit the Contractor's books to the extent they are relevant. This right shall include the right to examine books, records, documents, and other evidence and accounting procedures and practices, sufficient to discover and verify all direct and indirect costs of whatever nature claimed to have been incurred or anticipated to be incurred and for which a claim for payment has been submitted. The right to audit shall include the right to inspect the Contractor's plants, or such parts thereof, as may be or have been engaged in the performance of the Work. The Contractor further agrees that the right to audit encompasses all subcontracts and is binding upon all subcontractors. The rights to examine and inspect herein provided for shall be exercisable through such representatives as the County deems desirable during the Contractors normal business hours at the office of the Contractor. The Contractor shall make available to the County for auditing, all relevant accounting records and documents, and other financial data, and upon request, shall submit true copies of requested records to the County.

The County shall have the Right to Audit for five (5) years after Final Payment or resolution of all claims, whichever occurs last, except that additional time may be required for a state- or federal- funded project.

67 Asbestos

If the Contractor during the course of the work observes, uncovers, or otherwise becomes aware of the existence of any suspect asbestos material at the site that was not previously identified by the County, the Contractor shall immediately stop work in the affected area and notify the County and confirm any oral notice in writing. In addition, the Contractor shall take reasonable precautions to prevent or contain the movement, spread or disturbance of such materials and to protect persons and property. The County shall promptly consult with the Engineer concerning such condition and determine the necessity of County's retaining special consultants or qualified experts to deal therewith. The Contractor shall not perform any work in connection near or in connection with the suspect material until receipt of special written instructions from the County

A. PROCEDURES FOR DEMOLITION OF STRUCTURES:

1. Notification:

Federal and state asbestos regulations require, prior to demolition of any structure:

(a) An inspection for asbestos-containing materials (ACM);
(b) Removal of specific ACM; and,
(c) An asbestos notification of demolition received at least ten (10) business days prior to demolition.

To meet requirement (c) above, the Contractor is responsible for submitting a complete and accurate asbestos notification of demolition form titled "Notice of Demolition or Asbestos Renovation " [i.e., NESHAP notification, 40 CFR Part 61.145(b)], for each separate address to be demolished to the below listed agency at least ten (10) business days prior to demolition. The form and business portal are available from the Florida Department of Environmental

Protection (FDEP) at:
https://floridadep.gov/air/permitting-compliance/content/asbestos

1. A copy of the pre-demolition asbestos inspection report; and,
2. A copy of Risk Management/Loss Control's memo of approval to proceed to the next phase of the project addressed to the County department overseeing this project, and

To meet requirement (c) above, the Contractor is responsible for submitting a complete and accurate asbestos notification of demolition form titled "Notice of Demolition or Asbestos Renovation " [i.e., NESHAP notification, 40 CFR Part 61.145(b)], for each separate address to be demolished to the below listed agency at least ten (10) business days prior to demolition. The form is available from the Florida Department of Environmental Protection (FDEP) at www.dep.state.fl.us/air/rules/forms/asbestos.htm

SEND ORIGINAL TO:
Florida Department of Environmental Protection
Division of Air Resource Management
3301 Gun Club Road, MSC 7210-1
West Palm Beach, FL 33406
Fax (561) 681-6755

The Contractor must notify FDEP and the project manager of the County Department overseeing the project immediately if the demolition start date changes. No demolition may begin before the start date on the NESHAP notification and no demolition may occur without a notice to proceed from the County department. It is the responsibility of the Contractor to call and submit revised NESHAP notifications to the above listed agency, adhering to required NESHAP time frames.

The Contractor will provide a copy of the submitted NESHAP form(s) to the County Department overseeing this project, when requested.

The Contractor is responsible for physically checking the structure(s) before submitting the NESHAP notification to ensure that all RACM and Category II ACM, as identified in the pre-demolition asbestos inspection report, have been removed. If RACM or Category II ACM is discovered or Category I flooring and/or roofing is in poor (friable/not intact) condition, immediately contact the County's Project Manager or Loss Control.

2. Work Practices:

The Contractor will utilize wet methods to control airborne emissions during the demolition process and during loading onto transport vehicles, regardless whether NESHAP Category I material is present or not. The Contractor is responsible for supplying water meters, hoses, and adequate volume of water to the demolition site.

Intact resilient flooring, floor mastic, and bituminous roofing materials (NESHAP Category I Non-Friable ACM) are not required to be removed prior to wet demolition. Demolition work practices will be conducted in a manner to prevent Category I materials from becoming friable (regulated). It is the demolition contractor’s responsibility to ensure Category I materials and their substrates are segregated from non-asbestos debris, kept wet, and disposed properly in a licensed facility.

Recycling and/or salvage of presumed or confirmed asbestos-containing Category I materials and their substrates is strictly prohibited.

Materials containing less than one percent (<1%) asbestos are not mandated to be removed prior to wet demolition under NESHAP, however, the Contractor's compliance with OSHA regulations is required.

Materials containing less than one percent (<1%) asbestos and debris mixed in with it cannot be recycled. It is the Contractor's responsibility to properly segregate these materials from non-asbestos debris should recycling be considered. The County will require verification of proper disposal of materials containing <1% asbestos to ensure they are not recycled.

3. Applicable Regulations

Compliance with the following regulations is the demolition contractor's responsibility:

1. Environmental Protection Agency (EPA) 40 CFR part 61 Subpart M – National Emission Standards for Hazardous Air Pollutants (NESHAP)
2. Occupational Safety and Health Administration (OSHA) Construction Industry Standard, 29 CFR 1926.1101
3. Chapter 469 Florida Statutes

In accordance with OSHA (29 CFR 1926.1101) the Contractor must have a Competent Person onsite who:

(a) Is capable of identifying existing asbestos hazards in the work place;
(b) Is capable of selecting the appropriate control strategy for asbestos exposure; and
(c) Has the authority to take prompt corrective action to eliminate hazard.

This person must be trained in accordance with OSHA, EPA, and Florida Statutes as an onsite supervisor (commonly referred to as Asbestos Supervisor/Contractor). Copies of training certificates of the onsite supervisor shall be made available to the County upon request.

B. REMOVAL OF CONFIRMED OR PRESUMED ASBESTOS-CONTAINING BITUMINOUS ROOFING MATERIALS:

The County will provide all known information as to the roofing material used on the existing roof specified in the Contract Documents. This information will include the results of any recent bulk sampling analysis of the existing roof system determining the presence or absence of asbestos by percentage and the location where each sample was taken. In the absence of bulk sampling for asbestos, the roofing materials will be presumed asbestos containing until proven otherwise.

It is the Contractor's responsibility to determine if the information furnished is adequate to provide a bid.

It is the responsibility of the Contractor awarded the Contract to determine if the roofing materials do not contain asbestos. If the Contractor wishes not to sample and analyze for asbestos, the materials will be presumed to contain asbestos and must be handled accordingly. If the Contractor elects to sample the roof system, it must first notify the County of the sampling, including date, location, and number of samples to be collected. The bulk sample collection must be conducted by a Florida Licensed Asbestos Consultant and the analyses must be performed by an NVLAP-accredited laboratory (NVLAP: National Voluntary Laboratory Accreditation Program). Results, if proven less than one percent (1.0%) asbestos, shall be provided to the County prior to the start of any Work.

The Contractor awarded the Contract will be required to meet all Federal, State, and local regulations pertaining to the handling, removal, and disposal of confirmed or presumed asbestos-containing roofing materials. This includes, but is not limited to:

1. Meeting the requirements listed in Chapter 469 Florida Statutes regarding training of onsite roofing supervisors involved in the removal of asbestos containing bituminous resinous roofing materials; and,

2. Utilizing removal methods that will maintain the roofing material's Category I non-friable status and will not create dust (i.e., employ methods other than sanding, grinding, drilling, abrading, rotary blade, or saw cutting). Suggested methods are slicing, shearing, or punch cutting while using wet methods where feasible.

3. Submitting a NESHAP notification of renovation if greater than 5580 square feet of asbestos-containing roofing will be removed.

   To meet requirement #3 above, the Contractor is responsible for submitting a complete and accurate asbestos notification titled "Notice of Demolition or Asbestos Renovation " [i.e., NESHAP notification, 40 CFR Part 61.145(b)], to the below listed agency at least ten (10) business days prior to the start of work. The form and business portal are available from the Florida Department of Environmental Protection (FDEP) at:
   https://floridadep.gov/air/permitting-compliance/content/asbestos

   SEND ORIGINAL TO:
   Florida Department of Environmental Protection
   Division of Air Resource Management
   3301 Gun Club Road, MSC 7210-1
   West Palm Beach, FL 33406
   Fax (561) 681-6755

The Contractor will submit upon award of the Contract the following documentation to the County department coordinating this project:

1. Copies of training certificates of the onsite roofing supervisor in compliance with the current requirements of Chapter 469 Florida Statutes;

2. Approval of a landfill to accept confirmed or presumed asbestos containing roofing material and any conditions associated with its acceptance; and,

3. A plan of action, as specified by OSHA 29 CFR 1926.1101, which addresses:
   a. Method(s) of removal;
   b. Worker protection;
   c. Protection of building occupants and ventilation system;
   d. Method and location of disposal.

C. HANDLING AND DISPOSAL OF ASBESTOS CEMENT PIPE

1. General

Federal EPA regulations (40 CFR Part 61, Sub-part M “NESHAP”) classify asbestos-cement pipe (AC pipe) as Category II non-friable asbestos-containing material. Federal OSHA regulations regarding materials containing asbestos (29 CFR 1926.1101) state handling such materials must be performed in accordance with its regulations, including work practices and training. Florida Statutes (Chapter 469) require adherence to EPA and OSHA regulations. Contractors working on or tying into AC pipe owned

by the County or its entities shall comply with these regulations.

The County will make every effort to identify and quantify the location of known AC pipe prior to onset of the work.

If during the course of the work Contractor observes, uncovers, or otherwise becomes aware of the existence of any AC pipe, AC pipe pieces, or suspect asbestos material at the site that was not previously identified by the County, the Contractor shall immediately notify the County and confirm any verbal notice in writing. In addition, the Contractor shall take reasonable precautions to prevent or contain the movement, spread or disturbance of such materials and to protect persons and property. The County shall promptly consult with the Project Engineer concerning such conditions and determine the necessity of the County retaining special consultants or qualified experts. The Contractor shall not perform any work near or in connection with the suspect material until receipt of special written instructions from the County.

2. Pre-Work Submittals

Prior to any work on AC pipe that could disturb the pipe or expose the worker to possible asbestos fiber release while working on AC pipe, the Contractor shall submit the following documentation to the County department overseeing this Contract and/or the applicable Florida agency:

1. Copy of the current training certificate of the onsite OSHA Competent Person (also known as the Onsite Supervisor or Asbestos Supervisor).

2. Copy of the current training certificate or training documentation for each employee working on the AC pipe. This training shall meet the criteria stated for OSHA Class II special operation.

3. Copy of the Contractor's most recent Negative Exposure Assessment or Periodic Monitoring for asbestos.

4. Copy of the plan of action, as specified by OSHA 29 CFR 1926.1101, which addresses:
    a. Method of removal and/or repair
    b. Worker protection
    c. Method and location of AC Pipe disposal

5. Copy of the NESHAP notification, when applicable.

Prior to any work on AC pipe that may render it to become friable or regulated in quantities of 260 linear feet or greater, the Contractor will submit a NESHAP "Notice of Demolition or Asbestos Renovation" form to (a) the County department overseeing this Contract and (b) the below listed agency at least ten (10) business days prior to the start of work. The form and business portal are available from the Florida Department of Environmental Protection (FDEP) at:
https://floridadep.gov/air/permitting-compliance/content/asbestos

SEND ORIGINAL TO:
Florida Department of Environmental Protection
Division of Air Resource Management
3301 Gun Club Road, MSC 7210-1
West Palm Beach, FL 33406
Fax: (561) 681-6755

The Contractor will provide a copy of the submitted NESHAP form(s) to the County Department overseeing this project, when requested.

3. Work Practices

Compliance with the following regulations is the Contractor's responsibility:

1. Environmental Protection Agency (EPA) 40 CFR part 61 Subpart M – National Emission Standards for Hazardous Air Pollutants (NESHAP)
2. Occupational Safety and Health Administration (OSHA) Construction Industry Standard, 29 CFR 1926.1101
3. Chapter 469 Florida Statutes

4. Post Work Submittals

The Contractor will submit the following documentation to the County department coordinating this project prior to payment:

1. A Waste Shipment Record (WSR) for each shipment of AC pipe disposed, signed by the disposal facility, within 35 days of shipment. Refer to 40 CFR part 61 Subpart M (NESHAP) for an example of a WSR.

68. Explosives and Hazardous Materials

Contractor shall obtain all required Federal, State and local permits and licenses and shall be responsible for the safe and proper handling, transporting, storage and use of any explosive or hazardous materials brought onto or encountered within the site, and at its expense, make good any damage caused by its handling, transporting, storage and use. The Contractor will notify the County immediately if explosive or hazardous materials are encountered on the site. Transporting explosive or hazardous materials onto the site will require prior written approval from the County. The Contractor shall maintain and Post as necessary Material Hazard Data Sheets for all applicable Hazardous Materials used in the course of his work.

In the event that hazardous material is improperly handled or stored by the Contractor, its subcontractors, any sub-subcontractors, or any employee or agent of any of the aforementioned which results in contamination of the site, Contractor shall immediately notify the County and the appropriate governmental authority and shall take whatever action is necessary or desirable to remediate the contamination at the Contractor's sole cost and expense. Further, Contractor shall indemnify and hold harmless from any and all cost, expense, action, or liability whatsoever resulting from such contamination and/or remedial activities.

69. Notice and Service

All notices, demands, requests, instructions, approvals and claims shall be made in writing.

Any notice to or demand upon the Contractor shall be sufficiently given if delivered to such office of the Contractor specified in the Proposal (or to such other office as the Contractor may from time to time designate to the County in writing), or if deposited in the United States Mail in a sealed, postage prepaid envelope, or if delivered with charges prepaid to any telegraph company for transmission, in each case addressed to such office.

All notices or other papers required to be delivered by the Contractor to the County, or to any of its representatives shall, unless otherwise specified in writing to the Contractor, be delivered to the office of the County's Engineer, and any other notice or demand upon the County shall be sufficiently given if

delivered to such office, or if deposited in the United States Mail in a sealed, postage prepaid envelope, or if delivered, with the charges prepaid to any telegraph company for transmission, in each case addressed to such office (or to such other representative of the County or to such other address as the County may subsequently specify in writing to the Contractor for such purpose).

Any such notice or demand shall be deemed to have been given or made as of the time of actual delivery, or, in the case of mailing, when the same should have been received in due course of posts, or in the case of telegrams, at the time of actual receipt thereof.

70. Listing of the Duties, Responsibilities and Limitations of Authority of the Resident Project Representative

The Engineer may furnish a Resident Project Representative (RPR), assistants and other field staff to assist the Engineer in observing performance of the Work of the Contractor. The RPR may only be part time on site, and the Contractor shall coordinate with the RPR as required in the Contract Documents.

Through on-site observations of the Work in progress and field checks of materials and equipment by the RPR and assistants, the Engineer shall provide further protection for the County against defects and deficiencies in the Work; but, the furnishing of such services will not make the Engineer responsible for or give the Engineer control over construction means, methods, techniques, sequences or procedures or for the safety precautions or programs, or responsibility for the Contractor's failure to perform the Work in accordance with the Contract Documents.

The duties and responsibilities of the RPR are limited to those of the Engineer in the Engineer's Contract with the County and in the construction Contract Documents, and are further limited and described as follows:

A. GENERAL:

The RPR is the Engineer's agent at the site, will act as directed by and under the supervision of the Engineer, and will confer with the Engineer regarding the RPR's actions. The RPR's dealings in matters pertaining to the on-site Work shall in general be with the Engineer and the Contractor, keeping the County advised as necessary. RPR's dealings with subcontractors shall only be through or with the full knowledge and approval of the Contractor. RPR shall generally communicate with the County with the knowledge of and under the direction of the Engineer.

B. DUTIES AND RESPONSIBILITIES OF THE RPR:

1. Review the construction progress schedule, schedule of shop drawing submittals, and schedule of values prepared by the contractor and consult with the Engineer concerning their acceptability.

2. Attend various meetings with the Contractor, including pre-construction conferences, construction progress meetings, job site conferences and other project-related meetings, and prepare and circulate written copies of minutes thereof.

3. Serve as the Engineer's liaison with the Contractor, working principally through the Contractor's superintendent or construction manager, and assist in understanding the intent of the Contract Documents; and assist the Engineer in serving as the County's liaison with the Contractor when the Contractor's operations affect the County's on-site operations.

4. Assist in obtaining from the County additional details or information, when required for proper execution of the Work.

5. Record the dates of receipt of shop drawings and samples.

6. Receive samples furnished at the site by the Contractor, and notify the Engineer of availability of samples for examination.

7. Advise the Engineer and the Contractor of the commencement of any Work requiring a shop drawing or sample if the submittal has not been approved by the Engineer.

8. Conduct on-site observations of the Work in progress to assist the Engineer in determining if the Work is in general proceeding in accordance with the Contract Documents.

9. Report to the Engineer whenever the RPR believes that any Work is unsatisfactory, faulty or defective or does not conform to 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 the Engineer of Work that the RPR believes should be corrected or rejected or should be uncovered for observation, or requires special testing, inspection or approval.

10. Verify that tests, equipment and systems start-ups and operating and maintenance training are conducted in the presence of appropriate personnel and that the Contractor maintains adequate records thereof; and observe, record and report to the Engineer appropriate details relative to the test procedures and start-ups.

11. Accompany visiting inspectors representing public or other agencies having jurisdiction over the Project, record the results of these inspections and report to the Engineer.

12. Report to the Engineer when clarifications and interpretations of the Contract Documents are needed and transmit to the Contractor clarifications and/or interpretations as issued by the Engineer.

13. Consider and evaluate the Contractor's suggestions for modifications in Drawings or Specifications and report with the RPR's recommendations to the Engineer. Transmit to the Contractor decisions as issued by the Engineer.

14. Maintain at the job site and the Engineer's office files for correspondence, reports of job conferences, shop drawings and samples, reproductions of original Contract Documents including all Work Directive Changes, Addenda, Change Orders, Field Orders, Written Amendments, additional drawings issued subsequent to the execution of the Contract, the Engineer's clarifications and interpretations of the Contract Documents, progress reports, and other Project-related documents.

15. Record names, addresses and telephone numbers of all subcontractors and major suppliers of materials, equipment and manufactured articles.

16. Furnish the Engineer periodic reports as required of progress of the Work and of the Contractor's compliance with the progress schedule and schedule of shop drawing and sample submittals.

17. Consult with the Engineer in advance of scheduled major tests, inspections or start of important phases of the Work.

18. Draft proposed Change Orders and Work Directive Changes, obtaining backup material from the Contractor and recommend to the Engineer Change Orders, Work Directive Changes, and Field Orders.

19. Report immediately to the Engineer and the County upon the occurrence of any accident witnessed by the RPR or that was otherwise made known to the RPR.

20. Review applications for payment with the Contractor for compliance with the established procedure for their submission and forward with recommendations to the 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.

21. During the course of the Work, verify that certificates, maintenance and operation manuals and other data required to be assembled and furnished by the Contractor are applicable to the items actually installed and in accordance with the Contract Documents, and have this material delivered to the Engineer for review and forwarding to the County prior to final payment for the Work.

22. Before the Engineer issues a Certificate of Substantial Completion, submit to the Contractor a list of observed items requiring completion or correction.

23. Conduct final inspections in the company of the Engineer, the County and the Contractor and prepare a final list of items to be completed or corrected.

24. Observe that all items on the final list have been completed or corrected and make recommendations to the Engineer concerning acceptance.

C. LIMITATIONS OF AUTHORITY:

1. The Resident Project Representative shall not:

   a. Authorize any deviation from the Contract Documents or substitution of materials or equipment, unless authorized in writing by the Engineer.
   b. Exceed limitations of the Engineer's authority as set forth in the Contract Documents.
   c. Undertake any of the responsibilities of the Contractor, subcontractors or the Contractors superintendent or construction manager.
   d. Advise on issue directions relative to or assume control over any aspect of the means, methods, techniques, sequences or procedures of construction unless such advice or directions are specifically required by the Contract Documents.
   e. Advise on issue directions regarding or assume control over safety precautions and programs in connection with the Work.
   f. Accept shop drawings or sample submittals from anyone other than the Contractor.
   g. Authorize the County to occupy the Project in whole or in part.
   h. Participate in specialized field or laboratory tests or inspections conducted by others as specifically authorized by the Engineer.

71. Waiver of Jury Trial

THE PARTIES HEREBY WAIVE ANY RIGHTS EITHER OF THEM MAY HAVE TO A JURY TRIAL IN ANY LITIGATION ARISING OUT OF OR RELATED TO THIS AGREEMENT AND AGREE THAT THEY

SHALL NOT ELECT A TRIAL BY JURY. THE PARTIES HERETO HAVE SEPARATELY, KNOWINGLY AND VOLUNTARILY GIVEN THIS WAIVER OF RIGHT TO TRIAL BY JURY WITH THE BENEFIT OF COMPETENT LEGAL COUNSEL.

72. Contractor Furnished Drawings, Data and Samples

Review and permission to proceed by County as stated in this Contract does not constitute acceptance or approval of design details, calculations, analyses, test methods, certificates or materials developed or selected by the Contractor and does not relieve Contractor from full compliance with contractual obligations. Drawings, samples, catalogues, data and certificates required to be submitted to the County for review, shall be submitted attached to forms provided by County.

All correspondence from the Contractor to the County shall be numbered sequentially and the submittal number shall be referenced. Submittal drawings (shop, erection or setting diagrams) and schedules, required for work of various trades, shall be checked before submission by technically qualified employees of Contractor for accuracy, completeness and compliance with contract requirements. These drawings and schedules shall be stamped and signed by Contractor certifying to such check. The certification stamp shall read as follows:

"I certify that I have checked this submittal for accuracy, completeness and compliance with contract requirements, and it has been coordinated with all other submittals and Contract Documents."
"I certify that I have checked this submittal for accuracy, completeness and compliance with contract requirements, and it has been coordinated with all other submittals and Contract Documents."

_____ _____
Signed Date

_____
Print Name of signer

_____ (Company Name)

A. Drawings

Where drawings are required for (a) fabrication of Contractor furnished equipment; (b) installing Contractor furnished material or equipment; or (c) planning and performance of the work under Contract; such drawings shall be submitted by and at the expense of the Contractor before fabrication, installation or performance is commenced. Each submittal shall be made not less than thirty five (35) calendar days prior to the time that the drawings are required in accordance with the schedule. Allow at least 21 calendar days for review by County. County's review will be accomplished based on the Contractor's submittal schedule portion of the CPM schedule, as approved. Such drawings shall include, but not be limited to, matchmarks, erection diagrams and other details, such as field connections for proper installation, erection of the equipment, and performance of the work.

For drawings greater in size than 11" x 17", one reproducible and four copies shall be submitted to the County by and at the expense of the Contractor. The County will be the sole judge of the adequacy of the quality of the reproducible and prints and may reject reproducibles and/or prints on the basis of quality alone. Such drawings will not be folded, but will be transmitted in mailer rolls manufactured expressly for that purpose. The reproducible with the County's review comments will be returned to the Contractor. A reproducible copy of drawings equal to or less than 11" x 17" is not necessary, but five copies of the unfolded drawings must be transmitted to the County.

If drawings show variations from the contract requirements, the Contractor shall describe such variations in writing, separate from the drawings, at the time of submission. If the County approves any such variation(s), it shall issue an appropriate contract modification, except that, if the variation is minor and does not involve a change in price or in time of performance, a modification need not be issued.

Drawings of a specific piece of equipment shall identify components with the manufacturer's part number or reference drawing clearly indicated. If reference drawing numbers are used, the review date of such drawings shall be included. Drawings shall indicate design dimensions, maximum and minimum allowable operating tolerances on all major wear fits, i.e. rotating, reciprocating or intermittent sliding fits between shafts or stems and seals, guides and pivot pins. The sequence of submission of all drawings shall be such that all information is available for reviewing each drawing when it is received.

All drawings submitted by the Contractor shall be certified and dated by the Contractor on the face of each drawing to be correct, accurate and shall be furnished in accordance with requirements of the specifications. County will conduct a review of Contractor's drawings and a drawing marked with one of the following review comments will be returned to the Contractor.

1. No exceptions taken.

2. Comments attached. Resubmit.

3. Rejected.

The Contractor must incorporate the changes indicated, resubmit and obtain a Code 1 or 2 notation before release for shipment can be granted.

B. Samples

Samples are physical examples which illustrate materials, equipment or workmanship and establish standards by which the work will be judged. Samples of all items of related systems (i.e. adjacent surfaces requiring similar colors but manufactured of different materials) must be submitted in the same time frame before the approval process can begin.

Where samples are required, they shall be submitted by and at the expense of the Contractor. Such submittal shall be made not less than thirty five (35) calendar days prior to the time that the materials represented by such samples need to be ordered for incorporation into any work in accordance with the schedule. Allow at least 21 calendar days for County's review. Materials represented by such samples shall not be manufactured, delivered to the site or incorporated into any work without such review. Each sample shall bear a label showing the Contractor's name, date submitted, project name, name of the item, manufacturer's name, brand name, model number, supplier's name, and reference to the appropriate drawing, technical specification section and paragraph number, all as applicable.

Samples which have been reviewed may, at County's option, be returned to the Contractor for incorporation into the work.

C. Catalogues, Data and Certificates

Where catalogues, data or certificates are required, five (5) copies of each shall be submitted by and at the expense of the Contractor. Such submittal shall be made not less than thirty five (35) calendar days prior to the time that the materials represented by such catalogues, data or certificates must be ordered for incorporation into any work in accordance with the CPM schedule. Allow at least 21 calendar days for County's review. Material represented by such shall not be fabricated, delivered to the site or incorporated into any work without such review.

Certificates shall clearly identify the material being certified and shall include but not be limited to providing the following information: Contractor's name, project name, name of the item, manufacturer's name, and reference to the appropriate drawing, technical specification section and paragraph number all as applicable. All catalogues, data and certificates submitted by the Contractor shall be certified and dated by the Contractor on the face of each catalogue, data and certificate to be correct and shall be furnished in accordance with these requirements and the requirements of the Technical Specification, on forms provided by the County. County will conduct a review of Contractor's catalogues, data, and certificates and one copy marked with the review comments listed in paragraph A, above, will be returned to the Contractor.

73. Contractor Work-Site Emergency Action Plan

Contractor shall be fully and solely responsible for the safety of all on-site contract personnel, including subcontractors. The contractor shall supply the Water Utilities Communication Department with names, telephone numbers and/or pager numbers of designated contract/subcontract personnel responsible for implementing contractor emergency action plans.

74. Cost Savings

After award of the Contract, the County will consider changes to the Contract proposed by the Contractor impacting the intent of the Contract Documents. If the Contractor awarded the project proposes changes to the Contract Documents which reduce project costs, and they are accepted by the County and the Engineer, then the Contractor will be entitled to fifty percent (50%) of the savings resulting from the changes (after engineering fees have been paid).

75. Safety and Health Regulations

A. The Contractor shall be fully and solely responsible for conducting all operations under this Contract at all times in such a manner as to avoid the risk of bodily harm to persons and damage to property. The Contractor shall continually and diligently inspect all work, materials, and equipment to discover any conditions that might involve such risks and shall be solely responsible for discovery and correction of any such conditions.

The Contractor shall comply with the Department of Labor Safety and Health Regulations promulgated under the Occupational Safety and Health Act of 1970 to include General Industry Standards (29 CFE 1910) and (29 CFR 1926/1910) for construction, and under Section 107 of the Contract Work Hours and Safety Standards Act.

B. The Contractor shall comply with the Manual on Uniform Traffic Control Devices when working on or off the site.

C. The Contractor shall allow representatives of the Department of Labor and authorized representatives of the Palm Beach County Water Utilities Department and the Palm Beach County Risk Management Department full access to the project for inspection.

76. Best Management Practices for the Construction Industry

A. The Contractor shall be responsible for assuring that each contractor or subcontractor evaluates the site before construction is initiated to determine if any site conditions may pose particular problems for the use, handling, production or storage of any regulated substances. For instance, handling regulated substances in the proximity of water bodies or wetlands may be improper.

B. If any regulated substances are stored on the construction site during the construction process, they shall be stored in a location and manner which will minimize any possible risk of release to the

environment. Any storage container of 55 gallons or 440 pounds or more containing regulated substances shall have constructed below it an impervious containment system constructed of material of sufficient thickness, density and composition that will prevent the discharge to the land, groundwater or surface water of any pollutant which may emanate from said storage container. Each containment system shall be able to contain 150% of the contents of all storage containers above or within the containment system.

C. Each Contractor shall familiarize itself with the manufacturer's safety data sheet supplied with each material containing a regulated substance and shall be thoroughly familiar with procedures required to contain and clean up any releases of the regulated substance. Any tools or equipment necessary to accomplish same shall be available in case of release.

D. Upon completion of construction, all unused and waste regulated substances and containment systems shall be removed from the construction site by the Contractor and shall be disposed of in a proper manner as prescribed by law.

77. Performance During Emergency

By submitting a bid, bidder agrees and promises that, during and after a public emergency, disaster, hurricane, flood, or acts of God, Palm Beach County shall be given "first priority" for all goods and services under this contract. Bidder agrees to provide all goods and services to Palm Beach County during and after the emergency/disaster at the terms, conditions, and prices as provided in this solicitation, and with a priority above, a preference over, sales to the private sector. Bidder shall furnish a 24-hour phone number to the County in the event of such an emergency. Failure to provide the stated priority/preference during and after an emergency/disaster shall constitute breach of contract and make the bidder subject to sanctions from further business with the County.

78. Incentives

A. Apprentice Incentive

1. Palm Beach County offers an Apprentice Incentive payment to a contractor who actually expends a minimum of $25,000 (including subcontractors) in payroll costs on apprentice wages. For purposes of this section, "apprentice" means any person who is participating in a Florida Department of Education registered apprenticeship program. The Living Wage provisions of this contract shall not be diminished by paying an apprentice less than the Living Wage.

2. Upon completion of the contract, Contractor may apply for the payment which will be added to the contract by change order. If the County determines that the Contractor complied with the requirements of this section, it will reimburse the contractor 20% of its apprentice wages (including payroll taxes, costs, and benefits) up to a maximum reimbursement of $100,000. The request must be submitted no later than 45 days after Substantial Completion of the project.

3. For projects with construction costs of $20,000,000 or greater, the threshold amount of expenditures for apprentices which must be paid to qualify for the incentive shall increase to $50,000 and the maximum reimbursement payment to $200,000.

4. To be eligible for the Apprenticeship Incentive payment, the apprentice employer (through the Contractor) must provide the following documentation: apprentice name(s), contact information, the apprentice Registered Apprenticeship Partners Information Data System (RAPIDS) Registration number, certification from the apprentice program that the employee was in good standing during the time on the project, registered trade, and certified payroll for the apprentice hours worked on the project.

5. The Contractor is required to forward all documentation, assembled and submitted by the apprentice employer in accordance with the above paragraph, to the County for review and disposition. Any incentive that the County approves shall be provided to the apprentice employer in full.

B. Glades Resident Incentive

1. Palm Beach County offers an incentive Payment to any contractor (and subcontractors) who hires a new employee that is a resident of the Glades area for work on County contracts ("Glades Employee"). For purposes of this section, "resident of the Glades area" means any person whose legal residence is located in the Glades area as defined in the Palm Beach County Local Preference Ordinance.

2. To be eligible for the Incentive Payment, the employee must be a full-time employee of the Contractor for a minimum of 3 weeks on this project and cannot have worked for the Contractor claiming the Glades Employee as a new hire for 90 days prior to this project. Within 5 days of the Contractor hiring and the Glades Employee reporting to work at the project site, Contractor must provide the following documentation ("Hiring Certification"): Glades Employee name, contact information including legal residence, copy of driver's license or other proof of residence, hire date, start date at project site, and trade. Both the Glades Employee and employer must sign the Hiring Certification with signatures notarized.

3. The County has the right, but not the obligation, to conduct unannounced field interviews with the Glades Employee to ensure compliance with the requirements of this Section.

4. Upon completion of the contract, Contractor may apply for the Incentive Payment which will be added to the contract by change order. The documentation ("Incentive Certification") required includes resubmitting of the Hiring Certification along with the employment end date or last day on the job site (whichever is earlier), a certified payroll for the hours worked on the project, and employee wages and benefits paid. The Incentive Certification must be signed by both the Glades Employee and employer with both signatures notarized. No markup will be allowed either by the General Contractor or a subcontractor.

5. If the County determines that the Contractor complied with the requirements of this section, it will reimburse the contractor 30% of the new employee(s) wages (including payroll taxes, costs, and benefits) up to a maximum reimbursement of $100,000. The request must be submitted no later than 45 days after Substantial Completion of the project.

6. Contractor can only claim the Incentive Payment once for each Glades Employee within a rolling twelve (12) month period, but the incentive can be claimed across multiple County contracts.

7. It is a Contract requirement of the Contractor that any reimbursement requested by a subcontractor under this Section be processed by the Contractor to the County for review.

79. Budget Availability

The County's performance and obligation to pay under this contract for subsequent fiscal years are contingent upon annual appropriations for its purpose by the Board of County Commissioners.

80. Public Records

Notwithstanding anything contained herein, as provided under Section 119.0701, F.S., if the Contractor: (i) provides a service; and (ii) acts on behalf of the County as provided under Section

119.011(2) F.S., the Contractor shall comply with the requirements of Section 119.0701, Florida Statutes, as it may be amended from time to time The Contractor is specifically required to:

A. Keep and maintain public records required by the County to perform services as provided under this Contract.

B. Upon request from the County's Custodian of Public Records, provide the County with a copy of the requested records or allow the records to be inspected or copied within a reasonable time at a cost that does not exceed the cost provided in Chapter 119 or as otherwise provided by law. The Contractor further agrees that all fees, charges and expenses shall be determined in accordance with Palm Beach County PPM CW-F-002, Fees Associated with Public Records Requests, as it may be amended or replaced from time to time.

C. Ensure that public records that are exempt, or confidential and exempt from public records disclosure requirements are not disclosed except as authorized by law for the duration of the contract term and following completion of the Contract, if the Contractor does not transfer the records to the public agency.

D. Upon completion of the Contract the Contractor shall transfer, at no cost to the County, all public records in possession of the Contractor unless notified by County's representative/liaison, on behalf of the County's Custodian of Public Records, to keep and maintain public records required by the County to perform the service. If the Contractor transfers all public records to the County upon completion of the Contract, the Contractor shall destroy any duplicate public records that are exempt, or confidential and exempt from public records disclosure requirements. If the Contractor keeps and maintains public records upon completion of the Contract, the Contractor shall meet all applicable requirements for retaining public records. All records stored electronically by the Contractor must be provided to County, upon request of the County's Custodian of Public Records, in a format that is compatible with the information technology systems of County, at no cost to County.

Failure of the Contractor to comply with the requirements of this article shall be a material breach of this Contract. County shall have the right to exercise any and all remedies available to it, including but not limited to, the right to terminate for cause. Contractor acknowledges that it has familiarized itself with the requirements of Chapter 119, F.S., and other requirements of state law applicable to public records not specifically set forth herein.

IF THE CONTRACTOR HAS QUESTIONS REGARDING THE APPLICATION OF CHAPTER 119, FLORIDA STATUTES, TO THE CONTRACTOR'S DUTY TO PROVIDE PUBLIC RECORDS RELATING TO THIS CONTRACT, PLEASE CONTACT THE CUSTODIAN OF PUBLIC RECORDS AT RECORDS REQUEST, PALM BEACH COUNTY PUBLIC AFFAIRS DEPARTMENT, 301 N. OLIVE AVENUE, WEST PALM BEACH, FL 33401, BY E-MAIL AT RECORDSREQUEST@PBCGOV.ORG OR BY TELEPHONE AT 561-355-6680.

END OF SECTION

SUPPLEMENTAL GENERAL CONDITIONS

1. GENERAL

A. These Supplemental General Conditions make additions, deletions, or revisions to the General Conditions as indicated herein. All provisions which are not so added, deleted, or revised remain in full force and effect. Terms used in these Supplemental General Conditions which are defined in the General Conditions have the meanings assigned to them in the General Conditions.

2. FDEP RESILIENT FLORIDA GRANT

1. PBCWUD has successfully secured grant funding for the project from the Florida Department of Environmental Protection (FDEP) Resilient Florida Grant Program wholly funded by Coronavirus State and Local Fiscal Recovery Funds under the American Rescue Plan Act. The Contractor shall conform to the requirements, conditions and intent of the grant. The grant agreement is made part of this Supplemental General Conditions.

2. A condition of the grant is that all requests for reimbursement must be received by grant administrator(s) no later than September 30, 2026. The Contractor fully acknowledges the September 30, 2026 date specified herein, and consequently the Contractor will use its best endeavors to submit each and every reimbursable cost prior to September 30, 2026. The Contractor is encouraged to make completing LS0637 a priority to meet this deadline.

3. The provisions of the federal Build America, Buy America Act (“BABA”) DO NOT apply to Resilient Florida grant agreements that are wholly funded by Coronavirus State and Local Fiscal Recovery Funds under the American Rescue Plan Act, including any subcontracts.

END OF SECTION

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STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Standard Grant Agreement

This Agreement is entered into between the Parties named below, pursuant to Section 215.971, *Florida Statutes*:

1. Project Title (Project): **Wastewater Lift Station LS 0637 Hardening Improvements** R2023 0170
   Agreement Number: **22FRP75**

2. Parties: **State of Florida Department of Environmental Protection, 3900 Commonwealth Boulevard Tallahassee, Florida 32399-3000** (Department)
   Grantee Name: **Palm Beach County BOCC** Entity Type: **Local Government**
   Grantee Address: **8100 Forest Hill Boulevard, West Palm Beach, Florida 33413** FEID: **59-6000785** (Grantee)

3. Agreement Begin Date: **Upon Execution**
   Date of Expiration: **9/30/2026**

4. Project Number: **FRP075** *(If different from Agreement Number)*
   Project Location(s): **26.609356657/-80.380802597**
   Project Description: **The Wastewater Lift Station LS 0637 Hardening Improvements project (Project) includes elevating the critical components such as access hatches, power supply, and instrumentation system to improve reliability of operation during projected periods of groundwater inundation, storm surge and rainfall-induced flooding.**

5. Total Amount of Funding: **$250,000.00**

Funding Source?	Award #s or Line Item Appropriations:	Amount per Source(s):
☐ State ☑ Federal	**152-D 22**	**$250,000.00**
☐ State ☐ Federal		
☑ Grantee Match		**$250,000.00**
	Total Amount of Funding + Grantee Match, if any:	**$500,000.00**

6. Department's Grant Manager
   Name: **Deneka Smith** or successor
   Address: **Resilient Florida Program, 2600 Blair Stone Road, MS235, Tallahassee, Florida 32399**
   Phone: **850-245-2171**
   Email: **Deneka.Smith@FloridaDEP.gov**

   Grantee's Grant Manager
   Name: **Jade Greene** or successor
   Address: **8100 Forest Hill Boulevard, West Palm Beach, Florida 33413**
   Phone: **561-493-6009**
   Email: **jgreene3@pbcwater.com**

7. The Parties agree to comply with the terms and conditions of the following attachments and exhibits which are hereby incorporated by reference:

- ☑ Attachment 1: Standard Terms and Conditions Applicable to All Grant Agreements
- ☑ Attachment 2: Special Terms and Conditions
- ☑ Attachment 3: Grant Work Plan
- ☑ Attachment 4: Public Records Requirements
- ☑ Attachment 5: Special Audit Requirements
- ☑ Attachment 6: Program-Specific Requirements
- ☐ Attachment 7: Grant Award Terms (Federal) *Copy available at https://facts.fldfs.com, in accordance with § 215.985, F.S.
- ☑ Attachment 8: Federal Regulations and Terms (Federal)
- ☐ Additional Attachments (if necessary):
- ☑ Exhibit A: Progress Report Form
- ☐ Exhibit B: Property Reporting Form
- ☑ Exhibit C: Payment Request Summary Form
- ☐ Exhibit D: Quality Assurance Requirements for Grants
- ☐ Exhibit E: Advance Payment Terms and Interest Earned Memo
- ☑ Additional Exhibits (if necessary): **Exhibit F: Final Report Form, Exhibit G: Photographer Release Form, and Exhibit H: Contractual Services Certification**

8. The following information applies to Federal Grants only and is identified in accordance with 2 C.F.R. § 200.331(a)(1):

Federal Award Identification Number(s) (FAIN):	**SLFRP0125**
Federal Award Date to Department:	**2/4/22**
Total Federal Funds Obligated by this Agreement:	**$250,000.00**
Federal Awarding Agency:	**U.S. Department of Treasury**
Award R&D?	☐ Yes ☑N/A

IN WITNESS WHEREOF, this Agreement shall be effective on the date indicated by the Agreement Begin Date above or the last date signed below, whichever is later.

Palm Beach County BOCC R2023 0170 **GRANTEE**

Grantee Name

By _____ FEB 07 2023

(Authorized Signature) Date Signed

Gregg K. Weiss, Mayor

Print Name and Title of Person Signing

State of Florida Department of Environmental Protection **DEPARTMENT**

By Alex Reed 3/13/2023

Secretary or Designee Date Signed

Alex Reed, Director of the Office of Resilience and Coastal Protection

Print Name and Title of Person Signing

☑ Additional signatures attached on separate page.

ORCP Additional Signatures

DEP Grant Manager, Deneka Smith

DEP QC Reviewer, Jeremy Jimenez

Local Sponsor may add additional signatures if needed below.

R2023 0170 FEB 07 2023

(COUNTY SEAL)

ATTEST:

JOSEPH ABRUZZO, CLERK
OF THE CIRCUIT COURT
AND COMPTROLLER

PALM BEACH COUNTY, FLORIDA, BY ITS
BOARD OF COUNTY COMMISSIONERS

By: _____
DEPUTY CLERK

By: _____
Gregg K. Weiss, Mayor

APPROVED AS TO FORM AND LEGAL SUFFICIENCY

By: _____
ASSISTANT COUNTY ATTORNEY

APPROVED AS TO TERMS AND CONDITIONS

By: _____
DIRECTOR OF WATER UTILITIES

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
STANDARD TERMS AND CONDITIONS
APPLICABLE TO GRANT AGREEMENTS

ATTACHMENT 1

1. Entire Agreement.

This Grant Agreement, including any Attachments and Exhibits referred to herein and/or attached hereto (Agreement), constitutes the entire agreement between the parties with respect to the subject matter hereof and supersedes all prior agreements, whether written or oral, with respect to such subject matter. Any terms and conditions included on Grantee's forms or invoices shall be null and void.

2. Grant Administration.

a. Order of Precedence. If there are conflicting provisions among the documents that make up the Agreement, the order of precedence for interpretation of the Agreement is as follows:
   i. Standard Grant Agreement
   ii. Attachments other than Attachment 1, in numerical order as designated in the Standard Grant Agreement
   iii. Attachment 1, Standard Terms and Conditions
   iv. The Exhibits in the order designated in the Standard Grant Agreement

b. All approvals, written or verbal, and other written communication among the parties, including all notices, shall be obtained by or sent to the parties' Grant Managers. All written communication shall be by electronic mail, U.S. Mail, a courier delivery service, or delivered in person. Notices shall be considered delivered when reflected by an electronic mail read receipt, a courier service delivery receipt, other mail service delivery receipt, or when receipt is acknowledged by recipient. If the notice is delivered in multiple ways, the notice will be considered delivered at the earliest delivery time.

c. If a different Grant Manager is designated by either party after execution of this Agreement, notice of the name and contact information of the new Grant Manager will be submitted in writing to the other party and maintained in the respective parties' records. A change of Grant Manager does not require a formal amendment or change order to the Agreement.

d. This Agreement may be amended, through a formal amendment or a change order, only by a written agreement between both parties. A formal amendment to this Agreement is required for changes which cause any of the following:
   (1) an increase or decrease in the Agreement funding amount;
   (2) a change in Grantee's match requirements;
   (3) a change in the expiration date of the Agreement; and/or
   (4) changes to the cumulative amount of funding transfers between approved budget categories, as defined in Attachment 3, Grant Work Plan, that exceeds or is expected to exceed twenty percent (20%) of the total budget as last approved by Department.
   A change order to this Agreement may be used when:
   (1) task timelines within the current authorized Agreement period change;
   (2) the cumulative transfer of funds between approved budget categories, as defined in Attachment 3, Grant Work Plan, are less than twenty percent (20%) of the total budget as last approved by Department;
   (3) changing the current funding source as stated in the Standard Grant Agreement; and/or
   (4) fund transfers between budget categories for the purposes of meeting match requirements.
   This Agreement may be amended to provide for additional services if additional funding is made available by the Legislature.

e. All days in this Agreement are calendar days unless otherwise specified.

3. Agreement Duration.

The term of the Agreement shall begin and end on the dates indicated in the Standard Grant Agreement, unless extended or terminated earlier in accordance with the applicable terms and conditions. The Grantee shall be eligible for reimbursement for work performed on or after the date of execution through the expiration date of this Agreement, unless otherwise specified in Attachment 2, Special Terms and Conditions. However, work performed prior to the execution of this Agreement may be reimbursable or used for match purposes if permitted by the Special Terms and Conditions.

4. Deliverables.

The Grantee agrees to render the services or other units of deliverables as set forth in Attachment 3, Grant Work Plan. The services or other units of deliverables shall be delivered in accordance with the schedule and at the pricing outlined in the Grant Work Plan. Deliverables may be comprised of activities that must be completed prior to Department making payment on that deliverable. The Grantee agrees to perform in accordance with the terms and conditions set forth in this Agreement and all attachments and exhibits incorporated by the Standard Grant Agreement.

5. Performance Measures.

The Grantee warrants that: (1) the services will be performed by qualified personnel; (2) the services will be of the kind and quality described in the Grant Work Plan; (3) the services will be performed in a professional and workmanlike manner in accordance with industry standards and practices; (4) the services shall not and do not knowingly infringe upon the intellectual property rights, or any other proprietary rights, of any third party; and (5) its employees, subcontractors, and/or subgrantees shall comply with any security and safety requirements and processes, if provided by Department, for work done at the Project Location(s). The Department reserves the right to investigate or inspect at any time to determine whether the services or qualifications offered by Grantee meet the Agreement requirements. Notwithstanding any provisions herein to the contrary, written acceptance of a particular deliverable does not foreclose Department's remedies in the event deficiencies in the deliverable cannot be readily measured at the time of delivery.

6. Acceptance of Deliverables.

a. Acceptance Process. All deliverables must be received and accepted in writing by Department's Grant Manager before payment. The Grantee shall work diligently to correct all deficiencies in the deliverable that remain outstanding, within a reasonable time at Grantee's expense. If Department's Grant Manager does not accept the deliverables within 30 days of receipt, they will be deemed rejected.

b. Rejection of Deliverables. The Department reserves the right to reject deliverables, as outlined in the Grant Work Plan, as incomplete, inadequate, or unacceptable due, in whole or in part, to Grantee's lack of satisfactory performance under the terms of this Agreement. The Grantee's efforts to correct the rejected deliverables will be at Grantee's sole expense. Failure to fulfill the applicable technical requirements or complete all tasks or activities in accordance with the Grant Work Plan will result in rejection of the deliverable and the associated invoice. Payment for the rejected deliverable will not be issued unless the rejected deliverable is made acceptable to Department in accordance with the Agreement requirements. The Department, at its option, may allow additional time within which Grantee may remedy the objections noted by Department. The Grantee's failure to make adequate or acceptable deliverables after a reasonable opportunity to do so shall constitute an event of default.

7. Financial Consequences for Nonperformance.

a. Withholding Payment. In addition to the specific consequences explained in the Grant Work Plan and/or Special Terms and Conditions, the State of Florida (State) reserves the right to withhold payment when the Grantee has failed to perform/comply with provisions of this Agreement. None of the financial consequences for nonperformance in this Agreement as more fully described in the Grant Work Plan shall be considered penalties.

b. Invoice reduction
If Grantee does not meet a deadline for any deliverable, the Department with reduce the invoice by 1% for each day the deadline is missed, unless an extension is approved in writing by the Department.

c. Corrective Action Plan. If Grantee fails to correct all the deficiencies in a rejected deliverable within the specified timeframe, Department may, in its sole discretion, request that a proposed Corrective Action Plan (CAP) be submitted by Grantee to Department. The Department requests that Grantee specify the outstanding deficiencies in the CAP. All CAPs must be able to be implemented and performed in no more than sixty (60) calendar days.

    i. The Grantee shall submit a CAP within ten (10) days of the date of the written request from Department. The CAP shall be sent to the Department's Grant Manager for review and approval. Within ten (10) days of receipt of a CAP, Department shall notify Grantee in writing whether the CAP proposed has been accepted. If the CAP is not accepted, Grantee shall have ten (10) days from receipt of Department letter rejecting the proposal to submit a revised proposed CAP. Failure to obtain Department approval of a CAP as specified above may result in Department's termination of this Agreement for cause as authorized in this Agreement.

    ii. Upon Department's notice of acceptance of a proposed CAP, Grantee shall have ten (10) days to commence implementation of the accepted plan. Acceptance of the proposed CAP by Department does not relieve Grantee of any of its obligations under the Agreement. In the event the CAP fails to correct or eliminate performance deficiencies by Grantee, Department shall retain the right to

require additional or further remedial steps, or to terminate this Agreement for failure to perform. No actions approved by Department or steps taken by Grantee shall preclude Department from subsequently asserting any deficiencies in performance. The Grantee shall continue to implement the CAP until all deficiencies are corrected. Reports on the progress of the CAP will be made to Department as requested by Department's Grant Manager.

iii. Failure to respond to a Department request for a CAP or failure to correct a deficiency in the performance of the Agreement as specified by Department may result in termination of the Agreement.

8. Payment.

a. Payment Process. Subject to the terms and conditions established by the Agreement, the pricing per deliverable established by the Grant Work Plan, and the billing procedures established by Department, Department agrees to pay Grantee for services rendered in accordance with Section 215.422, Florida Statutes (F.S.).

b. Taxes. The Department is exempted from payment of State sales, use taxes and Federal excise taxes. The Grantee, however, shall not be exempted from paying any taxes that it is subject to, including State sales and use taxes, or for payment by Grantee to suppliers for taxes on materials used to fulfill its contractual obligations with Department. The Grantee shall not use Department's exemption number in securing such materials. The Grantee shall be responsible and liable for the payment of all its FICA/Social Security and other taxes resulting from this Agreement.

c. Maximum Amount of Agreement. The maximum amount of compensation under this Agreement, without an amendment, is described in the Standard Grant Agreement. Any additional funds necessary for the completion of this Project are the responsibility of Grantee.

d. Reimbursement for Costs. The Grantee shall be paid on a cost reimbursement basis for all eligible Project costs upon the completion, submittal, and approval of each deliverable identified in the Grant Work Plan. Reimbursement shall be requested on Exhibit C, Payment Request Summary Form. To be eligible for reimbursement, costs must be in compliance with laws, rules, and regulations applicable to expenditures of State funds, including, but not limited to, the Reference Guide for State Expenditures, which can be accessed at the following web address: https://www.myfloridacfo.com/Division/AA/Manuals/documents/ReferenceGuideforStateExpenditures.pdf.

e. Invoice Detail. All charges for services rendered or for reimbursement of expenses authorized by Department pursuant to the Grant Work Plan shall be submitted to Department in sufficient detail for a proper pre-audit and post-audit to be performed. The Grantee shall only invoice Department for deliverables that are completed in accordance with the Grant Work Plan.

f. Interim Payments. Interim payments may be made by Department, at its discretion, if the completion of deliverables to date have first been accepted in writing by Department's Grant Manager.

g. Final Payment Request. A final payment request should be submitted to Department no later than sixty (60) days following the expiration date of the Agreement to ensure the availability of funds for payment. However, all work performed pursuant to the Grant Work Plan must be performed on or before the expiration date of the Agreement.

h. Annual Appropriation Contingency. The State's performance and obligation to pay under this Agreement is contingent upon an annual appropriation by the Legislature. This Agreement is not a commitment of future appropriations. Authorization for continuation and completion of work and any associated payments may be rescinded, with proper notice, at the discretion of Department if the Legislature reduces or eliminates appropriations.

i. Interest Rates. All interest rates charged under the Agreement shall be calculated on the prevailing rate used by the State Board of Administration. To obtain the applicable interest rate, please refer to: www.myfloridacfo.com/Division/AA/Vendors/default.htm.

j. Refund of Payments to the Department. Any balance of unobligated funds that have been advanced or paid must be refunded to Department. Any funds paid in excess of the amount to which Grantee or subgrantee is entitled under the terms of the Agreement must be refunded to Department. If this Agreement is funded with federal funds and the Department is required to refund the federal government, the Grantee shall refund the Department its share of those funds.

9. Documentation Required for Cost Reimbursement Grant Agreements and Match.

If Cost Reimbursement or Match is authorized in Attachment 2, Special Terms and Conditions, the following conditions apply. Supporting documentation must be provided to substantiate cost reimbursement or match requirements for the following budget categories:

a. Salary/Wages. Grantee shall list personnel involved, position classification, direct salary rates, and hours spent on the Project in accordance with Attachment 3, Grant Work Plan in their documentation for reimbursement or match requirements.

b. Overhead/Indirect/General and Administrative Costs. If Grantee is being reimbursed for or claiming match for multipliers, all multipliers used (i.e., fringe benefits, overhead, indirect, and/or general and administrative rates) shall be supported by audit. If Department determines that multipliers charged by Grantee exceeded the rates supported by audit, Grantee shall be required to reimburse such funds to Department within thirty (30) days of written notification. Interest shall be charged on the excessive rate.

c. Contractual Costs (Subcontractors). Match or reimbursement requests for payments to subcontractors must be substantiated by copies of invoices with backup documentation identical to that required from Grantee. Subcontracts which involve payments for direct salaries shall clearly identify the personnel involved, salary rate per hour, and hours spent on the Project. All eligible multipliers used (i.e., fringe benefits, overhead, indirect, and/or general and administrative rates) shall be supported by audit. If Department determines that multipliers charged by any subcontractor exceeded the rates supported by audit, Grantee shall be required to reimburse such funds to Department within thirty (30) days of written notification. Interest shall be charged on the excessive rate. Nonconsumable and/or nonexpendable personal property or equipment costing $5,000 or more purchased for the Project under a subcontract is subject to the requirements set forth in Chapters 273 and/or 274, F.S., and Chapter 69I-72, Florida Administrative Code (F.A.C.) and/or Chapter 69I-73, F.A.C., as applicable. The Grantee shall be responsible for maintaining appropriate property records for any subcontracts that include the purchase of equipment as part of the delivery of services. The Grantee shall comply with this requirement and ensure its subcontracts issued under this Agreement, if any, impose this requirement, in writing, on its subcontractors.

    i. For fixed-price (vendor) subcontracts, the following provisions shall apply: The Grantee may award, on a competitive basis, fixed-price subcontracts to consultants/contractors in performing the work described in Attachment 3, Grant Work Plan. Invoices submitted to Department for fixed-price subcontracted activities shall be supported with a copy of the subcontractor's invoice and a copy of the tabulation form for the competitive procurement process (e.g., Invitation to Bid, Request for Proposals, or other similar competitive procurement document) resulting in the fixed-price subcontract. The Grantee may request approval from Department to award a fixed-price subcontract resulting from procurement methods other than those identified above. In this instance, Grantee shall request the advance written approval from Department's Grant Manager of the fixed price negotiated by Grantee. The letter of request shall be supported by a detailed budget and Scope of Services to be performed by the subcontractor. Upon receipt of Department Grant Manager's approval of the fixed-price amount, Grantee may proceed in finalizing the fixed-price subcontract.

    ii. If the procurement is subject to the Consultant's Competitive Negotiation Act under section 287.055, F.S. or the Brooks Act, Grantee must provide documentation clearly evidencing it has complied with the statutory or federal requirements.

d. Travel. All requests for match or reimbursement of travel expenses shall be in accordance with Section 112.061, F.S.

e. Direct Purchase Equipment. For the purposes of this Agreement, Equipment is defined as capital outlay costing $5,000 or more. Match or reimbursement for Grantee's direct purchase of equipment is subject to specific approval of Department, and does not include any equipment purchased under the delivery of services to be completed by a subcontractor. Include copies of invoices or receipts to document purchases, and a properly completed Exhibit B, Property Reporting Form**.**

f. Rental/Lease of Equipment. Match or reimbursement requests for rental/lease of equipment must include copies of invoices or receipts to document charges.

g. Miscellaneous/Other Expenses. If miscellaneous or other expenses, such as materials, supplies, non-excluded phone expenses, reproduction, or mailing, are reimbursable or available for match or reimbursement under the terms of this Agreement, the documentation supporting these expenses must be itemized and include copies of receipts or invoices. Additionally, independent of Grantee's contract obligations to its subcontractor, Department shall not reimburse any of the following types of charges: cell phone usage; attorney's fees or court costs; civil or administrative penalties; or handling fees, such as set percent overages associated with purchasing supplies or equipment.

h. Land Acquisition. Reimbursement for the costs associated with acquiring interest and/or rights to real property (including access rights through ingress/egress easements, leases, license agreements, or other site access agreements; and/or obtaining record title ownership of real property through purchase) must be supported by the following, as applicable: Copies of Property Appraisals, Environmental Site Assessments, Surveys and Legal

Descriptions, Boundary Maps, Acreage Certification, Title Search Reports, Title Insurance, Closing Statements/Documents, Deeds, Leases, Easements, License Agreements, or other legal instrument documenting acquired property interest and/or rights. If land acquisition costs are used to meet match requirements, Grantee agrees that those funds shall not be used as match for any other Agreement supported by State or Federal funds.

10. Status Reports.

The Grantee shall submit status reports quarterly, unless otherwise specified in the Attachments, on Exhibit A, Progress Report Form**,** to Department's Grant Manager describing the work performed during the reporting period, problems encountered, problem resolutions, scheduled updates, and proposed work for the next reporting period. Quarterly status reports are due no later than twenty (20) days following the completion of the quarterly reporting period. For the purposes of this reporting requirement, the quarterly reporting periods end on March 31, June 30, September 30 and December 31. The Department will review the required reports submitted by Grantee within thirty (30) days.

11. Retainage.

The following provisions apply if Department withholds retainage under this Agreement:

a. The Department reserves the right to establish the amount and application of retainage on the work performed under this Agreement up to the maximum percentage described in Attachment 2, Special Terms and Conditions. Retainage may be withheld from each payment to Grantee pending satisfactory completion of work and approval of all deliverables.

b. If Grantee fails to perform the requested work, or fails to perform the work in a satisfactory manner, Grantee shall forfeit its right to payment of the retainage associated with the work. Failure to perform includes, but is not limited to, failure to submit the required deliverables or failure to provide adequate documentation that the work was actually performed. The Department shall provide written notification to Grantee of the failure to perform that shall result in retainage forfeiture. If the Grantee does not correct the failure to perform within the timeframe stated in Department's notice, the retainage will be forfeited to Department.

c. No retainage shall be released or paid for incomplete work while this Agreement is suspended.

d. Except as otherwise provided above, Grantee shall be paid the retainage associated with the work, provided Grantee has completed the work and submits an invoice for retainage held in accordance with the invoicing procedures under this Agreement.

12. Insurance.

a. Insurance Requirements for Sub-Grantees and/or Subcontractors. The Grantee shall require its sub-grantees and/or subcontractors, if any, to maintain insurance coverage of such types and with such terms and limits as described in this Agreement. The Grantee shall require all its sub-grantees and/or subcontractors, if any, to make compliance with the insurance requirements of this Agreement a condition of all contracts that are related to this Agreement. Sub-grantees and/or subcontractors must provide proof of insurance upon request.

b. Deductibles. The Department shall be exempt from, and in no way liable for, any sums of money representing a deductible in any insurance policy. The payment of such deductible shall be the sole responsibility of the Grantee providing such insurance.

c. Proof of Insurance. Upon execution of this Agreement, Grantee shall provide Department documentation demonstrating the existence and amount for each type of applicable insurance coverage ***prior to*** performance of any work under this Agreement. Upon receipt of written request from Department, Grantee shall furnish Department with proof of applicable insurance coverage by standard form certificates of insurance, a self-insured authorization, or other certification of self-insurance.

d. Duty to Maintain Coverage. In the event that any applicable coverage is cancelled by the insurer for any reason, or if Grantee cannot get adequate coverage, Grantee shall immediately notify Department of such cancellation and shall obtain adequate replacement coverage conforming to the requirements herein and provide proof of such replacement coverage within ten (10) days after the cancellation of coverage.

e. Insurance Trust. If the Grantee's insurance is provided through an insurance trust, the Grantee shall instead add the Department of Environmental Protection, its employees, and officers as an additional covered party everywhere the Agreement requires them to be added as an additional insured.

13. Termination.

a. Termination for Convenience. When it is in the State's best interest, Department may, at its sole discretion, terminate the Agreement in whole or in part by giving 30 days' written notice to Grantee. The Department shall notify Grantee of the termination for convenience with instructions as to the effective date of termination or the specific stage of work at which the Agreement is to be terminated. The Grantee must submit all invoices for work to be paid under this Agreement within thirty (30) days of the effective date of termination. The Department shall not pay any invoices received after thirty (30) days of the effective date of termination.

b. Termination for Cause. The Department may terminate this Agreement if any of the events of default described in the Events of Default provisions below occur or in the event that Grantee fails to fulfill any of its other obligations under this Agreement. If, after termination, it is determined that Grantee was not in default, or that the default was excusable, the rights and obligations of the parties shall be the same as if the termination had been issued for the convenience of Department. The rights and remedies of Department in this clause are in addition to any other rights and remedies provided by law or under this Agreement.

c. Grantee Obligations upon Notice of Termination. After receipt of a notice of termination or partial termination unless as otherwise directed by Department, Grantee shall not furnish any service or deliverable on the date, and to the extent specified, in the notice. However, Grantee shall continue work on any portion of the Agreement not terminated. If the Agreement is terminated before performance is completed, Grantee shall be paid only for that work satisfactorily performed for which costs can be substantiated. The Grantee shall not be entitled to recover any cancellation charges or lost profits.

d. Continuation of Prepaid Services. If Department has paid for any services prior to the expiration, cancellation, or termination of the Agreement, Grantee shall continue to provide Department with those services for which it has already been paid or, at Department's discretion, Grantee shall provide a refund for services that have been paid for but not rendered.

e. Transition of Services Upon Termination, Expiration, or Cancellation of the Agreement. If services provided under the Agreement are being transitioned to another provider(s), Grantee shall assist in the smooth transition of Agreement services to the subsequent provider(s). This requirement is at a minimum an affirmative obligation to cooperate with the new provider(s), however additional requirements may be outlined in the Grant Work Plan. The Grantee shall not perform any services after Agreement expiration or termination, except as necessary to complete the transition or continued portion of the Agreement, if any.

14. Notice of Default.

If Grantee defaults in the performance of any covenant or obligation contained in the Agreement, including, any of the events of default, Department shall provide notice to Grantee and an opportunity to cure that is reasonable under the circumstances. This notice shall state the nature of the failure to perform and provide a time certain for correcting the failure. The notice will also provide that, should the Grantee fail to perform within the time provided, Grantee will be found in default, and Department may terminate the Agreement effective as of the date of receipt of the default notice.

15. Events of Default.

Provided such failure is not the fault of Department or outside the reasonable control of Grantee, the following non-exclusive list of events, acts, or omissions, shall constitute events of default:

a. The commitment of any material breach of this Agreement by Grantee, including failure to timely deliver a material deliverable, failure to perform the minimal level of services required for a deliverable, discontinuance of the performance of the work, failure to resume work that has been discontinued within a reasonable time after notice to do so, or abandonment of the Agreement;

b. The commitment of any material misrepresentation or omission in any materials, or discovery by the Department of such, made by the Grantee in this Agreement or in its application for funding;

c. Failure to submit any of the reports required by this Agreement or having submitted any report with incorrect, incomplete, or insufficient information;

d. Failure to honor any term of the Agreement;

e. Failure to abide by any statutory, regulatory, or licensing requirement, including an entry of an order revoking the certificate of authority granted to the Grantee by a state or other licensing authority;

f. Failure to pay any and all entities, individuals, and furnishing labor or materials, or failure to make payment to any other entities as required by this Agreement;

g. Employment of an unauthorized alien in the performance of the work, in violation of Section 274 (A) of the Immigration and Nationality Act;

h. Failure to maintain the insurance required by this Agreement;

i. One or more of the following circumstances, uncorrected for more than thirty (30) days unless, within the specified 30-day period, Grantee (including its receiver or trustee in bankruptcy) provides to Department adequate assurances, reasonably acceptable to Department, of its continuing ability and willingness to fulfill its obligations under the Agreement:

    i. Entry of an order for relief under Title 11 of the United States Code;
    ii. The making by Grantee of a general assignment for the benefit of creditors;
    iii. The appointment of a general receiver or trustee in bankruptcy of Grantee's business or property; and/or

iv. An action by Grantee under any state insolvency or similar law for the purpose of its bankruptcy, reorganization, or liquidation.

16. Suspension of Work.

The Department may, in its sole discretion, suspend any or all activities under the Agreement, at any time, when it is in the best interest of the State to do so. The Department shall provide Grantee written notice outlining the particulars of suspension. Examples of reasons for suspension include, but are not limited to, budgetary constraints, declaration of emergency, or other such circumstances. After receiving a suspension notice, Grantee shall comply with the notice. Within 90 days, or any longer period agreed to by the parties, Department shall either: (1) issue a notice authorizing resumption of work, at which time activity shall resume; or (2) terminate the Agreement. If the Agreement is terminated after 30 days of suspension, the notice of suspension shall be deemed to satisfy the thirty (30) days' notice required for a notice of termination for convenience. Suspension of work shall not entitle Grantee to any additional compensation.

17. Force Majeure.

The Grantee shall not be responsible for delay resulting from its failure to perform if neither the fault nor the negligence of Grantee or its employees or agents contributed to the delay and the delay is due directly to acts of God, wars, acts of public enemies, strikes, fires, floods, or other similar cause wholly beyond Grantee's control, or for any of the foregoing that affect subcontractors or suppliers if no alternate source of supply is available to Grantee. In case of any delay Grantee believes is excusable, Grantee shall notify Department in writing of the delay or potential delay and describe the cause of the delay either (1) within ten days after the cause that creates or will create the delay first arose, if Grantee could reasonably foresee that a delay could occur as a result; or (2) if delay is not reasonably foreseeable, within five days after the date Grantee first had reason to believe that a delay could result. **THE FOREGOING SHALL CONSTITUTE THE GRANTEE'S SOLE REMEDY OR EXCUSE WITH RESPECT TO DELAY**. Providing notice in strict accordance with this paragraph is a condition precedent to such remedy. No claim for damages, other than for an extension of time, shall be asserted against Department. The Grantee shall not be entitled to an increase in the Agreement price or payment of any kind from Department for direct, indirect, consequential, impact or other costs, expenses or damages, including but not limited to costs of acceleration or inefficiency, arising because of delay, disruption, interference, or hindrance from any cause whatsoever. If performance is suspended or delayed, in whole or in part, due to any of the causes described in this paragraph, after the causes have ceased to exist Grantee shall perform at no increased cost, unless Department determines, in its sole discretion, that the delay will significantly impair the value of the Agreement to Department, in which case Department may: (1) accept allocated performance or deliveries from Grantee, provided that Grantee grants preferential treatment to Department with respect to products subjected to allocation; (2) contract with other sources (without recourse to and by Grantee for the related costs and expenses) to replace all or part of the products or services that are the subject of the delay, which purchases may be deducted from the Agreement quantity; or (3) terminate Agreement in whole or in part.

18. Indemnification.

a. The Grantee shall be fully liable for the actions of its agents, employees, partners, or subcontractors and shall fully indemnify, defend, and hold harmless Department and its officers, agents, and employees, from suits, actions, damages, and costs of every name and description arising from or relating to:
   i. personal injury and damage to real or personal tangible property alleged to be caused in whole or in part by Grantee, its agents, employees, partners, or subcontractors; provided, however, that Grantee shall not indemnify for that portion of any loss or damages proximately caused by the negligent act or omission of Department;
   ii. the Grantee's breach of this Agreement or the negligent acts or omissions of Grantee.

b. The Grantee's obligations under the preceding paragraph with respect to any legal action are contingent upon Department giving Grantee: (1) written notice of any action or threatened action; (2) the opportunity to take over and settle or defend any such action at Grantee's sole expense; and (3) assistance in defending the action at Grantee's sole expense. The Grantee shall not be liable for any cost, expense, or compromise incurred or made by Department in any legal action without Grantee's prior written consent, which shall not be unreasonably withheld.

c. Notwithstanding sections a. and b. above, the following is the sole indemnification provision that applies to Grantees that are governmental entities: Each party hereto agrees that it shall be solely responsible for the negligent or wrongful acts of its employees and agents. However, nothing contained herein shall constitute a waiver by either party of its sovereign immunity or the provisions of Section 768.28, F.S. Further, nothing herein shall be construed as consent by a state agency or subdivision of the State to be sued by third parties in any matter arising out of any contract or this Agreement.

d. No provision in this Agreement shall require Department to hold harmless or indemnify Grantee, insure or assume liability for Grantee's negligence, waive Department's sovereign immunity under the laws of Florida, or otherwise impose liability on Department for which it would not otherwise be responsible. Any provision, implication or suggestion to the contrary is null and void.

19. Limitation of Liability.

The Department's liability for any claim arising from this Agreement is limited to compensatory damages in an amount no greater than the sum of the unpaid balance of compensation due for goods or services rendered pursuant to and in compliance with the terms of the Agreement. Such liability is further limited to a cap of $100,000.

20. Remedies.

Nothing in this Agreement shall be construed to make Grantee liable for force majeure events. Nothing in this Agreement, including financial consequences for nonperformance, shall limit Department's right to pursue its remedies for other types of damages under the Agreement, at law or in equity. The Department may, in addition to other remedies available to it, at law or in equity and upon notice to Grantee, retain such monies from amounts due Grantee as may be necessary to satisfy any claim for damages, penalties, costs and the like asserted by or against it.

21. Waiver.

The delay or failure by Department to exercise or enforce any of its rights under this Agreement shall not constitute or be deemed a waiver of Department's right thereafter to enforce those rights, nor shall any single or partial exercise of any such right preclude any other or further exercise thereof or the exercise of any other right.

22. Statutory Notices Relating to Unauthorized Employment and Subcontracts.

a. The Department shall consider the employment by any Grantee of unauthorized aliens a violation of Section 274A(e) of the Immigration and Nationality Act. If Grantee/subcontractor knowingly employs unauthorized aliens, such violation shall be cause for unilateral cancellation of this Agreement. The Grantee shall be responsible for including this provision in all subcontracts with private organizations issued as a result of this Agreement.

b. Pursuant to Sections 287.133, 287.134, and 287.137 F.S., the following restrictions apply to persons placed on the convicted vendor list, discriminatory vendor list, or the antitrust violator vendor list:

   i. Public Entity Crime. A person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a bid, proposal, or reply on a contract to provide any goods or services to a public entity; may not submit a bid, proposal, or reply on a contract with a public entity for the construction or repair of a public building or public work; may not submit bids, proposals, or replies on leases of real property to a public entity; may not be awarded or perform work as a Grantee, supplier, subcontractor, or consultant under a contract with any public entity; and may not transact business with any public entity in excess of the threshold amount provided in Section 287.017, F.S., for CATEGORY TWO for a period of 36 months following the date of being placed on the convicted vendor list.

   ii. Discriminatory Vendors. An entity or affiliate who has been placed on the discriminatory vendor list may not submit a bid, proposal, or reply on a contract to provide any goods or services to a public entity; may not submit a bid, proposal, or reply on a contract with a public entity for the construction or repair of a public building or public work; may not submit bids, proposals, or replies on leases of real property to a public entity; may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with any public entity; and may not transact business with any public entity.

   iii. Antitrust Violator Vendors. A person or an affiliate who has been placed on the antitrust violator vendor list following a conviction or being held civilly liable for an antitrust violation may not submit a bid, proposal, or reply on any contract to provide any good or services to a public entity; may not submit a bid, proposal, or reply on any contract with a public entity for the construction or repair of a public building or public work; may not submit a bid, proposal, or reply on leases of real property to a public entity; may not be awarded or perform work as a Grantee, supplier, subcontractor, or consultant under a contract with a public entity; and may not transact new business with a public entity.

   iv. Notification. The Grantee shall notify Department if it or any of its suppliers, subcontractors, or consultants have been placed on the convicted vendor list, the discriminatory vendor list, or antitrust violator vendor list during the life of the Agreement. The Florida Department of Management Services is responsible for maintaining the discriminatory vendor list and the antitrust violator vendor list and posts the list on its website. Questions regarding the discriminatory vendor list or antitrust violator vendor list may be directed to the Florida Department of Management Services, Office of Supplier Diversity, at (850) 487-0915.

23. Compliance with Federal, State and Local Laws.

a. The Grantee and all its agents shall comply with all federal, state and local regulations, including, but not limited to, nondiscrimination, wages, social security, workers' compensation, licenses, and registration requirements. The Grantee shall include this provision in all subcontracts issued as a result of this Agreement.

b. No person, on the grounds of race, creed, color, religion, national origin, age, gender, or disability, shall be excluded from participation in; be denied the proceeds or benefits of; or be otherwise subjected to discrimination in performance of this Agreement.

c. This Agreement shall be governed by and construed in accordance with the laws of the State of Florida.

d. Any dispute concerning performance of the Agreement shall be processed as described herein. Jurisdiction for any damages arising under the terms of the Agreement will be in the courts of the State, and venue will be in the Second Judicial Circuit, in and for Leon County. Except as otherwise provided by law, the parties agree to be responsible for their own attorney fees incurred in connection with disputes arising under the terms of this Agreement.

24. Build America, Buy America Act (BABA).

Recipients or Subrecipients of an award of Federal financial assistance from a program for infrastructure are required to comply with the Build America, Buy America Act (BABA), including the following provisions:

a. All iron and steel used in the project are produced in the United States--this means all manufacturing processes, from the initial melting stage through the application of coatings, occurred in the United States;

b. All manufactured products used in the project are produced in the United States-this means the manufactured product was manufactured in the United States; and the cost of the components of the manufactured product that are mined, produced, or manufactured in the United States is greater than 55 percent of the total cost of all components of the manufactured product, unless another standard for determining the minimum amount of domestic content of the manufactured product has been established under applicable law or regulation; and

c. All construction materials are manufactured in the United States-this means that all manufacturing processes for the construction material occurred in the United States.

The Buy America preference only applies to articles, materials, and supplies that are consumed in, incorporated into, or affixed to an infrastructure project. As such, it does not apply to tools, equipment, and supplies, such as temporary scaffolding, brought to the construction site and removed at or before the completion of the infrastructure project. Nor does a Buy America preference apply to equipment and furnishings, such as movable chairs, desks, and portable computer equipment, that are used at or within the finished infrastructure project but are not an integral part of the structure or permanently affixed to the infrastructure project.

25. Scrutinized Companies.

a. Grantee certifies that it is not on the Scrutinized Companies that Boycott Israel List or engaged in a boycott of Israel. Pursuant to Section 287.135, F.S., the Department may immediately terminate this Agreement at its sole option if the Grantee is found to have submitted a false certification; or if the Grantee is placed on the Scrutinized Companies that Boycott Israel List or is engaged in the boycott of Israel during the term of the Agreement.

b. If this Agreement is for more than one million dollars, the Grantee certifies that it is also not on the Scrutinized Companies with Activities in Sudan, Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, or engaged with business operations in Cuba or Syria as identified in Section 287.135, F.S. Pursuant to Section 287.135, F.S., the Department may immediately terminate this Agreement at its sole option if the Grantee is found to have submitted a false certification; or if the Grantee is placed on the Scrutinized Companies with Activities in Sudan List, or Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, or engaged with business operations in Cuba or Syria during the term of the Agreement.

c. As provided in Subsection 287.135(8), F.S., if federal law ceases to authorize these contracting prohibitions then they shall become inoperative.

26. Lobbying and Integrity.

The Grantee agrees that no funds received by it under this Agreement will be expended for the purpose of lobbying the Legislature or a State agency pursuant to Section 216.347, F.S., except that pursuant to the requirements of Section 287.058(6), F.S., during the term of any executed agreement between Grantee and the State, Grantee may lobby the executive or legislative branch concerning the scope of services, performance, term, or compensation regarding that agreement. The Grantee shall comply with Sections 11.062 and 216.347, F.S.

27. Record Keeping.

The Grantee shall maintain books, records and documents directly pertinent to performance under this Agreement in accordance with United States generally accepted accounting principles (US GAAP) consistently applied. The Department, the State, or their authorized representatives shall have access to such records for audit purposes during the term of this Agreement and for five (5) years following the completion date or termination of the Agreement. In the event that any work is subcontracted, Grantee shall similarly require each subcontractor to maintain and allow access to such records for audit purposes. Upon request of Department's Inspector General, or other authorized State official, Grantee shall provide any type of information the Inspector General deems relevant to Grantee's integrity or responsibility. Such information may include, but shall not be limited to, Grantee's business or financial records, documents, or files of any type or form that refer to or relate to Agreement. The Grantee shall retain such records for the longer of: (1) three years after the expiration of the Agreement; or (2) the period required by the General Records Schedules maintained by the Florida Department of State (available at: http://dos.myflorida.com/library-archives/records-management/general-records-schedules/).

28. Audits.

a. Inspector General. The Grantee understands its duty, pursuant to Section 20.055(5), F.S., to cooperate with the inspector general in any investigation, audit, inspection, review, or hearing. The Grantee will comply with this duty and ensure that its sub-grantees and/or subcontractors issued under this Agreement, if any, impose this requirement, in writing, on its sub-grantees and/or subcontractors, respectively.

b. Physical Access and Inspection. Department personnel shall be given access to and may observe and inspect work being performed under this Agreement, with reasonable notice and during normal business hours, including by any of the following methods:

    i. Grantee shall provide access to any location or facility on which Grantee is performing work, or storing or staging equipment, materials or documents;
    ii. Grantee shall permit inspection of any facility, equipment, practices, or operations required in performance of any work pursuant to this Agreement; and,
    iii. Grantee shall allow and facilitate sampling and monitoring of any substances, soils, materials or parameters at any location reasonable or necessary to assure compliance with any work or legal requirements pursuant to this Agreement.

c. Special Audit Requirements. The Grantee shall comply with the applicable provisions contained in Attachment 5, Special Audit Requirements. Each amendment that authorizes a funding increase or decrease shall include an updated copy of Exhibit 1, to Attachment 5. If Department fails to provide an updated copy of Exhibit 1 to include in each amendment that authorizes a funding increase or decrease, Grantee shall request one from the Department's Grants Manager. The Grantee shall consider the type of financial assistance (federal and/or state) identified in Attachment 5, Exhibit 1 and determine whether the terms of Federal and/or Florida Single Audit Act Requirements may further apply to lower tier transactions that may be a result of this Agreement. For federal financial assistance, Grantee shall utilize the guidance provided under 2 CFR §200.331 for determining whether the relationship represents that of a subrecipient or vendor. For State financial assistance, Grantee shall utilize the form entitled "Checklist for Nonstate Organizations Recipient/Subrecipient vs Vendor Determination" (form number DFS-A2-NS) that can be found under the "Links/Forms" section appearing at the following website: https:\\apps.fldfs.com\fsaa.

d. Proof of Transactions. In addition to documentation provided to support cost reimbursement as described herein, Department may periodically request additional proof of a transaction to evaluate the appropriateness of costs to the Agreement pursuant to State guidelines (including cost allocation guidelines) and federal, if applicable. Allowable costs and uniform administrative requirements for federal programs can be found under 2 CFR 200. The Department may also request a cost allocation plan in support of its multipliers (overhead, indirect, general administrative costs, and fringe benefits). The Grantee must provide the additional proof within thirty (30) days of such request.

e. No Commingling of Funds. The accounting systems for all Grantees must ensure that these funds are not commingled with funds from other agencies. Funds from each agency must be accounted for separately. Grantees are prohibited from commingling funds on either a program-by-program or a project-by-project basis. Funds specifically budgeted and/or received for one project may not be used to support another project. Where a Grantee's, or subrecipient's, accounting system cannot comply with this requirement, Grantee, or subrecipient, shall establish a system to provide adequate fund accountability for each project it has been awarded.

    i. If Department finds that these funds have been commingled, Department shall have the right to demand a refund, either in whole or in part, of the funds provided to Grantee under this Agreement for non-compliance with the material terms of this Agreement. The Grantee, upon such written notification from Department shall refund, and shall forthwith pay to Department, the amount of

money demanded by Department. Interest on any refund shall be calculated based on the prevailing rate used by the State Board of Administration. Interest shall be calculated from the date(s) the original payment(s) are received from Department by Grantee to the date repayment is made by Grantee to Department.

ii. In the event that the Grantee recovers costs, incurred under this Agreement and reimbursed by Department, from another source(s), Grantee shall reimburse Department for all recovered funds originally provided under this Agreement and interest shall be charged for those recovered costs as calculated on from the date(s) the payment(s) are recovered by Grantee to the date repayment is made to Department.

iii. Notwithstanding the requirements of this section, the above restrictions on commingling funds do not apply to agreements where payments are made purely on a cost reimbursement basis.

29. Conflict of Interest.

The Grantee covenants that it presently has no interest and shall not acquire any interest which would conflict in any manner or degree with the performance of services required.

30. Independent Contractor.

The Grantee is an independent contractor and is not an employee or agent of Department.

31. Subcontracting.

a. Unless otherwise specified in the Special Terms and Conditions, all services contracted for are to be performed solely by Grantee.

b. The Department may, for cause, require the replacement of any Grantee employee, subcontractor, or agent. For cause, includes, but is not limited to, technical or training qualifications, quality of work, change in security status, or non-compliance with an applicable Department policy or other requirement.

c. The Department may, for cause, deny access to Department's secure information or any facility by any Grantee employee, subcontractor, or agent.

d. The Department's actions under paragraphs b. or c. shall not relieve Grantee of its obligation to perform all work in compliance with the Agreement. The Grantee shall be responsible for the payment of all monies due under any subcontract. The Department shall not be liable to any subcontractor for any expenses or liabilities incurred under any subcontract and Grantee shall be solely liable to the subcontractor for all expenses and liabilities incurred under any subcontract.

e. The Department will not deny Grantee's employees, subcontractors, or agents access to meetings within the Department's facilities, unless the basis of Department's denial is safety or security considerations.

f. The Department supports diversity in its procurement program and requests that all subcontracting opportunities afforded by this Agreement embrace diversity enthusiastically. The award of subcontracts should reflect the full diversity of the citizens of the State. A list of minority-owned firms that could be offered subcontracting opportunities may be obtained by contacting the Office of Supplier Diversity at (850) 487-0915.

g. The Grantee shall not be liable for any excess costs for a failure to perform, if the failure to perform is caused by the default of a subcontractor at any tier, and if the cause of the default is completely beyond the control of both Grantee and the subcontractor(s), and without the fault or negligence of either, unless the subcontracted products or services were obtainable from other sources in sufficient time for Grantee to meet the required delivery schedule.

32. Guarantee of Parent Company.

If Grantee is a subsidiary of another corporation or other business entity, Grantee asserts that its parent company will guarantee all of the obligations of Grantee for purposes of fulfilling the obligations of Agreement. In the event Grantee is sold during the period the Agreement is in effect, Grantee agrees that it will be a requirement of sale that the new parent company guarantee all of the obligations of Grantee.

33. Survival.

The respective obligations of the parties, which by their nature would continue beyond the termination or expiration of this Agreement, including without limitation, the obligations regarding confidentiality, proprietary interests, and public records, shall survive termination, cancellation, or expiration of this Agreement.

34. Third Parties.

The Department shall not be deemed to assume any liability for the acts, failures to act or negligence of Grantee, its agents, servants, and employees, nor shall Grantee disclaim its own negligence to Department or any third party. This Agreement does not and is not intended to confer any rights or remedies upon any person other than the parties. If Department consents to a subcontract, Grantee will specifically disclose that this Agreement does not create any third-party rights. Further, no third parties shall rely upon any of the rights and obligations created under this Agreement.

35. Severability.

If a court of competent jurisdiction deems any term or condition herein void or unenforceable, the other provisions are severable to that void provision, and shall remain in full force and effect.

36. Grantee's Employees, Subcontractors and Agents.

All Grantee employees, subcontractors, or agents performing work under the Agreement shall be properly trained technicians who meet or exceed any specified training qualifications. Upon request, Grantee shall furnish a copy of technical certification or other proof of qualification. All employees, subcontractors, or agents performing work under Agreement must comply with all security and administrative requirements of Department and shall comply with all controlling laws and regulations relevant to the services they are providing under the Agreement.

37. Assignment.

The Grantee shall not sell, assign, or transfer any of its rights, duties, or obligations under the Agreement, or under any purchase order issued pursuant to the Agreement, without the prior written consent of Department. In the event of any assignment, Grantee remains secondarily liable for performance of the Agreement, unless Department expressly waives such secondary liability. The Department may assign the Agreement with prior written notice to Grantee of its intent to do so.

38. Compensation Report.

If this Agreement is a sole-source, public-private agreement or if the Grantee, through this agreement with the State, annually receive 50% or more of their budget from the State or from a combination of State and Federal funds, the Grantee shall provide an annual report, including the most recent IRS Form 990, detailing the total compensation for the entities' executive leadership teams. Total compensation shall include salary, bonuses, cashed-in leave, cash equivalents, severance pay, retirement benefits, deferred compensation, real-property gifts, and any other payout. The Grantee must also inform the Department of any changes in total executive compensation between the annual reports. All compensation reports must indicate what percent of compensation comes directly from the State or Federal allocations to the Grantee.

39. Execution in Counterparts and Authority to Sign.

This Agreement, any amendments, and/or change orders related to the Agreement, may be executed in counterparts, each of which shall be an original and all of which shall constitute the same instrument. In accordance with the Electronic Signature Act of 1996, electronic signatures, including facsimile transmissions, may be used and shall have the same force and effect as a written signature. Each person signing this Agreement warrants that he or she is duly authorized to do so and to bind the respective party to the Agreement.

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Special Terms and Conditions
AGREEMENT NO. 22FRP75

ATTACHMENT 2

These Special Terms and Conditions shall be read together with general terms outlined in the Standard Terms and Conditions, Attachment 1. Where in conflict, these more specific terms shall apply.

1. Scope of Work.
The Project funded under this Agreement is Wastewater Lift Station LS 0637 Hardening Improvements. The Project is defined in more detail in Attachment 3, Grant Work Plan.

2. Duration.
a. Reimbursement Period. The reimbursement period for this Agreement is the same as the term of the Agreement.
b. Extensions. There are extensions available for this Project.
c. Service Periods. Additional service periods may be added in accordance with 2.a above and are contingent upon proper and satisfactory technical and administrative performance by the Grantee and the availability of funding.

3. Payment Provisions.
a. Compensation. This is a cost reimbursement Agreement. The Grantee shall be compensated under this Agreement as described in Attachment 3.
b. Invoicing. Invoicing will occur as indicated in Attachment 3.
c. Advance Pay. Advance Pay is not authorized under this Agreement.

4. Cost Eligible for Reimbursement or Matching Requirements.
Reimbursement for costs or availability for costs to meet matching requirements shall be limited to the following budget categories, as defined in the Reference Guide for State Expenditures, as indicated:

Reimbursement	Match	Category
☐	☐	Salaries/Wages
		Overhead/Indirect/General and Administrative Costs:
☐	☐	a. Fringe Benefits, N/A.
☐	☐	b. Indirect Costs, N/A.
☒	☒	Contractual (Subcontractors)
☐	☐	Travel, in accordance with Section 112, F.S.
☐	☐	Equipment
☐	☐	Rental/Lease of Equipment
☐	☐	Miscellaneous/Other Expenses
☐	☐	Land Acquisition

5. Equipment Purchase.
No Equipment purchases shall be funded under this Agreement.

6. Land Acquisition.
There will be no Land Acquisitions funded under this Agreement.

7. Match Requirements
The Agreement requires at least a 50% match on the part of the Grantee. Therefore, the Grantee is responsible for providing $250,000.00 through cash or third party in-kind towards the project funded under this Agreement.
The Grantee may claim allowable project expenditures made on July 1, 2021 or after for purposes of meeting its match requirement as identified above.

Each payment request submitted shall document all matching funds and/or match efforts (i.e., in-kind services) provided during the period covered by each request. The final payment will not be processed until the match requirement has been met.

8. Insurance Requirements

Required Coverage. At all times during the Agreement the Grantee, at its sole expense, shall maintain insurance coverage of such types and with such terms and limits described below. The limits of coverage under each policy maintained by the Grantee shall not be interpreted as limiting the Grantee's liability and obligations under the Agreement. All insurance policies shall be through insurers licensed and authorized to issue policies in Florida, or alternatively, Grantee may provide coverage through a self-insurance program established and operating under the laws of Florida. Additional insurance requirements for this Agreement may be required elsewhere in this Agreement, however the minimum insurance requirements applicable to this Agreement are:

a. Commercial General Liability Insurance.
The Grantee shall provide adequate commercial general liability insurance coverage and hold such liability insurance at all times during the Agreement. The Department, its employees, and officers shall be named as an additional insured on any general liability policies. The minimum limits shall be $250,000 for each occurrence and $500,000 policy aggregate.

b. Commercial Automobile Insurance.
If the Grantee's duties include the use of a commercial vehicle, the Grantee shall maintain automobile liability, bodily injury, and property damage coverage. Insuring clauses for both bodily injury and property damage shall provide coverage on an occurrence basis. The Department, its employees, and officers shall be named as an additional insured on any automobile insurance policy. The minimum limits shall be as follows:

$200,000/300,000	Automobile Liability for Company-Owned Vehicles, if applicable
$200,000/300,000	Hired and Non-owned Automobile Liability Coverage

c. Workers' Compensation and Employer's Liability Coverage.
The Grantee shall provide workers' compensation, in accordance with Chapter 440, F.S. and employer liability coverage with minimum limits of $100,000 per accident, $100,000 per person, and $500,000 policy aggregate. Such policies shall cover all employees engaged in any work under the Grant.

d. Other Insurance. None.

9. Quality Assurance Requirements.

There are no special Quality Assurance requirements under this Agreement.

10. Retainage.

Retainage is permitted under this Agreement. Retainage may be up to a maximum of 5% of the total amount of the Agreement.

11. Subcontracting.

The Grantee may subcontract work under this Agreement without the prior written consent of the Department's Grant Manager except for certain fixed-price subcontracts pursuant to this Agreement, which require prior approval. The Grantee shall submit a copy of the executed subcontract to the Department prior to submitting any invoices for subcontracted work. Regardless of any subcontract, the Grantee is ultimately responsible for all work to be performed under this Agreement.

12. State-owned Land.

The work will not be performed on State-owned land.

13. Office of Policy and Budget Reporting.

There are no special Office of Policy and Budget reporting requirements for this Agreement.

14. Common Carrier.

a. Applicable to contracts with a common carrier – firm/person/corporation that as a regular business transports people of commodities from place to place. If applicable, Contractor must also fill out and return PUR 1808 before contract execution] If Contractor is a common carrier pursuant to section

908.111(1)(a), Florida Statutes, the Department will terminate this contract immediately if Contractor is found to be in violation of the law or the attestation in PUR 1808.

b. Applicable to solicitations for a common carrier – Before contract execution, the winning Contractor(s) must fill out and return PUR 1808, and attest that it is not willfully providing any service in furtherance of transporting a person into this state knowing that the person unlawfully present in the United States according to the terms of the federal Immigration and Nationality Act, 8 U.S.C. ss. 1101 et seq. The Department will terminate a contract immediately if Contractor is found to be in violation of the law or the attestation in PUR 1808

15. Additional Terms.

Documentary Evidence Requirement for Subcontractor(s). If any work associated with this Agreement is completed by a subcontractor(s), the Grantee shall require that such subcontractor(s) submit documentary evidence (e.g., workshop agendas; meeting recordings) to Grantee demonstrating that the subcontractor(s) has fully performed its Project obligation(s). The Grantee shall forward copies of all such documentary evidence to the Department with the Grantee's relevant deliverable(s), using the approved Project Timeline set forth in Attachment 3 to this Agreement (Grant Work Plan).

Sea Level Impact Projection Study Requirement. If the project is within the designated area, pursuant to Section 161.551, F.S. and Chapter 62S-7, *Florida Administrative Code*, the Grantee is responsible for performing a Sea Level Impact Projection (SLIP) study and submitting the resulting report to the Department. The SLIP study report must be received by the Department, approved by the Department, and be published on the Department's website for at least thirty (30) days before construction can commence. This rule went into effect July 1, 2021, and applies to certain state-funded construction projects located in the coastal building zone as defined in the rule.

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
GRANT WORK PLAN
AGREEMENT NO. 22FRP75

ATTACHMENT 3

PROJECT TITLE: Wastewater Lift Station LS 0637 Hardening Improvements

PROJECT LOCATION: The Project is located in Royal Palm Beach in Palm Beach County, Florida.

PROJECT DESCRIPTION: The Wastewater Lift Station LS 0637 Hardening Improvements project (Project) includes elevating the critical components such as access hatches, power supply, and instrumentation system to improve reliability of operation during projected periods of groundwater inundation, storm surge and rainfall-induced flooding. This project mitigates threats to the operation and maintenance of the wastewater collection/transmission system associated with groundwater inundation, tidal flooding, and rainfall induced flooding. These hardening improvements will improve reliability of the facility to serve the service area population and reduce the potential for wastewater overflow and exposure that poses a risk to health and safety. The project includes design and permitting and construction activities.

TASKS AND DELIVERABLES:

Task 1: Design and Permitting

Description: The Grantee will complete the design of Lift Station No. 637 Improvements, procure a responsible contractor through a competitive bidding process and obtain all necessary permits for construction of the Project. Design and permitting activities may include coastal or civil engineering analyses, preparation of plans and specifications, physical and environmental surveys, cultural resource surveys, design-level geotechnical services, environmental analyses, orthophotography, plan formulations and other necessary studies for obtaining environmental permits, and other Project-related authorizations. The Grantee will submit its work products to the appropriate state or federal regulatory agencies.

Deliverables: The Grantee will submit all final design documents as signed by a Florida-registered Professional Engineer. If applicable, the Grantee will also submit final permit documents from all appropriate state and federal regulatory agencies.

Task 2: Construction

Description: The Grantee will construct the improvements to Lift Station No. 637 by elevating critical components, such as access hatches, power supply, and instrumentation system in accordance with the construction contract documents. Project costs associated with the Construction task include work approved through construction bids and/or construction-phase engineering and monitoring services contracts. Eligible activities may include mobilization, demobilization, construction observation or inspection services, physical and environmental surveys, and mitigation projects. Construction shall be conducted in accordance with all state or federal permits. The Grantee does not anticipate that the funding under this Agreement will result in a fully completed project, so this Agreement will cover only a portion of the work described herein.

Deliverables: The Grantee will submit: 1) a copy of the as-built drawings; 2) a signed acceptance of the completed work to date, as provided in the Grantee's Certification of Payment Request; 3) a signed Engineer's Certification of Payment Request; and 4) when construction is complete, a Certificate of

Occupancy (if applicable) and a Certificate of Completion signed by a Florida-registered Professional Engineer.

PERFORMANCE MEASURES: The Grantee will submit all deliverables for each task to the Department's Grant Manager on or before the Task Due Date listed in the Project Timeline. The Grantee must also submit Exhibit A, Progress Report Form, to the Department's Grant Manager, with every deliverable and payment request. For interim payment requests, Exhibit A may serve as the deliverable for a task. The Department's Grant Manager will review the deliverable(s) to verify that they meet the specifications in the Grant Work Plan and the task description, to include any work being performed by any subcontractor(s). Upon review and written acceptance by the Department's Grant Manager of deliverables under the task, the Grantee may proceed with payment request submittal.

CONSEQUENCES FOR NON-PERFORMANCE:
For each task deliverable not received by the Department at one hundred percent (100%) completion and by the specified due date listed in the Agreement's most recent Project Timeline, the Department will reduce the relevant Task Funding Amount(s) paid to Grantee in proportion to the percentage of the deliverable(s) not fully completed and/or submitted to the Department in a timely manner.

PAYMENT REQUEST SCHEDULE: Following the Grantee's full completion of a task, the Grantee may submit a payment request for cost reimbursement using both Exhibit A, Progress Report Form, and Exhibit C, Payment Request Summary Form. Interim payment requests cannot be made more frequently than quarterly and must be made using Exhibit A, detailing all work progress made during that payment request period, and Exhibit C. Upon the Department's receipt of Exhibit A and C, along with all supporting fiscal documentation and deliverables, the Department's Grant Manager will have ten (10) working days to review and approve or deny the payment request.

PROJECT TIMELINE AND BUDGET DETAIL: The tasks must be completed by, and all deliverables received by, the corresponding task due date listed in the table below. Cost-reimbursable grant funding must not exceed the budget amounts indicated below. Requests for any change(s) must be submitted prior to the current task due date listed in the Project Timeline. Requests are to be sent via email to the Department's Grant Manager, with the details of the request and the reason for the request made clear.

Task No.	Task Title	Budget Category	DEP Amount	Local Amount	Total Amount	Task Start Date	Task Due Date
1	Design and Permitting	Contractual Services	$ 25,000	$ 25,000	$ 50,000	Upon Execution	6/30/2026
2	Construction	Contractual Services	$ 225,000	$ 225,000	$ 450,000	Upon Execution	6/30/2026
		Total:	**$ 250,000**	**$ 250,000**	**$ 500,000**		

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Public Records Requirements

Attachment 4

1. **Public Records.**

a. If the Agreement exceeds $35,000.00, and if Grantee is acting on behalf of Department in its performance of services under the Agreement, Grantee must allow public access to all documents, papers, letters, or other material, regardless of the physical form, characteristics, or means of transmission, made or received by Grantee in conjunction with the Agreement (Public Records), unless the Public Records are exempt from section 24(a) of Article I of the Florida Constitution or section 119.07(1), F.S.

b. The Department may unilaterally terminate the Agreement if Grantee refuses to allow public access to Public Records as required by law.

2. **Additional Public Records Duties of Section 119.0701, F.S., If Applicable.**
For the purposes of this paragraph, the term "contract" means the "Agreement." If Grantee is a "contractor" as defined in section 119.0701(1)(a), F.S., the following provisions apply and the contractor shall:

a. Keep and maintain Public Records required by Department to perform the service.

b. Upon request, provide Department with a copy of requested Public Records or allow the Public Records to be inspected or copied within a reasonable time at a cost that does not exceed the cost provided in Chapter 119, F.S., or as otherwise provided by law.

c. A contractor who fails to provide the Public Records to Department within a reasonable time may be subject to penalties under section 119.10, F.S.

d. Ensure that Public Records that are exempt or confidential and exempt from Public Records disclosure requirements are not disclosed except as authorized by law for the duration of the contract term and following completion of the contract if the contractor does not transfer the Public Records to Department.

e. Upon completion of the contract, transfer, at no cost, to Department all Public Records in possession of the contractor or keep and maintain Public Records required by Department to perform the service. If the contractor transfers all Public Records to Department upon completion of the contract, the contractor shall destroy any duplicate Public Records that are exempt or confidential and exempt from Public Records disclosure requirements. If the contractor keeps and maintains Public Records upon completion of the contract, the contractor shall meet all applicable requirements for retaining Public Records. All Public Records stored electronically must be provided to Department, upon request from Department's custodian of Public Records, in a format specified by Department as compatible with the information technology systems of Department. These formatting requirements are satisfied by using the data formats as authorized in the contract or Microsoft Word, Outlook, Adobe, or Excel, and any software formats the contractor is authorized to access.

f. **IF THE CONTRACTOR HAS QUESTIONS REGARDING THE APPLICATION OF CHAPTER 119, F.S., TO THE CONTRACTOR'S DUTY TO PROVIDE PUBLIC RECORDS RELATING TO THE CONTRACT, CONTACT THE DEPARTMENT'S CUSTODIAN OF PUBLIC RECORDS AT:**

Telephone: **(850) 245-2118**
Email: public.services@floridadep.gov
Mailing Address: **Department of Environmental Protection**
ATTN: Office of Ombudsman and Public Services
Public Records Request
3900 Commonwealth Boulevard, MS 49
Tallahassee, Florida 32399

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Special Audit Requirements
(State and Federal Financial Assistance)

Attachment 5

The administration of resources awarded by the Department of Environmental Protection *(which may be referred to as the "Department", "DEP", "FDEP" or "Grantor", or other name in the agreement*) to the recipient *(which may be referred to as the "Recipient", "Grantee" or other name in the agreement)* may be subject to audits and/or monitoring by the Department of Environmental Protection, as described in this attachment.

MONITORING

In addition to reviews of audits conducted in accordance with 2 C.F.R. Part 200, Subpart F-Audit Requirements, and Section 215.97, F.S., as revised (*see* "AUDITS" below), monitoring procedures may include, but not be limited to, on-site visits by DEP Department staff, limited scope audits as defined by 2 C.F.R. § 200.425, or other procedures. By entering into this Agreement, the recipient agrees to comply and cooperate with any monitoring procedures/processes deemed appropriate by the Department of Environmental Protection. In the event the Department of Environmental Protection determines that a limited scope audit of the recipient is appropriate, the recipient agrees to comply with any additional instructions provided by the Department to the recipient regarding such audit. The recipient further agrees to comply and cooperate with any inspections, reviews, investigations, or audits deemed necessary by the Chief Financial Officer (CFO) or Auditor General.

AUDITS

PART I: FEDERALLY FUNDED

This part is applicable if the recipient is a State or local government or a non-profit organization as defined in 2 C.F.R. § 200.330

1. A recipient that expends $750,000 or more in federal awards in its fiscal year, must have a single or program-specific audit conducted in accordance with the provisions of 2 C.F.R. Part 200, Subpart F. EXHIBIT 1 to this Attachment indicates federal funds awarded through the Department of Environmental Protection by this Agreement. In determining the federal awards expended in its fiscal year, the recipient shall consider all sources of federal awards, including federal resources received from the Department of Environmental Protection. The determination of amounts of federal awards expended should be in accordance with the guidelines established in 2 C.F.R. §§ 200.502-503. An audit of the recipient conducted by the Auditor General in accordance with the provisions of 2 C.F.R. Part 200.514 will meet the requirements of this part.

2. For the audit requirements addressed in Part I, paragraph 1, the recipient shall fulfill the requirements relative to auditee responsibilities as provided in 2 C.F.R. §§ 200.508-512.

3. A recipient that expends less than $750,000 in federal awards in its fiscal year is not required to have an audit conducted in accordance with the provisions of 2 C.F.R. Part 200, Subpart F-Audit Requirements. If the recipient expends less than $750,000 in federal awards in its fiscal year and elects to have an audit conducted in accordance with the provisions of 2 C.F.R. Part 200, Subpart F-Audit Requirements, the cost of the audit must be paid from non-federal resources (i.e., the cost of such an audit must be paid from recipient resources obtained from other federal entities).

4. The recipient may access information regarding the Catalog of Federal Domestic Assistance (CFDA) via the internet at **www.cfda.gov**

PART II: STATE FUNDED

This part is applicable if the recipient is a nonstate entity as defined by Section 215.97(2), *Florida Statutes*.

1. In the event that the recipient expends a total amount of state financial assistance equal to or in excess of $750,000 in any fiscal year of such recipient (for fiscal years ending June 30, 2017, and thereafter), the recipient must have a State single or project-specific audit for such fiscal year in accordance with Section 215.97, F.S.; Rule Chapter 69I-5, F.A.C., State Financial Assistance; and Chapters 10.550 (local governmental entities) or 10.650 (nonprofit and for-profit organizations), Rules of the Auditor General. EXHIBIT 1 to this form lists the state financial assistance awarded through the Department of Environmental Protection by this agreement. In determining the state financial assistance expended in its fiscal year, the recipient shall consider all sources of state financial assistance, including state financial assistance received from the Department of Environmental Protection, other state agencies, and other nonstate entities. State financial assistance does not include federal direct or pass-through awards and resources received by a nonstate entity for Federal program matching requirements.

2. In connection with the audit requirements addressed in Part II, paragraph 1; the recipient shall ensure that the audit complies with the requirements of Section 215.97(8), *Florida Statutes*. This includes submission of a financial reporting package as defined by Section 215.97(2), *Florida Statutes*, and Chapters 10.550 (local governmental entities) or 10.650 (nonprofit and for-profit organizations), Rules of the Auditor General.

3. If the recipient expends less than $750,000 in state financial assistance in its fiscal year (for fiscal year ending June 30, 2017, and thereafter), an audit conducted in accordance with the provisions of Section 215.97, *Florida Statutes*, is not required. In the event that the recipient expends less than $750,000 in state financial assistance in its fiscal year, and elects to have an audit conducted in accordance with the provisions of Section 215.97, *Florida Statutes*, the cost of the audit must be paid from the non-state entity's resources (i.e., the cost of such an audit must be paid from the recipient's resources obtained from other than State entities).

4. For information regarding the Florida Catalog of State Financial Assistance (CSFA), a recipient should access the Florida Single Audit Act website located at https://apps.fldfs.com/fsaa for assistance. In addition to the above websites, the following websites may be accessed for information: Legislature's Website at http://www.leg.state.fl.us/Welcome/index.cfm, State of Florida's website at http://www.myflorida.com/, Department of Financial Services' Website at http://www.fldfs.com/and the Auditor General's Website at http://www.myflorida.com/audgen/.

PART III: OTHER AUDIT REQUIREMENTS

(NOTE: This part would be used to specify any additional audit requirements imposed by the State awarding entity that are solely a matter of that State awarding entity's policy (i.e., the audit is not required by Federal or State laws and is not in conflict with other Federal or State audit requirements). *Pursuant to Section 215.97(8),* Florida Statutes, *State agencies may conduct or arrange for audits of State financial assistance that are in addition to audits conducted in accordance with Section 215.97,* Florida Statutes. *In such an event, the State awarding agency must arrange for funding the full cost of such additional audits.)*

PART IV: REPORT SUBMISSION

1. Copies of reporting packages for audits conducted in accordance with 2 C.F.R. Part 200, Subpart F-Audit Requirements, and required by PART I of this form shall be submitted, when required by 2 C.F.R. § 200.512, by or on behalf of the recipient directly to the Federal Audit Clearinghouse (FAC) as provided in 2 C.F.R. §§ 200.36 and 200.512

   A. The Federal Audit Clearinghouse designated in 2 C.F.R. § 200.501(a) (the number of copies required by 2 C.F.R. § 200.501(a) should be submitted to the Federal Audit Clearinghouse), at the following address:

By Mail:

Federal Audit Clearinghouse
Bureau of the Census
1201 East 10th Street
Jeffersonville, IN 47132

Submissions of the Single Audit reporting package for fiscal periods ending on or after January 1, 2008, must be submitted using the Federal Clearinghouse's Internet Data Entry System which can be found at http://harvester.census.gov/facweb/

2. Copies of financial reporting packages required by PART II of this Attachment shall be submitted by or on behalf of the recipient directly to each of the following:

A. The Department of Environmental Protection at one of the following addresses:

By Mail:
Audit Director
Florida Department of Environmental Protection
Office of Inspector General, MS 40
3900 Commonwealth Boulevard
Tallahassee, Florida 32399-3000

Electronically:
FDEPSingleAudit@dep.state.fl.us

B. The Auditor General's Office at the following address:

Auditor General
Local Government Audits/342
Claude Pepper Building, Room 401
111 West Madison Street
Tallahassee, Florida 32399-1450

The Auditor General's website (http://flauditor.gov/) provides instructions for filing an electronic copy of a financial reporting package.

3. Copies of reports or management letters required by PART III of this Attachment shall be submitted by or on behalf of the recipient directly to the Department of Environmental Protection at one of the following addresses:

By Mail:
Audit Director
Florida Department of Environmental Protection
Office of Inspector General, MS 40
3900 Commonwealth Boulevard
Tallahassee, Florida 32399-3000

Electronically:
FDEPSingleAudit@dep.state.fl.us

4. Any reports, management letters, or other information required to be submitted to the Department of Environmental Protection pursuant to this Agreement shall be submitted timely in accordance with 2 C.F.R. § 200.512, section 215.97, F.S., and Chapters 10.550 (local governmental entities) or 10.650 (nonprofit and for-profit organizations), Rules of the Auditor General, as applicable.

5. Recipients, when submitting financial reporting packages to the Department of Environmental Protection for audits done in accordance with 2 C.F.R. Part 200, Subpart F-Audit Requirements, or Chapters 10.550 (local governmental entities) and 10.650 (non and for-profit organizations), Rules of the Auditor General, should indicate the date and the reporting package was delivered to the recipient correspondence accompanying the reporting package.

PART V: RECORD RETENTION

The recipient shall retain sufficient records demonstrating its compliance with the terms of the award and this Agreement for a period of **five (5)** years from the date the audit report is issued, and shall allow the Department of Environmental Protection, or its designee, Chief Financial Officer, or Auditor General access to such records upon request. The recipient shall ensure that audit working papers are made available to the Department of Environmental Protection, or its designee, Chief Financial Officer, or Auditor General upon request for a period of **three (3)** years from the date the audit report is issued, unless extended in writing by the Department of Environmental Protection.

EXHIBIT 1

FUNDS AWARDED TO THE RECIPIENT PURSUANT TO THIS AGREEMENT CONSIST OF THE FOLLOWING:

Note: If the resources awarded to the recipient represent more than one federal program, provide the same information shown below for each federal program and show total federal resources awarded

Federal Resources Awarded to the Recipient Pursuant to this Agreement Consist of the Following:					
Federal Program A	Federal Agency	CFDA Number	CFDA Title	Funding Amount	State Appropriation Category
Original Agreement	U.S. Department of Treasury	21.027	SLRFP0125	$250,000	152-D 22
Federal Program B	Federal Agency	CFDA Number	CFDA Title	Funding Amount	State Appropriation Category
				$	

Note: Of the resources awarded to the recipient represent more than one federal program, list applicable compliance requirements for each federal program in the same manner as shown below:

Federal Program A	First Compliance requirement: i.e.: (what services of purposes resources must be used for)	
	Second Compliance requirement: i.e.:(eligibility requirement for recipients of the resources)	
	Etc.	
Federal Program Etc.	First Compliance requirement: i.e.: (what services of purposes resources must be used for)	
	Second Compliance requirement: i.e.: (eligibility requirement for recipients of the resources)	
B	Etc.	

Etc.

Note: If the resources awarded to the recipient for matching represent more than one federal program, provide the same information shown below for each federal program and show total state resources awarded for matching.

State Resources Awarded to the Recipient Pursuant to this Agreement Consist of the Following Matching Resources for Federal Programs:					
Federal Program A	Federal Agency	CFDA	CFDA Title	Funding Amount	State Appropriation Category
Federal Program B	Federal Agency	CFDA	CFDA Title	Funding Amount	State Appropriation Category

Note: If the resources awarded to the recipient represent more than one state project, provide the same information shown below for each state project and show total state financial assistance awarded that is subject to section 215.97, F.S.

State Resources Awarded to the Recipient Pursuant to this Agreement Consist of the Following Resources Subject to Section 215.97, F.S.:						
State Program A	State Awarding Agency	State Fiscal Year[1]	CSFA Number	CSFA Title or Funding Source Description	Funding Amount	State Appropriation Category
State Program B	State Awarding Agency	State Fiscal Year[2]	CSFA Number	CSFA Title or Funding Source Description	Funding Amount	State Appropriation Category

Total Award	$250,000	

Note: List applicable compliance requirement in the same manner as illustrated above for federal resources. For matching resources provided by the Department for DEP for federal programs, the requirements might be similar to the requirements for the applicable federal programs. Also, to the extent that different requirements pertain to different amount for the non-federal resources, there may be more than one grouping (i.e. 1, 2, 3, etc.) listed under this category.

For each program identified above, the recipient shall comply with the program requirements described in the Catalog of Federal Domestic Assistance (CFDA) [www.cfda.gov] and/or the Florida Catalog of State Financial Assistance (CSFA) [https://apps.fldfs.com/fsaa/searchCatalog.aspx], and State Projects Compliance Supplement (Part Four: State Projects Compliance Supplement [https://apps.fldfs.com/fsaa/state_project_compliance.aspx]. The services/purposes for which the funds are to be used are included in the Agreement's Grant Work Plan. Any match required by the Recipient is clearly indicated in the Agreement.

[1] Subject to change by Change Order.
[2] Subject to change by Change Order.

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
PROGRAM-SPECIFIC REQUIREMENTS
RESILIENT FLORIDA PROGRAM

ATTACHMENT 6

1. Permits. The Grantee acknowledges that receipt of this grant does not imply nor guarantee that a federal, state, or local permit will be issued for a particular activity. The Grantee agrees to ensure that all necessary permits are obtained prior to implementation of any grant-funded activity that may fall under applicable federal, state, or local laws. Further, the Grantee shall abide by all terms and conditions of each applicable permit for any grant-funded activity. Upon request, the Grantee must provide a copy of all acquired and approved permits for the project.

2. Ineligibility. If the Grantee fails to perform in accordance with the terms and conditions set forth in this Agreement; Attachment 3 (Grant Work Plan), and all other applicable attachments and exhibits, the Grantee shall be ineligible to be considered for funding under the Resilient Florida Program for two (2) consecutive funding cycles. The Department shall make its determination of ineligibility within thirty (30) days of this Agreement's end date and notify the Grantee in writing if determined ineligible. If the failure to perform in accordance with the terms and conditions set forth in this Agreement is due to the Grantee's contractor or subcontractor(s), then the Grantee should submit that documentation in writing to the Department's Grant Manager.

3. Additional Documentation for Contractual Costs. In addition to the documentation requirements in paragraph 11 of Attachment 2 (Subcontracting), and in paragraph 9.c. of Attachment 1 (Contractual Costs (Subcontractors)), Grantee shall provide the following for all subcontractual agreements that the Grantee executes for this project:

    a. A valid link or documentation that outlines their entity's procurement processes as required in Attachment 1, paragraph 9.c; and
    b. A certification statement signed by the Grantee's designated grant manager indicating the procurement process that was utilized per their entities' policies and procedures for all subcontractors. The certification must include a listing of all subcontractor quotes/bids amounts, along with the company name, address, and the details of how and why they made their determinations for those subcontractors that were selected and utilized for this Agreement.

4. Attachment 3, Grant Work Plan, Performance Measures. All deliverables and reports submitted to the Department should be submitted electronically and must be compliant with the Americans with Disabilities Act, also known as "508 Compliant," in all formats provided.

5. Copyright, Patent and Trademark. The Department reserves a royalty-free, nonexclusive, and irrevocable license to reproduce, publish or otherwise use, and to authorize others to use, for state government purposes:

    a. The copyright in any work developed under this Agreement; and
    b. Any rights or copyright to which the Grantee or subcontractor purchases ownership with grant support.

6. Grant funds may not be used to support ongoing efforts to comply with legal requirements, including permit conditions, mitigation, and settlement agreements.

7. Funding Source. With the exception of audiovisuals not intended for presentation to the general public that are produced either as research instruments or for documenting experimentation or findings (unless otherwise required under the special terms of this Agreement), Grantee agrees to include the Department's logo (which

can be found on the Department's website at: https://floridadep.gov or by contacting the Grant Manager for a copy) on all publications, printed reports, maps, audiovisuals (including videos, slides, and websites), and similar materials, as well as the following language:

"This work was funded in part through a grant agreement from the Florida Department of Environmental Protection's Office of Resilience and Coastal Protection Resilient Florida Program. The views, statements, findings, conclusions, and recommendations expressed herein are those of the author(s) and do not necessarily reflect the views of the State of Florida or any of its subagencies."

The next printed line must identify the month and year of the publication.

8. Final Project Report. The Grantee shall submit Exhibit F, Final Project Report Form, prior to requesting final payment. The Final Project Report may be submitted in lieu of the final quarterly status report, only in instances where the next quarterly report falls after the project's completion date.

ATTACHMENT 8
Contract Provisions for Coronavirus State and Local Fiscal Recovery Funds (SLFRF) Agreements

The Department, as a Non-Federal Entity as defined by 2 CFR §200.69, shall comply with the following provisions, where applicable. For purposes of this Grant Agreement between the Department and the Grantee, the term "Recipient" shall mean "Grantee."

Further, the Department, as a pass-through entity, also requires the Grantee to pass on these requirements to all lower tier subrecipients/contractors, and to comply with the provisions of the award, the SLFRF implementing regulation, including applicable provisions of the OMB Uniform Guidance (2 CFR Part 200), and all associated terms and conditions. Therefore, Grantees must include these requirements in all related subcontracts and/or sub-awards. Grantees can include these requirements by incorporating this Attachment in the related subcontract and/or sub-awards, however for all such subcontracts and sub-awards, the Grantee shall assume the role of the Non-Federal Entity and the subrecipients shall assume the role of the Recipient.

2 CFR PART 200 APPENDIX 2 REQUIREMENTS

1. Administrative, Contractual, and Legal Remedies

The following provision is required if the Agreement is for more than $150,000. In addition to any of the remedies described elsewhere in the Agreement, if the Recipient materially fails to comply with the terms and conditions of this Contract, including any Federal or State statutes, rules, or regulations, applicable to this Contract, the Non-Federal Entity may take one or more of the following actions.

A. Temporarily withhold payments pending correction of the deficiency by the Recipient.
B. Disallow (that is, deny both use of funds and any applicable matching credit for) all or part of the cost of the activity or action not in compliance.
C. Wholly or partly suspend or terminate this Contract.
D. Take other remedies that may be legally available.

The remedies identified above, do not preclude the Recipient from being subject to debarment and suspension under Presidential Executive Orders 12549 and 12689. The Non-Federal entity shall have the right to demand a refund, either in whole or part, of the funds provided to the Recipient for noncompliance with the terms of this Agreement.

2. Termination for Cause and Convenience

Termination for Cause and Convenience are addressed elsewhere in the Agreement.

3. Equal Opportunity Clause

The following provision applies if the agreement meets the definition of "federally assisted construction contract" as defined by 41 CFR Part 60-1.3:

During the performance of this Agreement, the Recipient agrees as follows:

A. The Recipient will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, gender identity, or national origin. The Recipient will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, sexual orientation, gender identity, or national origin. Such action shall include, but not be limited to the following:
    i. Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Recipient agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.
B. The Recipient will, in all solicitations or advertisements for employees placed by or on behalf of the Recipient, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, or national origin.
C. The Recipient will not discharge or in any other manner discriminate against any employee or applicant for employment because such employee or applicant has inquired about, discussed, or disclosed the compensation of the employee or applicant or another employee or applicant. This provision shall not apply to instances in which an employee who has access to the compensation information of other employees or applicants as a part of such employee's

essential job functions discloses the compensation of such other employees or applicants to individuals who do not otherwise have access to such information, unless such disclosure is in response to a formal complaint or charge, in furtherance of an investigation, proceeding, hearing, or action, including an investigation conducted by the employer, or is consistent with the Recipient's legal duty to furnish information.

D. The Recipient will send to each labor union or representative of workers with which he has a collective bargaining agreement or other Agreement or understanding, a notice to be provided advising the said labor union or workers' representatives of the Recipient's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

E. The Recipient will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

F. The Recipient will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

G. In the event of the Recipient's noncompliance with the nondiscrimination clauses of this Agreement or with any of the said rules, regulations, or orders, this Agreement may be canceled, terminated, or suspended in whole or in part and the Recipient may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

H. The Recipient will include the portion of the sentence immediately preceding paragraph (1) and the provisions of paragraphs (1) through (8) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The Recipient will take such action with respect to any subcontractor purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance.

4. Contract Work Hours and Safety Standards Act

Where applicable, if the Agreement is in excess of $100,000 and involves the employment of mechanics or laborers, the Recipient must comply with 40 U.S.C. 3702 and 3704, as supplemented by Department of Labor regulations (29 CFR Part 5). Under 40 U.S.C. 3702 of the Act, each Recipient must be required to compute the wages of every mechanic and laborer on the basis of a standard work week of 40 hours. Work in excess of the standard work week is permissible provided that the worker is compensated at a rate of not less than one and a half times the basic rate of pay for all hours worked in excess of 40 hours in the work week. The requirements of 40 U.S.C. 3704 are applicable to construction work and provide that no laborer or mechanic must be required to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous. These requirements do not apply to the purchases of supplies or materials or articles ordinarily available on the open market, or contracts for transportation or transmission of intelligence.

5. Rights to Inventions Made Under Agreement

If the Federal award meets the definition of “funding agreement” under 37 CFR §401.2 (a) and the Non- Federal Entity or subrecipient wishes to enter into a contract with a small business firm or nonprofit organization regarding the substitution of parties, assignment or performance of experimental, developmental, or research work under that “funding agreement,” the Non-Federal Entity or subrecipient must comply with the requirements of 37 CFR Part 401, “Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements,” and any implementing regulations issued by the awarding agency.

6. Clean air Act (42 U.S. C. 7401-7671q.), the Federal Water Pollution Control Act (33 U.S.C. 1251-1387), and EPA Regulations

If the Agreement is in excess of $100,000, the Recipient shall comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 U.S.C. 7401-7671q) and the Federal Water Pollution Control Act as amended (33 U.S.C. 1251-1387), and by the EPA (40 CFR Part 15). Violations must be reported to the

Federal Awarding Agency and the Regional Office of the Environmental Protection Agency (EPA).

i. The Grantee shall include these requirements for the Clean Air Act and the Federal Water Pollution Act in each subcontract exceeding $100,000 financed in whole or in part with SLFRF funds.

7. Debarment and Suspension (Executive Orders 12549 and 12689)

The Recipient certifies that it is not listed on the governmentwide exclusions in the System for Award Management (SAM), in accordance with the OMB guidelines at 2 CFR 180 and 2 CF 1200 that implement Executive Orders 12549 (3 CFR part 1986 Comp., p. 189) and 12689 (3 CFR part 1989 Comp., p. 235), "Debarment and Suspension."

8. Byrd Anti-Lobbying Amendment (31 U.S.C. 1352)

The Recipient certifies that it will not and has not used Federal 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. If applicable, the Recipient shall disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award, using form SF-LLL, available at:
https://apply07.grants.gov/apply/forms/sample/SFLLL_1_2_P-V1.2.pdf.

i. Grantees who apply or bid for an award of $100,000 or more shall file the required certification. Each tier certifies to the tier above that it will not and has not used federal 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.

9. Procurement of Recovered Materials

The Recipient must comply with Section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act as described in 2 CFR part 200.322.

10. Prohibition on Certain Telecommunications and Video Surveillance Services or Equipment

The Recipients and subrecipients are prohibited from obligating or expending loan or grant funds to procure or obtain; extend or renew a contract to procure or obtain; or enter into a contract (or extend or renew a contract) to procure or obtain equipment, services, or systems that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as partof any system. See Section 889 of Public Law 115-232 (National Defense Authorization Act 2019). Also, see 2 CFR 200.216 and 200.471.

11. Domestic Preferences for Procurement

The Recipients and subrecipients must, to the greatest extent practical, give preference to the purchase, acquisition, or use of goods, products, or materials produced in the United States in accordance with 2 CFR 200.322.

ADMINISTRATIVE

1. General Federal Regulations

Recipients shall comply with the regulations listed in 2 CFR 200, 48 CFR 31, and 40 U.S.C. 1101 *et seq.*

2. Rights to Patents and Inventions Made Under a Contract or Agreement

Rights to inventions made under this assistance agreement are subject to federal patent and licensing regulations, which are codified at Title 37 CFR Part 401 and Title 35 U.S.C. 200 through 212.

3. Compliance with the Trafficking Victims Protection Act of 2000 (2 CFR Part 175)

Recipients, their employees, subrecipients under this award, and subrecipients' employees may not:

A. Engage in severe forms of trafficking in persons during the period of time that the award is in effect;
B. Procure a commercial sex act during the period of time that the award is in effect; or
C. Use forced labor in the performance of the award or subawards under the award.

4. Whistleblower Protection

Recipients shall comply with U.S.C. §4712, Enhancement of Recipient and Subrecipient Employee Whistleblower Protection. This requirement applies to all awards issued after July 1, 2013 and effective December 14, 2016 has been permanently extended (Public Law (P.L.) 114-261).

A. This award, related subawards, and related contracts over the simplified acquisition threshold and all

employees working on this award, related subawards, and related contracts over the simplified acquisition threshold are subject to the whistleblower rights and remedies in the pilot program on award recipient employee whistleblower protections established at 41 U.S.C. 4712 by section 828 of the National Defense Authorization Act for Fiscal Year 2013 (P.L. 112-239).

B. Recipients, their subrecipients, and their contractors awarded contracts over the simplified acquisition threshold related to this award, shall inform their employees in writing, in the predominant language of the workforce, of the employee whistleblower rights and protections under 41 U.S.C. 4712.

C. The Recipient shall insert this clause, including this paragraph C, in all subawards and in contracts over the simplified acquisition threshold related to this award; best efforts should be made to include this clause, including this paragraph C in any subawards and contracts awarded prior to the effective date of this provision.

5. Notification of Termination (2 CFR § 200.340)

In accordance with 2 CFR § 200.340, in the event that the Agreement is terminated prior to the end of the period of performance due to the Recipient's or subcontractor's material failure to comply with Federal statutes, regulations or the terms and conditions of this Agreement or the Federal award, the termination shall be reported to the Office of Management and Budget (OMB)-designated integrity and performance system, accessible through System for Award Management (SAM) currently the Federal Awardee Performance and Integrity Information System (FAPIIS). The Non-Federal Entity will notify the Recipient of the termination and the Federal requirement to report the termination in FAPIIS. See 2 CFR § 200.340 for the requirements of the notice and the Recipient's rights upon termination and following termination.

6. Additional Lobbying Requirements

A. The Recipient certifies that no funds provided under this Agreement have been used or will be used to engage in the lobbying of the Federal Government or in litigation against the United States unless authorized under existing law.

B. The Lobbying Disclosure Act of 1995, as amended (2 U.S.C. §1601 et seq.), prohibits any organization described in Section 501(c)(4) of the Internal Revenue Code, from receiving federal funds through an award, grant (and/or subgrant) or loan unless such organization warrants that it does not, and will not engage in lobbying activities prohibited by the Act as a special condition of such an award, grant (and/or subgrant), or loan. This restriction does not apply to loans made pursuant to approved revolving loan programs or to contracts awarded using proper procurement procedures.

C. Pursuant to 2 CFR §200.450 and 2 CFR §200.454(e), the Recipient is hereby prohibited from using funds provided by this Agreement for membership dues to any entity or organization engaged in lobbying activities.

7. Increasing Seat Belt Use in the United States

Pursuant to Executive Order 13043, 62 FR 19217 (Apr. 18, 1997), Grantee is encouraged to adopt and enforce on-the-job seat belt policies and programs for its employees when operating company-owned, rented or personally owned vehicles.

8. Reducing Text Messaging While Driving

Pursuant to Executive Order 13513, 74 FR 51225 (Oct. 6, 2009), Grantee is encouraged to adopt and enforce policies that ban text messaging while driving and establish workplace safety policies to decrease accidents caused by distracted drivers.

9. Uniform Relocation Assistance and Real Property Acquisitions Act of 1970

Where applicable, 42 U.S.C. §§ 4601-4655 and implementing regulations apply to this Agreement.

COMPLIANCE WITH ASSURANCES

1. Assurances

Recipients shall comply with all applicable assurances made by the Department or the Recipient to the Federal Government during the Grant application process.

FEDERAL REPORTING REQUIREMENTS

1. FFATA

Grant Recipients awarded a new Federal grant greater than or equal to $30,000 awarded on or after October1, 2015, are subject to the FFATA the Federal Funding Accountability and Transparency Act ("FFATA") of 2006. The FFATA legislation requires that information on federal awards (federal financial assistance and expenditures) be made available to the public via a single, searchable website, which is www.USASpending.gov. The Grantee agrees to provide the information necessary, within one (1) month of execution, for the Department to comply with this requirement.

DEPARTMENT OF TREASURY-SPECIFIC

1. Civil Rights Compliance

Recipients of Federal financial assistance from the Treasury are required to meet legal requirements relating to nondiscrimination and nondiscriminatory use of Federal funds. Those requirements include ensuring that entities receiving Federal financial assistance from the Treasury do not deny benefits or services or otherwise discriminate on the basis of race, color, national origin, (including limited English proficiency), disability, age, or sex (including sexual orientation and gender identity), in accordance with the following: Title VI of Civil Rights Acts of 1973 (Section 504), Public Law 93-112, as amended by Public Law 93-516, 29 U.S.C. 794; Title IX of the Education Amendments of 1972 (Title IX), 20 U.S.C. 1681 et seq., and the Department's implementing regulations, 31 CFR 28; Age Discrimination Act of 1975, Public Law 94-135, 42 U.S.C. 6101 et seq., and the Department of Treasury implementing regulations at 31 CFR part 23.

The Department of Treasury will request information on recipients' compliance with Title VI of the Civil Rights Act of 1964, as applicable, on an annual basis. This information may include a narrative descripting the recipient's compliance with Title VI, along with other questions and assurances.

SLFRF-SPECIFIC

1. Period of Performance

All funds from SLFRF must be obligated by December 31, 2024 and expended by December 31, 2026.

2. Equipment and Real Property Management

Any purchase of equipment or real property with SLFRF funds must be consistent with the Uniform Guidance at 2 CFR Part 200, Subpart D. Equipment and real property acquired under this program must be used for the originally authorized purpose. Consistent with 2 CFR 200.311 and 2 CFR 200.313, any equipment or real property acquired using SLFRF funds shall vest in the non-Federal entity. Any acquisition and maintenance of equipment or real property must also be in compliance with relevant laws and regulations.

SLFRF INFRASTRUCTURE PROJECTS

For all infrastructure projects, the Grantee shall provide the following project information on a quarterly basis to the Department:

i. Projected/actual construction start date (month/year)
ii. Projected/actual initiation of operation date (month/year)
iii. Location details

SLFRF INFRASTRUCTURE PROJECTS OVER $10 MILLION

For infrastructure projects over $10 million, the following provisions apply:

1. Wage Certification

Grantees may provide a certification that all laborers and mechanics employed by Grantee in the performance of such project are paid wages at the rates not less than those prevailing, as determined by the U.S. Secretary of Labor in accordance with the Davis-Bacon Act, for the corresponding classes of laborers and mechanics employed projected of a character similar to the contract work in the civil subdivision of Florida in which the work is to be performed. If the Grantee does not provide such certification, the Grantee must provide a project employment and local impact report detailing:

i. The number of employees of contractors and sub-contractors working on the project;
ii. The number of employees on the project hired directly and hired through a third party;
iii. The wages and benefits of workers on the project by classification; and
iv. Whether those wages are at rates less than those prevailing.

Grantee must maintain sufficient records to substantiate this information upon request.

2. Project Labor Agreements

Grantees may provide a certification that the project includes a project labor agreement, meaning a pre-hire collective bargaining agreement consistent with the section 8(f) of the National Labor Relations Act (29 U.S.C. 158(f)). If the Grantee does not provide such certification, the Grantee must provide a project workforce continuity plan, detailing:

i. How the Grantee will ensure the project has ready access to a sufficient supply of

appropriately skilled and unskilled labor to ensure high-quality construction throughout the life of the project;

ii. How the Grantee will minimize risks of labor disputes and disruptions that would jeopardize timeliness and cost-effectiveness of the project;

iii. How the Grantee will provide a safe and healthy workplace that avoids delays and costs associatedwith workplace illnesses, injuries, and fatalities;

iv. Whether workers on the project will receive wages and benefits that will secure and appropriately skilled workforce in the context of the local or regional labor market; and

v. Whether the project has completed a labor agreement.

3. Other Reporting Requirements

Grantees must report whether the project prioritizes local hires and whether the project has Community Benefit Agreement, with a description of any such agreement, if applicable.

SLFRF WATER & SEWER PROJECTS

For water and sewer projects, Grantees shall provide the following information to the Department once the project starts:

i. National Pollutant Discharge Elimination System (NPDES) Permit Number

ii. Public Water System (PWS) ID number

iii. Median Household Income of service area

iv. Lowest Quintile Income of the service area

DEPARTMENT OF ENVIRONMENTAL PROTECTION
Resilient Florida Program
Progress Report Form

Exhibit A

DEP Agreement No.:	22FRP75		
Project Title:	Wastewater Lift Station LS 0637 Hardening Improvements		
Grantee Name:	Palm Beach County Board of County Commissioners		
Grantee Address:			
Grantee's Grant Manager:		**Telephone No.:**	
Reporting Period:	(MM/DD/YYYY – MM/DD/YYYY)		

INSTRUCTIONS: Provide the following information for **all tasks and deliverables identified in Attachment 3, Grant Work Plan:** Description of the work performed during the reporting period, problems encountered, problem resolutions, scheduled updates, proposed work for the next reporting period, and percentage of the work that has been completed to date.
NOTE: Use as many pages as necessary to cover all tasks in the Grant Work Plan.

The following format should be followed:

Task 1:
Progress for this reporting period:
Identify any delays or problems encountered:
Percentage of task completed:

Task 2:
Progress for this reporting period:
Identify any delays or problems encountered:
Percentage of task completed:

Task 3:
Progress for this reporting period:
Identify any delays or problems encountered:
Percentage of task completed:

Task 4:
Progress for this reporting period:
Identify any delays or problems encountered:
Percentage of task completed:

This report is submitted in accordance with the reporting requirements of the above DEP Agreement No. and accurately reflects the activities associated with the project.

Signature of Grantee's Grant Manager (or successor) Date

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
RESILIENT FLORIDA GRANT PROGRAM
EXHIBIT C
PAYMENT REQUEST SUMMARY FORM

The current **Exhibit C, Payment Request Summary Form** for the Resilient Florida Program grant agreements can be found on the Department's website at the link below. Each payment request must be submitted on the current form. The Department will notify grantees of any substantial changes to Exhibit C that occur during the grant agreement period.

https://floridadep.gov/Resilient-Florida-Program/Grants

EXHIBIT F

DEP AGREEMENT NO. 22FRP75

WASTEWATER LIFT STATION LS 0637 HARDENING IMPROVEMENTS

Palm Beach County Board of County Commissioners

Final Project Report

This report is funded in part through a grant agreement from the Florida Department of Environmental Protection. The views, statements, findings, conclusions, and recommendations expressed herein are those of the author(s) and do not necessarily reflect the views of the State of Florida or any of its subagencies.

Part I. Executive Summary

Part II. Methodology

Part III. Outcome

Include evaluation of project's ability to meet goals and expected performance measures and provide explanation for why goals were not met, if applicable. Identify successful outcomes, areas for improvement, and quantifiable metrics as a result of the project.

Part IV. Further Recommendations

Instructions for completing Attachment F Final Project Report Form:

DEP AGREEMENT NO.: This is the number on your grant agreement.

GRANTEE NAME: Enter the name of the grantee's agency.

PROJECT TITLE: Enter the title shown on the first page of the grant agreement.

MONTH & YEAR: Enter month and year of publication

The final Project Report must contain the following sections: Executive Summary, Methodology, Outcome, and Further Recommendations. The Final Project Report must comply with the publication requirements in the grant agreement. Please limit the final project report to no more than five (5) pages. One electronic copy shall be submitted to the Department's Grant Manager for approval. Final payment will be held until receipt and approval of the Final Project Report.

Questions regarding completion of the Final Project Report should be directed to the Department's Grant Manager, identified in paragraph 18 of this agreement.

Florida Department of Environmental Protection

EXHIBIT G

PHOTOGRAPHER RELEASE FORM
FOR PHOTOGRAPHS, VIDEOS, AUDIO RECORDINGS AND ARTWORKS

DEP AGREEMENT NO: 22FRP75

RELEASE FORM FOR PHOTOGRAPHS, VIDEOS, AUDIO RECORDINGS AND ARTWORKS

Owner/Submitter's Name: _____

Address: _____

City: _____ **State:** _____ **Zip:** _____

Phone Number: ( ) _____ **Email:** _____

License and Indemnification

I certify that I am the owner of the photograph(s), video(s), audio recording(s) and/or artwork(s) being submitted and am eighteen (18) years of age or older.

I hereby grant to the Florida Department of Environmental Protection the royalty-free and non-exclusive right to distribute, publish and use the photograph(s), video(s), audio recording(s) and art work(s) submitted herewith (the "Work") to promote the Florida Department of Environmental Protection. Uses may include, but are not limited to:

1. Promotion of FDEP (including, but limited to publications, websites, social media venues, advertisements, etc.); and
2. Distribution to the media; and
3. Use in commercial products.

The Florida Department of Environmental Protection reserves the right to use/not use any Work as deemed appropriate by the Florida Department of Environmental Protection. No Work will be returned once submitted.

I hereby acknowledge that the Florida Department of Environmental Protection shall bear no responsibility whatsoever for protecting the Work against third-party infringement of my copyright interest or other intellectual property rights or other rights I may hold in such Work, and in no way shall be responsible for any losses I may suffer as a result of any such infringement; and I hereby represent and warrant that the Work does not infringe the rights of any other individual or entity.

I hereby unconditionally release, hold harmless and indemnify the Florida Department of Environmental Protection, its employees, volunteers, and representatives of and from all claims, liabilities and losses arising out of or in connection with the Florida Department of Environmental Protection's use of the Work. This release and indemnification shall be binding upon me, and my heirs, executors, administrators and assigns.

I have read and understand the terms of this release.

Owner signature: _____ **Date:** _____

Photo/video/audio/artwork/recording file name(s): _____

Location of photo/video/audio recording/artwork: _____

Name of person accepting Work submission _____

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
RESILIENT FLORIDA GRANT PROGRAM
CONTRACTUAL SERVICES CERTIFICATION

Exhibit H

Required for all grant agreements that include Contractual Services as an expenditure category.

DEP Agreement Number: 22FRP75

Project Title: Wastewater Lift Station LS 0637 Hardening Improvements

Grantee: Palm Beach County Board of County Commissioners

Prior to making a request for payment of contractual services, the Grantee must provide the following to the Department Grant Manager then responsible for the Grantee's Resilient Florida Grant Program grant agreement:

1. Documentation of the Grantee's procurement process, as consistent with Attachment 1, Paragraph 9(c) and Attachment 2, Paragraph 11;
2. A list of all subcontractor quote and/or bid amounts (as applicable), including the company name and address for each subcontractor;
3. An explanation of how and why the Grantee made their determination(s) for the subcontractor(s) selected to perform certain task(s) under the Grantee's relevant grant agreement; and
4. This Exhibit H, signed and dated by the Grantee's own (non-Departmental) grant manager.

By signing below, I certify that, on behalf of the Grantee, I have provided all the information required by items 1. through 3. of this exhibit, as stated above, to the Department Grant Manager currently responsible for the Grantee's Resilient Florida Grant Program grant agreement. I also certify that the procurement process the Grantee utilized follows all of said Grantee's non-Departmental policies and procedures for subcontractors.

_____
Grantee's Grant Manager Signature

_____
Print Name

_____
Date

This page intentionally left blank.

SECURITY

Criminal History Records Check Ordinance

The Palm Beach County Criminal History Records Check Ordinance Palm Beach County Code Section 2-371 - 2-377. Pursuant to the ordinance, the County will conduct fingerprint based criminal history record checks on all employees of contractors and subcontractors of contractors, vendors, repair persons and delivery persons entering a facility determined to be either a critical facility ("Critical Facilities") or criminal justice information facility ("CJI Facility"). Critical Facilities and CJI Facilities and the corresponding list of disqualifying offenses are identified in Resolution R2013-1421 and is available upon request. **In October, 2013, compliance with the requirements of the U.S. Federal Bureau of Investigations Criminal Justice Information (CJI) security policy was added to the ordinance and has a broad list of disqualifying offenses.** The Bidder understands that is solely responsible for the financial, schedule and/or staffing implications of compliance with this ordinance, and represents and warrants that its bid price includes any direct or indirect costs (not including the FDLE/FBI fees which will be paid directly by the County) of compliance with this county code. Refer to department specific instructions in this section for applicability of criminal history records check for this project.

Individuals passing the background check will be issued a badge. Contractor shall make every effort to collect the badges of its employees and its subcontractors' employees upon conclusion of the contract work and return them to the county. If the contractor or its subcontractor terminates an employee who has been issues a badge, the contractor must notify the county within 2 hours. At the time of termination, the contractor shall retrieve the badge and return it to the county in a timely manner. The county reserves the right to suspend any contractor that; 1) does not comply with the requirements of county code section 2-2371 - 2-377 as amended, 2) does not contact the county regarding a terminated contractor employee or subcontractor employee within the stated time, or 3) fails to make a good faith effort in attempting to comply with the badge retrieval policy. The Contractor will be charged a nominal fee for lost cards.

<u>Department Specific Instructions</u>

This project is subject to:

[**X**] Critical Facilities Background Check
[ ] CJI Facilities Background Check
[ ] No Background Check

The contractor shall comply with the following requirements:

1) CONFIDENTIALITY NOTICE 2

2) PROJECT MANAGER INSTRUCTIONS 3-4

3) CONTRACTOR INSTRUCTIONS 5-6

4) ACKNOWLEDGEMENT 7

CONFIDENTIALITY NOTICE

Project Name: Improvements to Lift Stations 980, 981, and 1051; Lift Station Rehabilitation Bid Package 1, LS0637

PBCWUD Project No.: 21-059R

Pursuant to Florida Statute 119.071(3), I Stephen Decker as authorized representative of B&B Underground Construction Inc., (hereinafter "Consultant/Contractor") agree that Consultant/Contractor shall maintain the exempt and confidential status of all security system plans, building plans, blueprints, schematic drawings, and diagrams, including draft, preliminary and final formats which depict the internal layout and structural elements of the water, wastewater, reclaimed water treatment and/or support facilities owned or operated by Palm Beach County. Consultant/Contractor further agrees the documents which shall remain exempt from disclosure pursuant to Florida Statute 119.071(3) shall not be used for any purpose other than what was contracted for and shall not be disclosed to any other party.

Also in accordance with Florida Statutes 153 and 281.301.

By: _____
(Signature of Consultant/Contractor)

Stephen Decker, P.E.
(Print Name and Title of Person Executing on behalf of Consultant/Contractor)

STATE OF FLORIDA
COUNTY OF Palm Beach

The foregoing instrument was acknowledged before me by means of ☑ physical presence or ☐ online notarization, this 8 day of July, 2024, by Stephen Decker, who is ☑ personally known to me or ☐ has produced _____ as identification.

LAURA DEMILLO
Notary Public - State of Florida
Commission # HH 120510
My Comm. Expires May 19, 2025
Bonded through National Notary Assn.

Laura Demillo
(Signature of Notary Public – State of Florida)

(Print, Type, or Stamp Commissioned Name of Notary Public)

PROJECT MANAGER INSTRUCTIONS

All Project Managers will follow the steps set forth below when requesting either a Critical Facility or CJI photo ID or access card for contractor and sub-contractor personnel.

Complete the Project Information Form (an optional internal information collection tool). Link to form: http://wudengineering/PDS/Shared%20Documents/Bid%20Award/Bid%20Construction%20Contract/Project%20Information%20Form.pdf

PROJECT INFORMATION FORM

TO BE COMPLETED BY THE PROJECT MANAGER

PROJECT NUMBER OR PURCHASE ORDER NUMBER:	
PROJECT NAME OR PURCHASE ORDER REFERENCE:	
PROJECT LOCATION:	
BRIEF DESCRIPTION OF PROJECT OR PROCUREMENT:	
FACILITY TYPE:	☐ Critical Facility ☐ CJI Facility
START DATE:	END DATE:
CONTRACTING COMPANY or SUBCONTRACTING COMPANY:	
FEI/EIN Number	
CONTRACTING or SUBCONTRACTING COMPANY ADDRESS:	
CONTRACTOR CONTACT:	
CONTRACTOR EMAIL AND PHONE:	
HOW MANY INDIVIDUALS WILL BE SENT FOR UNESCORTED ACCESS:	

Contractor/subcontractor employees are to be listed on the Contractor/Subcontractor form

INSTRUCTIONS:

1. We cannot process record checks for contractors until we receive the **Project Information** and **Contractor/Subcontractor** forms. You may fax the form to the Access Section at (561) 233-0790 or email the form to FDO-ACCESS-SUPPORT@pbcgov.org, so that we can begin to schedule the record checks. Be sure to allow sufficient time for the contractor employees to complete the record checks and for the results to be received, before the scheduled work can begin.
2. The individual, who is responsible for initiating and/or monitoring the project or procurement (e.g., project manager, crew chief, etc.), should sign the form. This individual will become the ESS/Access Section's primary contact during the project or procurement. The Project Manager will notify the company when the form is received, so that contractor employees may schedule appointments for fingerprinting.
3. Complete a separate Project Information form for each contractor and each subcontractor that will be working the project. Fill in all of the requested information, including the start and end date and estimated number of employees who will need criminal history record checks.
4. Complete a separate Contractor/Subcontractor form for each contractor and each subcontractor that you will be sending for criminal history records check. Attach as many sheets as necessary. You may attach a typed or computer generated list provided by the contractor/subcontractor. The Project Manager should review the list to verify if the number of contractor/subcontractor employees is reasonable for the work to be performed.

I ACKNOWLEDGE THAT I HAVE READ THE INSTRUCTIONS AND UNDERSTAND MY RESPONSIBILITIES AS A PROJECT MANAGER:

REQUESTED BY (Print or Type Name):

REQUESTING DEPARTMENT/DIVISION:

AUTHORIZED SIGNATURE: DATE:

WORK PHONE: CELL PHONE (If Applicable):

WUD 4/9/2019

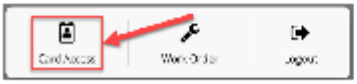
ESS Access – Card Tracking System
Project Manager Cheat Sheet

Login

Go to the **eFDO** site on the FDO SharePoint page http://pbcportal.pbcgov.org/fdo/default.aspx.



Click the **Card Access** icon. This will bring you to your **Project Dashboard**.



There are 4 main steps for requesting a badge:

Step 1: The Project Manager will create the new project

1. Click the **Create New Project** button, enter the required data then click **Save**. The project will display on your Dashboard.

Step 2: The Project Manager will add the Company to the project

1. Click the **Add Company/Send Request** button.
2. Select an existing company or create a new one.
3. Click the **Save & Send Request** button. This will send an email to the company to add contractors.



Step 3: The Company will add the contractors (this step will be completed by the Company)

The Company will receive and email, click a link and enter their **Verification Code**. This will take them to the Contractor/Subcontractor From. From there they will use the **Add Contractor** button and enter Contractor(s) information. Once all Contractors have been added, they click the **Submit to PM** button.

Step 4: The Project Manager will add permission

1. Next to the Company name, click the **Review Request** button.
2. Click inside the **Permission Type(s)** field then click the permission to add it. To add another permission, click inside the field again and select the other permission. The background check is run based on your selection of CJIS and/or Critical.
3. Click **Submit to ESS**.





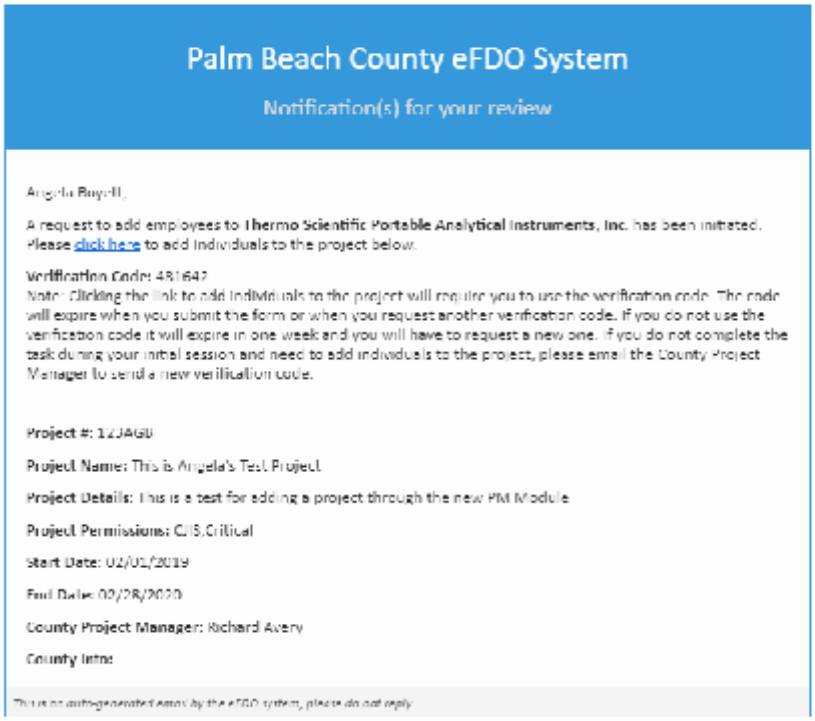
From this point on, the existing process for badge creation remains the same.

CONTRACTOR INSTRUCTIONS

eFDO Quick Guide
ESS Access – Card Tracking System
Vendor Company User Guide

Vendor / Company - Add Contractors

An email is sent to the company to add contractors. The email contains a link to the website where contractors will be added. They will need the Verification Code in order to login to the website.



Palm Beach County eFDO System

Notification(s) for your review

Angela Boyett,

A request to add employees to **Thermo Scientific Portable Analytical Instruments, Inc.** has been initiated. Please click here to add individuals to the project below.

Verification Code: 481647
Note: Clicking the link to add individuals to the project will require you to use the verification code. The code will expire when you submit the form or when you request another verification code. If you do not use the verification code it will expire in one week and you will have to request a new one. If you do not complete the task during your initial session and need to add individuals to the project, please email the County Project Manager to send a new verification code.

Project #: 12JAGD

Project Name: This is Angela's Test Project

Project Details: This is a test for adding a project through the new PM Module

Project Permissions: CJIS,Critical

Start Date: 02/02/2019

End Date: 02/28/2020

County Project Manager: Richard Avery

County Info:

This is an auto-generated email by the eFDO system, please do not reply

1. **Click the "click here" link in the email to go to the company portion of the application.**



Angela Boyett,

A request to add employees to **Thermo Scientific Portable Analytical Instruments, Inc.** has been initiated. Please click here to add individuals to the project below.

Verification Code: 481642

Notification for access to Critical Facilities – Criminal History Records Check (CHRC)_ can take approximately to one week for results.

Notification for access to CJI Facilities - CHRC can take two weeks for results. In addition to the normal process time (two weeks), it is important to inform your contractors/subcontractors that anyone with disqualifying offense(s) who requests an escort may take longer to evaluate and approve. Overall contractors/subcontractors should plan for 4-6 weeks for results.

An appointment with Electronic Services and Security (ESS) is required to complete a CHRC. To make appointment with ESS call 561-233-0750.

Notification of all terminated employees must be made to the PM within 2 hours and must be immediately reported after that to the Access Section. Any terminated employees must surrender their IDs and/or access cards. Surrendered cards are to be returned to the Access Section.

Instruction on IDs and/or access card surrender for temporary or permanent surrender.

After the ESS has completed the required CHRC and the required ID and/or access card is ready, the Project Manager will be contacted and requested to pick up.

The Project Manager is responsible for the distribution of the ID and/or access cards to the contractor and subcontractor personnel and to ensure the contractor/subcontractor personnel wear the CJIS ID while on-site. The PM can make arrangements with ESS Access Section to have the Contractor pick up the ID badges or access cards. However, if the PM is going to make these alternate arrangements the PM is responsible to send written notice to ESS as to the name of the Contractor employee that is responsible for pick up. Only persons that are compliant with the access requirements for the applicable critical facility or CJI can be designated to pick-up cards.

No access card will be activated or "turned on" until 1) the access card is in the hands of the individual it belongs to; and 2) the call is made to activate per the instructions that will be given with each access card.

The Project Manager is responsible to collect all contractor/subcontractor IDs and/or access cards either at the completion of the project or as each subcontractor completes their portion of the work. The Project Manager is required to complete the ID/access card surrender form and return all ID/access cards to ESS within a reasonable amount of time from contractor/subcontractor completion of work.

BY INITIALING EACH ITEM BELOW, I AGREE THAT I HAVE READ AND UNDERSTAND ALL ITEMS:

_____ I have been provided the opportunity to review all disqualifying offenses at the time of my application submission and fingerprinting and I have read and understand the list.

_____ I will notify the Access Section within 24 hours if I am arrested while I am allowed to work in Critical or CJI Facilities.

_____ The information I have provided on this application is true, complete and correct to the best of my knowledge and is provided in good faith.

_____ I understand that this application will be sent to the Palm Beach Sheriff's Office for CJI Facility requests.

_____ I understand that my fingerprints will be transmitted electronically to the Florida Department of Law Enforcement and the Federal Bureau of Investigation for a state and national criminal history record check. I understand that if there is an active warrant for my arrest, I could be arrested. I release Palm Beach County from any liability whatsoever in connection with the criminal history record check with regards to my request to work unescorted in Critical or CJI Facilities.

_____ I understand that my employer is required to utilize good faith efforts to notify the County when I am no longer working in a County facility or CJI facility and request my badge and monitoring of my background check be terminated. I further understand that I can send the same information to the ESS Access Section via a signed letter or request to ESS Access Section at 2633 Vista Parkway, West Palm Beach, Florida 33411.

INITIAL EACH ITEM THAT PERTAINS TO YOUR APPLICATION. I AGREE THAT I HAVE READ AND UNDERSTAND ALL ITEMS I HAVE INITIALED:

_____ My employer has advised me I am working at a Critical Facility.

_____ My employer has explained the requirements for a criminal history records check for a Critical Facility.

_____ My employer has advised me I am working at a CJI Facility.

_____ My employer has explained the requirements for a criminal history records check for a CJI Facility.

By signing below, I acknowledge that I have an understanding of County Code, Section 2-371 thru 2-377 as well as having a full understanding all items disclosed in this application.

APPLICANT SIGNATURE: _____ DATE: _____

PRINT NAME: _____

END OF SECTION

Appendix A

NOTICE TO PROCEED

Dated_____, 20___

TO: _____
(CONTRACTOR)

ADDRESS:_____

FOR
PALM BEACH COUNTY
WATER UTILITIES DEPARTMENT

Improvements to Lift Stations 980, 981, and 1051
Lift Station Rehabilitation Bid Package 1, LS0637
PBCWUD Project No.: 21-059R

You are hereby notified that the Contract Time under the above Contract will commence to run on_____, 20___. By that date, you are to start performing your obligations under the Contract Documents. In accordance with the Contract, the dates of Substantial Completion and Final Completion are 580 successive calendar days and 30 successive calendar days, respectively, from this date.

Before you may start any Work you must deliver to the Engineer, the following:

1. List of all subcontractors that will perform work on the project.
2. Construction schedule as required in specification Section 01 33 00.
3. List of all shop drawings to be submitted.

Palm Beach County, Florida By:_____
(Authorized Signature)
PBC Water Utilities Department

ACCEPTANCE OF NOTICE

Receipt of the above Notice to Proceed is hereby acknowledged by _____ this _____ day of _____, 20___.

BY: _____ TITLE: _____

PRINT NAME: _____

Copy to Engineer
(Use Certified Mail
Return Receipt Requested)

PERIODICAL ESTIMATE FOR PARTIAL PAYMENT

PROJECT NAME: Improvements to Lift Stations 980, 981, and 1051 Lift Station Rehabilitation Bid Package 1, LS0637

PBCWUD PROJECT NO.: 21-059R RESOLUTION NO.: R

CONTRACTOR: _____

ADDRESS: _____

Application No.: _____ Period From: _____ to _____

Account Number: _____

Item # (1)	Description of Item (2)	Original Estimate				Completed			
		Quantity (3)	Unit (4)	Unit Price (5)	Value (6)	Unit to Date (7)	Cost to Date (8)	Cost to Complete (9)	% Complete (10)

PERIODICAL ESTIMATE FOR PARTIAL PAYMENT

PROJECT NAME: Improvements to Lift Stations 980, 981, and 1051 Lift Station Rehabilitation Bid Package 1, LS0637

PBCWUD PROJECT NO.: 21-059R RESOLUTION NO.: R

CONTRACTOR: _____

ADDRESS: _____

Application No.: _____ Period From: _____ to _____

Account Number: _____

CHANGE ORDERS

Change Order				Additions		Deletions (7)
C.O. # (1)	Date (2)	Item # (3)	Description (4)	Amount (5)	Amount Completed To Date (6)	

PERIODICAL ESTIMATE FOR PARTIAL PAYMENT

PROJECT NAME: Improvements to Lift Stations 980, 981, and 1051 Lift Station Rehabilitation Bid Package 1, LS0637

PBCWUD PROJECT NO.: 21-059R RESOLUTION NO.: R

CONTRACTOR: _____

ADDRESS: _____

Application No.: _____ Period From: _____ to _____

Account Number: _____

ANALYSIS OF ADJUSTED CONTRACT AMOUNT TO DATE:

A. Original Contract Amount (Page A-2, Col. 6) _____
B. Plus: Change Order Additions (Page A-3, Col. 5) _____
C. Less: Change Order Deletions (Page A-3, Col. 7) _____
D. Adjusted Contract Amount as of this Estimate _____

ANALYSIS OF WORK PERFORMED TO DATE:

1. Original Contract Work Performed to Date (Page A-2, Col. 8) _____
2. Extra Work Performed to Date (Page A-3, Col. 6) _____
3. Total Value of Work Performed To Date _____
4. Plus: _____ % of Stored Material and Equipment (Attach Schedule & Copies of Invoices) _____
5. Total Work Performed To Date Plus Stored Materials and Equipment _____
6. Less: _____ % Retainage _____
7. Net Amount Earned on Contract to Date _____
8. Less: Amount of Previous Payments _____
9. Plus: Reduction in Retainage from _____ % to _____ % _____
10. Balance Due This Payment _____

CERTIFICATION OF CONTRACTOR:

I hereby certify that I have checked and verified this Periodical Estimate for Payment No. _____, for the period from _____ to _____, inclusive, and that it is a true and correct statement of all work performed, and/or any and all material and equipment supplied by this Contractor; that all work, materials, and equipment included in Periodical Estimate No. _____ have been performed and/or supplied in full accordance with the terms and conditions of the Contract Documents and/or duly authorized deviations, substitutions, alterations and/or additions; that all terms of Periodical Estimate No. _____have been authenticated and approved by the authorized undersigned representative of the Contractor.

_____ By _____
(Contractor) (Authorized Representative)

_____
(Print Name)

Title _____ Date _____

PERIODICAL ESTIMATE FOR PARTIAL PAYMENT

PROJECT NAME: Improvements to Lift Stations 980, 981, and 1051 Lift Station Rehabilitation Bid Package 1, LS0637

PBCWUD PROJECT NO.: 21-059R RESOLUTION NO.: R

CONTRACTOR: _____

ADDRESS: _____

Application No.: _____ Period From: _____ to _____

Account Number: _____

CERTIFICATION OF CONSTRUCTION REPRESENTATIVE:

According to the best of my knowledge and belief, I certify that all items and amounts shown on the face of the Periodical Estimate No. _____ are correct; that the work, material and equipment shown thereon has been completed and supplied in conformance with the Contract Documents of the project between PALM BEACH COUNTY (Owner), and _____ (Contractor), dated _____ , including any authorized changes, deviations, substitutions, alterations and/or additions; that it is agreed that this Periodical Estimate for Payment No. _____ is a true and correct statement of the Contract Amount, up to and including the last day of the last day of the period covered by this Periodical Estimate No. _____ and that no part of the "balance due", this payment has been received.

_____ By _____

(Resident Project Representative) (Authorized Representative)

Title _____ Date _____

CERTIFICATION OF WATER UTILITIES REPRESENTATIVE:

To the best of my knowledge and belief, all items shown on the face of this Periodical Estimate for Partial Payment No. ___ are correct and that the work, material and equipment shown thereon has been completed and/or supplied in conformance with the Contract Documents, and is satisfactory for approval and processing for payment.

Palm Beach County Water Utilities Dept. By _____

(Owner) (Authorized Representative)

_____

(Print Name)

Title Director of Engineering Division Date _____

WARRANTY OF TITLE AND RELEASE

(For Periodic Progress Payments)

STATE OF _____) CUTOFF DATE:
)SS: CONTRACTOR:
COUNTY OF _____) PBCWUD PROJECT NO. 21-059R

PROJECT NAME: Improvements to Lift Stations 980, 981, and 1051 Lift Station Rehabilitation Bid Package 1, LS0637

BEFORE ME, the undersigned authority, personally appeared _____ (hereinafter called the "Affiant"), who after being duly sworn, deposes and says that he is the ___ of_____ a _____ corporation (hereinafter called the "Contractor"), pursuant to Palm Beach County Contract No. 21-059R, dated the ____ day of _____, 20___ (hereinafter called the "Contract"), with the BOARD OF COUNTY COMMISSIONERS, PALM BEACH COUNTY, FLORIDA (hereinafter called the "County"), for the furnishing of certain labor, materials, equipment, tools, supplies and manufactured articles (hereinafter called the "Work"), to improve certain property located in PALM BEACH COUNTY, FLORIDA (hereinafter called the "Property"), and on behalf of the Contractor named above is authorized to make the following warranties, requests, releases, and indemnifications:

I. The Contractor warrants that it has fully completed in accordance with the Drawings and Specifications therefor, that portion of the Work, pursuant to the Contract (the "Completed Work") and represents that the attached Application for Payment constitutes a full and complete accounting of all monies due the Contractor under the Contract as of the Cutoff Date.

II. A. ORIGINAL CONTRACT SUM $_____

B. Approved Change Orders $_____

C. Other Adjustments (Explain on attachment) $_____

III. The Contractor further warrants and represents that:

1. All Work performed by the Contractor through the Cutoff Date has been incorporated into this request for payment.

2. There are no costs, extras, change orders, or claims of any kind or nature due the Contractor for Work performed through the Cutoff Date other than as set forth herein.

3. Contractor hereby waives its right to payment and to any other claim not indicated herein.

4. All subcontractors, laborers, vendors, materialmen, manufacturers, suppliers and other parties of whatever kind or nature who are entitled to payment from the Contractor for providing labor and materials to the Contractor pursuant to the Contract as of the Cutoff Date in the last previous Periodical Estimate for Partial Payment have been paid in full for performing or furnishing the work, labor, equipment, materials, tools, supplies and manufactured articles upon said Contract and have delivered to the Contractor validly executed Partial Releases of Liens or Claims with respect thereto.

5. Contractor does hereby waive, release, remise, and relinquish Contractor's right to claim, demand, or impose a lien or claims to the extent of the previous payments, and except to the extent of the "Present Unpaid Balance" set forth above, for work done or labor, materials, equipment or supplies furnished and/or any other kind of class of lien or liens on the Property.

6. This shall constitute a full, absolute, and unconditional release and discharge by the Contractor to the County of all claims or liens of the Contractor, of whatever nature, arising out of, in connection with, or resulting from the supply by the Contractor, or any of its subcontractors or suppliers, of labor and/or materials to the Property as of the indicated Cutoff Date, except to the extent of the "Present Unpaid Balance" and any claims listed on the attached statement of unresolved claims.

The Contractor agrees to indemnify and hold the County harmless from and against all costs and expenses, including reasonable attorney's fees and fees on appeal, resulting from any entity or individual who claims to have not been paid for labor, materials, equipment, tools, supplies and manufactured articles furnished in connection with the Completed Work.

This Affidavit is done with the understanding that contract payments are based on the truth and veracity of this document and any misrepresentation hereunder could result in action for breach of contract and/or loss, reduction or retention of future contract payments.

This statement is given under oath.

_____ (CORPORATE SEAL)
(Contractor)

_____
(Signature)

_____
(Print Name)

_____
(Title)

STATE OF FLORIDA

COUNTY OF _____

The foregoing instrument was acknowledged before me by means of ☐ physical presence or ☐ online notarization, this ___ day of _____, _____, by _____, who is ☐ personally known to me or ☐ has produced _____ as identification.

_____
(Signature of Notary Public – State of Florida)

_____
(Print, Type, or Stamp Commissioned Name of Notary Public)

CONSENT OF SURETY

For Reduction of or Partial Release of Retainage

PROJECT NAME: Improvements to Lift Stations 980, 981, and 1051 Lift Station Rehabilitation Bid Package 1, LS0637

PROJECT LOCATION: Palm Beach County Department Zones 2 and 4

PBCWUD PROJECT NO.:21-059R RESOLUTION NO.: R_____
CONTRACT DATE:_____

CONTRACT
TYPE:_____

CONTRACT AMOUNT:_____ ENGINEER'S PROJECT NO.:_____

ENGINEER:_____

In accordance with the provisions of the above-named Contract between the County and the Contractor, the

following named Surety:

_____

on the PUBLIC CONSTRUCTION BOND of the following named Contractor:

_____

hereby approves a reduction of or a partial release of retainage to the Contractor as set forth below:

The Surety Company hereby agrees that such reduction of or partial release of retainage to the Contractor shall not relieve said Surety Company of any of its obligations to the following named County as set forth in said Surety Company's bond:

_____

_____

IN WITNESS WHEREOF, the Surety Company has hereunto set its hand and seal this _____ day of _____, 20___.

_____ _____
(Attest) (Name of Surety Company)

_____ _____
(Print Name) (Signature of Authorized Representative)

(Affix corporate here) _____
(Print Name)

TITLE:_____

REQUEST FOR ADJUSTMENT OF RETAINAGE

PROJECT NAME: Improvements to Lift Stations 980, 981, and 1051 Lift Station Rehabilitation Bid Package 1, LS0637

PBCWUD PROJECT NO.:21-059R

County:_____ RESOLUTION NO.: R_____

ENGINEER:_____ PROJECT MANAGER _____

CONTRACTOR:_____

The Contractor, _____ hereby requests that the percentage of partial payment estimates retained by the County under the provisions of the Contract Documents be REDUCED from ____% to ____%.

By _____ Date _____
(Contractor Representative)

_____Title_____
(Print Name)

The Surety on the Public Construction Bond for said project:

_____
hereby approves the foregoing request.

By _____ Date _____
(Attorney-in-Fact)

_____
(Print Name)

Power of Attorney must be attached to original copy

_____

Approval IS/IS NOT recommended. The percentage of completed work as of _____,

20___ is _____% and the present percentage of elapsed contract time as of _____,

20___ is _____%

By _____ Date_____
Resident Project Representative

_____
(Print Name)

Approval IS/IS NOT recommended:

By _____ Date_____
County Project Manager

_____
(Print Name)

APPROVED/DISAPPROVED:

By _____ Date_____
County's Representative

_____
(Print Name)

(The remainder of this page intentionally left blank)

CHANGE ORDER

PROJECT: Improvements to Lift Stations 980, 981, and 1051 Lift Station Rehabilitation Bid Package 1, LS0637

CHANGE ORDER NO.: ___

PBCWUD PROJECT NO. :21-059R
Resolution No. R_____

(Contractor):

DOCUMENT NO.
CONTRACT DATE:
NOTICE TO PROCEED:
BUDGET LINE ITEM:

You are directed to make the following changes in this contract:

1.

Total $

NOT VALID UNTIL SIGNED BY BOTH OWNER AND ENGINEER. SIGNATURE OF THE CONTRACTOR INDICATES HIS CONTRACT HEREWITH INCLUDING ANY ADJUSTMENT IN THE CONTRACT SUM OR CONTRACT TIME, AND NO ADDITIONAL COST OR TIME INDICATED HEREIN WILL BE RELATED TO THIS CHANGE

The Original Contract Sum was.....	**$**_____
Net Change by previous Change Orders	**$**_____
The Contract Sum prior to this Change Order was	**$**_____
The Contract Sum will be **increased/decreased** by this Change Order.....	**$**_____
The New Contract Sum indicating this Change Order will be...	**$**_____
The Contract Time will be **changed** by_____ ( )Days	_____
The Date of Substantial Completion including this Change Order:	_____
The Date of Final Completion including this Change Order:	_____

Execution of this change order acknowledges final settlement of, and releases, all claims for costs and time associated, directly or indirectly, with the above stated modification(s), including all claims for cumulative delays or disruptions resulting from, caused by, or incident to such modification(s), and including any claim that the above stated modification(s) constitutes, in whole or part, a cardinal change to the contract.

Palm Beach County	_____	Palm Beach County
ENGINEER	**CONTRACTOR**	**OWNER**
8100 Forest Hill Blvd.	_____	8100 Forest Hill Blvd.
W. Palm Beach, FL 33413	_____	West Palm Beach, FL 33413
Address	**Address**	**Address**
BY_____	BY_____	BY_____
_____	_____	_____
(Print Name)	(Print Name)	(Print Name)
DATE_____	DATE_____	DATE_____

STATE OF FLORIDA

COUNTY OF _____

The foregoing instrument was acknowledged before me by means of ☐ physical presence or ☐ online notarization, this ___ day of _____, _____, by _____, who is ☐ personally known to me or ☐ has produced _____ as identification.

_____

(Signature of Notary Public – State of Florida)

_____

(Print, Type, or Stamp Commissioned Name of Notary Public)

CHARGE AUTHORIZATION

PROJECT: Improvements to Lift Stations 980, 981, and 1051 Lift Station Rehabilitation Bid Package 1, LS0637
PBCWUD PROJECT NO. 21-059R **RESOLUTION NO. R_____**
DISTRICT NUMBERS:
CHARGE AUTHORIZATION NO.:

TO (Contractor): **DOCUMENT NO.**

CONTRACT DATE:
NOTICE TO PROCEED:
BUDGET LINE ITEM:

You are directed to perform the following work and make the following charges to the applicable allowance accounts:
1.

Total: _____

NOT VALID UNTIL SIGNED BY BOTH OWNER AND ENGINEER. SIGNATURE OF THE CONTRACTOR INDICATES HIS AGREEMENT HEREWITH INCLUDING ANY ADJUSTMENT IN THE CONTRACT SUM OR CONTRACT TIME, AND NO ADDITIONAL COST OR TIME INDICATED HEREIN WILL BE RELATED TO THIS CHARGE.

Total of Original Contract Allowances	$_____
Contract Allowances previously granted	$_____
The Allowance Balance prior to this Charge Authorization was	$_____
Amount Allowance Accounts will be **increased**/**decreased** by this Charge Authorization	$_____
The Allowance Balance after this Charge Authorization will be	$_____

Execution of this Charge Authorization acknowledges final settlement of, and releases, all claims for costs and time associated, directly or indirectly, with the above stated modification(s), including all claims for cumulative delays or disruptions resulting from, caused by, or incident to such modification(s), and including any claim that the above stated modification(s) constitutes, in whole or part, a cardinal change to the contract.

Palm Beach County	_____	Palm Beach County
ENGINEER	**CONTRACTOR**	**OWNER**
8100 Forest Hill Blvd.	_____	8100 Forest Hill Blvd.
W. Palm Beach, FL 33413	_____	West Palm Beach, FL 33413
Address	**Address**	**Address**
BY_____	BY_____	BY_____
_____	_____	_____
(Print Name)	(Print Name)	(Print Name)
DATE_____	DATE_____	DATE_____

CERTIFICATE OF SUBSTANTIAL COMPLETION

FOR THE Improvements to Lift Stations 980, 981, and 1051 Lift Station Rehabilitation Bid Package 1, LS0637
PBCWUD Project No.: 21-059R

CONTRACTOR: _____

CONTRACT DATE:_____, 20___

This Certificate of Substantial Completion applies to all Work under the Contract Documents or to the following specified parts thereof:

TO: _____
(County)

AND
TO:_____
(Contractor)

The Work to which this Certificate applies has been inspected by authorized representatives of the ENGINEER, along with the CONTRACTOR and that Work is hereby declared to be Substantially Complete in accordance with the Contract Documents on:

_____
(Date of Substantial Completion)

A tentative list of items to be completed or corrected is attached hereto. This list may not be all-inclusive, and failure to include an item in the list does not alter the responsibility of the CONTRACTOR to complete all the Work in a good and workmanlike manner in accordance with the Contract Documents. The items in the tentative list shall be completed or corrected by the CONTRACTOR within _____days of the above date of Substantial Completion.

The responsibilities between the County and the CONTRACTOR for security, operation, safety, maintenance, heat, utilities, insurance and warranties shall be as follows:

County:_____

CONTRACTOR:_____

The following documents are attached to and made a part of this Certificate:
_____

This Certificate does not constitute an acceptance of any Work not in accordance with the Contract Documents nor is it a release of CONTRACTOR'S obligation to complete the Work in a good and workmanlike manner in accordance with the Contract Documents.

Recommended by the ENGINEER:

By: _____ _____ Date _____
Professional Engineer (Print Name)

CONTRACTOR hereby accepts this Certificate of Substantial Completion:

By: _____ _____
(Signature) (Print Name)

_____ Date: _____
(Title)

County acknowledges receipt of this Certificate of Substantial Completion:

By: _____ _____
Director of Engineering Division (Print Name)

Date:_____

CONTRACTOR'S CERTIFICATION OF FINAL COMPLETION

TO: _____

PROJECT NAME: Improvements to Lift Stations 980, 981, and 1051Lift Station Rehabilitation Bid Package 1, LS0637

PBCWUD PROJECT # 21-059R

JOB NO. _____

RESOLUTION NO. _R_____

ATTN: _____

COUNTY: _____

ENGINEER _____

FROM: _____
(Firm or Corporation)

This is to certify that I, _____ am an authorized official of

_____ working in the capacity of _____ and have

been properly authorized by said firm or corporation to sign the following statements pertaining to the subject Contract:

I know of my own personal knowledge, and do hereby certify, that the work of the Contract described above has been performed, and materials used and installed in every particular, in accordance with, and in conformity to, the Contract Documents and approved changes thereto.

The contract work is now complete in all parts and requirements, and ready for your final inspection.

I understand that neither the determination by the Engineer that the work is complete, nor the acceptance thereof by the County, shall operate as a bar to claim against the Contractor under the terms of the guarantee provisions of the Contract Documents.

Date of Final Completion: _____

BY _____ TITLE _____

_____
(Print Name) FOR _____

Recommended by the ENGINEER:

By: _____ _____ Date: _____
Professional Engineer (Print Name)

County acknowledges receipt of this Certificate of Final Completion:

By: _____ _____Date: _____
Director of Engineering Division (Print Name)

STATEMENT OF UNRESOLVED CLAIMS

FOR PBCWUD PROJECT NO. 21-059R

RESOLUTION NO. R_____

PAYMENT APPLICATION NUMBER _____

Contractor shall list, in detail, on this page and any required additional pages all outstanding, unresolved claims which Contractor has on this project.

CONSENT OF SURETY FOR FINAL PAYMENT

PROJECT NAME: Improvements to Lift Stations 980, 981, and 1051 Lift Station Rehabilitation Bid Package 1, LS0637

PROJECT LOCATION: Palm Beach County Department Zones 2 and 4

PBCWUD PROJECT NO.: 21-059R PROJECT RESOLUTION NO.: R_____

CONTRACT DATE:_____CONTRACT RESOLUTION NO.: R_____

CONTRACT TYPE:_____

CONTRACT AMOUNT:_____ ENGINEER'S PROJECT NO.:_____

ENGINEER:_____

In accordance with the provisions of the above named Contract between the County and the Contractor, the following named Surety:

_____

on the PUBLIC CONSTRUCTION BOND of the following named Contractor:_____
hereby approves of final payment by County to the Contractor, and further agrees that said final payment to the Contractor shall not relieve the Surety Company named herein of any of its obligations to the following named County, as set forth in said Surety Company's bond:

IN WITNESS WHEREOF, the Surety Company has hereunto set its hand and seal this _____ day

of _____, 20___.

_____ _____
(Attest) (Name of Surety Company)

_____
(Print Name)

(Affix corporate seal)

_____
(Signature of Authorized Representative)

_____
(Print Name)

TITLE:_____

FINAL WARRANTY OF TITLE

STATE OF FLORIDA_____ **)**

COUNTY OF_____**)**

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

1. Affiant is the _____ of _____ a _____ (hereinafter called the "Contractor").

2. Contractor entered into a Contract dated the _____ day of_____**, 20**__ (hereinafter called the "Contract") with the **PALM BEACH COUNTY,** a political subdivision of the State of Florida (hereinafter called the "County"), being Contract No. R_____ for the construction of certain improvements and the performance of certain Work more particularly described in the Contract Documents (such construction and performance being hereinafter collectively referred to as the "Work") on property owned and or controlled by the County, located in Palm Beach County Department Zones 2 and 4.

3. Contractor has fully completed the Work and all individuals, firms, and corporations furnishing materials, labor, equipment, tools, supplies, manufactured articles and services incident to the completion of the Work, and all payrolls, bills for materials, equipment, tools, supplies, manufactured articles, and all other indebtedness connected with the Work, have been paid in full, except for the following:

None, unless set forth below:

Name	Address	Amount Due or to Become Due and Unpaid

(Attach additional sheets, if more space is needed)

4. Receipt by Contractor of the Final Payment from County in the amount of $_____shall constitute a full release and discharge by Contractor to said County of all claims and liens of the Contractor against said County arising out of, connected with, or resulting from performance of the Contract or the Work.

5. The undersigned further certifies that all non-exempt taxes imposed by Chapter 212, Florida Statutes (Sales and Use Tax Act), as amended, have been paid and discharged.

6. Contractor agrees to forever indemnify, defend, and hold said County harmless from and against all costs and expenses, including reasonable attorney's fees, including fees on appeal, resulting from individuals, firms, or corporations who claim to have not been paid for material, labor, equipment, tools, supplies, manufactured articles or services furnished incident to the Work.

7. This Affidavit is made for the purpose of inducing Final Payment from the County to the Contractor under the Contract in compliance with the Contract Documents.

8. Affiant has full authority to execute this Affidavit and to execute a full and final release of all claims and liens on behalf of the Contractor.

Signed and Sealed in the presence of:

_____ (CORPORATE SEAL)
(Contractor)

_____
(Signature))

`
_____
(Print Name)

_____
(Title)

_____
(Witness)

_____
(Print Name)

_____
(Witness)

_____
(Print Name)

STATE OF FLORIDA
COUNTY OF _____

The foregoing instrument was acknowledged before me by means of ☐ physical presence or ☐ online notarization, this ___ day of _____, _____, by _____, who is ☐ personally known to me or ☐ has produced _____ as identification.

_____
(Signature of Notary Public – State of Florida)

_____
(Print, Type, or Stamp Commissioned Name of Notary Public)

PALM BEACH COUNTY
WATER UTILITIES DEPARTMENT

WORK DIRECTIVE

To: _____
Contractors Name

_____
Address

Project Name: Improvements to Lift Stations 980, 981, and 1051 Lift Station Rehabilitation Bid Package 1, LS0637
PBCWUD Project No.: 21-059R Resolution No. R_____
Work Directive No.: _____

In accordance with your proposal dated _____ you are authorized to perform the following scope of work
_____
_____
_____
_____

_____ Time and materials as specified in the Contract Documents

_____ Lump Sum Price of _____.

Note: This Work Directive will be incorporated into a Change Order that will be submitted to the Contract Review Committee, Board of County Commissioners or Palm Beach County Water Utilities Director for approval.

Authorized by:

_____
(Print Name)

_____
Title

_____
Signature

_____
Date

Appendix B

POST BID INFORMATION

Improvements to Lift Stations 980, 981, and 1051
Lift Station Rehabilitation Bid Package 1, LS0637
PBCWUD PROJECT NO.: 21-059R

1. POST BID INFORMATION REQUIREMENTS

If required by the County, this form must be completed and returned to the County within two (2) working days of the request. Failure to return this form within two (2) working days may result in rejection of the Bid by the County. Award will be made to the lowest, responsive, responsible Bidder. To be considered responsive, the Bid must conform in all respects to the conditions of the Invitation to Bid, to the Instructions to Bidders, Palm Beach County Code Sections 2-51 through 2-54, as amended and to Florida law. To demonstrate qualifications to perform the Work, each Bidder must be prepared to submit within two (2) days of the County's request, The Post Bid Information as may be called for herein. Each Bidder must, upon request, provide evidence that, as of the date of Primary Bid Document submission, Bidder, and the listed subcontractors, were qualified to do business in the State of Florida and Palm Beach County.

1. Contractor's Legal Name and Address:

Name: _____

Address: _____

City:_____ State _____ Zip Code:_____

2. Check One: Corporation: _____ Partnership: _____ LLC _____

Individual: _____ Joint Venture: _____

3. If a Corporation or LLC, state:

Date of Incorporation or Organization :_____

State in which Incorporated or Organized:_____

4. If an out-of-state corporation or LLC which is currently authorized to do business in the State of Florida, give the date of such authorization: _____

5. Names and Titles of Principal Officers or Managing Members (LLC)

Date Elected:

_____

_____

6. If a Partnership, state:

Date of Partnership: _____

Type of Partnership (General or Limited): _____

Names and Addresses of Partners: _____

_____

_____

7. If Joint Venture, state:

Date of Joint Ventureship: _____

Names and Addresses of Joint Ventures:

_____

_____

8. If Sole Proprietorship, state:

Name and Address of Sole Proprietor:

_____

_____

9. List corporate names or business names under which each of the principals in the present corporation have done business for the last ten (10) years:

_____

_____

_____

_____

10. List all subsidiaries or holding companies:

_____

_____

11. Contractor's License: _____ Primary Classification _____

State License No.: _____

Supplemental classifications held, if any: _____

_____

Name of Licensee, if different from (1) above:

_____

_____

_____

_____

12. What is the maximum bonding capacity of your company?

(A) Capacity (Dollar Amount):

(B) Include the company name, phone number, address and name of the Florida Resident Agent of your current bonding company:

_____

13. Has your organization or any member been involved in any litigation or arbitration within the last ten (10) years as a result of construction contracts, including but not limited to liens, defective performance or workmanship? If yes, provide the following information for each case (attach additional sheets as necessary):

(A) Style or caption of litigation or arbitration: _____

_____

(B) All parties to such proceedings:

_____

_____

_____

(C) Names, Addresses, and Telephone Numbers of Attorneys for each party:

_____

_____

(D) Date Litigation Started: _____

(E) Status of Case: _____

(F) Provide an explanation of each claim by and against each party (Attach additional sheets as necessary).

14. Have you or any principal of your company ever declared bankruptcy?

Yes _____ No _____

If yes, provide dates and particulars:

Date Reason

15. Have you ever failed to complete work awarded to you? If so, where and why?

16. List some major subcontractors and suppliers from your completed or ongoing projects:

17. State the construction experience of your firm's principal members including, but not limited to, type, size and completion of projects, including project status (attach additional sheets as necessary):

_____

_____

_____

_____

_____

_____

18. State the construction experience of your organization including, but not limited to, type, size and completion of projects, including project status (attach additional sheets as necessary):

_____

_____

_____

_____

19. State the construction experience of the Superintendent to be assigned to this project including, but not limited to, type, size and completion of projects, including project status (attach additional sheets as necessary):

_____

_____

_____

_____

_____
(Contractors Name)

_____ _____
(Signature) (Title)

_____ _____
(Print Name) (Date)

END OF SECTION

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TECHNICAL SPECIFICATIONS

FOR THE

PALM BEACH COUNTY
WATER UTILITIES DEPARTMENT

IMPROVEMENTS TO LIFT STATIONS 980, 981, and 1051; LIFT STATION REHABILITATION BID PACKAGE 1 – LS 0637

PROJECT NO. WUD 21-059

January 2024

Prepared by:

Holtz Consulting Engineers, Inc.
270 South Central Boulevard, Suite 207
Jupiter, Florida 33458
(561) 575-2005

PBCWUD
STANDARD DESIGN SPECIFICATION
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SECTION 01 11 00

SUMMARY OF WORK

PART 1 - GENERAL

1.1 REQUIREMENTS

A. The following is a description and summary of the work covered by the Contract Documents. Additional information in this Section is provided to explain and generally outline work to be completed. The omission of reference of any required work by the CONTRACTOR to comply with Federal, State, or Local Regulatory Agencies or implied or otherwise required in order to provide a complete, acceptable and operable facility shall not, however, alter the intent of the Bid Form, or relieve the CONTRACTOR of the necessity of furnishing such, as part of the Contract.

B. The WORK shall be complete, and all work, materials, and services not expressly indicated or called for in the Contract Documents which may be necessary for the complete and proper construction of the WORK in good faith shall be provided by the CONTRACTOR and coordinated with the ENGINEER as though originally so indicated, at no increase in cost to the OWNER.

C. CONTRACTOR shall comply with all applicable federal, state and local safety regulations, laws and standards, as well as any specific Palm Beach County or Water Utilities Department requirements while completing the work. The CONTRACTOR is fully responsible for ensuring the safety and security of the project site. At a minimum the CONTRACTOR is required to maintain compliance with all relevant health and safety regulations, securing the site against unauthorized access and potential hazards (during active and non-active construction), adhering to local, state, and federal regulations, and establishing effective emergency response plans.

D. The CONTRACTOR shall provide an equipment list and the required information for each piece of equipment in accordance with the examples provided in Exhibit 'A' and Exhibit 'B' of this section. Refer to **Section 01 33 00 – Submittals** for specific requirements pertaining to submittals.

E. Funds for the reconstruction of LS 637 are derived from grants; therefore, the CONTRACTOR must comply with grant guidelines. Compensation to the CONTRACTOR shall be partially from grant funds. As such, the CONTRACTOR agrees that the provisions set forth in the grant will apply to any services or work performed or provided by the CONTRACTOR or its SUBCONTRACTORS under the Contract. The CONTRACTOR shall be obligated to comply with all applicable grant requirements, laws, and regulations. In the event of a conflict between the Grant Requirements and other

provisions of the Invitation to Bid, the Grant Requirements will govern and prevail.

1.2 SUMMARY

A. The project consists of the following major elements:

The work covered by these specifications consists in general of furnishing all labor, supervision, materials, equipment, supplies, tools and manufactured articles of every kind required to reconstruct two (2) lift station (LS 637 and 1051), relocate two (2) lift stations (LS 980 and LS 981), reconnect FM and gravity sewer to new lift stations, install approximately 2,550 LF of 6" force main along Ponderosa Drive, and completion of all necessary force main work at the intersection of Ponderosa Drive and Palmetto Park Road. The work includes all necessary permitting with various agencies and authorities including but not limited to FDOT, and Palm Beach County Land Development. The work additionally includes all necessary roadway improvements, pipe restraints, driveway and sidewalk repair, site restoration, and all other incidentals necessary to perform all work as shown on the contract drawings.

B. The CONTRACTOR shall complete all work shown in the Drawings and as indicated in the Technical Specifications and all work and materials shall meet the requirements outlined in these Technical Specifications and the latest edition of the Palm Beach County Water Utilities Department's "Minimum Design and Construction Standards". In case of discrepancies, the requirements in these Technical Specifications shall prevail. . In the event of conflict, the more specific or more recent document shall control.

1.3 WORK COVERED BY CONTRACT DOCUMENTS

A. The work covered by these Contract Documents (Drawings and Technical Specifications) is in general the furnishing of all labor, materials, equipment, supplies, tools and manufactured articles of every kind required to conduct the work as described by the contract documents. The CONTRACTOR shall complete all work shown in the Drawings and as indicated in the Technical Specifications and all work and materials shall meet the requirements outlined in these Technical Specifications and the latest edition of the Palm Beach County Water Utilities Department's "Minimum Design and Construction Standards". In case of discrepancies, in or between the drawings and specification, the CONTRACTOR shall include the better quality or greater quantity of work in the Bid.

B. The work shall also include all transportation and all temporary services, utilities, systems and construction, including those not expressly shown or called for in the Contract Documents, necessary to properly accomplish and complete the work in accordance with the requirements of the Contract Documents.

C. Except as specifically noted, the CONTRACTOR shall provide and pay for:

1. Labor, materials, and equipment.

2. Tools, equipment and machinery.

3. Water, electricity, and other utilities required to complete project.

4. Other facilities and services necessary for proper execution, restoration of site, and completion of the work.

5. Permits, surveys, connection fees, and testing.

1.4 GENERAL PROVISIONS

A. The OWNER must be notified seventy-two (72) hours prior to the commencement of the work at the project site. Please notify the Construction Services Section of the Palm Beach County Water Utilities Department at 561-493-6000. The CONTRACTOR shall submit a proposed work plan and schedule prior to commencing work. The plan and schedule will be reviewed by the OWNER and ENGINEER.

B. The CONTRACTOR shall perform all work in accordance with current approved Federal, State, and Local Laws, Regulations, Codes, Statutes, Ordinances, Orders, and other legal requirements of Public Authorities which bear on the performance and safety of the work.

C. The CONTRACTOR and subcontractors selected for this project must have a Palm Beach County Occupational License (and any others that may be required) for the work to be undertaken, and be certified with the State of Florida Department of Professional Regulation.

D. The CONTRACTOR shall be responsible for locating by test pit excavation or other approved method any underground and aboveground utilities located within the project site area within the first 30 calendar days following the Notice to Proceed, including potholing and surveying of utility conflicts to avoid project delays, at no cost to the OWNER.

E. The CONTRACTOR shall be responsible for holding utility poles or charges for such work and protecting and/or supporting underground utilities at no cost to the OWNER.

F. Any damage caused to existing aboveground or underground utilities, structures or facilities during construction shall be repaired by the CONTRACTOR at no cost to the OWNER.

G. All accessories and appurtenances shall be new, of recent manufacture, complete in place and ready for use.

H. The CONTRACTOR shall remove and legally dispose of all debris and excess materials brought on site or caused to be on site by the CONTRACTOR's activities.

I. The CONTRACTOR shall provide the services of a qualified manufacturer's technical representative(s) who shall adequately supervise the installation and testing of the mechanical, electrical, and instrumentation equipment furnished under this Contract.

J. The CONTRACTOR shall secure and pay for, as necessary for proper execution and completion of the work and as applicable at time of receipt of bids:

1. Building permits (including but not limited to plumbing and electrical) will be required from the City/Municipality/County having jurisdiction for the lift station, water service, backflow prevention device, and electrical work.

2. Governmental or Utility fees (Florida Power and Light).

3. Licenses.

4. No back charges shall be allowed.

K. The CONTRACTOR shall bear sole responsibility for issuing required notices.

L. The CONTRACTOR shall comply with codes, ordinances, rules, regulations, orders and other legal requirements of public authorities, which bear on performance of the work.

M. The CONTRACTOR shall determine the number and location of isolation valves along the existing force main(s) prior to any lift station shut down operations. The CONTRACTOR shall include in his lump sum bid price for each lift station all work required to locate and make operable the existing isolation valves or the installation of line stops**.**

N. All existing irrigation system components conflicting with the proposed construction shall be removed and relocated by the CONTRACTOR at no additional cost to the OWNER. Any damage to existing irrigation system components shall be repaired promptly by the CONTRACTOR to the OWNER’s satisfaction and at no additional cost to the OWNER.

1.5 SILTATION, BANK EROSION

A. The CONTRACTOR shall take adequate precautions to prevent siltation and bank erosion in crossing canal or ditches, in discharging well point system or during other construction activities and shall submit such plan for siltation mitigation for any permits and approvals prior to construction.

1.6 STORAGE OF MATERIALS

A. Suitable storage facilities shall be furnished by the CONTRACTOR. The location of the storage and laydown areas shall be coordinated with the OWNER. All materials, supplies and equipment intended for use in the work shall be suitably stored by the CONTRACTOR to prevent damage from exposure, admixture with foreign substances, vandalism or other cause. The ENGINEER will refuse to accept or sample for testing materials, supplies or equipment that have been improperly stored, as determined by the ENGINEER. Materials found unfit for use shall not be incorporated in the work and shall immediately be removed from the construction or storage site. Delivered materials shall be stored in a manner acceptable to the ENGINEER before any payment for same will be made. Materials strung out along the line of construction will not be allowed unless the materials will be installed within one (1) week from the time of unloading and stringing out. Access to resident driveways, mail delivery and garbage/recycle pick-up will be maintained at all times.

1.7 INSPECTIONS

A. The OWNER or his designee may inspect all construction and materials and may also inspect preparation, fabrication or manufacture of components, materials and supplies. The OWNER or his designee is authorized to notify the CONTRACTOR of any failure of work or materials to conform to the Contract Documents. The OWNER or his designee shall have the authority to reject materials or suspend the work until questions of issue can be decided upon by the OWNER. The OWNER or his designee shall in no case act as a foreman or perform other duties for the ENGINEER and/or CONTRACTOR nor interfere with the management of the work. The advice which the OWNER/ENGINEER or his designee may give shall in no way be construed as binding to the OWNER or release the CONTRACTOR from performing according to the intent of the Drawings, Technical Specifications, the OWNER's Minimum Design and Construction Standards, and Approved Materials List.

B. Inspections shall be scheduled during regular working hours, except for nights when service interruptions are involved. Work shall not be scheduled for weekends or holidays unless approved at the sole discretion of the OWNER or as stipulated in the Drawings. The OWNER should be provided with two (2) full working days notice for scheduled inspections, and a minimum seven (7) days notice is required for construction with service interruptions. The OWNER/ENGINEER or his designee will inspect such items as restrained joints, material on site, and clearances between conflicting lines. Scheduled inspections are also required for jack and bores, horizontal directional drilling, pressure testing, field application of coatings to manholes and wet wells, setting of wet wells and valve vaults, lift station start-ups and connections to OWNER's facilities. The CONTRACTOR shall keep a copy of the current approved Drawings and the Water Utilities Department Minimum Design and Construction Standards on the project site at all times.

C. It shall be the CONTRACTOR's responsibility to schedule inspections and their qualified representative shall be present when required by the ENGINEER/OWNER. A scheduled inspection will be cancelled if the representative is not present. The OWNER/Engineer or his designee shall be present during the entire length of the inspection. The CONTRACTOR shall pre-test pressure tests and lampings to minimize failures. The CONTRACTOR shall prepare accurate signed and sealed (by a Florida Registered Professional Surveyor and Mapper) record drawings which shall be submitted to the OWNER with each CONTRACTOR Monthly Request. Approved record drawings (signed and sealed) must be submitted prior to request for Substantial Completion and final inspection for any phase of the project.

1.8 PRESERVATION OF PROPERTY & LIMITS OF WORK

A. The CONTRACTOR shall preserve from damage all property along the line of the work, or which is in the vicinity of or is in any way affected by the work, the removal or destruction of which is not called for by the Drawings. Wherever such property is damaged due to the activities of the CONTRACTOR, it shall be immediately restored to its original condition by the CONTRACTOR at no cost to the OWNER.

B. In case of failure on the part of the CONTRACTOR to restore such property, or make good such damage or injury, the OWNER may, after 48 hours' notice to the CONTRACTOR, proceed to repair, rebuild or otherwise restore such property as may be deemed necessary and the cost thereof will be deducted from any monies due or which may become due the CONTRACTOR under this Contract.

1.9 CLEAN UP

A. The CONTRACTOR shall keep the construction site free of rubbish and waste materials and restore to their original condition those portions of the site not designated for alteration by the Contract Documents. Clean up and restoration shall be accomplished on a continuing basis throughout the contract period and in such a manner as to maintain a minimum of nuisance and interference to the general public and residents in the vicinity of the work. The CONTRACTOR shall also remove, when no longer needed, all temporary structures and equipment used in his operations. It is the intent of this specification that the construction areas and those other areas not designated for alteration by the Contract Documents shall be restored to their original condition as nearly as possible immediately after completion of installation. The CONTRACTOR shall be responsible for all costs related to cleanup of wastewater spills as a result of construction activities or failure to meet scheduled dates. Material removed from the wet well, pipes or gravity sewer system by cleaning shall be properly and legally disposed of at no extra cost to the OWNER.

1.10 MATERIAL APPROVAL

A. All materials furnished by the CONTRACTOR shall be new and unused and furnished as specified and shown on the Drawings. The CONTRACTOR shall furnish

satisfactory documentation to assure materials meet the standards called for in the Technical Specifications. Copies of specific tests called for in the Technical Specifications shall be furnished in three (3) copies. Before commencing the work, the CONTRACTOR shall submit for approval of the ENGINEER any optional materials which he/she proposes to use.

1.11 RECORD DATA OR RECORD DRAWINGS

A. The CONTRACTOR shall maintain during the progress of the project accurate records of the location, length and elevation of all pipe lines and piping installed and of all architectural, mechanical and structural features of the Contract. A set of drawings and/or electronic file will be provided to the CONTRACTOR which shall be kept at the job site for this purpose. Record drawings shall comply with the latest edition of the Palm Beach County Water Utilities Department's Minimum Design and Construction Standards", and the PBCWUD Record Drawing (As-Built) Checklist. Refer to **Section 01 33 00 - Submittals, Section 01 77 00 - Project Close Out,** and **Section 01 72 00 - Project Record Drawings**.

B. Submit record drawings' each month with pay estimate. Pay estimate will not be processed unless accurate as-builts are received.

1.12 PROTECTION OF PROPERTY

A. The CONTRACTOR shall be responsible for the protection of property, in the areas in the vicinity of the project; and for the protection of his own equipment, supplies, materials and work, against any damage resulting from the elements, such as flooding, by rainstorm, wind damage, or other elemental cause resulting from the project configuration. The CONTRACTOR shall take all precautions against any such damage occurrence, and shall be responsible for damage resulting from same. The CONTRACTOR shall provide adequate drainage facilities, tie-downs, or other protection, throughout the Contract period, for the protection of his, the OWNER's and other properties from such damage.

1.13 SITE FAMILIARIZATION

A. The CONTRACTOR's attention is particularly called to the provisions of Paragraph 3.1.4 of the Instructions to Bidders. The CONTRACTOR shall check and familiarize himself with the overall general conditions prevailing along the route of construction and at the construction site(s).

1.14 SEQUENCE OF WORK

A. The wastewater collection system work will proceed in an orderly fashion. The CONTRACTOR is responsible for preparing a complete and detailed schedule and work sequence plan prior to commencing any work (in accordance with **Section 01 33 00 - Submittals**) in the form acceptable to the ENGINEER/ OWNER. The

schedule shall indicate a detailed breakdown of the work tasks to be performed, and how the work will proceed in order to achieve final completion of the work on or before the final Contract time allotted. This schedule shall be submitted to the OWNER and ENGINEER for review.

1.15 WORK HOURS

A. Work hours shall be 8:00 AM to 5:00 PM Monday through Friday, excluding legal holidays. Additional work days and hours may be requested for approval by the OWNER.

1.16 MAINTENANCE OF TRAFFIC

A. The CONTRACTOR shall not obstruct traffic lanes without an approval of the appropriate agencies. CONTRACTOR must provide an approved Maintenance of Traffic (MOT) plan for all lane closures. CONTRACTOR shall have an approved MOT from the Florida Department of Transportation State for state roadways and Palm Beach County for County owned rights-of-way. Access to all residential lots by emergency vehicles, and garbage and mail services shall be provided at all times. The CONTRACTOR shall be responsible for all MOT plans, permitting, installing MOT, maintaining MOT and removal of MOT.

1.17 SITE FAMILIARIZATION

A. The CONTRACTOR's attention is particularly called to the provisions of Paragraph 3.1.4 of the Instructions to Bidders. The CONTRACTOR shall check and familiarize himself with the overall general conditions prevailing along the route of construction and at the construction site(s).

B. All vertical and horizontal locations for existing surface and subsurface structures, utilities, etc. Have been shown on the drawings according to the best information available. No attempt has been made to show all below grade utilities not visible from surface features. The CONTRACTOR shall consider all locations approximate in nature. CONTRACTOR shall comply with Florida statute 553.851 regarding notification of utility owners prior to excavation and shall also notify 1-800-432-4770 “Sunshine State One Call of Florida, Inc.” At least forty-eight (48) hours prior to excavating. Evidence of such notice shall be furnished to the OWNER upon request. It may be necessary for CONTRACTOR to conduct soft/hard digs to confirm location of utilities, cost to conduct soft/hard digs shall be considered incidental.

C. Prior to the start of construction and/or ordering of any materials or fabricated items, the CONTRACTOR shall confirm, at their own expense, all exact vertical and horizontal locations, and shall be responsible to verify. If "other" structures, utilities, etc., not shown on the drawings, exist within the area of construction, the CONTRACTOR shall be responsible for providing engineer with “as-built” information and written notification of all conflicts with the proposed construction

prior to ordering materials and commencing work onsite. The CONTRACTOR shall not proceed with any work or ordering of any materials until all conflicts have been resolved.

D. CONTRACTOR shall take note of existing lift station components that are to remain and include in the CONTRACTORS base bid price, any adjustments or modifications that are necessary to provide a complete and fully functioning system meeting permitting, code, and OWNERS requirements.

1.17 PROTECTION AND RESTORATION OF SURVEY MONUMENTS

A. The CONTRACTOR shall be responsible for protecting and restoring all land and property corners, such as section corners, ¼ section corners, property corners or block control points, and for maintaining all horizontal and vertical control points. All surveying work shall be the responsibility of the CONTRACTOR and shall be performed under the supervision of a Florida Registered Land Surveyor. Survey points that will be destroyed during construction shall be properly referenced and replaced at the CONTRACTOR's expense with permanent monuments approved by the ENGINEER.

1.18 INDEMNIFICATION

A. To the fullest extent permitted by Laws and Regulations, CONTRACTOR shall indemnify and hold harmless OWNER and ENGINEER, and the officers, directors, 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 the OWNER or ENGINEER or any of their respective consultants, agents, officers, directors, partners, or employees 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 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 A shall not extend to the liability of ENGINEER and Engineer's officers, directors, partners, employees, agents, consultants, and subcontractors arising out of:

a. The preparation or approval of, or the failure to prepare or approve, maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or

b. Giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

1.19 CONTRACTORS LIABILITY INSURANCE

A. CONTRACTOR shall meet all contract insurance requirements providing coverage for not less than the amount specified in the contract or greater where required by Laws and Regulations including but not limited to providing Comprehensive General Liability Insurance, Umbrella or Excess Liability Insurance, and Contractual Liability Insurance.

B. Prior to beginning work, CONTRACTOR shall provide the OWNER and ENGINEER with its certificates of Insurance and endorsements naming the OWNER and ENGINEER as additional insureds.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

Exhibit 'A'
Equipment List with Examples

ELECTRICAL (ELECTRICAL & CONTROL PANELS):

Alternator, Circuit Breaker (control, disconnect, emergency, pump, or lighting), Control Circuit, Control Panel, Contactor, Insulator, Electrical Panel, Limit Switch, Main Breaker, Power Capacitor, Pressure Switch, Phase Monitor, Soft Start Controller, Timer, Transfer Switch, Transformer (bank, control, lighting, or current), Variable Frequency Drive, Voltage Regulator, Disconnect Switch, etc.

PUMPS:

Aeration, Backwash, Booster, Centrifugal, Flooded Suction, Grinder, Grit, Horizontal, Mud Hog, Moyno, Positive Displacement, Recirculation, Sampling, Screw, Sludge, Submersible, Sump, Sweep, Transfer, Turbine, Vacuum, etc.

TELEMETRY:

Alarms, Battery Backup Power, Controllers, CPU, Fiber Optics, PLC, Radio, Telemetry, UPS, etc.

VALVES:

Air Relief, Altitude, Auto Switchover, Back Pressure, Back Flush, Ball, Ball Check, Butterfly, Claval Check, Diaphragm, Flap, Gate, Hydraulic, Knife, Plug, Pneumatic, Pressure Reducing, Pressure Relief, Pulse Dampener, Silent Check, Under Flow, Vacuum Priming, etc.

Exhibit 'B'
Required Equipment Information

Required for all equipment:
Equipment Description:
Equipment Tag Number:
Equipment Location:
Manufacturer:
Serial Number:
Model Number:
Catalog Number:
Part Number:
Class/Shop/Drawing Number:
Type:

Required as pertains to each piece of equipment:

Size
Capacity
Volts
Amps
Phase
Heater Size
KW/HEA
KVA
RPM
Horse Power
Arrangement
Insulation
Enclosure
Service Factor
Frame Size
Drive Bearing No.
Opp Drive Bearing No.
Sealed Bearing No.
Fuel Capacity
Oil Filter Number
Air Filter Number
Coolant Filter Number
Fuel Filter Number
Hydro Filter Number
Ratio
Torque

Input RPM
Output RPM
TDH
PSI
Impeller Number
Impeller Diameter
Number of Stages
Suction Size
Discharge Size
Packing Type
Packing Size
Packing Rings
Mechanical Seal Type
Mechanical Seal Manufacturer
Body Size
Port Size
Valve Material
Pressure Rating
Face to Face
Body Ends
Hand Wheel
Trim
Casing Size
Column Pipe Length
Column Pipe Size
Column Pipe Material
Well Depth

END OF SECTION

SECTION 01 20 00

MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.1 GENERAL

A. The CONTRACTOR shall receive and accept the compensation provided in the Contract as full payment for performing all operations necessary to complete the work under the Contract, and also in full payment for all loss or damages between the actual quantities of work and quantities herein estimated by the ENGINEER, or from the action of the elements or from any unforeseen difficulties which may be encountered during the prosecution of the work until the final acceptance by the OWNER. The CONTRACTOR shall be responsible for conforming to all permit conditions as required by all governing agencies including, but not limited to, the local building department, Palm Beach County Health Department, and Palm Beach County Roadway and Engineering.

B. Each of the prices for the individual items stated in the Proposal include all costs and expenses for taxes, labor, supervision, administration, equipment, materials, commissions, transportation charges and expenses, patent fees and royalties, labor for handling materials during inspection, together with any and all other costs and expenses for performing and completing the work as shown on the Plans and specified herein. The basis of payment for an item at the unit price shown shall be in accordance with the description of that item in this Section.

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 for completing the work in its entirety. Should the CONTRACTOR feel that the cost for any item of work has not been established by the Bid Form or Payment Items, he shall include the cost for that 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 OWNER reserves the right to increase or decrease the quantities of work to be paid for at the stated unit price, whichever it deems to be in the best interest of the OWNER.

E. The quantities shown are approximate and are given only as a basis of calculation upon which the award of the Contract is to be made. The OWNER/ENGINEER does not assume any responsibility for the final quantities, nor shall the CONTRACTOR claim misunderstanding because of such estimate of quantities. The OWNER/ENGINEER may change the quantities or delete items in their entirety to match the project budget. Final payment shall be made only for the

satisfactorily completed quantity of each item.

F. All required manufacturer testing and certification shall be included in the unit prices shown in the proposal and Contract. Density testing required for compacted backfilling, and concrete strength and materials testing required at the time of construction shall be arranged for by CONTRACTOR and paid for by the CONTRACTOR. Water quality monitoring testing required for the dewatering permit shall be arranged for by the CONTRACTOR and paid for by the CONTRACTOR.

G. 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.

H. Payment for repair and/or replacement of existing utilities will be included in the unit price bid or the lump sum bid amount for the related new construction bid item.

I. The bids for the work are intended to establish a total cost for the work in its entirety. Should the CONTRACTOR feel that the cost for the work has not been established by specific items in the Bid Form, include the cost for that work in some related bid item so that the Bid Price for the project reflects the total cost for completing the work in its entirety.

PART 2 – PRODUCTS

Not Used

PART 3 - EXECUTION

3.1 MEASUREMENT AND PAYMENT

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 unless otherwise stated. A representative of the CONTRACTOR shall witness all field measurements.

B. Payment for all work completed under this Contract shall be in accordance with the provisions of the Contract and upon the basis of specific provisions of this Section of the Contract Documents. The bid items for furnishing and installing work under the Contract shall include full compensation for completing all activities not limited to selling, delivery, construction, testing and restoration, within the limits of easement and/or right-of- way to right-of-way, and work

areas outside of the easement and/or right-of-way.

C. Partial payment for Lump Sum items shall be paid for according to the percent of work fully complete, tested, and accepted by the OWNER.

3.2 PAYMENT ITEMS

GENERAL CONDITIONS

1. Mobilization and Demobilization – Bid Items No. 1 and 2

   a. Mobilization shall include the cost of the preparatory work and operations to mobilize for beginning Work on the Project, including, but not limited to, those operations necessary for the movement of personnel, equipment, materials, supplies and incidentals to the Project site, NPDES permitting, for the establishment of temporary offices, buildings, safety equipment and first aid supplies, sanitary and other facilities, as required by these Specifications, State and local laws and regulations, the costs of bonds, insurance and any other pre-construction expense necessary for the start of the Work. Payment for mobilization is limited to 2.5 percent of the total Contract value.

   b. Demobilization shall include removal of all construction equipment, materials and debris from the site of the work and restoration thereof to its preconstruction condition including repair of all damage caused by the construction. Payment for demobilization is limited to 1.0 percent of the total Contract value.

2. Construction Survey – Bid Item No. 3

   a. Lump sum payment for construction survey shall be in accordance with the requirements of the Contract Documents.

   b. Payment for Surveying Services will be made to the CONTRACTOR to retain a Professional Surveyor Licensed in the State of Florida to perform construction staking including establishing base-lines and verification of the connecting stations and offset and notification to the OWNER's representative of any discrepancies. Payment will be made for the construction staking and layout information in accordance with the requirements of the Contract Documents.

3. Pre-construction Video Taping – Bid Item No. 4

   a. Lump sum payment for the pre-construction video documentation shall be in accordance with the requirements of the Contract Documents.

   b. Payment for Pre-Construction Audio Video Services shall be made to the CONTRACTOR to perform videotaping along the entire route of the project prior

to construction including all areas to be disturbed. The OWNER shall make payment upon completion, submittal, review and approval of the videotaping by the ENGINEER or OWNER'S Representative.

4. Record Drawings – Bid Item No. 5

   a. Payment shall be on a lump sum basis for completing record drawings in accordance with the requirements of the Contract Documents.

   b. Payment for Record Drawings will be made to the CONTRACTOR to retain a Professional Surveyor Licensed in the State of Florida to perform as-built surveying including: signed and sealed record drawings; AUTO CAD Release 2000 record drawings; and other items described in Section 01 72 00, Project Record Drawings. Payment for record drawings will be made upon completion of all required items in accordance with the requirements of the Contract Documents.

   c. Payment for record drawings will be processed after drawings are approved. No partial payments shall be made for record drawings.

5. Maintenance of Traffic (MOT) – Bid Item No. 6

   a. Lump sum payment for maintenance of traffic including but not limited to: preparation, submittal, and approval of MOT plans by the appropriate agency; barricades; flag persons; sign boards; public notification; and removal of MOT devices in accordance with the requirements of the Contract Documents.

LIFT STATION IMPROVEMENTS

6. Lift Station 980 including Electrical and Instrumentation – Bid Item No. 7

   a. Payment for this item shall be on a Lump Sum (LS) basis.

   b. This item includes full compensation for demolition and modifications including the furnishing & installation of the piping and valves up to and including the station isolation valve, concrete, top slabs, meter can, fused disconnect switch with lighting arrestor, equipment rack, submersible pumps, hatches, guide rails, base elbows, telemetry, controls, and all mounting hardware and associated conduit, wire and grounding, testing, water service, coatings, top slab, fence, gates, driveway, etc. and any other items required for a complete and operating installation of the improvements shown on the drawings, details, and specifications.

   c. Work also includes excavation of any type including rock and/or muck, fill, backfill, sheeting, shoring, protection of existing utilities, complying with the State of Florida Trench Safety Act, dewatering, and disposal of excess material, etc. for the installation lift station improvements.

d. Additionally, the lump sum price shall include temporary piping assemblies, bypass pump, bypass pump power/fuel, and all appurtenances required per the specifications, especially Section 01 33 16, and the Approved Materials and Equipment List to place the existing lift station and gravity system on temporary bypass pumping required to perform the proposed improvements.

e. The lump price shall also include the cost to verify location (horizontal & vertical) of existing utilities including all utility crossings, including paralleling of utilities, prior to construction.

7. Lift Station 981 including Electrical and Instrumentation – Bid Item No. 8

a. Payment for this item shall be on a Lump Sum (LS) basis.

b. This item includes full compensation for demolition and modifications including the furnishing & installation of the piping and valves up to and including the station isolation valve, concrete, top slabs, meter can, fused disconnect switch with lighting arrestor, equipment rack, submersible pumps, hatches, guide rails, base elbows, telemetry, controls, and all mounting hardware and associated conduit, wire and grounding, testing, water service, coatings, top slab, fence, gates, driveway, etc. and any other items required for a complete and operating installation of the improvements shown on the drawings, details, and specifications.

c. Work also includes excavation of any type including rock and/or muck, fill, backfill, sheeting, shoring, protection of existing utilities, complying with the State of Florida Trench Safety Act, dewatering, and disposal of excess material, etc. for the installation lift station improvements.

d. Additionally, the lump sum price shall include temporary piping assemblies, bypass pump, bypass pump power/fuel, and all appurtenances required per the specifications, especially Section 01 33 16, and the Approved Materials and Equipment List to place the existing lift station and gravity system on temporary bypass pumping required to perform the proposed improvements. For Lift Station 981, this also includes temporary bypass pumping required to construct the new gravity sewer connecting to the new lift station site.

e. The lump price shall also include the cost to verify location (horizontal & vertical) of existing utilities including all utility crossings, including paralleling of utilities, prior to construction.

8. Lift Station 1051 including Electrical and Instrumentation – Bid Item No. 9

a. Payment for this item shall be on a Lump Sum (LS) basis.

b. This item includes full compensation for demolition and modifications including the furnishing & installation of the piping and valves up to and including the station isolation valve, concrete, top slabs, meter can, fused disconnect switch with lighting arrestor, equipment rack, submersible pumps, hatches, guide rails, base elbows, telemetry, controls, and all mounting hardware and associated conduit, wire and grounding, testing, water service, coatings, top slab, fence, gates, driveway, etc. and any other items required for a complete and operating installation of the improvements shown on the drawings, details, and specifications.

c. Work also includes excavation of any type including rock and/or muck, fill, backfill, sheeting, shoring, protection of existing utilities, complying with the State of Florida Trench Safety Act, dewatering, and disposal of excess material, etc. for the installation lift station improvements.

d. Additionally, the lump sum price shall include temporary piping assemblies, bypass pump, bypass pump power/fuel, and all appurtenances required per the specifications, especially Section 01 33 16, and the Approved Materials and Equipment List to place the existing lift station and gravity system on temporary bypass pumping required to perform the proposed improvements.

e. The lump price shall also include the cost to verify location (horizontal & vertical) of existing utilities including all utility crossings, including paralleling of utilities, prior to construction.

FORCE MAIN AND GRAVITY SEWER IMPROVEMENTS

5. PVC Wastewater Force Main (Bid Items 10 to 13)

   a. Measurement shall be the horizontal distance along the surface of the trench between the listed stations as shown on the record drawings.

   b. Payment for force main shall be the product of the appropriate unit price bid and the horizontal distance measured per linear foot. The unit price bid per foot for this item shall be full compensation to provide all clearing, excavation, dewatering, trench safety, supporting/protecting existing utilities, pressure testing of pipe, backfilling, compaction, density testing, and grading for the proper construction of the work with all work as shown on the Contract Drawings and Specifications. PVC pipe within lump sum items are to be included in those items and will <u>not</u> be paid for separately.

6. Ductile Iron Wastewater Force Main (Bid Item 14 to 16)

   a. Measurement shall be the horizontal distance along the surface of the trench

between the listed stations as shown on the record drawings.

b. Payment for force main shall be the product of the appropriate unit price bid and the horizontal distance measured per linear foot. The unit price bid per foot for this item shall be full compensation to provide all clearing, excavation, dewatering, trench safety, supporting/protecting existing utilities, pressure testing of pipe, backfilling, compaction, density testing, and grading for the proper construction of the work with all work as shown on the Contract Drawings and Specifications. DIP pipe within lump sum items are to be included in those items and will not be paid for separately.

7. Ductile Iron Fittings for Force Main with Accessories (Bid Item 17)

a. Measurement shall be based on the weight of the fittings installed per ton based on manufacture's specifications. The weight of glands, gaskets, nuts, washers, bolts, rods and other accessories will not be measured for payment.

b. Payment for furnishing and installing said items will be the product of the unit price named in the Bid Form and the weight of the fittings. The unit price for this item shall include, but not be limited to, excavation, dewatering, disposal of excess materials, bracing, sheeting, trench safety, furnishing and installing of ductile iron fittings, bolts, nuts, gaskets, flanges, restraints, markers, backfilling, compaction, density testing, thrust restraints, flushing, pressure testing of pipe, and grading as shown on the Contract Drawings and Specifications. Fittings within lump sum items are to be included in those items and will not be paid for separately.

8. Mechanical Joint Restraint for DIP or PVC Pipe (Bid Items 18 to 21)

a. Measurement for payment of said item will be based upon the actual quantity furnished and installed including the restraining device, bolts and nuts in accordance with the requirements of the Contract Documents.

b. Payment for furnishing and installing said item will be made at the unit price named in the Bid Schedule. The unit price shall constitute full compensation for furnishing and installing the item as shown on the Contract Drawings and Specifications, and shall include clearing, excavation, dewatering, bedding, testing, backfilling and grading. Restraints within lump sum items are to be included in those items and will not be paid for separately.

9. Restraint Harness for DIP and PVC Pipe (Bid Items 22 through 24)

a. Measurement for payment of said item will be based upon the actual quantity furnished and installed, in accordance with the requirements of the Contract Documents.

b. Payment for furnishing and installing said item will be made at the unit price named

in the Bid Schedule. The unit price shall constitute full compensation for furnishing and installing the item as shown on the Contract Drawings and Specifications, and shall include clearing, excavation, dewatering, bedding, testing, backfilling and grading. Restraints within lump sum items are to be included in those items and will not be paid for separately.

10. Gate Valve with Box (Bid Items 25 and 26)

    a. Measurement for payment for valve with box and concrete collar based upon the actual quantity furnished and installed including all gaskets, bolts, nuts and appurtenances in accordance with the requirements of the Contract Documents.

    b. Payment for furnishing and installing said item will be made at the unit price named in the Bid Schedule. The unit price shall constitute full compensation for furnishing and installing the item as shown on the Contract Drawings and Specifications, and shall include clearing, excavation, dewatering, bedding, testing, backfilling, density testing, and grading. Valves within lump sum items are to be included in those items and will not be paid for separately.

11. 2" Air Release Valve w/Manhole (Bid Item 27)

    a. Measurement for payment for furnishing and installing air release valves with manholes will be based on the actual number of units as shown on the record drawings furnished and installed in accordance with the Contract Documents.

    b. Payment for furnishing and installing said item will be the measured quantity at the unit price bid. The unit price shall constitute full compensation for the furnishing and installing the item including manhole, riser, bricks or grade rings, mortar, frame and covers with Palm Beach County Logo and appropriate label as shown on the Contract Drawings and Specifications, and shall include clearing, excavation, dewatering, bedding, testing, backfilling, density testing, and grading.

12. Connect to existing force main (Bid Items 28 and 29)

    a. Measurement for payment of said item will be based upon the actual quantity furnished and installed, in accordance with the requirements of the Contract Documents. The connection to existing water mains shall include the Pressure Pipe Tie-In Detail (Refer to the latest PBCWUD Minimum Design and Construction Standard details).

    b. Payment for furnishing and installing said item will be the measured quantity at the unit price named in the Bid Schedule. The unit price shall constitute full compensation for the furnishing and installing the item as shown on the Contract Drawings and Specifications, and shall include clearing, excavation, dewatering, bedding, testing, backfilling, density testing, and grading. The cost of restraining existing piping shall be included under this Bid Item. The cost of tanker trucks

for disposal of wastewater for force main connections shall be paid under this line item.

13. Tapping Sleeve with Tapping Valve and Valve Box (Bid Items 30 to 32)

a. Measurement for payment of tapping sleeve with tapping valve, box and concrete collar will be based upon the actual quantity furnished, installed and tapped, in accordance with the requirements of the Contract Documents.

b. Payment for furnishing and installing tapping sleeve with tapping valve, box and concrete collar shall be made at the unit price named in the Bid Schedule. The unit price shall constitute full compensation for furnishing and installing the item as shown on the Contract Drawings and Specifications, and shall include clearing, excavation, dewatering, bedding, testing, backfilling and grading.

14. Pig Receiving/Sending Station (Bid Item 33)

a. Measurement for payment for each pig receiving or sending station including pipe, fittings, joint restraints, pipe restraints, valves with box and concrete collar based upon the actual quantity of pig receiving or sending stations furnished and installed including all gaskets, bolts, nuts and appurtenances in accordance with the requirements of the Contract Documents.

b. Payment for furnishing and installing said item will be made at the unit price named in the Bid Schedule. The unit price shall constitute full compensation for furnishing and installing the item as shown on the Contract Drawings and Specifications, and shall include clearing, excavation, dewatering, bedding, testing, backfilling, density testing, and grading.

15. PVC Gravity Sewer Main (Bid Item 34)

a. Measurement shall be the horizontal distance along the surface of the trench between the listed stations as shown on the record drawings.

b. Payment for gravity sewer shall be the product of the appropriate unit price bid and the horizontal distance measured per linear foot. The unit price bid per foot for this item shall be full compensation to provide all clearing, excavation, dewatering, trench safety, supporting/protecting existing utilities, backfilling, density testing, and grading for the proper construction of the work with all work as shown on the Contract Drawings and Specifications.

16. Sanitary Sewer Manhole w/ Ring & Cover and Corrosion Barrier System (Bid Item 35)

a. Measurement for payment for furnishing and installing sanitary sewer manholes will be based on the actual number of units as shown on the record drawings furnished and installed in accordance with the Contract Documents.

b. Payment for furnishing and installing said item will be the measured quantity at the unit price bid. The unit price shall constitute full compensation for the furnishing and installing the item including manhole, riser, connections, bricks or grade rings, mortar, corrosion barrier system, frame and covers with Palm Beach County Logo and appropriate label as shown on the Contract Drawings and Specifications, and shall include clearing, excavation, dewatering, bedding, testing, backfilling and grading.

17. HDPE Storm Sewer Pipe (Bid Item 36)

a. Measurement shall be the horizontal distance along the surface of the trench between the listed stations as shown on the record drawings.

b. Payment for HDPE storm sewer shall be the product of the appropriate unit price bid and the horizontal distance measured per linear foot. The unit price bid per foot for this item shall be full compensation to provide all clearing, excavation, dewatering, trench safety, supporting/protecting existing utilities, backfilling, density testing, and grading for the proper construction of the work with all work as shown on the Contract Drawings and Specifications.

18. Type C Catch Basin (Bid Item 37)

a. Measurement for payment for furnishing and installing Type C catch basins will be based on the actual number of units as shown on the record drawings furnished and installed in accordance with the Contract Documents.

b. Payment for furnishing and installing said item will be the measured quantity at the unit price bid. The unit price shall constitute full compensation for the furnishing and installing the item including FDOT Type C catch basin, connections, bricks or grade rings, mortar, and frame and grate as shown on the Contract Drawings and Specifications, and shall include clearing, excavation, dewatering, bedding, testing, backfilling and grading.

19. Storm Manhole (Bid Item 38)

a. Measurement for payment for furnishing and installing storm manholes will be based on the actual number of units as shown on the record drawings furnished and installed in accordance with the Contract Documents.

b. Payment for furnishing and installing said item will be the measured quantity at the unit price bid. The unit price shall constitute full compensation for the furnishing and installing the item including manhole, riser, connections, bricks or grade rings, mortar, and frame and covers w as shown on the Contract Drawings and Specifications, and shall include clearing, excavation, dewatering, bedding, testing, backfilling and grading.

20. Grouting/Deactivation of Existing Pipe (Bid Items 39 to 42)

    a. Measurement of grouting/deactivation of pipe will be the horizontal length of the existing pipe to be removed from service in accordance with the requirements of the Contract Documents.

    b. Payment for grouting/deactivation of pipe will be the measured quantity at the contract unit price per foot, which price shall be full compensation for all labor, materials and operations necessary for grouting and deactivation of existing pipe, and all associated work as shown on the Contract Drawings and Specifications, and shall include clearing, excavation, dewatering, bedding, testing, backfilling, density testing, grading, removal and disposal of existing valves, valve vaults, meter boxes, and appurtenances.

21. Asphalt Milling and Overlay (Bid Item 43)

    a. Measurement for payment said item will be based upon the actual quantity milled and overlayed in accordance with the requirements of the Contract Documents. Invoices from the supplier of the actual quantity furnished and installed will be required. Asphalt type shall match the friction course of the road being overlayed.

    b. Payment for asphalt milling and overlay shall include cleaning of streets, removal of excess sod from the roadway, tack coat, asphalt materials placement and compaction, cleanup of excess sod and asphalt waste, restoration of all pavement markings and all work as shown on the Contract Drawings and Specifications.

22. Asphalt Roadway Removal and Restoration (Bid Item 44)

    a. Measurement of asphaltic concrete surface course for asphalt roadway restoration will be the actual area of the surface course replaced in square yard, furnished and installed in accordance with the requirements of the Contract Documents.

    b. Payment for open-cut roadway for asphaltic concrete restoration will be the measured quantity at the Contract unit price per square yard with thickness of not less than 2-1/2", which price shall be full compensation for all labor, equipment materials, transportation and necessary preparation including placement and compaction of stabilized sub-grade, placement and compaction of base course, density testing, tack coat, placement and compaction of surface course, replacement of concrete curbs, testing, restoring all pavement markings, removal and disposal of existing asphalt including saw cutting and all work as shown on the Contract Drawings and Specifications.

23. Asphalt Driveway Removal and Restoration (Bid Item 45)

    a. Measurement of asphalt driveway restoration will be the actual areas

reconstructed and accepted in accordance with the requirements of the Contract Documents.

b. Payment for asphalt driveway restoration will be made at the contract unit price per square yard, which price shall be full compensation for all labor, materials and operations necessary for cutting, removal and replacement of all asphalt driveway satisfactorily restored, including compaction and base, density testing, and all work as shown on the Contract Drawings and Specifications.

24. Asphalt Sidewalk Removal and Restoration (Bid Item 46)

a. Measurement of asphalt sidewalk restoration will be the actual areas reconstructed and accepted in accordance with the requirements of the Contract Documents.

b. Payment for asphalt sidewalk restoration will be made at the contract unit price per square yard, which price shall be full compensation for all labor, materials and operations necessary for cutting, removal and replacement of all asphalt sidewalk satisfactorily restored, including compaction and base, density testing, and all work as shown on the Contract Drawings and Specifications.

25. Concrete Sidewalk Removal and Restoration (Bid Item 47)

a. Measurement of concrete sidewalk removal and restoration will be the actual areas reconstructed and accepted in accordance with the requirements of the Contract Documents and FDOT Standard Plan 522-001.

b. Payment for concrete sidewalk removal and restoration will be made at the contract unit price per square yard, which price shall be full compensation for all labor, materials and operations necessary for cutting, removal and replacement of all concrete sidewalk, including welded wire fabric, expansion joints, concrete and density testing, satisfactorily restored and all work as shown on the Contract Drawings and Specifications.

26. Concrete Curb and Gutter Removal and Restoration (Bid Item 48)

a. Measurement of concrete curb and gutter removal and restoration will be the actual lengths reconstructed and accepted in accordance with the requirements of the Contract Documents and FDOT Standard Plan 520-001.

b. Payment for concrete curb and gutter removal and restoration will be made at the contract unit price per linear foot, which price shall be full compensation for all labor, materials and operations necessary for cutting, removal and replacement of all concrete curb and gutter, including expansion joints, concrete and density testing, satisfactorily restored and all work as shown on the Contract Drawings and Specifications.

27. Bahia Sod (Bid Item 49)

a. Measurement for payment per square yard (SY) of said item will be based upon a maximum payment width of 10 feet furnished and installed in accordance with the requirements of the Contract Documents. Any disturbed/damaged sod beyond the 10-foot width (5 feet in each direction from the center of the new force main) shall be replaced by the CONTRACTOR at no additional cost to the OWNER.

b. Payment for performing all clean up, fine grading and restoration with sod will be made at the Contract unit price for the item upon completion of the work. Said price shall be full compensation for all material, equipment and labor required for finish grading, landscape grading, sodding, general site clean-up, irrigation and fertilization. All grass areas shall be fully sodded as shown on the Contract Drawings and Specifications.

28. Root Barrier (Bid Item 50)

a. Measurement for payment of said item will be based upon the actual quantity furnished and installed upon linear footage furnished and installed in accordance with the requirements of the Contract Documents.

b. Payment for performing all clean up, fine grading and restoration will be made at the Contract unit price for the item upon completion of the work. Said price shall be full compensation for all material, equipment and labor required for installation of root barrier as shown on the Contract Drawings and Specifications.

29. Miscellaneous Landscaping Restoration (Bid Item 51):

a. Measurement for payment of said item will be based upon each location where the existing landscaping is restored in accordance with the requirements of the Contract Documents.

b. Payment for performing all clean up, and restoration with landscaping will be made at the lump sum for the item upon completion of the work. Said price shall be full compensation for all material, equipment and labor required for finish grading, landscape grading, sodding, general site clean-up, irrigation, and fertilization. All landscaped areas shall be fully restored to existing or better conditions where shown on the Contract Drawings and Specifications.

LIFT STATION 637 IMPROVEMENTS

30. Lift Station 637 including Electrical and Instrumentation – (Bid Item No. 52)

a. Payment for this item shall be on a Lump Sum (LS) basis.

b. This item includes full compensation for demolition and modifications including the furnishing & installation of the piping and valves at the lift station site, connecting to the existing forcemain, concrete, top slabs, backfill, FDOT modified gravity wall, meter can, fused disconnect switch with lighting arrestor, equipment rack, submersible pumps, hatches, guide rails, base elbows, telemetry, controls, and all mounting hardware and associated conduit, wire and grounding, testing, water service, coatings, painting, manhole modifications and rehabilitation, wetwell leak repair, wetwell extension and collar, owner furnished generator (pickup, delivery, installation, initial fuel, fuel for testing, final fuel, startup, testing) fence, gates, elevated driveway, site grading, temporary and permanent fill, etc. and any other items required for a complete and operating installation of the improvements shown on the drawings, details, and specifications.

c. Work also includes excavation of any type including rock and/or muck, fill, backfill, sheeting, shoring, protection of existing utilities, complying with the State of Florida Trench Safety Act, dewatering, and disposal of excess material, etc. for the installation lift station improvements.

d. The lump price shall ALSO INCLUDE THE COST TESTING THE WETWELL COATING, prior to substantial completion of the lift station.

e. Additionally, the lump sum price shall include temporary piping assemblies, bypass pump, bypass pump power/fuel, and all appurtenances required per the specifications, especially Section 01 33 16, and the Approved Materials and Equipment List to place the existing lift station and gravity system on temporary bypass pumping required to perform the proposed improvements.

f. The lump price shall also include the cost to verify location (horizontal & vertical) of existing utilities including all utility crossings, including paralleling of utilities, prior to construction.

END OF SECTION

SECTION 01 25 13

SUBSTITUTIONS AND PRODUCT OPTIONS

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

A. Furnish and install products specified, under options and conditions for substitutions stated in this Section.

1.2 RELATED REQUIREMENTS

A. **Section 01 60 00: Material, Equipment and Products**.

B. **Section 01 77 00: Project Close-Out.**

1.3 PRODUCTS LIST

A. Within 30 days after Award of the Contract, submit to the ENGINEER five (5) copies of a complete list of major products proposed for installation.

B. Tabulate products by Specification Section Number and Title.

C. For products specified only by reference standards, list the following information for each such product:

1. Name and address of manufacturer.

2. Trade name.

3. Model or catalog designation.

4. Manufacturer's data including reference standards and performance test data.

1.4 CONTRACTOR'S OPTIONS

A. For products specified only by reference standard, select products meeting that standard, by any manufacturer.

B. For products specified by naming several products or manufacturer's, select any one (1) of those products and manufacturers named which comply with the Technical Specifications.

C. For products specified by naming only one or more products or manufacturers and stating "or equal", submit a request as for substitutions, for any product or manufacturer which is not specifically named.

D. For those specified by naming only one (1) product and manufacturer, there is no option and no substitution will be allowed.

1.5 SUBSTITUTIONS

A. Within a 30-day period after Award of the Contract, the ENGINEER will consider formal requests from the CONTRACTOR for substitutions of products in place of those specified.

1. After the end of the 30-day period, requests will be considered only in case of product unavailability or other conditions beyond the control of the CONTRACTOR.

B. Submit a separate request for each substitution. Support each request with the following:

1. Complete data substantiating compliance of the proposed substitution with the requirements stated in the Contract Documents:

a. Product identification, including manufacturer's name and address.

b. Manufacturer's literature identifying:
   i. Product description.
   ii. Reference standards.
   iii Performance and test data.

c. Samples, as applicable.

d. Name and address of similar projects on which the product has been used, and the date of each installation.

2. An itemized comparison of the proposed substitution with the product specified, listing all variations.

3. Data relating to changes in the construction schedule.

4. Any effect of the substitution on separate contracts.

5. List of changes, if any, required in other work or products.

6. Accurate cost data comparing proposed substitutions with the product specified.

7. Designation of required license fees or royalties.

8. Availability of maintenance services and sources of replacement materials.

C. Substitutions will not be considered for acceptance when:

1. They are indicated or implied on Shop Drawings or product data submittals without a formal request from the CONTRACTOR.

2. They are requested directly by a subcontractor or a supplier.

3. Acceptance will require substantial revisions to the Contract Documents.

D. Substitute products shall not be ordered or installed without written acceptance of the ENGINEER.

E. The ENGINEER will determine the acceptability of proposed substitutions.

1.6 CONTRACTOR'S REPRESENTATION

A. In making formal requests for substitutions, the CONTRACTOR represents that:

1. CONTRACTOR has investigated the proposed product and has determined that it is equal to or superior in all respects to that specified.

2. CONTRACTOR will provide the same warranties or bonds for substitute products as for the product specified.

3. CONTRACTOR will coordinate installation of accepted substitutions into the work, and will make such changes required for the work to be complete in all respects.

4. CONTRACTOR waives claims for additional costs caused by substitutions which may subsequently become apparent.

5. Cost data is complete and includes related costs under this Contract, but not the following:

a. Costs under separate contracts.

b. The ENGINEER's costs of redesign or revision of the Contract Documents.

1.7 ENGINEER'S DUTIES

A. Review the CONTRACTOR's requests for substitutions with reasonable promptness.

B. Notify the CONTRACTOR, in writing, of decisions to accept or reject requested substitutions.

PART 2 – PRODUCTS

Not Used.

PART 3 – EXECUTION

Not Used.

END OF SECTION

SECTION 01 26 57

CHANGE ORDER PROCEDURES

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

A. Promptly implement Change Order procedure:

1. Provide full written data required to evaluate changes.

2. Maintain detailed records of work done on a time and materials/force account basis.

3. Provide full documentation to the ENGINEER on request.

B. Designate in writing the member of the CONTRACTOR's organization:

1. Authorized to accept changes in the work.

2. Responsible for informing others in the CONTRACTOR's employ of the authorization of changes in the work.

C. The OWNER will designate in writing the person authorized to execute Change Orders.

1.2 RELATED REQUIREMENTS

A. Agreement of the Contract Documents.

B. General Conditions of the Contract Documents.

C. Supplementary Conditions of the Contract Documents.

D. **Section 01 29 00: Application for Payment**.

E. **Section 01 32 16: Construction Schedules**.

F. **Section 01 77 00: Project Close-out**.

1.3 DEFINITIONS

A. Change Order: See the General Conditions and the Supplementary Conditions of the Contract Documents.

B. Field Order: See the General Conditions and the Supplementary Conditions of the Contract Documents.

C. Work Directive Change: See the General Conditions and the Supplementary Conditions of the Contract Documents.

D. Construction Change Authorization: A written order to the CONTRACTOR, signed by the OWNER and the ENGINEER (if applicable), which amends the Contract Documents as described, and authorizes the CONTRACTOR to proceed with a change which affects the Contract Sum and/or the Contract Time, for inclusion in a subsequent Change Order.

1.4 PRELIMINARY PROCEDURES

A. The OWNER or the ENGINEER (if applicable) may initiate changes by submitting a written Proposal Request to the CONTRACTOR. Such requests will include the following:

1. Detailed description of the change, products, and location of the change in the project.

2. Supplementary or revised Drawings and Technical Specifications.

3. The projected time span for making the change and a specific statement as to whether overtime work is or is not authorized.

4. A specific period of time during which the requested price will be considered valid.

5. Such request is for information only, and is not an instruction to execute the changes, nor to stop work in progress.

B. The CONTRACTOR may initiate changes by submitting a written notice to the OWNER and the ENGINEER (if applicable) containing the following:

1. Description of the proposed changes.

2. Statement of the reason for making the changes.

3. Statement of the effect on the Contract Sum and the Contract Time.

4. Statement of the effect of the work on other prime CONTRACTOR's.

5. Documentation supporting any change in Contract Sum or Contract Time, as appropriate.

1.5 CONSTRUCTION CHANGE AUTHORIZATIONS AND WORK DIRECTIVES

A. In lieu of a Proposal Request, the OWNER or the ENGINEER (if applicable) may issue a construction change authorization or a work Directive for the CONTRACTOR to proceed with a change for subsequent inclusion in the next Change Order.

B. The Authorization or Directive will describe changes in the work, both additions and deletions, with attachments of revised Contract Documents to define details of the change, and will designate the method of determining any change in the Contract Sum and any change in the Contract Time.

C. The OWNER and the ENGINEER (if applicable) will sign and date the Construction Change Authorization or work Directive as authorization for the CONTRACTOR to proceed with the changes.

D. The CONTRACTOR shall sign and date the Construction Change Authorization or work Directive to indicate agreement with the terms therein.

1.6 DOCUMENTATION OF PROPOSALS AND CLAIMS

A. Support each quotation for a lump-sum proposal, and for each unit price which has not previously been established, with sufficient substantiating data to allow the OWNER and the ENGINEER to evaluate the quotation.

B. On request, provide additional data to support time and cost computations for:

1. Labor required.

2. Equipment required.

3. Products required:

    a. Recommended sources of purchase and unit costs.

    b. Quantities required.

4. Taxes, insurance and bonds.

5. Credit for work deleted from the Contract, similarly documented.

6. Overhead and Profit.

7. Justification for any change in Contract Time.

C. Support each claim for additional costs, and for work done on a time-and-material/force account basis, with documentation as required for a lump sum proposal, plus additional information as follows:

1. Name of OWNER's authorized agent who ordered the work.

2. The date of the order.

3. Dates and times work was performed and by whom.

4. Time records, summary of hours worked, and hourly rates paid.

5. Receipts and invoices for:

a. Equipment used, listing dates and times of use.

b. Products used, listing quantities.

c. Subcontractors.

1.7 PREPARATION OF CHANGE ORDERS

A. The OWNER or the ENGINEER (if applicable) will prepare each Change Order on the OWNER's standard form.

B. The Change Order will describe changes in the work, both additions and deletions, with attachments of revised Contract Documents to define details of the changes.

C. Change Order will provide an accounting of the adjustment in the Contract Sum and/or the Contract Time.

1.8 LUMP-SUM/FIXED PRICE CHANGE ORDER

A. Content of Change Orders will be based on either:

1. The Proposal Request and the CONTRACTOR's responsive Proposal as mutually agreed between the OWNER and the CONTRACTOR.

2. The CONTRACTOR's Proposal for a change, as recommended by the ENGINEER.

B. The OWNER and the ENGINEER (if applicable) will sign and date the Change Order as authorization for the CONTRACTOR to proceed with the changes.

B. The CONTRACTOR shall sign and date the Change Order to indicate agreement with all of the terms therein.

1.9 UNIT PRICE CHANGE ORDER

A. The content of Change Orders will be based on either:

1. The OWNER's and/or the ENGINEER's definition of the scope of the required changes.

2. The CONTRACTOR's Proposal for a change, as recommended by the ENGINEER.

3. Survey of completed work.

B. The amounts of the unit prices to be:

1. Those stated in the Agreement of the Contract Documents.

2. Those mutually agreed upon between the OWNER and the CONTRACTOR.

C. When quantities of each of the items affected by the Change Order can be determined prior to the start of the work:

1. The CONTRACTOR will sign and date the Change Order to indicate agreement with the terms therein.

2. The OWNER and the ENGINEER (if applicable) will sign and date the Change Order as authorization for the CONTRACTOR to proceed with the changes.

D. When quantities of the items cannot be determined prior to the start of the work:

1. The ENGINEER (if applicable) or the OWNER will issue a Construction Change Authorization directing the CONTRACTOR to proceed with the change on the basis of unit prices, and will cite the applicable unit prices.

2. At completion of the change, the OWNER or the ENGINEER (if applicable) will determine the cost of such work based on the unit prices and quantities used.

a. The CONTRACTOR shall submit documentation to establish the number of units of each item and any claims for a change in Contract Sum and/or Contract Time.

3. The ENGINEER (if applicable) will sign and date the Change Order to establish the change in Contract Sum and/or Contract Time.

4. The OWNER and the CONTRACTOR will sign and date the Change Order to indicate their agreement with the terms therein.

1.10 TIME AND MATERIAL/FORCE ACCOUNT CHANGE ORDER / CONSTRUCTION CHANGE AUTHORIZATION

A. The ENGINEER (if applicable) or the OWNER will issue a Construction Change Authorization directing the CONTRACTOR to proceed with the changes.

B. At completion of the change, the CONTRACTOR shall submit itemized accounting and supporting data as provided in the Article 1.6 "Documentation of Proposals and Claims" of this Section.

C. The OWNER or the ENGINEER (if applicable) will determine the allowable costs of such work, as provided in the General Conditions and the Supplementary Conditions of the Contract Documents.

D. The ENGINEER (if applicable) will sign and date the Change Order to establish the change in Contract Sum and/or Contract Time.

E. The OWNER and the CONTRACTOR will sign and date the Change Order to indicate their agreement therewith.

1.11 CORRELATION WITH CONTRACTOR'S SUBMITTALS

A. Periodically revise the Schedule of Values and Application for Payment forms to record each change as a separate item of work, and to record the adjusted Contract Sum.

B. Periodically revise the Construction Schedule to reflect each change in Contract Time:

1. Revise sub-schedules to show changes for other items of work affected by the changes.

C. Upon completion of work under a Change Order, enter pertinent changes in Record Documents.

PART 2 – PRODUCTS

Not Used.

PART 3 – EXECUTION

Not Used.

END OF SECTION

SECTION 01 29 00

APPLICATION FOR PAYMENT

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

A. Submit Applications for Payment to the OWNER in accordance with the schedule established by the General Conditions of the Contract Documents.

1.2 RELATED REQUIREMENTS

A. Agreement between the OWNER and the CONTRACTOR.

B. General Conditions of the Contract Documents.

C. **Section 01 26 57: Change Order Procedures.**

D. **Section 01 29 73: Schedule of Values.**

E. **Section 01 32 16: Construction Schedules.**

F. **Section 01 77 00: Project Close Out.**

G. **Section 01 72 00: Project Record Drawings.**

1.3 FORMAT AND DATA REQUIRED

A. Submit applications on the form required by and provided by the OWNER, with itemized data typed on 8½ inch x 11-inch white paper continuation sheets, and Excel computer file.

B. Provide itemized data on continuation sheets:

1. Format, schedules, line items and values: Those accepted by the OWNER, see **Section 01 29 73 – Schedule of Values**.

1.4 PREPARATION OF APPLICATION FOR EACH PROGRESS PAYMENT

A. Application Form provided by OWNER:

1. Fill in required information, including that for Change Orders executed prior to the cut-off date of the Application.

2. Fill in the summary of dollar values to agree with respective totals indicated on continuation sheets.

3. Execute certification with the signature of a responsible officer of the CONTRACTOR's firm.

B. Continuation Sheets:

1. Fill in the total list of all scheduled component items of work, with the item number and scheduled dollar value for each item.

2. Fill in the dollar value in each column for each scheduled line item when work has been performed or products stored.

a. Round off values to the nearest dollar, or as specified for the Schedule of Values.

3. List each Change Order executed prior to the cut-off date of the Application.

a. List by Change Order Number and description, as for an original component item of work.

1.5 SUBSTANTIATING DATA FOR PROGRESS PAYMENTS

A. The CONTRACTOR shall submit suitable information, with a cover letter identifying:

1. Project Name.

2. Application number, date and period of coverage.

3. Detailed list of enclosures.

4. Stored products:

a. Item number and identification as shown on the application.

b. Description of specific material.

5. Submit updated Construction Schedules.

6. Provide record drawings for piping installation within the payment period.

B. Submit one (1) copy of data with each original application.

1.6 PREPARATION OF APPLICATION FOR FINAL PAYMENT

A. Fill in Application form as specified for progress payments.

B. Use continuation sheet for presenting the final statement of accounting.

1.7 SUBMITTAL PROCEDURE

A. Submit Applications for Payment to the OWNER at the times stipulated.

B. Submit not less than three (3) originals of each Application.

C. When the OWNER finds the Application to be properly completed and correct, it will be processed for payment.

PART 2 – PRODUCTS

Not Used.

PART 3 – EXECUTION

Not Used.

END OF SECTION

SECTION 01 29 73

SCHEDULE OF VALUES

PART 1 – GENERAL

1.1 REQUIREMENTS INCLUDED

A. This Section defines the process whereby the Schedules of Values (lump sum price breakdown) shall be developed and incorporated into the project schedule. Upon request of the ENGINEER, the CONTRACTOR shall support the Schedule of Values with data that shall substantiate their correctness. The Schedule of Values, unless objected to by the ENGINEER, may be used for the lump sum portions of the work as the basis for Payment Applications.

1.2 FORM AND CONTENT OF SCHEDULE OF VALUES

A. The CONTRACTOR shall type Schedule of Values on 8½ inches X 11 inches white paper. The CONTRACTOR's standard forms and automated printout shall be considered for approval by the ENGINEER upon the CONTRACTOR's request. The CONTRACTOR shall identify the Schedule of Values with:

1. Title of Project and Location.

2. ENGINEER and OWNER's Project numbers.

3. Date of Submission

B. The Schedule of Values shall list the installed value of the components of the work in sufficient detail to serve as a basis for computing values for partial payments during construction.

C. The CONTRACTOR shall identify each line with the numbers and title of the respective major section of the Technical Specifications.

D. For each major line item, the CONTRACTOR shall list sub-values of major products or operations under the item.

E. For the various portions of the work:

1. Each item shall include a directly proportional amount of the CONTRACTOR's overhead profit.

2. For items on which partial payments will be requested for stored materials, the Schedule of Values shall conform to the requirements of the General Conditions of these Contract Documents.

F. The sum of each item of the lump sump breakdown shall equal the lump sum in the Proposal. All lump sum values listed in the Schedule of Values plus the sum of the unit price shall equal the Total Contract Price.

1.3 PRELIMINARY SCHEDULE OF VALUES

A. The CONTRACTOR shall submit a preliminary Schedule of Values for the major components of the work at the Preconstruction conference in accordance with **Section 01 11 00 – Summary of Work**.

B. The CONTRACTOR and ENGINEER shall meet and jointly review the preliminary Schedule of Values and make any adjustments in value allocation and 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 from items in the above listing if in the opinion of the ENGINEER such reallocation is necessary. This review and any necessary revisions shall be completed within 25 days from the date of Notice to Proceed.

1.4 DETAILED SCHEDULE OF VALUES

A. The CONTRACTOR shall prepare and submit a detailed Schedule of Values to the ENGINEER within 30 days from the date of Notice to Proceed. The detailed Schedule of Values shall be based on the accepted preliminary Schedule of Values for major work components. Because 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, sufficient detailed breakdown shall be provided to meet this requirement. The ENGINEER shall be the sole judge of acceptable numbers, details and description of values established. If, in the opinion of the ENGINEER, a greater number of Schedule of Values items than proposed by the CONTRACTOR are necessary, the CONTRACTOR shall add in the additional items so identified by the ENGINEER.

B. The CONTRACTOR and ENGINEER shall meet and jointly review the detailed Schedule of Values within 35 days from the date of Notice to Proceed. The value allocations and extent of detail shall be reviewed to determine any necessary adjustments to the values and to determine if sufficient detail has been proposed to provide cost loading of the CPM Schedule activities. Any adjustment deemed necessary to the value allocation or level of detail shall be made by the CONTRACTOR and a revised detailed Schedule of Values shall be submitted within 40 days from the date of Notice to Proceed.

C. 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.

1.5 CROSS REFERENCE LISTING

A. To assist in the correlation of the Schedule of Values and the CPM Schedule, the CONTRACTOR shall provide a Cross Reference Listing which shall be 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.

B. These listings shall be updated and submitted in conjunction with the CPM monthly submittals as stated in **Section 01 32 16 –Construction Schedules.**

C. Approved change orders reflected in the CPM Schedule shall be incorporated into the Schedule of Values as a single unit identified by the change order number.

1.6 CHANGES TO SCHEDULE OF VALUE

A. Changes to the CPM Schedule, which add activities not included in the original schedule but included in the original work (schedule omissions) shall have values assigned as approved by the ENGINEER. Other activity values shall be reduced to provide equal value adjustment increases for added activities as approved by the ENGINEER.

B. In the event that the CONTRACTOR and ENGINEER agree to make adjustments to the original Schedule of Values because of inequities discovered in the original accepted detailed Schedule of Values; increases and equal decreases to values for activities may be made.

1.7 LIQUIDATED DAMAGES

A. The Schedule of Values information is an integral part of the scheduling and reporting under **Section 01 32 16 –Construction Schedules** and the progress payment information. As such, it is critical information to evaluating the project's progress and the proper planning of the OWNER's and ENGINEER's work effort as well as their financial obligations associated with this project. Accordingly, if any submittal required by this Section is found to be incomplete or is submitted later than required the OWNER will suffer financial loss and, accordingly liquidated damages will be assessed against the CONTRACTOR.

PART 2 – PRODUCTS

Not Used.

PART 3 – EXECUTION

Not Used.

END OF SECTION

SECTION 01 31 13

PROJECT COORDINATION

PART 1 GENERAL

1.1 REQUIREMENTS INCLUDED

A. The CONTRACTOR shall:

1. Coordinate the work of its employees and all of its subcontractors.

2. Expedite its work to assure compliance with approved construction schedules.

3. Coordinate its work with the work of other Prime CONTRACTOR's and work by the OWNER.

4. Comply with the orders and instructions of the ENGINEER and/or the OWNER.

1.2 RELATED REQUIREMENTS

A. **Section 01 11 00: Summary of Work**.

B. **Section 01 29 00: Application for Payment**.

C. **Section 01 31 19: Project Meetings**.

D. **Section 01 32 16: Construction Schedules**.

E. **Section 01 52 00: Construction Facilities & Temporary Controls**.

F. **Section 01 77 00: Project Close-Out**.

1.3 CONSTRUCTION ORGANIZATION AND START-UP

A. The OWNER shall establish on-site lines of authority and communications:

1. Schedule and conduct pre-construction conference and progress meetings as outlined in **Section 01 31 19 – Project Meetings**.

2. Establish procedures for intra-project communications:

a. Submittals.

b. Reports and records.

c. Recommendations.

d. Coordination of Drawings.

e. Schedules.

f. Resolution of conflicts.

g. Interpret Contract Documents:
   i. Transmit written interpretations to the CONTRACTOR and to other concerned parties.

3. Control the use of the Site:

   a. Space for the CONTRACTOR's use for storage areas and the work shall be coordinated with OWNER.

4. Inspection and Testing:

   a. Inspect work to assure performance in accordance with requirements of the Contract Documents.

   b. Administer special testing and inspections of suspect work.

   c. Reject work not in compliance with the requirements of the Contract Documents.

   d. Coordinate testing laboratory services:
      i. Verify that required laboratory personnel are present.
      ii. Verify that tests are made in accordance with specified standards.
      iii. Review test reports for compliance with specified criteria.
      iv. Recommend and administer any required re-testing.

1.4 CONTRACTOR'S DUTIES

A. Construction Schedules:

1. Prepare a detailed schedule of basic operations.

2. Monitor schedules as work progresses:

   a. Identify potential variances between scheduled and probable

completion dates for each phase.

b. Recommend to the OWNER adjustments in the schedule to meet required completion dates.

c. Document changes in schedule and submit to the OWNER, the ENGINEER and the involved subcontractors.

3. Observe work of each subcontractor to monitor compliance with the schedule.

a. Verify that labor and equipment are adequate for the work and the schedule.

b. Verify that product and equipment procurement schedules are adequate, including OWNER furnished materials.

c. Verify that product and equipment deliveries are adequate to maintain the schedule, including OWNER furnished materials

d. Report non-compliance to the OWNER, with recommendations for changes.

B. Process Shop Drawings, Product Data and Samples:

1. Prior to submittal to the OWNER, review for compliance with the Contract Documents:

a. Field dimensions and clearance dimensions.

b. Relation to available space.

c. Effect of any changes on the work of any subcontractor.

C. Review drawings prepared by subcontractors:

1. Prior to submittal to the OWNER, review for compliance with the Contract Documents.

D. Prepare coordination drawings as required to resolve conflicts and to assure coordination of the work of all trades or subcontractors or by special equipment requirements.

1. Submit to the OWNER and the ENGINEER.

2. Reproduce and distribute copies to concerned parties after review by the

OWNER and the ENGINEER.

E. Maintain reports and records at the job site:

1. Daily log of the progress of work.

2. Records:

a. Contracts.

b. Purchase Orders.

c. Materials and Equipment Records, including delivery tickets and invoices for OWNER furnished materials.

d. Approved Field Orders and Change Orders.

e. Applicable handbooks, codes and standards.

3. Maintain a file of record documents.

1.5 CONTRACTOR'S CLOSE-OUT DUTIES

A. Cleaning and testing of piping systems:

1. Coordinate flushing/cleaning of piping systems to remove all construction deposits and debris.

2. Supply Record Drawings for approval prior to pressure testing.

3. Organize hydrostatic pressure testing and gravity sewer lamping.

4 Record dates on which specific sections were tested.

5. Submit to the OWNER written notice of beginning of warranty and guarantee periods for equipment installed.

B. Substantial Completion:

1. Conduct an inspection with the ENGINEER and the OWNER to develop a list of work to be completed or corrected.

2. Assist the OWNER and the ENGINEER in conducting the inspection.

3. Supervise correction and completion of work of subcontractors.

4. Return all unused piping materials desired to be retained by the OWNER to the OWNER's storage yard.

C. At completion of the work, conduct an inspection to assure that:

1. Specified cleaning and restoration has been accomplished to the satisfaction of the OWNER or other governmental agencies.

2. Temporary facilities have been removed from the site.

1.6 ENGINEER'S CLOSE-OUT DUTIES

A. Final Completion:

1. When the CONTRACTOR determines that the work is finally complete, conduct an inspection with the CONTRACTOR and the OWNER to verify final completion of the work.

B. Administration of Contract Close-Out:

1. Receive and review CONTRACTOR's final submittals.

2. Transmit to the OWNER with recommendations for action.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01 31 19

PROJECT MEETINGS

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

A. The OWNER shall schedule and administer the pre-bid conference, pre-construction conference, periodic construction progress meetings, and specially called meetings throughout the progress of the work. The OWNER or the ENGINEER shall:

1. Prepare agenda for meetings.

2. Distribute written notice of each meeting four (4) days in advance of the meeting date.

3. Make physical arrangements for meetings.

4. Preside at meetings.

5. Record minutes of the meeting.

6. Reproduce and distribute written copies of the meeting minutes within seven (7) days after the meeting to the meeting participants and to parties affected by decisions made at the meeting.

B. Representatives of CONTRACTOR's, subcontractors and suppliers attending meetings shall be qualified and authorized to act on behalf of the entity each represents.

C. The ENGINEER (if applicable) shall attend meetings to ascertain that the work is expedited consistent with the Contract Documents and the construction schedule.

1.2 RELATED REQUIREMENTS

A. Instructions to Bidders of the Contract Documents.

B. General Conditions of the Contract Documents.

C. **Section 01 11 00: Summary of Work**.

D. **Section 01 31 13: Project Coordination.**

E. **Section 01 33 00: Submittals.**

F. **Section 01 32 16: Construction Schedules**.

G. **Section 01 77 00: Project Close-out**.

1.3 PRE-CONSTRUCTION MEETING

A. Schedule within ten (10) days of the Notice to Proceed

B. Location: A central site convenient for all parties, designated by the OWNER.

C. Attendees:

1. OWNER's Representative(s).

2. ENGINEER and its professional sub-consultants (if applicable).

3. Resident Project Representative.

4. CONTRACTOR's Superintendent.

5. CONTRACTOR's Project Manager.

6. Major subcontractors.

7. Major suppliers.

8. Other parties as appropriate and as approved by the OWNER.

D. Suggested Agenda:

1. Distribution and discussion of:

a. List of major subcontractors and suppliers.

b. Projected schedules (shop drawing submittal, material and equipment procurement, construction progress).

2. Critical work sequencing.

3. Major material and equipment deliveries and priorities.

4. Project Coordination:

a. Designation of responsible personnel.

b. Coordination and scheduling of concurrent projects.

5. Procedures and Processing of:

a. Field decisions.

b. Proposal requests.

c. CONTRACTOR requests for information.

d. Submittals.

e. Change Orders, Field Orders and Work Directives.

f. Applications for Payment.

6. Adequacy for distribution of Contract Documents.

7. Procedures for maintaining Record Documents.

8. Use of premises:

a. Office, work and storage areas.

b. OWNER's requirements.

9. Construction facilities, controls and construction aids.

10. Temporary utilities.

11. Safety and first-aid procedures.

12. Security procedures.

13. Housekeeping procedures.

14. Miscellaneous.

1.4 PROGRESS MEETINGS

A. Schedule one (1) meeting per month or as required.

B. Hold meetings as required by the progress of the work.

C. Location of the meetings: Palm Beach County Water Utilities Department Engineering Offices, 8100 Forest Hill Boulevard, West Palm Beach, Florida, or other site as directed by the OWNER.

D. Attendees:

1. OWNER (PBCWUD) and its professional consultants (ENGINEER), as needed.

2. CONTRACTOR, subcontractors, suppliers and others as appropriate to the agenda.

E. Suggested Agenda:

1. Review and approval of previous meeting minutes.

2. Review of work progress since previous meeting.

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. Revisions to the Construction Schedule.

8. Progress scheduled during the succeeding work period.

9. Coordination of schedules.

10. Review of submittal schedules.

11. Maintenance of quality standards.

12. Pending changes and substitutions.

13. Review proposed changes for:

    a. Effect on the construction schedule and on the completion date.

    b. Effect on other contracts relating to this project.

14. Review of record drawings.

15. Other business.

1.5 EMERGENCY MEETINGS

A. May be called by the OWNER, ENGINEER or CONTRACTOR with a minimum of three (3) hours notice to resolve conditions of an emergency nature.

PART 2 – PRODUCTS

Not Used.

PART 3 – EXECUTION

Not Used.

END OF SECTION

SECTION 01 32 16

CONSTRUCTION SCHEDULES

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

A. Within ten (10) days after receipt of written Notice of Award of the Contract, prepare and submit to the ENGINEER/OWNER an estimated construction progress schedule for the work, with sub-schedules of related activities essential to its progress.

B. Submit revised progress schedules on the 7th of each month in accordance with the ENGINEER's/OWNER's requirements. The schedule shall show work completed as of the 30th of each month.

1.2 RELATED REQUIREMENTS

A. General Conditions of the Contract Documents.

B. **Section 01 11 00: Summary of Work.**

C. **Section 01 31 13: Project Coordination.**

D. **Section 01 31 19: Project Meetings.**

E. **Section 01 33 00: Submittals.**

1.3 FORM OF SCHEDULES

A. Prepare schedules in the form and to the level of detail and sequencing acceptable to the ENGINEER/OWNER.

B. Format of Listings: The chronological order of the start of each item of work.

1.4 CONTENT OF SCHEDULES

A. Construction Progress Schedule:

1. Show the complete sequence of construction by activity. Include dates for beginning and completing each and every task. The schedule must also include the following:
   a. Mobilization.

b. Placement of Equipment and Materials Orders.

c. Submission of Shop Drawings.

d. Delivery of Equipment and Materials, including OWNER furnished materials.

e. Testing.

f. Record Drawings.

g. Pressure Testing.

h. Restoration.

i. Clean-up and Completion.

B. For submittals, shop drawings, product data and samples show:

1. The dates for CONTRACTOR's submittals.

2. The dates reviewed submittals will be required from the ENGINEER/OWNER.

C. Provide sub-schedules to clearly and satisfactorily define critical portions of the prime schedule.

1.5 PROGRESS REVISIONS

A. Indicate the progress of each activity to the date of submission.

B. Show changes occurring since submission of the previous month's schedule:

1. Major changes in scope.

2. Activities modified since previous submission.

3. Revised projections of progress and completion.

4. Other identifiable changes.

C. Provide a narrative report as needed to define:

1. Problem areas, anticipated delays and the projected impact on the schedule.

2. Corrective action recommended and its effect.

3. The effect of changes on schedules of other prime CONTRACTOR's.

1.6 SUBMISSIONS

A. Submit initial schedules within 10 days of the date of the Notice to Proceed.

1. The ENGINEER/OWNER will review schedules and return one (1) reviewed copy within 10 days after receipt.

2. If required, resubmit a corrected schedule within 10 days after return of review copy.

B. Scheduling shall be prepared in a horizontal bar chart format on paper not smaller than 8½ inches x 14 inches.

C. With each application for payment, submit:

1. A written description and explanation of any changes in the schedule since the last submission.

2. Three (3) copies each of the construction progress schedule and the shop drawing submittal schedule.

1.7 DISTRIBUTION

A. Distribute copies of the reviewed schedules to:

1. Job site file.

2. Subcontractor's.

3. Other concerned parties.

B. Instruct recipients to report promptly to the CONTRACTOR, in writing, any problems anticipated by the projections shown in the schedule.

PART 2 – PRODUCTS

Not Used.

PART 3 – EXECUTION

Not Used.

END OF SECTION

SECTION 01 32 36

VIDEO PRECONSTRUCTION RECORD

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

A. The Contractor shall provide a continuous color video of the project site and surrounding area of the proposed project prior to construction, investigation or testing. The Contractor shall furnish to the ENGINEER and the OWNER two (2) copies of the video, which becomes a project record document. The video shall contain at least one (1) hour of recorded information.

1.2 SCHEDULE REQUIRED

A. Video recordings shall not be made more than 30 days prior to construction for each phase. No construction shall begin prior to review and approval of the videos by the ENGINEER and the OWNER. Videos not conforming to the Technical Specifications shall be resubmitted at no additional charge.

PART 2 - PRODUCTS

A. The finished product shall be a bright, sharp, clear picture free of distortion.

B The video shall be of the DVD format. Videos shall be color and compatible with any standard DVD player.

PART 3 - EXECUTION

A. The video recording shall show all surface features located within the construction, investigation or testing zone. These features shall include, but not be limited to, roadways, driveways, culverts, walls, fences, yards and landscaping and shall zoom in on any existing cracks or defects. The video shall be annotated verbally with name of streets, names of intersecting streets, addresses, business names, driveway reference by street address and special features.

B. Videos shall be labeled and identified by project title and project number.

C. Completely video each bid item area before moving on to another.

END OF SECTION

SECTION 01 33 00

SUBMITTALS

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

A. Submit to the OWNER, shop drawings, project data, samples and miscellaneous work-related submittals required by the Technical Specifications. Individual submittal requirements are specified in applicable sections of these Contract Documents.

B. The OWNER's review is for general conformance with the design concept and the Contract Documents.

C. Miscellaneous submittals related directly to the work (non-administrative) include warranties, guarantees, maintenance agreements, workmanship bonds, project photographs, survey data and reports, physical records, statements of applicability, quality testing and certifying reports, copies of industry standards, record drawings, overrun stock, and similar information, devices and materials applicable to the work and not defined as shop drawings, product data or samples.

1.2 RELATED REQUIREMENTS

A. **Section 01 31 19 - Project Meetings.**

B. **Section 01 32 16 - Construction Schedules.**

C. **Section 01 33 23 – Shop Drawings, Project Data, and Samples.**

D. **Section 01 45 00 - Quality Control.**

E. **Section 01 77 00 – Project Close-Out.**

F. **Section 01 72 00 – Project Record Drawings.**

1.3 SCHEDULE

A. Prepare and submit with the Construction Schedule, a separate schedule listing dates for submission and review of shop drawings, project data and samples that will be needed for each product or piece of equipment.

B. Coordinate and prepare the delivery and processing of submittals with the performance of the work so that the work is not delayed by submittals. Coordinate

and sequence different categories of submittals for the same work, and for interfacing units of work, so that one is not delayed for coordination with another.

C. No extension of time will be allowed because of the CONTRACTOR's failure to properly coordinate and sequence submittals.

D. Do not proceed with purchasing, fabrication and delivery of work related to a submittal until the submittal procedure is successfully complete.

E. Coordinate fabrication and delivery of OWNER furnished materials.

PART 2 - PRODUCTS

2.1 SHOP DRAWINGS

A. Original drawings, prepared by a CONTRACTOR, subcontractor, supplier or distributor which illustrate some portion of the work and showing fabrication, layout, setting or erection details, diagrams, performance curves, data sheets, schedules, templates, patterns, reports, calculations, instructions, dimensions, measurements and other similar information not in standard printed form applicable to other projects.

B. Provide information prepared by a qualified detailer showing dimensions and notes based on field measurements, identifying materials and products in the work shown, indicating compliance with standards and special coordination requirements.

C. Identify details by reference to sheet and detail numbers shown on the Drawings.

D. Review laying schedule for OWNER furnished materials.

2.2 PROJECT DATA

A. Includes standard printed information on materials, products and systems not custom-prepared for this project. Collect the required data into one (1) submittal for each material, product or system; and mark each copy to show which choices and options are applicable to the project.

B. Manufacturer's standard schematic drawings and standard printed recommendations for application and use, compliance with standards, application of labels and seals, notation of field measurements which have been checked, and special coordination requirements:

1. Modify drawings to delete information which is not applicable to the project.

2. Supplement standard information to provide additional information applicable to the project.

C. Manufacturer's catalog sheets, brochures, diagrams, schedules, performance charts, illustrations and other standard descriptive data.

1. Clearly mark each copy to identify pertinent materials, products or models.

2. Show dimensions and clearances required.

3. Show performance characteristics and capacities.

4. Show wiring diagrams and controls.

2.3 SAMPLES

A. Physical examples to illustrate materials, equipment or workmanship, and to establish standards by which completed work is judged.

B. Office samples of sufficient size and quantity to clearly illustrate:

1. Functional characteristics of products or materials, with integrally related parts and attachment devices.

2. Full range of color samples.

C. Field samples and mock-ups:

1. Erect at the project site at a location acceptable to the OWNER.

2. Construct each sample or mock-up complete, including work of all trades required in finished work.

2.4 WARRANTIES

A. Refer to individual sections of these Technical Specifications for specific general requirements on the submittal of warranties, guarantees, product/workmanship bonds, and maintenance agreements which are uniquely prepared and executed for the project.

PART 3 - EXECUTION

3.1 CONTRACTOR RESPONSIBILITIES

A. Review shop drawings, project data and samples for compliance with these Technical Specifications prior to submission.

B. Verify:

1. Field measurements.

2. Field construction criteria.

3. Catalog numbers and similar data.

C. Coordinate each submittal with requirements of the work and of the Contract Documents.

D. The CONTRACTOR's responsibility for errors and omissions in submittals is not relieved by the ENGINEER's review of submittals.

E. The CONTRACTOR's responsibility for deviations in submittals from the requirements of the Contract Documents is not relieved by the OWNER's review of submittals, unless the OWNER or the gives written acceptance of specific deviations.

F. Notify the OWNER, in writing at the time of submission, of deviations in submittals from the requirements of the Contract Documents.

G. Begin no work requiring submittals until return of submittals with the OWNER's stamp and initials or signature indicating review and approval.

H. Obtain shop drawing approval from Palm Beach County Water Utilities Department.

3.2 SUBMISSION REQUIREMENTS

A. Schedule submissions at least fourteen (14) days before dates reviewed submittals will be needed.

B. Submit the number of copies of shop drawings, project datum and samples which the CONTRACTOR requires for distribution plus four (4) copies which will be retained by the OWNER.

C. Accompany submittals with a transmittal letter, in duplicate, containing:

1. Date of submission.

2. Project title and number.

3. CONTRACTOR's name and address.

4. The number of each shop drawing, project datum and sample submitted.

5. Notification of any deviations from the Contract Documents.

6. Other pertinent data.

D. Submittals must include:

1. Date of submittal and revision dates.

2. Project title and number.

3. The names of:

a. ENGINEER (if applicable).

b. CONTRACTOR.

c. Subcontractor (if applicable).

d. Supplier.

e. Manufacturer.

f. Separate detailer, when pertinent.

4. Identification of products or materials.

5. Relation to adjacent structures or materials.

6. Field dimensions, clearly identified as such.

7. Specification Section Number.

8. Applicable standards, such as ASTM number or Federal Specifications.

9. A blank space, 4 inches X 4 inches, for the OWNER's stamp.

10. Identification of deviations from the Contract Documents.

11. CONTRACTOR's stamp, initialed or signed, certifying as to review of the submittal, verification of field measurements and compliance with the Contract Documents.

3.3 RESUBMISSION REQUIREMENTS

A. Shop Drawings:

1. Revise initial drawings as required and resubmit as specified for initial submittal.

2. Indicate on drawings any changes made other than those requested by the OWNER.

B. Project Data and Samples:

1. Submit new datum and samples as required for initial submittal.

3.4 DISTRIBUTION OF SUBMITTALS AFTER REVIEW

A. Distribute copies of Shop Drawings and project datum which carry the OWNER's stamp to:

1. Other prime contractors.

2. Subcontractors.

3. Suppliers.

4. Fabricators.

5. Contractor's file.

6. Job site file.

7. Record documents file.

B. Distribute samples as directed.

END OF SECTION

SECTION 01 33 16

APPROVED MATERIALS AND EQUIPMENT LIST

PART 1 - GENERAL

1.1 REQUIREMENTS

A. For Approved Materials, the Contractor shall refer to these Technical Specifications, Latest Edition of the Palm Beach County Water Utilities Department's "Minimum Design and Construction Standards" incorporated by reference herein.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

END OF SECTION

SECTION 01 33 23

SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

A. Submit shop drawings, product data and samples required by the Contract Documents.

1.2 RELATED REQUIREMENTS

A. **Section 01 33 16 – Approved Materials and Equipment Lis.t**

B. **Section 01 33 00 - Submittals.**

C. **Section 01 32 16 - Construction Schedules.**

D. **Section 01 77 00 - Contract Close-out.**

1.3 SHOP DRAWINGS

A. Submit approved list, **Section 01 33 16 – Approved Materials and Equipment List,** with selected materials circled. For materials not listed provide shop drawings as stated in this Section.

B. Drawings shall be presented in a clear and thorough manner.

1. Details shall be identified by reference to sheet and detail and schedule as shown on the Contract Documents.

C. Minimum sheet size: 8½ inches x 11 inches. Maximum sheet size: 24 inches x 36 inches.

D. Designate in the construction schedule, or in a separate coordinating schedule, the dates for submission and the dates that reviewed shop drawings, product data and samples are needed.

1.4 PRODUCT DATA

A. Preparation:

1. Clearly mark each copy to identify pertinent products or models.

2. Show performance characteristics and capacities.

3. Show dimensions and clearances required.

4. Show wiring or piping diagrams and controls.

B. Manufacturer's standard schematic drawings and diagrams:

1. Modify drawings and diagrams by deleting information not applicable to the work.

2. Supplement standard information to provide information specifically applicable to the work.

1.5 SAMPLES

A. Office 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.

1.6 CONTRACTOR RESPONSIBILITIES

A. Review shop drawings, product data and samples prior to submission.

B. Determine and verify:

1. Field measurements.

2. Field construction criteria.

3. Catalog numbers and similar data.

4. Conformance with the Technical Specifications.

C. Coordinate each submittal with requirements of the work and of the Contract Documents.

D. Notify the OWNER in writing, at the time of submission, of any deviations in the submittals from the requirements of the Contract Documents.

E. Begin no fabrication or work requiring approved submittals until return of submittals by the OWNER.

1.7 SUBMISSION REQUIREMENTS

A. Make submittals in such sequence as to cause no delay in the work.

B. Number of submittals required:

1. Shop Drawings: Submit the number of copies which the CONTRACTOR requires, plus four (4), which will be retained by the OWNER, but not more than nine (9) total.

2. Product Data: Submit the number of copies which the CONTRACTOR requires, plus four (4), which will be retained by the OWNER, but no more than nine (9) total.

3. Samples: Submit the quantity stated in each specification Section.

C. Submittals shall contain:

1. The date of submission and the dates of any previous submissions.

2. The project title and number.

3. Contract identification.

4. The names of:

a. Contractor.

b. Supplier.

c. Manufacturer.

5. Identification of the product, with the specification section number.

6. Field dimensions, clearly identified as such.

7. Relation to adjacent or critical features of the work or materials.

8. Applicable standards, such as ASTM or Federal Specification numbers.

9. Identification of deviations from the Contract Documents.

10. Identification of revisions on re-submittals.

11. An 8 inches x 3.5 inches blank space for CONTRACTOR, ENGINEER (if applicable) and OWNER stamps.

12. The CONTRACTOR's stamp initialed or signed, certifying as to review of the submittal, verification of products, field measurements and field construction criteria and coordination of the information within the submittal with the requirements of the work and of the Contract Documents.

13. Stamps shall be no smaller than 1½ inches x 3 inches, or larger than 2 inches x 3½ inches, and shall be laid out as follows:

(CONTRACTOR'S NAME) - (CONTRACTOR'S PROJECT NUMBER)
OWNER's Project Name
OWNER's Project Number

(ENGINEER'S NAME) - (ENGINEER'S PROJECT NUMBER)
DATE: _____ SUBMITTAL NO.: _____
SPEC. DIV. NO.: _____ PARA. NO.: _____
DRAWING NO.: _____ REVIEWED BY: _____

(OWNER'S NAME) - (OWNER'S PROJECT NUMBER)
DATE: _____ SUBMITTAL NO.: _____
SPEC. DIV. NO.: _____ PARA. NO.: _____
DRAWING NO.: _____ REVIEWED BY: _____

1.8 RESUBMISSION REQUIREMENTS

A. Make any corrections or changes in the submittals noted by the OWNER or the ENGINEER and resubmit unless otherwise noted.

B. Shop Drawings and Product Data:

1. Revise initial drawings or data, and resubmit as specified for the initial submittal.

2. Indicate any changes which are made other than those requested by the ENGINEER.

C. The OWNER will review one (1) re-submittal for each shop drawing or product data. All costs of reviewing additional re-submittals shall be at the CONTRACTOR's expense and shall be reflected in the final Change Order.

D. Samples: Submit new samples as required for initial submittal.

1.9 DISTRIBUTION

A. Distribute shop drawings and copies of product data which carry the OWNER's stamp and the ENGINEER's stamp (if applicable):

1. Shop Drawings:

a. Four (4) copies to the OWNER.

b. Three (3) copies (maximum) to the CONTRACTOR.

2. Product Data:

a. Four (4) copies to the OWNER.

b. Three (3) copies (maximum) to the CONTRACTOR.

3. Distribute samples as directed by the OWNER.

1.10 OWNER'S DUTIES

A. Review submittals within 21 days, or in accordance with the schedule.

B. Affix stamp and initials or signature, and indicate the status of the submittal.

C. Return submittals to the CONTRACTOR for distribution, or for resubmission.

PART 2 – PRODUCTS

Not Used.

PART 3 – EXECUTION

Not Used.

END OF SECTION

SECTION 01 42 13

ABBREVIATIONS

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

A. Wherever in these Technical Specifications references are made to the standards, specifications, or other published data of the various national, regional, or local organizations, such organizations may be referred to by their acronym or abbreviation only.

B. As a guide to the user of these Technical Specifications, the following acronyms or abbreviations which may appear in these Technical Specifications shall have the meanings indicated herein.

1.2 ABBREVIATIONS

AA	Aluminum Association
AAMA	Architectural Aluminum Manufacturer's Association
AAR	Association of American Railroads
AASHTO	American Association of State Highway and Transportation Officials
AATCC	American Association of Textile Chemists and Colorists
ACI	American Concrete Institute
AFBMA	Anti-Friction Bearing Manufacturer's Association
AGA	American Gas Association
AGMA	American Gear Manufacturer's Association
AHAM	Association of Home Appliance Manufacturers
AI	Asphalt Institute
AIA	American Institute of Architects
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AITC	American Institute of Timber Construction
AMCA	Air Moving and Conditioning Association
ANS	American Nuclear Society
ANSI	American National Standards Institute
APA	American Plywood Association
API	American Petroleum Institute
APWA	American Public Works Association
AREA	American Railway Engineering Association
ASA	Acoustical Society of America
ASAE	American Society of Agricultural Engineers
ASCE	American Society of Civil Engineers

ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers
ASLE	American Society of Lubricating Engineers
ASME	American Society of Mechanical Engineers
ASQC	American Society for Quality Control
ASSE	American Society of Sanitary Engineers
ASTM	American Society for Testing and Materials
AWPA	American Wood Preservers Association
AWPB	American Wood Preservers Bureau
AWPI	American Wood Preservers Institute
AWS	American Welding Society
AWWA	American Water Works Association
BBC	Basic Building Code, Building Officials and Code Administrators International
BHMA	Builders Hardware Manufacturer's Association
CBM	Certified Ballast Manufacturer's
CDA	Copper Development Association
CEMA	Conveyors Equipment Manufacturer’s Association
CGA	Compressed Gas Association
CISPI	Cast Iron Soil Pipe Institute
CLFMI	Chain Link Fence Manufacturer's Institute
CMA	Concrete Masonry Association
CMAA	Crane Manufacturer's Association of America
CRSI	Concrete Reinforcing Steel Institute
DCDMA	Diamond Core Drill Manufacturer’s Association
EIA	Electronic Industries Association
ETL	Electrical Test Laboratories
EPA	Environmental Protection Agency
FDEP	Florida Department of Environmental Protection
FES	Florida Engineering Society
FM	Factory Mutual System
FPL	Forest Products Laboratory
HI	Hydraulics Institute
HMI	Hoist Manufacturer's Institute
IAPMO	International Association of Plumbing and Mechanical Officials
ICBO	International Conference of Building Officials
ICEA	Insulated Cable Engineers Association
IEEE	Institute of Electrical and Electronics Engineers
IES	Illuminating Engineering Society
IME	Institute of Makers of Explosives
IP	Institute of Petroleum (London)
IPC	Institute of Printed Circuits
IPCEA	Insulated Power Cable Engineers Association
ISA	Instrument Society of America
ISO	International Organization for Standardization
ITE	Institute of Traffic Engineers

JIC	Joint Industry Conferences of Hydraulic Manufacturers
MBMA	Metal Building Manufacturer’s Association
MMA	Monorail Manufacturers Association
MPTA	Mechanical Power Transmission Association
MSS	Manufacturer’s Standardization Society
MTI	Marine Testing Institute
NAAMM	National Association of Architectural Metal Manufacturer’s
NACE	National Association of Corrosion Engineers
NBHA	National Builders Hardware Association
NBS	National Bureau of Standards
NCCLS	National Committee for Clinical Laboratory Standards
NEC	National Electrical Code
NEMA	National Electrical Manufacturer's Association
NESC	National Electric Safety Code
NFPA	National Fire Protection Association
NFPA	National Forest Products Association
NLGI	National Lubricating Grease Institute
NLMA	National Lumber Manufacturers Association
NMA	National Microfilm Association
NSF	National Sanitation Foundation
NSPE	National Society of Professional Engineers
NWMA	National Woodwork Manufacturers Association
OECI	Overhead Electrical Crane Institute
OSHA	Occupational Safety and Health Administration
PBCDERM	Palm Beach County Department of Environmental Resources Management
PBCPZB	Palm Beach County Planning, Zoning and Building
PBCPHU	Palm Beach County Public Health Unit
PBCWUD	Palm Beach County Water Utilities Department
PCA	Portland Cement Association
PPI	Plastics Pipe Institute
PS	Product Standards Section - U.S. Dept. of Commerce
RCRA	Resource Conservation and Recovery Act
RIS	Redwood Inspection Service
RLM	RLM Standards Institute
RMA	Rubber Manufacturers Association
RVIA	Recreational Vehicle Industry Association
RWMA	Resistance Welder Manufacturer's Association
SAE	Society of Automotive Engineers
SAMA	Scientific Apparatus Makers Association
SDI	Steel Door Institute
SFWMD	South Florida Water Management District
SMA	Screen Manufacturer's Association
SMACCNA	Sheet Metal and Air Conditioning Contractors National Association
SPI	Society of the Plastics Industry

SPIB	Southern Pine Inspection Bureau
SPR	Simplified Practice Recommendation
SSA	Swedish Standards Association
SSBC	Southern Standard Building Code, Southern Building Code Congress
SSPC	Steel Structures Painting Council
SSPWC	Standard Specifications for Public Works Construction
TAPPI	Technical Association of the Pulp and Paper Industry
TCA	Tile Council of America
TEMA	Tubular Exchanger Manufacturers Association
TFI	The Fertilizer Institute
UBC	Uniform Building Code
UL	Underwriters Laboratories, Inc.
WCLIB	West Coast Lumber Inspection Bureau
WCRSI	Western Concrete Reinforcing Steel Institute
WEF	Water Environment Federation
WIC	Woodwork Institute of California
WRI	Wire Reinforcement Institute
WWPA	Western Wood Products Association

Unless a particular issue is designated, all references to the above specifications, standards, or methods shall, in each instance, be understood to refer to the issue in effect (including all amendments) on the last published date of the Advertisement for Bids.

PART 2 – PRODUCTS

Not Used.

PART 3 – EXECUTION

Not Used.

END OF SECTION

SECTION 01 42 19

REFERENCE STANDARDS

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

A. Abbreviations and acronyms used in Contract Documents to identify reference standards.

1.2 QUALITY ASSURANCE

A. Application: When a standard is specified by reference, comply with requirements and recommendations stated in that standard, except when requirements are modified by the Contract Documents or applicable codes establish stricter standards.

B. Publication Date: The publication in effect on the date of issue of the Contract Documents, except when a specified publication date is specified.

1.3 ABBREVIATIONS, NAMES AND ADDRESSES OF ORGANIZATIONS

A. Obtain copies of referenced standards direct from the publication source when needed for proper performance of the work, or when required for submittal by the Contract Documents.

AASHTO American Association of State Highway and Transportation Officials
444 North Capitol Street, N.W.
Washington, D.C. 20001

ACI American Concrete Institute
Box 19150
Redford Station
Detroit, MI 48219

AISC American Institute of Steel Construction
1221 Avenue of the Americas
New York, N.Y. 10020

AISI American Iron and Steel Institute
1000 16th Street, N.W.
Washington, D.C. 20036

ANSI	American National Standards Institute 1430 Broadway New York, N.Y. 10018
ASME	American Society of Mechanical Engineers 345 East 47th Street New York, N.Y. 10017
ASTM	American Society of Testing and Materials 1916 Race Street Philadelphia, PA 19103
AWWA	American Water Works Association 6666 W. Quincy Avenue Denver, CO 80235
AWS	American Welding Society 2501 N.W. 7th Street Miami, FL 33125
CRSI	Concrete Reinforcing Steel Institute 180 North LaSalle Street, Suite #2110 Chicago, IL 60601
FS	Federal Specification General Services Administration Specifications and Consumer Information Distribution Section (WFSIS) Washington Navy Yard, Bldg. 197 Washington, D.C. 20407
MIL	Military Specification Naval Publications and Forms Center 5801 Tabor Avenue Philadelphia, PA 19120
NEMA	National Electrical Manufacturer's Association 2101 "L" Street, N.W. Washington, D.C. 20037
PCA	Portland Cement Association 5420 Old Orchard Road Skokie, IL 20076

PCI	Prestressed Concrete Institute 20 North Wacker Drive Chicago, IL 60606
PS	Product Standard U.S. Department of Commerce Washington, D.C. 20203
UL	Underwriter's Laboratories, Inc. 333 Pfingston Road Northbrook, IL 60062

PART 2 – PRODUCTS

Not Used.

PART 3 – EXECUTION

Not Used.

END OF SECTION

SECTION 01 45 00

QUALITY CONTROL

PART 1 - GENERAL

1.1 APPLICABLE STANDARDS AND CODES

A. Specific quality control requirements for the work are indicated throughout the Contract Documents. Quality control provisions for manufacturer products are specified in individual work Sections and in other related Sections. The requirements of this Section are primarily related to the performance of the work beyond the furnishing of manufactured products. **Quality control shall conform to these Technical Specifications and the latest edition of the Palm Beach County Water Utilities Department's "Minimum Design and Construction Standards".**

B. Wherever reference is made to any published standards, codes or standard specifications, it shall mean the latest issue, at the time of Award of the Contract, of that standard, code, specification or tentative specification of the technical society, organization, or body referred to, which is in the Technical Specifications by abbreviations, in accordance with the references listed in **Section 01 42 19 - Reference Standards.**

C. When no reference is made to a code, standard or specification, the standard specifications for the ASTM, the ASA, the ASME, the AIEE, or the NEMA shall govern.

1.2 SITE INVESTIGATION AND CONTROL

A. The CONTRACTOR shall verify all dimensions in the field and shall check field conditions continuously during construction. The CONTRACTOR shall be solely responsible for any inaccuracies built into the work due to its failure to comply with this requirement.

B. The CONTRACTOR shall inspect related and appurtenant work and shall report in writing to the ENGINEER/OWNER any condition(s) which will prevent proper completion of the work. Failure to report any such conditions shall constitute acceptance of all site conditions and any required removal, repair, or replacement caused by unsuitable conditions shall be performed by the CONTRACTOR within the scope of the Contract.

1.3 INSPECTION AND TESTING

A. The CONTRACTOR shall employ and the OWNER shall pay for the services of an independent testing laboratory for foundation testing, concrete testing, and other testing as specified herein.

B. The laboratory testing work will include such inspections and testing required by the Contract Documents, existing laws, codes, ordinances, etc.

C. The testing laboratory, regardless of whether engaged by the OWNER or the CONTRACTOR, will have no authority to change the requirements of the Contract Documents, nor perform or approve any of the CONTRACTOR's work.

D. The work or actions of the testing laboratory shall in no way relieve the CONTRACTOR of its obligations under the Contract.

E. The CONTRACTOR shall at all times allow the ENGINEER/OWNER ample time and opportunity for inspection and testing of materials, equipment and workmanship used in completing the work.

F. The CONTRACTOR shall advise the ENGINEER/OWNER promptly upon placing orders for materials and equipment so that arrangements may be made, if desired, for inspection before shipment from the place of manufacture.

G. The CONTRACTOR must anticipate that possible delays may occur in the execution of its work due to the necessity of materials and equipment being inspected.

H. The CONTRACTOR shall furnish, at its own expense, all samples of materials required by the ENGINEER/OWNER for testing, and shall make its own arrangements for providing labor, water, electric power, or fuel for the various inspections and tests of structures and equipment.

I. The CONTRACTOR shall furnish the services of pump manufacturer representatives for a minimum of eight (8) hours per lift station during lift station startup.

J. The CONTRACTOR shall place orders for equipment on the basis that after the equipment has been tested and prior to final acceptance of the work, the manufacturer will furnish the ENGINEER/OWNER with certified statements that the equipment has been installed properly and is ready to be placed in full operation.

K. Tests and analyses required of equipment shall be paid for by the CONTRACTOR, unless specified otherwise in the appropriate Section of the Technical Specifications which covers that particular item of equipment.

L. The OWNER will bear the cost of all tests, inspections, or investigations undertaken for the purpose of determining conformance with the Contract Documents if such tests, inspections, or investigations are not specifically required by the Contract Documents, and if conformance is ascertained thereby.

M. Whenever non-conformance is determined by the ENGINEER/OWNER as a result of such tests, inspections, or investigations, the CONTRACTOR shall bear the full cost of any additional tests and investigations which are ordered by the ENGINEER/OWNER to ascertain subsequent conformance with the Contract Documents.

N. No failure of test agencies, whether engaged by the OWNER or the CONTRACTOR, to perform adequate inspections of tests or to properly analyze or report results, shall relieve the CONTRACTOR of the responsibility for the fulfillment of the requirements of the Contract Documents.

O. It is recognized and acknowledged that the required inspection and testing program is intended to assist the CONTRACTOR, ENGINEER, OWNER, and governing authorities in the nominal determination of probable compliances with requirements for certain crucial elements of the work. The program is not intended to limit the CONTRACTOR in its regular quality control program, as needed for general assurance of compliance.

1.4 RIGHT OF REJECTION

A. The ENGINEER, acting for or as the OWNER, shall have the right, at all times and at all places, to reject any materials, equipment, or workmanship to be furnished hereunder which, in any respect, fail to meet the requirements of the Contract Documents, regardless of whether the defects in such materials, equipment, or workmanship are detected at the point of manufacture or after completion of the work at the project site.

B. If the ENGINEER, or its representative, through an oversight or otherwise, has accepted materials, equipment or work which is defective or which is contrary to the Contract Documents, such materials, equipment or work, no matter in what stage or condition of manufacture, delivery, or erection, shall be rejected by the ENGINEER for the OWNER.

C. The CONTRACTOR shall promptly remove rejected materials, equipment, or work from the site of the work after notification of rejection.

D. All costs of removal and replacement of rejected articles or materials, equipment, or work as specified herein shall be borne solely by the CONTRACTOR.

1.5 OTHER CONSTRUCTION CONSIDERATIONS

A. Cutting and Patching:

1. The CONTRACTOR shall perform all cutting and patching of its work required to make its several parts come together properly and fit it to receive or be received by such other work.

2. The CONTRACTOR shall not endanger any work of others by cutting, excavating or otherwise altering their work and shall only cut or alter work with the written consent of the ENGINEER/OWNER and the other CONTRACTOR's whose work will be affected.

B. Sleeves and Openings:

1. The CONTRACTOR shall provide all required sleeves, openings, etc., to fit its own work and that of any other subcontractors and contractors. All such sleeves or openings shown on the Drawings, or reasonably implied thereby, or as confirmed or modified by shop, setting or erection drawings approved by the ENGINEER/OWNER shall be provided by the CONTRACTOR.

2. Any cost resulting from the correction of defective, ill-timed, or misplaced work or for subsequent work which becomes necessary because of omitted openings, sleeves, etc., shall be borne by the subcontractor or CONTRACTOR responsible therefore.

3. No CONTRACTOR or subcontractor shall arbitrarily cut, drill, alter, damage, or otherwise endanger the work of another trade.

4. The nature and extent of any corrective or additional work shall be subject to the approval of the ENGINEER/OWNER following consultation with the affected parties.

C. Weather Conditions:

1. Work that may be affected by inclement weather shall be suspended until proper conditions prevail.

2. In the event of impending storms, the CONTRACTOR shall take necessary precautions to protect all work, materials and equipment from exposure in accordance with the General Conditions.

3. The ENGINEER/OWNER reserves the right to require that additional protection measures over and beyond those proposed by the CONTRACTOR, be taken to safeguard all components of the project.

4. The CONTRACTOR shall not claim any compensation for such precautionary measures so required, nor claim any additional compensation from the OWNER for damage to the work from the elements of weather.

D. Fire Protection:

1. The CONTRACTOR shall take all necessary precautions to prevent fires at or adjacent to the work.

PART 2 - PRODUCTS

2.1 Product Delivery, Storage and Handling:

A. Handle, store and protect materials and products, including fabricated components, by methods and means which will prevent damage, deterioration and losses (and resulting delays), thereby ensuring highest quality results as the performance of the work progresses.

B. Control delivery schedules so as to minimize unnecessary long-term storage at the project site prior to installation.

PART 3 - EXECUTION

3.1 Preparation for Installation:

A. Advise the ENGINEER and the OWNER of scheduled meeting dates.

B. Well in advance of the installation of every major unit of work requiring coordination with other work, meet at the project site with installers and representatives of manufacturers and fabricators involved in or affected by the unit of work, and in its coordination or integration with other work which has proceeded or will follow.

C. At each meeting, review the progress of other work and preparations for the particular work under consideration, including the requirements of the Contract Documents, options, approved change orders, pending change orders, field orders, purchases, deliveries, shop drawings, product data, quality control samples, possible conflicts, compatibility problems, time schedules, weather limitations, temporary facilities, space and access limitations, structural limitations, governing regulations, safety, inspection and testing requirements, required performance results, recording requirements, and protection.

D. Record the significant discussions of each conference, and the agreements and disagreements, along with the final plan of action.

E. Distribute a written record of the meeting promptly to every party concerned, including the ENGINEER.

F. Do not proceed with the work if the associated pre-installation conference cannot be concluded successfully. Investigate actions to resolve impediments to the performance of the work, and reconvene the conference at the earliest date feasible.

G. Require the installer of each major unit of work to inspect the conditions under which the work will be performed, and to report in writing to the CONTRACTOR any unsatisfactory conditions.

3.2 Installation Quality Control:

1. Where installations include manufactured products, comply with the manufacturer's applicable instructions and recommendations for installation.

2. Inspect each item of material or equipment immediately prior to installation and reject damaged and defective items.

3. Install work during conditions of temperature, humidity, exposure, forecasted weather, and status of project completion which will ensure the best possible results for each unit of work, in coordination with the entire work.

END OF SECTION

SECTION 01 45 23

TESTING LABORATORY SERVICES

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

A. The CONTRACTOR will employ the services of an independent Testing Laboratory to perform specified testing. Passing tests are line items on the bid form.

1. The CONTRACTOR shall cooperate with the laboratory to facilitate the execution of its required services.

2. Employment of the laboratory shall in no way relieve the CONTRACTOR's obligations to perform the work in accordance with the requirements of the Contract Documents.

1.2 RELATED REQUIREMENTS

A. **Section 31 23 16.13: Trenching, Backfilling and Compaction**.

B. **Section 32 16 33: Driveway and Other Removal and Replacement**.

C. **Section 32 12 16: Pavement Repair and Resurfacing**.

1.3 LIMITATIONS OF AUTHORITY OF TESTING LABORATORY

A. The Laboratory is not authorized to:

1. Release, revoke alter or enlarge on requirements of the Contract Documents.

2. Approve or accept any portion of the work.

3. Perform any duties of the CONTRACTOR.

1.4 CONTRACTOR'S RESPONSIBILITIES

A. Cooperate with laboratory personnel and/or the ENGINEER. Provide access to the work or manufacturer's operations.

B. Secure and deliver to the laboratory adequate quantities of representative samples of materials proposed to be used and which require testing.

C. Provide to the laboratory the preliminary design mix to be used for concrete and other mixes which require control by the testing laboratory.

D. Furnish copies of test reports as required.

E. Furnish incidental labor and facilities:

1. To provide access to work to be tested.

2. To obtain and handle samples at the project site to be tested.

3. To facilitate inspections and tests.

4. For storage and curing of test samples.

F. Notify the laboratory sufficiently in advance of operations to allow for laboratory assignment of personnel and scheduling of tests:

1. When tests or inspections cannot be performed after such notice, reimburse the OWNER for laboratory personnel and travel expenses incurred due to the CONTRACTOR's negligence.

G. Make arrangements with the laboratory and pay for additional samples and tests required for the CONTRACTOR's convenience.

PART 2 – PRODUCTS

Not Used.

PART 3 - EXECUTION

3.1 PAYMENT

A. Testing will be performed by an independent testing laboratory. Testing will be performed to least encumber the performance of the work.

B. The OWNER will authorize from the testing bid item the cost of one test only on the area or item being evaluated. The CONTRACTOR shall pay for the costs of additional testing as required due to improper performance of the work.

C. Notify the ENGINEER to witness tests. Do not proceed with additional portions of work until test results have been verified.

END OF SECTION

SECTION 01 52 00

CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

PART 1 – GENERAL

1.1 REQUIREMENTS INCLUDED

A. Furnish, install and maintain all methods, equipment and temporary utilities as required to provide controls over environmental conditions at the construction site and related areas under the CONTRACTOR's influence. Remove physical evidence of temporary facilities upon completion of the work.

B. Providing of adequate facilities at every stage of performing the work is the CONTRACTOR's sole responsibility, and is not limited by the requirements hereof.

C. Except as otherwise indicated, the costs of providing and using temporary utility services is to be included in the Contract Sum.

D. The CONTRACTOR may, at its option, provide stand-alone utility plants to provide needed services, in lieu of connected services from available public utilities, provided such stand-alone plant facilities comply with all federal, state and local regulations and are permitted as required by all regulatory agencies.

E. Enforce strict discipline in the use of utility services. Limit availability to essential uses so as to minimize waste. Do not allow the installations to be abused or endangered.

F. Maintain distinct markers for underground lines and protect from damage during excavation operations.

1.2 RELATED REQUIREMENTS

A. **Section 01 11 00: Summary of Work**.

1.3 REQUIREMENTS OF REGULATORY AGENCIES

A. Comply with the National Electrical Code.

B. Comply with Federal, State and local codes, ordinances, rules, regulations, standards and permits.

C. Comply with all utility company requirements.

D. Comply with the "Manual of Accident Prevention in Construction" by the Associated General Contractors (AGC).

PART 2 - PRODUCTS

2.1 MATERIALS

A. Materials may be new or used, but must be adequate in capacity for the required usage, must not create unsafe conditions, and must not violate requirements of applicable codes, ordinances, rules, regulations and standards.

2.2 TEMPORARY ELECTRICITY AND LIGHTING

A. Arrange with utility company, provide service required for power and lighting, and pay all costs for services and for power used.

B. Install circuit and branch wiring, with area distribution boxes located so that power and lighting is available throughout the construction by the use of construction-type power cords.

C. Provide adequate artificial lighting for all areas of work when natural lighting is not adequate for work, and for areas accessible to the public.

2.3 TEMPORARY HEAT AND VENTILATION

A. Provide temporary heat and ventilation as required to maintain adequate environmental conditions to facilitate progress of the work, to meet specified minimum conditions for the installation of materials, and to protect materials and finishes from damage due to temperature or humidity.

B. Provide adequate forced ventilation of enclosed areas for curing of installed materials, to disperse humidity, and to prevent hazardous accumulations of dust, fumes, vapors or gasses.

C. Portable heaters shall be standard approved units complete with controls.

D. Pay all costs of installation, maintenance, operation and removal, and for fuel consumed.

2.4 TEMPORARY WATER

A. If available, the OWNER will provide all water for potable purposes for use by the CONTRACTOR at no expense.

B. Make conservative use of water. Any negligence or wastefulness will be reason for waiving the provisions for free water.

C. All connections to hydrants shall be made by the OWNER's personnel and removed by the OWNER's personnel when no longer required by the CONTRACTOR.

D. Water utilization for concrete plaster and mortar shall meet the respective requirements and standards set forth for water utilized in these construction materials.

2.5 TEMPORARY SANITARY FACILITIES

A. Provide sanitary facilities in compliance with laws, ordinances and regulations.

B. Service, clean and maintain facilities and enclosures.

C. OWNER's plumbing facilities shall not be used by construction personnel.

2.6 TEMPORARY ACCESS ROAD, PARKING AND TRAFFIC CONTROL

A. Maintain traffic areas as free as possible of excavated materials, construction equipment, products and debris.

B. Keep fire hydrants and water control valves free from obstruction and accessible for use.

C. Provide traffic control devices including but not limited to signs, barricades, flashing lights, flag men and watchmen as required by governing authorities along established public thoroughfares to be used as haul routes to site access.

D. Traffic control warning signs and barricades shall be in strict accordance with the provisions of the Florida Department of Transportation, Manual on Traffic Controls and Safe Practices for Street and Highway Construction, Maintenance and Utility Operations, latest revision.

E. Suitable warning signs shall be placed and illuminated at night to show in advance where construction, barricades or detours exist. All barricades and obstructions shall be protected at night by flashing signal lights which shall be kept burning from sunrise to sunset.

F. No road or street shall be closed to the public except with the permission of the ENGINEER and the appropriate governmental agency.

G. The work shall be conducted at all times so as to ensure the least possible obstruction to traffic and inconvenience to the general public and the residents in the vicinity of the work, and to insure the protection of persons and property.

2.7 TEMPORARY CONTROLS

A. Noise Controls:

1. Between the hours of 6:00 P.M. and 8:00 A.M., Monday through Friday, noise levels shall not exceed ten (10) dbA above the ambient noise level, when measured within 50 feet of the noise source, without written permission of the OWNER.

2. Between the hours of 6:00 P.M. Friday and 8:00 A.M. Monday, noise levels shall not exceed ten (10) dbA above the ambient noise level, when measured within 50 feet of the noise source, without written permission of the OWNER.

3. Between the hours of 6:00 P.M. on the day prior to a recognized County Holiday to 8:00 A.M. on the day after such Holidays, noise levels shall not exceed ten (10) dbA above the ambient noise levels, when measured within 50 feet of the noise source, without written permission of the OWNER.

B. Dust Control:

1. Provide positive methods and apply dust control materials to minimize raising dust from construction operations, and provide positive means to prevent air-borne dust from dispersing into the atmosphere. Sweep roadways immediately following construction to minimize dust.

C. Water Control:

1. Provide methods to control surface water to prevent damage to the project, the site, or to adjoining properties:

   a. Control fill, grading and ditching to direct surface drainage away from excavations, trenches, pits and other construction areas, and to direct drainage to proper runoff.

2. Provide, operate and maintain hydraulic equipment of adequate capacity to control surface water.

3. Dispose of drainage water in a manner to prevent flooding, erosion, or other damage to any portion of the site or to adjoining areas.

D. Pest Control: Not Used.

E. Rodent Control:

1. Provide rodent control as necessary to prevent infestation of construction and storage areas.

    a. Employ methods and use materials which will not adversely affect conditions at the site or on adjoining properties.

    b. If the use of rodent control chemicals is considered necessary, submit an informational copy of the proposed program to the ENGINEER/OWNER. Clearly indicate:
        i. The area or areas to be treated.
        ii. The rodent control chemicals to be used, with a copy of the manufacturer's printed instructions.
        iii. The pollution preventative measures to be employed.

2. The use of any rodent control chemicals shall be in full accordance with the manufacturer's printed instructions and recommendations.

F. Debris Control:

1. Maintain all areas under the CONTRACTOR's control free of extraneous debris.

2. Initiate and maintain a specific program to prevent accumulation of debris at the construction site, storage and parking areas, or along access roads and haul routes.

    a. Provide acceptable containers for deposit of debris.

    b. Prohibit overloading of trucks to prevent spilling on access and haul routes.

    c. Provide periodic inspection of traffic areas to enforce requirements.

3. Schedule periodic collection and disposal of debris.

    a. Provide additional collections and disposals of debris whenever the periodic schedule is inadequate to prevent accumulation.

G. Pollution Control:

1. Provide methods, means and facilities required to prevent contamination of soil, water or air by the discharge of noxious substances from construction operations.

2. Provide equipment and personnel, perform emergency measures required to contain any spills, and to remove contaminated soils or liquids.

    a. Excavate and suitably dispose of any contaminated earth off-site, and replace with suitable compacted fill and topsoil.

3. Take special measures to prevent harmful substances from entering public waters.

    a. Prevent disposal of wastes, effluents, chemicals, or other such substances adjacent to streams, or in sanitary or storm sewers.

4. Provide systems for control of atmospheric pollutants.

    a. Prevent toxic concentrations of chemicals.

    b. Prevent harmful dispersal of pollutants into the atmosphere.

H. Erosion Control:

1. Plan execute construction and earth work by methods to control surface drainage from cuts and fills, and from borrow and waste disposal areas, to prevent erosion and sedimentation.

    a. Hold the areas of bare soil exposed at one time to a minimum.

    b. Provide temporary control measures such as berms, dikes and drains.

2. Construct fills and waste areas by selective placement to eliminate surface silts or clays which will erode.

3. Periodically inspect earthwork to detect any evidence of the start of erosion. Apply corrective measures as required to control erosion.

4. Take adequate precautions to minimize siltation and bank erosion in crossing canals or ditches, in discharging well point systems or during other construction activities.

I. Access Control:

1. The Contractor shall keep the site safe and secure from access by the public. These measures should include, but not limited to, the following safety measures to prevent access to the site by the public and non-authorized individuals:

   a. Providing temporary construction fencing around the work area. The work site must remain inaccessible to the public when the Contractor has completed construction activities for the day.

   b. All vaults, wet wells, structures, confined spaces, etc., must be chained, locked, and secured to prevent access by the public.

2.9 STORAGE FACILITIES

A. All materials, supplies and equipment intended for use in the work shall be suitably stored by the CONTRACTOR to prevent damage from exposure, admixture with foreign substances, vandalism, or other causes.

B. The ENGINEER/OWNER will refuse to accept or sample for testing, materials, supplies or equipment that have been improperly stored. Materials found unfit shall not be incorporated in the work and shall immediately be removed from the construction or storage site.

C. Delivered materials, supplies and equipment shall be suitably stored in a manner acceptable to the ENGINEER/OWNER before any payment will be made.

PART 3 - EXECUTION

3.1 GENERAL

A. Comply with applicable requirements of local building codes.

B. Maintain and operate systems to assure continuous service.

C. Modify and extend systems as work progress requires.

D. Preserve from damage all property in the vicinity of work, or which is in the vicinity of or is in any way affected by the work. Wherever such property is damaged due to the activities of the CONTRACTOR, it shall be immediately restored to its original condition by the CONTRACTOR at no cost to the OWNER.

3.2 INSPECTIONS

A. Prior to placing temporary utility services into use, inspect and test each service and arrange for inspections and tests by governing authorities, and obtain required certifications and permits for use thereof.

3.3 REMOVAL

A. Completely remove temporary materials and equipment when their use is no longer required.

B. Clean and repair damage caused by temporary installations or use of temporary facilities.

C. Restore permanent facilities used for temporary services to specified conditions.

END OF SECTION

SECTION 01 55 00

SITE ACCESS AND STORAGE

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

A. Provide safe access to the project site with minimal disruption to vehicular and pedestrian traffic.

1.2 RELATED REQUIREMENTS

A. **Section 01 11 00 – Summary of Work.**

1.3 TEMPORARY CROSSINGS

A. General:

1. Continuous, unobstructed, safe, and adequate pedestrian and vehicular access shall be provided to fire hydrants, commercial and industrial establishments, churches, schools, parking lots, service stations, fire stations, police stations, hospitals, and U.S. Postal Service delivery routes.

2. Safe and adequate public transportation stops and pedestrian crossings at intervals not exceeding 300 feet shall be provided.

3. The CONTRACTOR shall cooperate with parties involved in the delivery of mail and removal of solid waste so as to maintain existing schedules for such services.

4. Vehicular access to residential driveways shall be maintained to the property line except when necessary construction precludes such access for reasonable periods of time.

B. Temporary Bridges:

1. Whenever necessary, the CONTRACTOR shall provide suitable temporary bridges or steel plates over unfilled excavations, except in such cases as the CONTRACTOR shall secure the written consent of the individuals or authorities concerned to omit such temporary bridges or steel plates, which written consent shall be delivered to the ENGINEER prior to excavation.

2. All such bridges or steel plates shall be maintained in service until access is provided across the backfilled excavation.

3. Temporary bridges or steel plates for street and highway crossings shall conform to the requirements of the authority having jurisdiction in each case, and the CONTRACTOR shall adopt designs furnished by said authority for such bridges or steel plates, or shall submit designs to said authority for approval.

C. Street Use:

1. Nothing herein shall be construed to entitle the CONTRACTOR to the exclusive use of any public street, alleyway, or parking area during the performance of the work hereunder, and it shall so conduct its operations so as not to interfere unnecessarily with the authorized work of utility companies or other agencies in such streets, alleyways, or parking areas.

2. No street shall be closed to the public without first obtaining permission of the ENGINEER and proper governmental authority.

3. Where excavation is being performed in primary streets or highways, one (1) lane in each direction shall be kept open to traffic at all times unless otherwise indicated.

4. Toe boards shall be provided to retain excavated material if required by the ENGINEER or the agency having jurisdiction over the street or highway.

5. Fire hydrants on or adjacent to the work shall be kept accessible to fire-fighting equipment at all times.

6. Temporary provisions shall be made by the CONTRACTOR to assure the use of sidewalks and the proper functioning of all gutters, storm drain inlets, and other drainage facilities.

D. Safety:

1. The CONTRACTOR shall take necessary precautions for the protection of the work and the safety of the public.

2. All signs, signals, and barricades shall conform to the requirements of Subpart G, Part 1926, of the OSHA Safety and Health Standards for Construction.

1.4 CONTRACTOR'S WORK AND STORAGE AREA

A. The CONTRACTOR will arrange for and secure for its exclusive use in the immediate area of the project during the term of the Contract a storage area for its construction operations relative to this Contract.

B. The CONTRACTOR shall construct and use a separate storage area for hazardous materials used in constructing the work.

C. Hazardous materials are all products labeled with any of the following terms: Warning, Caution, Poisonous, Toxic, Flammable, Corrosive, Reactive, or Explosive.

D. The following materials shall also be stored in the separate area, whether or not they are labeled with any of the above terms: diesel fuel, gasoline, new and used motor oil, hydraulic fluid, cement, paints, paint thinners, two-part epoxy coatings, sealants, asphaltic products, glues, solvents, wood preservatives, sand blast materials, and spill absorbents.

1. The CONTRACTOR shall develop and submit to the ENGINEER a plan for storing and disposing of hazardous materials.

2. The CONTRACTOR shall obtain and submit to the ENGINEER a single EPA number for wastes generated at the site.

3. The separate storage area shall meet all the requirements of all authorities having jurisdiction over the storage of hazardous materials.

4. All hazardous materials that are delivered in containers shall be stored in the original containers until use.

5. Hazardous materials that are delivered in bulk shall be stored in containers meeting the requirements of authorities having jurisdiction.

1.5 PARKING

A. Traffic and parking areas shall be maintained in a sound condition, free of excavated material, construction equipment, mud and construction materials.

PART 2 – PRODUCTS

Not Used.

PART 3 – EXECUTION

Not Used.

END OF SECTION

SECTION 01 57 13

TEMPORARY EROSION AND SEDIMENTATION CONTROL

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

A. Designing, providing, maintaining and removing temporary erosion and sedimentation controls as necessary.

B. Temporary erosion controls include, but are not limited to, grassing, mulching, watering and seeding on-site surfaces and spoil 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.

C. Temporary sedimentation controls include, but are not limited to: silt dams, barriers, hay bales 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 OWNER.

D. The CONTRACTOR is responsible for providing effective temporary erosion and sedimentation control measures during construction or until final controls become effective.

E. The CONTRACTOR shall provide for and be responsible for the prevention, control and abatement of erosion and water pollution until completion and acceptance of the Project. The CONTRACTOR shall provide all temporary erosion control features necessary to prevent, control and abate erosion and water pollution, and shall prepare and submit as the operator and permittee, along with the applicable application fee, the "Notice of Intent to Use Generic Permit for Stormwater Discharge from Large and Small Construction Activities" (NOI) prior to commencing construction and the "Notice of Termination" (NOT) upon final completion of construction. The CONTRACTOR, as required by the NPDES permit program, shall prepare a stormwater pollution prevention plan (SWPPP). This SWPPP shall be modified and updated by the CONTRACTOR as necessary, to meet the requirements of the NPDES permit issued, at no additional cost to the OWNER. The CONTRACTOR shall also comply with the inspections, maintenance, reporting and all other provisions of the NPDES permitting program, and the cost for the compliance with this program is to be included in the CONTRACTOR bid price for the work.

F. The CONTRACTOR shall exercise precautionary measures to minimize dust emissions as necessary, which may include, but shall not be limited to, periodic sprinkling or wetting of the site, and shall modify measures to be implemented, as necessary, to satisfy jurisdictional agency requirements including but not limited to the City of Boca Raton, Palm Beach County and the local Health Department (Air Pollution Division) at no additional expense to the OWNER.

1.2 RELATED REQUIREMENTS

A. **Section 01 11 00 - Summary of Work**.

B. Permit Conditions of:

1. Florida Department of Transportation (FDOT).

2. South Florida Water Management District (SFWMD).

3. Municipality having jurisdiction.

4. Palm Beach County Land Development (PBCLD).

5. Florida Department of Environmental Protection (FDEP).

6. National Pollutant Discharge Elimination System (NPDES).

PART 2 - PRODUCTS

2.1 EROSION CONTROL

A. Sod is as specified in **Section 32 92 23 - Sod**.

B. Netting shall be fabricated of material acceptable to the OWNER or other regulatory agencies.

2.2 SEDIMENTATION CONTROL

A. Bales - clean, seed free cereal hay type.

B. Netting - fabricated of material acceptable to the OWNER or other affected regulatory agencies.

C. Filter Stone - crushed stone conforming to FDOT Specifications.

PART 3 - EXECUTION

3.1 EROSION CONTROL

A. Minimum procedures for grassing are:

1. Scarify slopes to a depth of not less than six (6) inches and remove large clods, rocks, stumps, roots larger than ½-inch in diameter and debris.

2. Sow seed within 24 hours after the ground is scarified with either mechanical seed drills or rotary hand seeders. (Not Used)

3. Apply mulch loosely and to a thickness of between ¾-inch and one (1) inch. (Not Used)

4. Apply netting over mulched areas on sloped surfaces. (Not Used)

5. Roll and water seeded areas in a manner which will encourage sprouting of seeds and growing of grass. Re-seed areas which exhibit unsatisfactory growth. (Not Used)

6. Sod all disturbed areas not receiving a hard or stone surface.

3.2 SEDIMENTATION CONTROL

A. Install and maintain silt dams, traps, barriers and appurtenances as required. Hay bales which deteriorate and filter stone which is dislodged shall be replaced.

3.3 PERFORMANCE

A. Should any of the temporary erosion and sediment control measures employed by the CONTRACTOR fail to produce results which comply with the requirements of the State of Florida Department of Environmental Regulation, Palm Beach County Health Department, South Florida Water Management District, and/or the municipality having jurisdiction, the CONTRACTOR shall immediately take the necessary measures to correct the deficiency at its own expense.

END OF SECTION

SECTION 01 57 19

WASTEWATER FLOW CONTROL

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. The objective of flow bypass and/or diversion pumping is to:

1. Maintain an efficient and uninterrupted level of service to wastewater collection system users while maintenance or construction operations (including rehabilitation, repair or replacement) are facilitated on the segment or segments being bypassed and/or from which flow is being diverted within the wastewater collection system.

2. Ensure all levels of sewage flow are continuously and effectively handled around the segment or segments of sewer being bypassed and/or from which flow is being diverted.

B. Performance requirements:

1. It is essential to the operation of the existing sewerage system that there is no interruption in the flow of sewage throughout the duration of the project. To this end, the Contractor shall provide, maintain and operate all temporary facilities such as dams, plugs, pumping equipment (both primary and back-up units as required), conduits, all necessary power, and all other labor and equipment necessary to intercept the sewage flow before it reaches the point where it would interfere with his work, carry it past his work, and return it to the existing sewer downstream of his work.

2. The design, installation and operation of the temporary pumping system shall be the Contractor's responsibility. The bypass system shall be the Contractor's responsibility. The bypass system shall meet the requirements of all codes and regulatory agencies having jurisdiction.

3. The Contractor shall provide all necessary means to safely convey the sewage past the work area.

4. The Contractor shall maintain sewer flow around the work area in a manner that will not cause surcharging sewers or damage to sewers, and that will protect public and private property from damage and flooding.

5. The Contractor shall protect water resources, wetlands and other natural resources.

6. In the event of a bypass failure, the Contractor shall be responsible for all necessary corrective action, as approved by the Owner, to complete the project.

7. The Contractor shall be solely responsible for planning and executing sewer flow control, bypass and diversion pumping operations. The Contractor shall be entirely liable for damages to private or public property that may result from his operations and for all cleanup, disinfection, damages, and resultant fines in the event of spillage, flooding or overflow.

1.02 RELATED WORK

A. The work of this section applies to the work of the following sections. Other sections of the Technical Specifications, not referenced-below, shall also apply to the extent required for proper performance of work.

1. **Section 31 23 16.13**: Trenching, Backfilling, and Compaction

2. **Section 33 01 30.13**: Sanitary Sewer Cleaning and Testing.

3. **Section 02 01 00**: Miscellaneous Work and Cleanup.

4. Lift Station Work and Piping Work (numerous sections including but not limited to Section 32 11 00, Section 32 11 33, Section 09 90 00, Section 09 91 13, Section 09 91 23, Section 44 40 00, Section 43 21 00, Section 26 05 00 and all other 01 60 00 series Sections)

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.01 PROCEDURE

A. All work and testing shall comply with the applicable Federal codes, including Federal Occupational Safety and Health Act of 1970 and the Construction Safety Act of 1969, as amended, and applicable state and local codes and standards; and

to the extent applicable with the requirements of the Underwriter's Laboratories, Inc. and the National Electric Code.

B. If during normal rehabilitation work on manholes and sewers, where flow control devices, including flow bypass and diversion pumping, have not been deployed, wastewater flow depth exceeds the workable levels, rehabilitation work shall be immediately discontinued. Rehabilitation works shall only resume, at no extra cost to the Owner when minimum flow levels prevail (normally between 2.00 a.m. and 5:30 a.m.).

C. During all bypass-pumping or other flow control operations, the Contractor shall prevent mains, manholes, and all local sewer lines from damage inflicted by any equipment. The Contractor shall be responsible for all physical damage to mains, manholes, and all local sewer lines caused by human or mechanical failure.

D. The Contractor shall coordinate with the Owner as necessary to determine and effect optimum working arrangements.

E. The Contractor shall immediately cease bypass and/or diversion pumping when so ordered by the Owner.

F. The Contractor shall notify the Owner 24 hours prior to commencing actual flow bypass and/or diversion pumping operations. The Contractor flow control proposal shall be agreed to by the Owner before the Contractor shall be allowed to commence sewerage bypass pumping and/or diversion.

3.02 FIELD QUALITY CONTROL

A. During flow bypass and/or diversion pumping, the Contractor is prohibited from allowing any sewage to be dumped, or spilled in or onto the ground or any area outside of the existing wastewater collection system. In addition, due care and attention shall be given to prevent vehicular or pump fuel or lubrication oil to be leaked.

B. When flow bypass and diversion pumping operations are complete, the residual contents of sewage in piping shall be drained into the existing sewer prior to disassembly.

C. It shall be the responsibility of the Contractor to schedule and perform his work in a manner that does not cause or contribute to incidence of overflows or spills of sewage from the sewer system.

D. In the event that the Contractor work activities contribute to overflows or spills the Contractor shall immediately take appropriate action to contain and stop the

overflow, clean up the spillage, disinfect the area affected by the spill, and notify the Owner in a timely manner.

E. Contractor will indemnify and hold harmless the Owner for any fines or third-party claims for personal or property damage arising out of a spill or overflow that is fully or partially the responsibility of the Contractor, including the legal, engineering and administrative expenses of the Owner in defending such fines and claims.

END OF SECTION

SECTION 01 60 00

MATERIAL EQUIPMENT AND PRODUCTS

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

A. Workmanship.

B. Manufacturer's Instructions.

C. Transportation and Handling.

D. Storage and Protection.

E. Substitutions and Product Options.

1.2 RELATED REQUIREMENTS

A. **Section 01 11 00: Summary of Work**.

B. **Section 01 33 00: Submittals.**

C. **Section 01 25 13: Substitutions and Product Options**.

D. **Section 01 77 00: Project Close-Out**.

1.3 SUBMITTALS

A. The CONTRACTOR shall submit the following:

1. Assembly instructions for parts shipped unassembled.

2. Manufacturer’s instructions for unloading, handling, storage, and protection prior to installation, with each shipment of each product type.

3. Copy of manufacturer’s notice of shipment for products critical to the project schedule.

4. Documentation of products in storage, submitted with each progress payment request.

5. Written agreement with property OWNER or lessee for storage of products, if offsite storage is necessary.

1.4 MATERIAL, EQUIPMENT AND PRODUCTS

A. Comply with these Technical Specifications and referenced standards as a minimum.

B. Components required to be supplied in quantity within a Technical Specification section shall be the same, and shall be interchangeable.

1.5 WORKMANSHIP

A. Comply with industry standards except when more restrictive tolerances of specified requirements indicate more rigid standards or more precise workmanship.

B. Perform work by persons qualified to produce workmanship of the specified quality.

C. Secure in places with positive anchorage devices designed and sized to withstand stresses, vibration and racking.

1.6 MANUFACTURER'S INSTRUCTIONS

A. When work is specified to comply with manufacturer's instructions, submit copies as specified in **Section 01 33 00 - Submittals**. Distribute copies to subcontractors involved and maintain one (1) set in the field office.

B. Perform work in accordance with details of instructions and specified requirements. Should a conflict exist between the Technical Specifications and the instructions, consult with the ENGINEER.

1.7 PREPARATION FOR SHIPMENT

A. When practical, products shall be factory assembled.

1. Furnish assembly instructions for parts and products that are shipped unassembled.

2. Mark or tag the separate parts and assemblies for field assembly.

3. Cover machined and unpainted parts that may be damaged by the elements with a strippable protective coating.

B. Package or crate products to provide protection from damage during shipping, handling, and storage.

1. Mark or tag the outside of each package or crate to indicate its purchase order number, bill of lading number, contents by name, name of project and CONTRACTOR, equipment number, and approximate weight.

C. Mark spare parts and special tools to identify the associated products by name, equipment, and part number.

D. Package parts for protection against damage from the elements during shipping, handling, and storage.

E. Ship in boxes or containers marked to indicate the contents as stated above.

F. Deliver spare parts and special tools before the associated equipment is scheduled for the initial test run.

G. The CONTRACTOR shall request a minimum 7-day advance notice of shipment from manufacturer's.

H. Where specified for specific products, factory test results shall be reviewed and accepted before such products are shipped.

1.8 TRANSPORTATION AND HANDLING

A. Provide equipment and personnel necessary to handle products by methods to prevent soiling or damage to products or packaging.

B. Provide additional protection during handling as necessary to prevent scraping, marring or otherwise damaging products or surrounding surfaces.

C. Handle products by methods to prevent bending or stressing.

D. Lift heavy components only at designated lifting points.

1.9 RECEIVING, INSPECTION AND UNLOADING

A. All OWNER furnished items, if applicable, will be picked up by the CONTRACTOR at the locations specified by the OWNER, and unloaded at the job site.

B. The CONTRACTOR shall record the receipt of products at the jobsite.

C. Upon receipt of products at the jobsite, the CONTRACTOR shall inspect for completeness and evidence of damage during shipment.

1. The OWNER, ENGINEER and manufacturer's representative may be present for inspection.

2. Should there appear to be any damage, notify the ENGINEER immediately and inform the manufacturer and the transportation company.

3. Expedite replacement of damaged, incomplete, or lost items.

D. After completion of inspection, unload products per the manufacturer's instructions.

E. Do not unload damaged or incomplete products to be returned to the manufacturer for replacement, except as necessary to expedite return shipment.

F. The CONTRACTOR shall certify that the materials and quantity received are suitable for installation in accordance with these Contract Documents.

G. The CONTRACTOR shall assume full responsibility for the storage and control of all OWNER supplied materials.

1.10 STORAGE, PROTECTION AND MAINTENANCE

A. Store in accordance with the manufacturer's instructions, with seals and labels intact and legible.

B. For exterior storage of fabricated products and equipment, place on supports above ground.

C. Cover products and equipment subject to deterioration with impervious sheet covering and provide adequate ventilation to avoid condensation.

D. Store loose granular materials on solid surfaces in a well-drained area. Prevent mixing with foreign matter.

E. Store items subject to damage by the elements, vandalism, or theft in secure areas.

F. Provide environmentally controlled storage facilities for items requiring environmental control for protection.

G. Arrange storage to provide access for inspection and inventory control by the ENGINEER. Periodically inspect to assure products, equipment and materials are undamaged and are maintained under the manufacturer's recommended conditions.

H. After installation, provide coverings to protect products and equipment from damage, traffic and construction operations. Remove when no longer needed.

I. During such periods of time as are designated by the U.S. Weather Bureau as being a hurricane warning or hurricane alert, construction materials or equipment shall be secured against displacement by wind forces.

J. Materials found unfit for use shall not be incorporated in the work and shall be immediately removed from the construction or storage site.

K. Delivered materials shall be stored in a manner acceptable to the ENGINEER before any payment for same will be made.

L The CONTRACTOR shall document products in storage to facilitate inspection and to estimate progress payments for products delivered but not installed in the work.

END OF SECTION

SECTION 01 71 13

MOBILIZATION AND DEMOBILIZATION

PART 1 - GENERAL

1.1 WORK INCLUDED

A. This Section covers the work necessary to move in and move out personnel and equipment, locate temporary facilitates, rehabilitate lift stations, and clean up site, complete.

PART 2 - PRODUCTS

2.1 GENERAL

A. Provide all materials and equipment required to accomplish the work as specified.

PART 3 - EXECUTION

3.1 GENERAL

A. Set up equipment within the area designated on the Drawings. Accomplish all required work in accordance with applicable portions, of these Technical Specifications.

B. Some obstructions may not be shown. Bidders are advised to carefully inspect the existing facilities before preparing their proposals.

3.2 CONTAMINATION PRECAUTIONS

A. Avoid contamination of the project area. Do not dump waste oil, rubbish, or other similar materials on the ground.

3.3 CLEANUP OF CONSTRUCTION AREAS

A. Upon completion and acceptance of work, remove from the site unused equipment, complete, and all debris, unused materials, temporary construction buildings, and other miscellaneous items resulting from or used in the operations. Replace or repair any facility which has been damaged during the construction work. Restore the site as nearly as possible to its original condition.

END OF SECTION

SECTION 01 72 00

PROJECT RECORD DRAWINGS

PART 1 - GENERAL

1.1 REQUIREMENTS

A. The CONTRACTOR shall keep and maintain, at the job site, one record copy of all Drawings, Technical Specifications, addenda, change orders, and other modifications to the Contract, approved shop drawings, and field test records.

B. The CONTRACTOR shall provide record drawings to indicate all project conditions, locations, configurations, and any other changes or deviations which may vary from the details represented in the Drawings, including buried or concealed construction and utility features which are revealed during the course of construction. Special attention shall be given to recording the horizontal and vertical location of all buried utilities that differ from the locations indicated, or which were not indicated on the Drawings. Said record drawings shall be supplemented by any detailed sketches as necessary or directed to indicate, fully, the work as actually constructed. These master record drawings of the CONTRACTOR's representation of as-built conditions, including all revisions made necessary by addenda and change orders shall be maintained up-to-date during the progress of the work.

C. Record drawings shall be accessible to the ENGINEER at all times during the construction period.

D. Periodic payments must be accompanied by an updated copy of the record drawings. Pay Applications submitted without record drawings will not be processed by the ENGINEER until the drawings are received. The CONTRACTOR shall provide the following:

1. One (1) set of hard copy record drawings (11"x17" drawings, to scale) and an electronic CAD file on CD.

2. The record drawings for the lift station shall show accurate locations of fence and gate(s), access driveway(s), wet well, valve vault, terminal manhole, valve/pipe fittings, emergency pump out, RPZ backflow preventer and water service back to existing water main, electrical panel, discharge force main length to furthest isolation valve or to fence or connection point to existing main, and gravity pipes connecting to existing wet well.

3. Record drawings for the gravity collection system shall show the pipe material type, size, length of pipe and slope between pipe manholes, and invert and rim elevations.

4. Record drawings for the force main shall show the pipe material type, size, and top of pipe elevation.

5. Provide GPS coordinates of the corners of pump station fences and center of wet well, the locations of manholes, valves, clean-outs, fire hydrants, meters, etc.

E. Final payment will not be processed until the CONTRACTOR has prepared and delivered record as-built drawings, signed and sealed by a licensed surveyor, to the ENGINEER.

F. Upon substantial completion of the work and prior to final acceptance, the CONTRACTOR shall finalize and deliver a complete set of signed and sealed record drawings to the ENGINEER for transmittal to the OWNER, conforming to the construction records of the CONTRACTOR. This set of drawings shall consist of corrected drawings showing the reported location of the work. The information submitted by the CONTRACTOR and incorporated by the ENGINEER into the Record Drawings will be assumed to be correct, and the CONTRACTOR shall be responsible for the accuracy of such information, and shall bear the costs resulting from the correction of incorrect data furnished to the ENGINEER and the OWNER.

1.2 RELATED REQUIREMENTS

A. **Section 01 33 00: Submittals.**

B. **Section 01 77 00: Project Close Out**.

1.3 MARKING DEVICES

A. The CONTRACTOR shall provide felt tip marking pens for recording information in a color code.

1.4 RECORDING

A. Label each document "PROJECT RECORD" in neat large printed letters.

B. Record information concurrently with the progress of construction.

C. Legibly mark drawings to record actual construction.

1. For pipelines, provide horizontal location of pipes any time the pipe passes a permanent surface reference point. Permanent reference points are as defined herein. Any deviations from the alignment shown on the Drawings must be noted.

2. For pressure pipelines, provide vertical locations at 100-foot intervals. Vertical location will be depth of cover or pipe elevation, whichever is called for on the Drawings.

3. All fittings, including sleeves, valves, and services are to be located by two measurements to permanent surface reference points and by GPS.

4. Permanent surface reference points are manholes, catch basins, power poles, concrete sidewalk, or concrete curbs. Edge of pavement and road intersections may not be used without the ENGINEER's approval. GPS coordinates shall also be provided.

5. Field changes of dimension and detail.

6. Changes made by Field Order, Change Order, or Construction Change Directive.

7. Details not shown on the original Drawings (i.e. fire hydrants, water meters, water main, etc.).

D. Legibly mark each Section of the Technical Specifications and Addenda to record:

1. Manufacturer, trade name, catalog number, and supplier of each item actually installed.

2. Changes made by Field Order, Change Order, or Work Directive.

1.5 SUBMITTAL

A. Prior to Substantial Completion, submit Record Documents to the ENGINEER for delivery to the OWNER.

B. Accompany submittal with a transmittal letter in duplicate, 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 its authorized representative.

C. Computer generated as-built drawings shall be submitted. Data in tabular form will not be accepted. Initially ten (10) signed and sealed paper prints are to be submitted for review. Following review by the ENGINEER and OWNER, any comments are to be addressed. On final submission, the following items shall be provided.

1. Two (2) signed and sealed sets of prints (24" x 36") for electrical panel modifications and all other drawings.

2. Manufacturers of equipment including but not limited to valves, hydrants, pumps, motors, control panels, backflow preventers, generators, engines, and meters shall be listed on at least one page of the record drawings.

3. The electronic drawing files must be AutoCAD and PDF format or compatible (DWG file or DXF file) submitted on compact disc (CD or DVD). All fonts and line types shall be from the standard AutoCAD library or be AutoCAD compatible. Reference files and blocks are to be bound to drawings prior to submittal. Layers and drawings created by turning on and off layers are to be documented and submitted in MS Word or ASCII format. As a minimum requirement, electronic files must include all features that were shown on the Drawings.

D. Record drawings for pump stations provided by the CONTRACTOR shall address the following information:

1. Manufacturer, model number, serial numbers for each piece of equipment.

2. For each new pump: pump type, design capacity and TDH, shutoff head, impeller size, manufacturer's pump curve reference number, horsepower, efficiency, motor speed, discharge pipe size, and discharge flange pressure rating.

PART 2 – PRODUCTS

Not Used.

PART 3 – EXECUTION

Not Used.

END OF SECTION

SECTION 01 73 29

CUTTING AND PATCHING

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

A. CONTRACTOR shall be responsible for all cutting, backfill, base replacement, asphalt replacement, and milling required to complete the work. The Contract Documents list cutting and patching of driveways and roadways. The CONTRACTOR shall maintain traffic and comply with the special conditions as shown on the Drawings.

1.2 RELATED REQUIREMENTS

A. **Section 01 11 00: Summary of Work**.

B. **Section 32 23 16.13: Trenching, Backfilling and Compaction**.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Comply with the Technical Specifications and standards for each product involved.

PART 3 – EXECUTION

3.1 INSPECTION

A. Inspect existing conditions of the Project, including elements subject to damage or to movement during cutting and patching.

B. After uncovering the work, inspect conditions affecting installation 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.

3.2 PREPARATION

A. Provide adequate temporary support as necessary to assure structural integrity of affected portions of the work.

B. Provide devices and methods to protect other portions of the work from damage.

C. Provide protection from elements for that portion of the Project which may be exposed by cutting and patching work, and maintain excavations free from water.

3.3 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. Perform excavation and backfill by methods that will prevent settlement or damage to other work.

C. Execute fittings and adjustment of products to provide a finished installation to comply with specified products, functions, tolerances and finishes.

D. Minimize disruption of vehicular and pedestrian traffic during cutting and patching. If a property has multiple entrances close only one entrance at a time.

END OF SECTION

SECTION 01 74 30

TESTING PIPING SYSTEMS

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

A. Perform specified services with CONTRACTOR's qualified personnel, or employ and pay for a qualified organization, pre-approved by the OWNER/ENGINEER, to perform the specified services.

1.2 RELATED REQUIREMENTS

A. **Section 01 31 13: Project Coordination**.

B. **Section 01 77 00: Project Close-Out**.

C. **Section 33 34 13.13: Ductile Iron Pipe and Fittings**.

D. **Section 33 34 00: Force Mains**.

1.3 DESCRIPTION

A. Perform testing of piping systems in accordance with AWWA C-600 and as specified herein.

B. Provide all instruments required for testing of piping systems:

1. Make instruments available to the ENGINEER to facilitate spot checks during testing.

2. Retain possession of instruments; remove from the site at completion of services.

C. Perform thorough cleaning and full pipe flow flushing of all piping prior to performing pressure testing.

D. Provide all necessary pumping equipment and other equipment, materials and facilities required for proper completion of the flushing and testing specified. Test procedure and test equipment shall be acceptable to the ENGINEER.

E. All tests shall be made in the presence of the OWNER/ENGINEER. Notify the OWNER/ENGINEER not less than 72 hours before any work is to be inspected or tested.

F. If inspections or tests reveal the existence of defects, the piping shall be repaired or replaced and inspection and testing repeated until such piping is acceptable to the OWNER/ENGINEER.

G. All pipe, fittings, valves and joints shall be carefully examined during testing. Leaky joints shall be tightened by remaking the joint.

H. Sections of the system may be tested separately. It shall be distinctly understood that any defect which may subsequently develop in a section already tested and accepted shall promptly be corrected by the CONTRACTOR and that section re-tested.

I. Disposal of the water used for testing shall be subject to the approval of the OWNER/ENGINEER.

1.4 QUALITY ASSURANCE

A. The organization which performs the testing shall, prior to testing, provide their qualifications and demonstrate their ability to perform the services to the satisfaction of the OWNER/ENGINEER.

1.5 SUBMITTALS

A. Preliminary:

1. Submit three (3) copies of documentation to confirm compliance with the following:

   a. Organization supervisor, personnel training and qualifications.

   b. Specimen copy of each of the report forms proposed for use.

B. At least fifteen days prior to the CONTRACTOR's request for final inspection, submit three copies of final reports on applicable reporting forms for review:

1. Each individual final reporting form must bear the signature of the person who recorded the data and that of the supervisor of the reporting organization.

2. Identify all instruments that were used, and the last date of calibration of each.

1.6 JOB CONDITIONS

A. Prior to the start of the testing, verify that required "Job Conditions" are met:

1. System or system element installation is complete.

2. All required materials, instruments, tools, and equipment are on hand.

3. All other preparations are completed.

1.7 TESTING PROCEDURES

A. Pressure Piping Systems:

1. Pressure piping shall pass a hydrostatic pressure test as defined herein prior to acceptance. The pressure test shall be made after all jointing operations are completed and after backfilling is completed. All concrete reaction blocks, or other bracing and restraint shall be in place at least 14 days before initial filling of the line.

2. The pressure test may be applied to an individual section of line isolated between line valves, or may be applied to a shorter section of line at the CONTRACTOR's option. If shorter sections are tested, test plugs or bulkheads, as required at the ends of the test section, shall be furnished and installed by the CONTRACTOR at its own expense, together with all anchors, braces and other devices required to withstand the hydrostatic pressure without imposing any hydraulic thrust on the pipeline or any part thereof. The CONTRACTOR shall be solely responsible for any and all damage to the pipeline, and/or to any other facility, which may result from the failure of test plugs furnished or supports thereto.

3. Hydrostatic Tests:

a. After thorough flushing, the section of line to be tested shall be slowly filled with water and all air expelled from the pipe. Care shall be taken that all air valves and service line corporation stops are installed and open in the section being filled, and that the rate of filling does not exceed the venting capacity of the air valves.

b. The hydrostatic test pressure is 150 psi. for pipes 16 inches and smaller. All pipes larger than 16 inches shall have a hydrostatic test pressure of 200 psi.

c. After the section of line to be tested has been filled with water, the specified test pressure shall be applied and maintained for a period of not less than two (2) hours, or for whatever longer period is necessary for the ENGINEER to complete inspection of the line under test and to locate any and all defective joints and pipe line materials. If repairs are needed, such repairs shall be made, the

line refilled, and the test pressure applied as before. This operation shall be repeated until the line and all parts of it withstand the test pressure in a satisfactory manner.

PART 2 – PRODUCTS

Not Used.

PART 3 - EXECUTION

3.1 GENERAL

A. Prior to testing, flush all piping systems with clean water to remove all debris in the system.

END OF SECTION

SECTION 01 75 00

STARTING OF SYSTEMS

PART 1 - GENERAL

1.1 SCOPE

A. Prior to substantial completion of the project, CONTRACTOR shall, in accordance with the requirements set forth in the Contract Documents, attend the following items:

1. Schedule equipment manufacturer's representative visits to project site to monitor installation.

2. Perform required testing, balancing, calibrating of all equipment, instruments and controls. Conduct force main pressure pipe test.

3. Schedule training sections, as required, for OWNER's O&M Personnel with manufacturer's representative(s).

4. Furnish skilled personnel and equipment, as required, to conduct all equipment inspections.

5. Schedule for Inspection, and Start-Up for Substantial Completion of the project. OWNER will prepare Punch List, if applicable.

B. After correction of Punch List Items if any, and prior to final completion of the project, CONTRACTOR shall Schedule for Final Inspection and Initial Operation of the System in the presence of the and Manufacture's equipment representatives.

1.2 STARTING SYSTEMS

A. General

1. The bid prices for all the equipment furnished by the CONTRACTOR shall include the cost of providing the services of a manufacturer's ENGINEER or competent representative to supervise the installation, adjustment, and testing of the equipment and to instruct the OWNER's Operation and Maintenance personnel in the operation and maintenance of such equipment. The supervision may be divided into two or more time periods, or as required by the ENGINEER. Refer to each individual product specifications.

B. Preparations

1. The CONTRACTOR shall coordinate a schedule for various equipment and systems, and shall notify the ENGINEER five (5) working days prior to the start-up of each item.

2. The CONTRACTOR shall verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, or other conditions which may cause damage. Verify that tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system. Verify wiring and support components.

3. Execute start-up under supervision of responsible manufacturer's representative, and qualified CONTRACTOR's personnel in accordance with manufacturer's instructions. When specified in individual specification Sections, require manufacturer to provide authorized representative to be present at the site to inspect, check and approve equipment or system installation prior to start-up, and to supervise placing equipment or system in operation.

C. Manufacturer's Representative(s) Requirements.

1. CONTRACTOR shall schedule manufacture's representatives to be present for installation, testing and start-up of equipment or systems, and for the instruction of the OWNER's Operating and Maintenance Personnel.

2. In addition to the Services of Manufacturer's Representative specified in each individual equipment specifications, the CONTRACTOR shall provide the services of the manufacturer's representative(s) for additional time as required, should difficulties arise in the operation of the equipment due to the manufacturer's design or fabrication of the equipment or faulty installation by the CONTRACTOR. This additional service shall be provided at no cost to the OWNER.

D. Certification

1. One (1) week prior to final inspection and start-up of the system, CONTRACTOR shall submit to the OWNER certification in writing from the manufacture's representative stating that the installation and testing of the equipment has satisfactorily been completed, and that the OWNER's operating personnel have been instructed in the operation, maintenance and lubrication of the equipment.

2. Prior to final payment, in addition to the Warranty Certificates, and O&M Manuals, the CONTRACTOR shall submit to the OWNER certification in

writing from the Manufacturer's representative stating that the equipment has passed final testing and is ready for operation and use.

3. Refer to **Sections 01 33 00 - Submittals** and individual equipment specifications.

1.3 DEMONSTRATION AND INSTRUCTION

A. Prior to Final Inspection, the equipment manufacture's representative shall demonstrate operation and maintenance of equipment to OWNER's personnel.

B. Attached to the Progress Schedule to be submitted at the Pre-Construction Conference, the CONTRACTOR shall develop and submit to the ENGINEER for approval, a comprehensive, coordinated training program for the training of the OWNER's personnel. The instruction sessions by equipment manufacturers representatives shall be in accordance with the training program established and as indicated herein.

C. The CONTRACTOR shall make the necessary arrangements and schedule in the same training session, manufacture representatives of those equipment that operate as a system (e.g. pump units and variable speed drives). Manufacturer representatives shall utilize operation and maintenance manuals and supporting materials as basis for instruction.

D. The equipment manufacturer's representative shall demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance and shutdown of each item of equipment, and shall prepare and insert additional data in operation and maintenance manuals when the need for additional data in operation and maintenance manuals becomes apparent during instructions. Thereafter, (if applicable) the above described demonstration process shall be conducted as a system with all the equipment interacting and operating together and ready to use.

E. Refer to each individual equipment specifications for more information regarding training program requirements.

END OF SECTION

SECTION 01 76 10

PROTECTION OF EXISTING FACILITIES

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

A. The CONTRACTOR shall protect all existing utilities and improvements, regardless of whether they were shown on the Drawings, not designated for removal and shall restore damaged or temporarily relocated utilities and improvements to a condition equal to or better than they were prior to such damage or temporary relocation, all in accordance with requirements of the Contract Documents.

B. The CONTRACTOR shall verify the exact locations and depths of all existing utilities, and the CONTRACTOR shall make exploratory excavations of all utilities that may interfere with the work.

C. All such exploratory excavations shall be performed as soon as practicable after award of the Contract and, in any event, a sufficient time in advance of construction to avoid possible delays to the CONTRACTOR's work.

D. When such exploratory excavations show the utility location as shown to be in error, the CONTRACTOR shall so notify the ENGINEER.

E. The number of exploratory excavations required shall be that number which is sufficient to determine the alignment and grade of the utility.

1.2 RIGHTS-OF-WAY

A. The CONTRACTOR shall not do any work that would affect any oil, gas, sewer, or water pipeline; any telephone, fiberoptic, or electric transmission line; any fence; or any other structure, nor shall the CONTRACTOR enter upon the rights-of-way involved until notified by the ENGINEER that the OWNER has secured permission from the proper party.

B After authority has been obtained, the CONTRACTOR shall give said party due notice of its intention to begin work, if required by said party, and shall remove, shore, support, or otherwise protect such pipeline, transmission line, ditch, fence, or structure, or replace the same.

C. When two (2) or more contracts are being executed at one time on the same or adjacent land in such manner that work on one Contract may interfere with that on another, the OWNER shall determine the sequence and order of the work.

D. When the limits of one Contract are the necessary or convenient means of access for the execution of another Contract, such privilege of access or any other reasonable privilege may be granted by the OWNER to the CONTRACTOR so desiring to the extent, amount, in the manner, and at the times permitted.

E. No such decision as to the method or time of conducting the work or the use of territory shall be made the basis of any claim for the delay or damage, except as provided for temporary suspension of the work.

1.3 PROTECTION OF STREET OR ROADWAY MARKERS

A. The CONTRACTOR shall not destroy, remove, or otherwise disturb any existing survey markers or other existing street or roadway markers without proper authorization.

B. No pavement breaking or excavation shall be started until all survey or other permanent marker points that will be disturbed by the construction operations have been properly referenced.

C. All survey markers or points disturbed by the CONTRACTOR shall be replaced after all street or roadway re-surfacing has been completed.

1.4 RESTORATION OF PAVEMENT

A. General:

1. All paved areas including asphaltic concrete berms cut or damaged during construction shall be replaced with similar materials and of equal thickness to match the existing adjacent undisturbed areas, except where specific re-surfacing requirements have been called for in the Contract Documents or the requirements of the agency issuing the permit.

2. All temporary and permanent pavements shall conform to the requirements of the affected pavement OWNER.

3. All pavements which are subject to partial removal shall be neatly saw-cut in straight lines.

B. Temporary Re-surfacing:

1. Wherever required by the public authorities having jurisdiction, the CONTRACTOR shall place temporary surfacing promptly after backfilling and shall maintain such surfacing for the period of time fixed by said authorities before proceeding with the final restoration of improvements.

C. Permanent Re-surfacing:

1. To obtain a satisfactory junction with adjacent surfaces, the CONTRACTOR shall saw cut back and trim the edge so as to provide a clean, sound, vertical joint before permanent replacement of an excavated or damaged portion of pavement.

2. Damaged edges of pavement along excavations and elsewhere shall be trimmed back by saw cutting in straight lines.

3. All pavement restoration and other facilities restoration shall be constructed to finish grades compatible with adjacent undisturbed pavement.

D. Restoration of Sidewalks or Private Driveways:

1. Wherever sidewalks or private roads have been removed for purposes of construction, the CONTRACTOR shall place suitable temporary sidewalks or roadways promptly after backfilling and shall maintain them in satisfactory condition for the period of time fixed by the authorities having jurisdiction over the affected portion before proceeding with the final restoration or, if no such period of time is so fixed, the CONTRACTOR shall maintain said temporary sidewalks or roadways until the final restoration thereof has been made.

1.5 EXISTING UTILITIES AND IMPROVEMENTS

A. General:

1. The CONTRACTOR shall protect underground utilities and other improvements which may be impaired during construction operations.

2. It shall be the CONTRACTOR's responsibility to ascertain the actual location of all existing utilities and other improvements that will be encountered in its construction operations, and to see that such utilities or other improvements are adequately protected from damage due to such operations.

3. The CONTRACTOR shall take all possible precautions for the protection of unforeseen utility lines to provide for uninterrupted service and to provide such special protection as may be deemed necessary.

4. CONTRACTOR shall pothole all conflicts within the first 30 days of the Contract to avoid delays while installing the pipelines.

B. Utilities to be Moved:

1. In case it may be necessary to move the property of any public utility or franchise holder, such utility company or franchise holder will, upon request of the CONTRACTOR, be notified by the OWNER to move such property within a specified reasonable time.

2. When utility lines that are to be removed are encountered within the area of operations, the CONTRACTOR shall notify the ENGINEER a sufficient time in advance for the necessary measures to be taken to prevent interruption of service.

C. Temporary Removal and/or Relocation:

1. Where the proper completion of the work requires the temporary removal and/or relocation of an existing utility or other improvement which is indicated, the CONTRACTOR shall remove and, without unnecessary delay, temporarily replace or relocate such utility or improvement in a manner satisfactory to the ENGINEER and the OWNER of the facility.

2. In all cases of such temporary removal or relocation, restoration to the former location shall be accomplished by the CONTRACTOR in a manner that will restore or replace the utility or improvement as neatly as possible to its former locations and to as good or better condition than found prior to removal.

D. The right is reserved to the OWNER and to the OWNER's of public utilities and franchises to enter at any time upon any public street, alley, right-of-way, or easement for the purpose of making changes in their property made necessary by the work of this Contract.

E. Existing utility lines that are indicated or the locations of which are made known to the CONTRACTOR prior to excavation and that are to be retained, and all utility lines that are constructed during excavation operations shall be protected from damage during excavation and backfilling and, if damage, shall be immediately repaired or replaced by the CONTRACTOR.

F. Underground Utilities Not Indicated:

1. In the event that the CONTRACTOR damages any existing utility lines that are not indicated or the locations of which will not make known to the CONTRACTOR prior to excavation, a written report thereof shall be made immediately to the ENGINEER.

2. If directed by the ENGINEER, repairs shall be made by the CONTRACTOR under the provisions for changes and extra work contained in the General Conditions.

G. All costs of locating, repairing damage not due to failure of the CONTRACTOR to exercise reasonable care, and removing or relocating such utility facilities not shown on the Contract Documents with reasonable accuracy, and for equipment on the project which was actually working on that portion of the work which was interrupted or idled by removal or relocation of such utility facilities, and which was necessarily idled during such work will be paid for as extra work in accordance with the provisions for changes and extra work contained in the General Conditions.

H. All repairs to a damaged utility or improvement are subject to inspection and approval by an authorized representative of the utility or improvement OWNER being concealed by backfill or other work.

1. All oil and gasoline pipelines, power, and telephone or the communication cable ducts, gas mains, water mains, irrigation lines, sewer lines, storm drainage, poles, and overhead power and communication wires and cables encountered along the line of the work shall remain continuously in service during all the operations under the Contract, unless other arrangements satisfactory to the ENGINEER are made with the Owner's of said pipelines, ducts, main, irrigation lines, sewers, storm drains, poles, wires or cables.

2. The CONTRACTOR shall be responsible for and shall repair all damage due to its operations, and the provisions of this Section shall not be abated even in the event such damage occurs after backfilling or is not discovered until after completion of the backfilling.

1.6 TREES WITHIN ROAD RIGHT-OF-WAY AND PROJECT LIMITS

A. General:

1. The CONTRACTOR shall exercise all necessary precautions so as not to damage or destroy any trees or shrubs, including those lying within street rights-of-way and project limits, and shall not trim or remove any trees unless such trees have been approved for trimming or removal by the jurisdictional agency or OWNER.

2. All existing trees and shrubs which are damaged during construction shall be trimmed or replaced by the CONTRACTOR or a certified tree company under permit from the jurisdictional agency and/or OWNER.

3. Tree trimming and replacement shall be accomplished in accordance with the following paragraphs.

B. Trimming:

1. Symmetry of the tree shall be preserved; no stubs or splits or torn branches left; clean cuts shall be made close to the trunk or large branch.

2. Spikes shall not be used for climbing live trees.

3. All cuts over 1½ inches in diameter shall be coated with an asphaltic emulsion material.

C. Replacement:

1. The CONTRACTOR shall immediately notify the jurisdictional agency/or OWNER if any tree is damaged by the CONTRACTOR's operations.

2. If, in the opinion of said agency or the OWNER, the damage is such that replacement is necessary, the CONTRACTOR shall replace the tree at its own expense.

3. The tree shall be of a like size and variety as the tree damaged, or, if of a smaller size, the CONTRACTOR shall pay to the OWNER of said tree a compensatory payment acceptable to the tree OWNER, subject to the approval of the jurisdictional agency or the OWNER.

4. The size of the trees shall be not less than one (1) inch diameter, nor less than six (6) feet in height.

1.7 NOTIFICATION BY THE CONTRACTOR

A. Prior to any excavation in the vicinity of any existing underground facilities, including all water, sewer, storm drain, gas, petroleum products, or other pipelines; all buried electric power, communications, or television cables; all traffic signal and street lighting facilities; and all roadway and state highway rights-of-way the CONTRACTOR shall notify the respective authorities representing the OWNER's or agencies responsible for such facilities not less than three (3) days nor more than seven (7) days prior to excavation so that a representative of said owner's or agencies can be present during such work if they so desire.

B. The CONTRACTOR shall also notify "SUNSHINE UNDERGROUND UTILITIES NOTIFICATION CENTER" at 1-800-432-4770 at lease three (3) days, but not more than ten (10) days prior to such excavation.

PART 2 – PRODUCTS

Not Used.

PART 3 – EXECUTION

Not Used.

END OF SECTION

SECTION 01 77 00

PROJECT CLOSE OUT

PART 1 – GENERAL

1.1 DESCRIPTION OF REQUIREMENTS

A. Definitions: Close out is defined to include the general requirements near the end of the Contract Time, which is between Substantial Completion and final acceptance of the work.

1.2 RELATED REQUIREMENTS

A. **Section 01 72 00: Project Record Drawings.**

1.3 PREREQUISITES FOR SUBSTANTIAL COMPLETION

A. General: Prior to requesting OWNER's inspection for certification of substantial completion, as required by the General Conditions (for either the entire work or portions thereof), and in addition to complying with all **Division 1 - General Requirements of these Contract Documents**, the CONTRACTOR shall complete the following and list known exceptions in request:

1. Submit last progress-payment request, with sworn statement showing percent completion of the work, complete with associated warranty of title releases, consents and supports.

2. Submit statement showing changes to the Contract Sum.

3. Obtain and submit occupancy permits, operating certificates, final inspection/test certificates, and similar releases enabling OWNER's full and unrestricted use of the work and access to services and utilities.

4. Submit signed and sealed record drawings, maintenance manuals, final project photographs, damage or settlement survey, property survey and similar final record information.

5. Provide all contractually required operational and maintenance manuals, training and start-up services.

6. Deliver tools, spare parts, extra stocks of materials, and similar physical items to OWNER.

1.4 PREREQUISITES FOR FINAL ACCEPTANCE

A. General: Prior to requesting OWNER's final inspection for certification of final acceptance and final payment, as required by the General Conditions, complete the following and list known exceptions (if any) in request:

1. Submit final payment request with final warranty of title, consent of surety for final payment, final releases and supports not previously submitted and accepted. Include certificates of insurance for products and completed operations.

2. Submit updated final statement, accounting for additional charges to the Contract Sum.

3. Complete the final cleaning.

4. Submit certified copy of OWNER's final punch-list of itemized work to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance, endorsed and dated by the OWNER's.

5. Submit final meter readings for utilities, measured record of stored fuel, and similar data as of the time of substantial completion or when OWNER's take possession of and responsibility for corresponding elements of the work.

6. Submit special guarantees, warranties, workmanship bonds, maintenance agreements, final certifications and similar documents.

7. Change over utilities to the OWNER’s name.

8. Touch-up and otherwise repair and restore marred exposed finishes.

9. Provide equipment list and details as required.

1.5 RECORD DOCUMENTS SUBMITTALS

A. General: General requirements for record documents are indicated in individual sections of these Technical Specifications. The specific submittal requirements are indicated in **Section 01 72 00 – Project Record Drawings**. Do not use record documents for construction purposes; protect from deterioration and loss in a secure fire-resistive location; provide access to record documents for the ENGINEER’s or OWNER’s inspection during normal working hours.

1.6 FINAL CLEANING

A. Clean project site, including landscape, development areas of litter and foreign

substances. Sweep paved areas to a broom clean condition; remove stains, petrochemical spills and other foreign deposits. Rake grounds which are neither planted nor paved, to a smooth, even-textured surface.

B. Time of Final Cleaning: Following OWNER's certification of "Substantial Completion," and immediately before his "Final Acceptance" inspection.

C. Removal of Protection: Except as otherwise indicated or requested by OWNER's, remove temporary protection devices and facilities which were installed during the course of the work to protect previously completed work during the remainder of the construction period.

D. Compliances: Comply with safety standards and governing regulations for cleaning operations. Do not burn waste materials at the site, or bury debris or excess materials, or discharge volatile or other harmful or dangerous materials into drainage systems; remove waste materials from the site and dispose of in a lawful manner.

E. Where extra materials of value remaining after completion of the associated work have become the OWNER's property, dispose or store at the site as directed by the OWNER.

PART 2 – PRODUCTS

Not Used.

PART 3 – EXECUTION

Not Used.

END OF SECTION

SECTION 01 78 23

OPERATING AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 REQUIREMENTS

A. Compile product data and related information appropriate for the OWNER's maintenance and operation of products specified.

1. Prepare operating and maintenance data as specified in this Section and as referenced in other pertinent Sections of these Technical Specifications.

B. Product data shall be specific to the items furnished.

C. Operating and maintenance data is to be sufficiently detailed to provide a full understanding of the equipment furnished. Include an equipment part number and description for all component parts.

D. Instruct the OWNER's personnel in the maintenance of products and in the operation of equipment and systems.

1.2 RELATED REQUIREMENTS

A. **Section 01 77 00: Project Close-Out**.

B. **Section 01 72 00: Project Record Drawings.**

1.3 QUALITY ASSURANCE

A. Preparation of data shall be done by factory personnel:

1. Trained and experienced in the maintenance and operation of the described products.

2. Familiar with the requirements of this Section.

3. Skilled as a technical writer to the extent required to communicate essential data.

4. Skilled as a draftsman competent to prepare required diagrams, schematics and Drawings.

5. Familiar with Operation and Maintenance Manual requirements.

1.4 FORM OF SUBMITTALS

A. Prepare data in the form of an instructional manual for use by the OWNER's personnel.

B. Provide three (3) preliminary review copies for review by the ENGINEER. Upon acceptance, submit four (4) final copies.

C. Format:

1. Size: 8½ inches x 11 inches.

2. Paper: Manufacturer's printed data, or typewritten.

3. Drawings:

a. Size: Not larger than 8½ inches x 17 inches.

b. Provide reinforced punched binder tab, bind in with text.

c. Fold larger drawings to size of text pages.

4. Provide fly-leaf for each separate product, or each piece of operating equipment:

a. Provide a typed description of the product and major component parts of equipment.

b. Provide indexed tabs.

5. Cover - Identify each volume with typed or printed title "OPERATING AND MAINTENANCE INSTRUCTIONS" listing:

a. Title and Project name.

b. Identity of separate structure as applicable.

c. Identify general subject matter covered in the manual.

D. Binders:

1. Commercial quality 3-ring binders with durable and cleanable plastic covers.

2. Maximum ring size of three (3) inches.

3. When multiple binders are used, correlate the data into related consistent groupings.

1.5 CONTENT OF MANUAL

A. Neatly typewritten table of contents for each volume, arranged in systematic order:

1. A list of each product required to be included, indexed to the content of the volume.

2. List with each product the name, address and telephone number of the following:

a. Authorized factory service representative.

b. Local source of supply for parts and replacement.

3. Identify each product by product name and other identifying symbols as set forth in the Contract Documents.

4. CONTRACTOR, name of responsible principal, address and telephone number.

B. Product Data:

1. Include only those sheets pertinent to the specific product.

2. Annotate each sheet to:

a. Clearly identify the specific product or part.

b. Clearly identify data applicable to the installation.

c. Delete references to inapplicable information.

C. Drawings:

1. Supplement product data with drawings as necessary to clearly illustrate:

a. Relations of component parts of equipment and systems.

b. Control of flow diagrams.

D. Written text as required to supplement product data for the particular installation:

1. Organize in consistent format under separate headings for different procedures.

2. Provide a logical sequence of instruction for each procedure.

E. Copy of each warranty, bond and service contract issued:

1. Provide an information sheet for the OWNER's personnel:

a. Proper procedures in the event of failure.

b. Instances which might affect the validity of warranties or bonds.

1.6 MANUAL FOR MATERIALS AND FINISHES - Not Used.

1.7 MANUAL FOR EQUIPMENT AND SYSTEMS

A. Submit six (6) hard copies and one (1) electronic copy of complete manual in final form in 3-ring binders.

B. Content for each unit of equipment or system, as appropriate:

1. Description of unit 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. 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.

3. Maintenance Procedures:

   a. Routine operations.

   b. Guide to "trouble-shooting".

   c. Disassembly, repair and reassembly.

   d. Alignment, adjusting and checking.

4. Servicing and lubricants required:

   a. List of lubricants required.

   b. Recommended lubrication schedule.

5. Manufacturer's printed operating and maintenance instructions.

6. Description of sequence of operation by control manufacturer.

7. Original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance:

   a. Predicted life of parts subject to wear.

   b. Items recommended to be stocked as spare parts.

C. Prepare and include additional data when the need for such data becomes apparent during instruction of the OWNER's personnel.

1.8 ELECTRONIC EQUIPMENT DATA SHEET SUBMITTAL REQUIREMENTS

A. The Palm Beach County Electronic Equipment Data Sheet will be provided electronically in Excel format. Refer to **Attachment A** provided at the end of this section for more information.

1.9 SUBMITTAL SCHEDULE

A. Submit the specified number of copies of approved O&M data in final form no later than 75% of construction completion time.

B. Changes and corrections to approved O&M data due to construction adjustments shall be submitted prior to Substantial Completion of the project.

C. The draft Electronic Equipment Data Sheet file must be provided to the Owner for review no later than 30 calendar days prior to startup of each lift station.

D. The final Electronic Equipment Data Sheet file addressing the Owner’s comments must be provided for each lift station no later than 7 calendar days prior to startup.

E. The final revised Electronic Equipment Data Sheet files addressing the Owner’s comments must be submitted prior to Substantial Completion of the project.

2.0 INSTRUCTION OF OWNER'S PERSONNEL

A. Prior to final inspection or acceptance, fully instruct the OWNER's designated operation and maintenance personnel in the operation, adjustment and maintenance of all products, equipment and systems.

B. The operation and maintenance manual shall constitute the basis of instruction:

1. Review contents of the manual with personnel in full detail to explain all aspects of operations and maintenance.

PART 2 – PRODUCTS

Not Used.

PART 3 – EXECUTION

Not Used.

END OF SECTION

ATTACHMENT A

ELECTRONIC EQUIPMENT DATA SHEET SUBMITTAL REQUIREMENTS AND USER GUIDE

SECTION 1

GENERAL INFORMATION

1.1 MINIMUM SYSTEM REQUIREMENTS

The following is required at a minimum to run the electronic equipment data sheet

1. A personal computer with a minimum 500MHz processor.
2. 256 MB of Random Access Memory (RAM).
3. Monitor capable of 1024x768 pixel resolution.
4. Microsoft Excel version 2007 or better.

SECTION 2

ELECTRONIC EQUIPMENT DATA SHEET USER GUIDE

The following section outlines the procedures to properly complete the Palm Beach County Electronic Equipment Data Sheet.

2.1 OPENING THE EQUIPMENT DATA SHEET

The Palm Beach County Electronic Equipment Data Sheet will be provided electronically from the Project Manager:

1. Open the Excel file.

2. If a yellow ribbon(s) appears at the top of the spreadsheet make sure to click the button(s) to "Enable Content" and/or "Enable Macros."

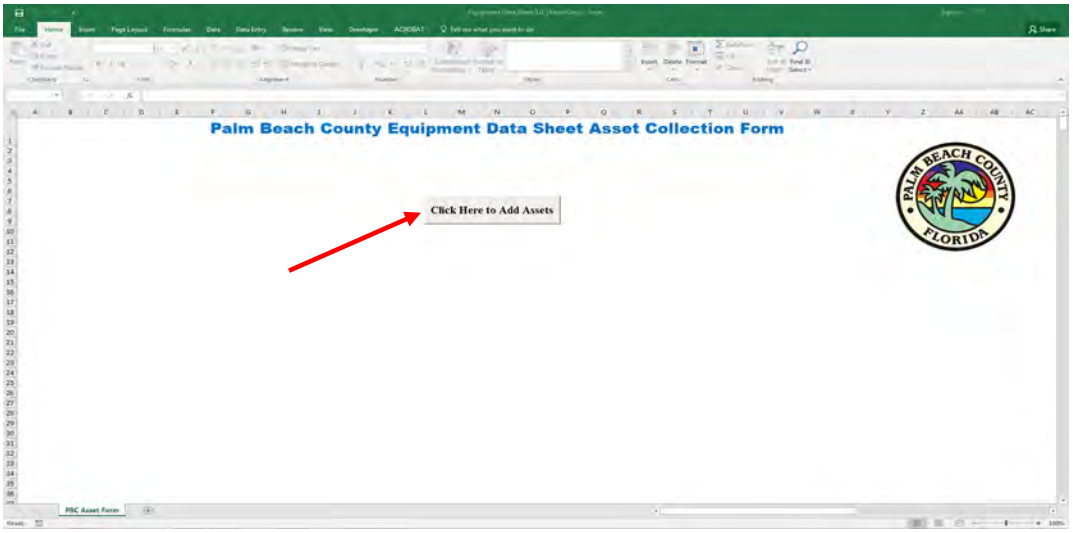


Figure 1 – PBC Equipment Data Sheet Asset Collection Form Tab

2.2 ADDING ASSETS TO THE EQUIPMENT DATA SHEET

To begin adding assets to the electronic equipment data sheet, perform the following procedure:

Step 1: *Opening the Palm Beach County Equipment Data Sheet User Form*

In the Equipment Data Sheet Asset Collection Form Tab (Figure 1) click the grey rectangular box in the middle of the spreadsheet that reads "Click Here to Add Assets." This will open up the Equipment Data Sheet User Form, **Figure 2**.

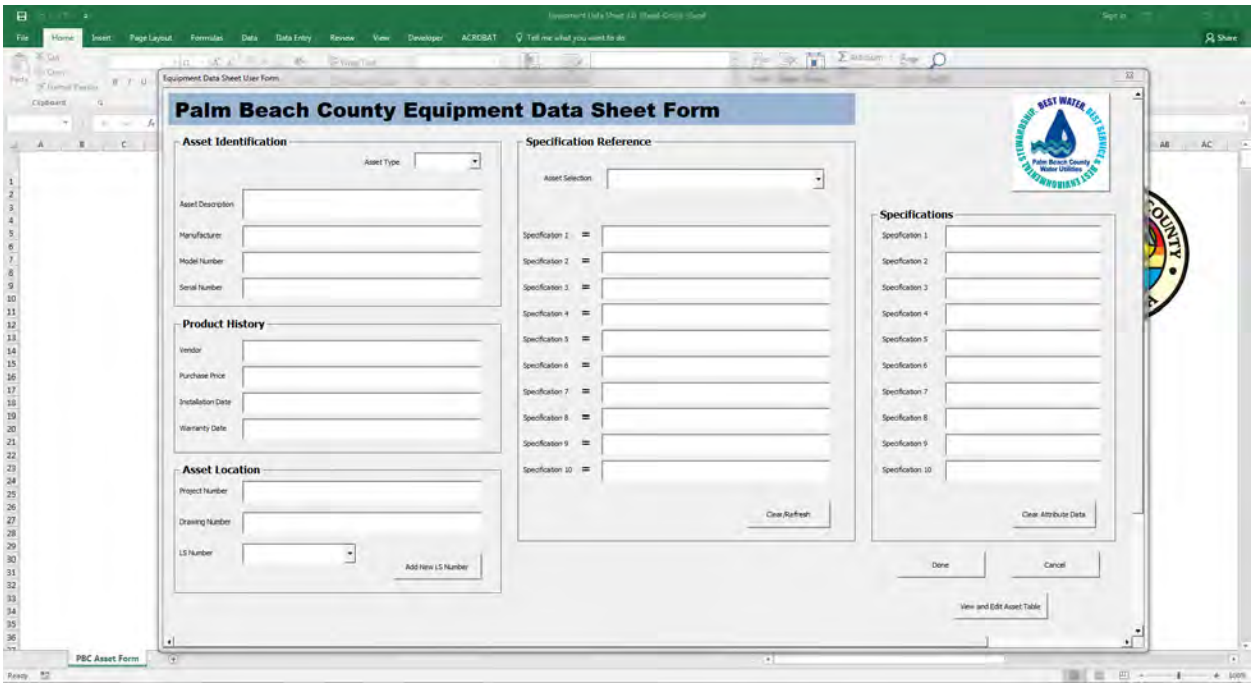


Figure 2 – Equipment Data Sheet User Form

NOTE: Depending on the size and resolution of the user's monitor, the Equipment Data Sheet User Form may not be the optimal size. The User Form size can be adjusted by clicking and dragging the sides or corners of the User Form until the Form is of the desired size.

NOTE: In order to go back to the Equipment Data Sheet Asset Collection Form tab, the Equipment Data Sheet User Form must first be closed by either clicking on the red "x" in the top right corner of the User Form or clicking the "Cancel" button in the bottom right of the User Form. IF THE USER FORM IS CLOSED WITH THE FORM FIELDS FILLED OUT BEFORE THE "DONE" BUTTON IS PRESSED, THAT DATA WILL BE DELETED AND NOT ADDED TO THE SYSTEM.

Step 2: *Completing the Asset Identification, Product History, and Asset Location Fields*

Once the Equipment Data Sheet User Form has been opened (Figure 2), information about the asset to be added to the database may be entered into the Asset Identification, Product History, and Asset Location text fields. Those fields include and are defined as follows:

Asset Type – The overall purpose of the asset in regards to the type of utility service the asset is a part of. The dropdown selections for Asset Type include Water, Waste, or Reclaimed. "N/A" may also be chosen if the asset does not fit any of the other categories or if the user is unsure of the asset type.

Asset Description – Describes the asset in a uniquely identifiable way as to differentiate that asset from all other assets that are submitted. ASSET DESCRIPTIONS MUST INCLUDE THE ASSET TAG AND BE OF THE FORM ["ASSET TAG", "ASSET DESCRIPTOR"]. A list of asset tags is located in **Appendix A**. Good asset descriptors may include: the assigned name of the asset (e.g. Submersible Pump, Pump 1), the nameplate or tag associated with the asset (e.g. Level Monitor, Filter 2 Level Monitor LIT-11202), or the location of the asset in relation to other surrounding assets (e.g. Gate Valve, Upstream Flow Meter Isolation Valve).

Manufacturer – The parent company that produced the asset.

Model Number – Manufacturer assigned number for the asset's product series. If there is no model number, the product series name or catalogue number may also be used.

Serial Number – Manufacturer assigned identification number for the asset within its model series.

Vendor – The person(s) or company that sold the asset to the CONTRACTOR. The vendor listed should be the point of contact for any warranty, technical or product maintenance inquiries.

Purchase Price – The material and tax cost of the asset purchased by the CONTRACTOR from the Vendor. Purchase price should not include the costs of labor and installation.

Installation Date – The calendar date of final installation of the asset by the CONTRACTOR. Installation date should be entered in the form [mm/dd/yyyy].

Warranty Date – The calendar date of final warranty as guaranteed by the manufacturer, if any exist. The warranty date should be entered in the form [mm/dd/yyyy].

Project Number – The Palm Beach County Water Utilities Department (PBCWUD) project number as specified on the cover of the contract documents.

Drawing Number – The sheet number on the bottom right corner of the drawings.

LS Number – The assigned PBCWUD identification number for the lift station site. If the asset is added to an existing lift station, the lift station number may be selected from the dropdown list. If the asset is added to a new lift station, a new lift station number may be added to the list by pressing the "Add New LS Number" button which will open up the Add/Replace LS Number Form, **Figure 3**. Follow the prompts on the Add/Replace LS Number form to add a new lift station to the list, or replace an existing lift station with a new lift station number.

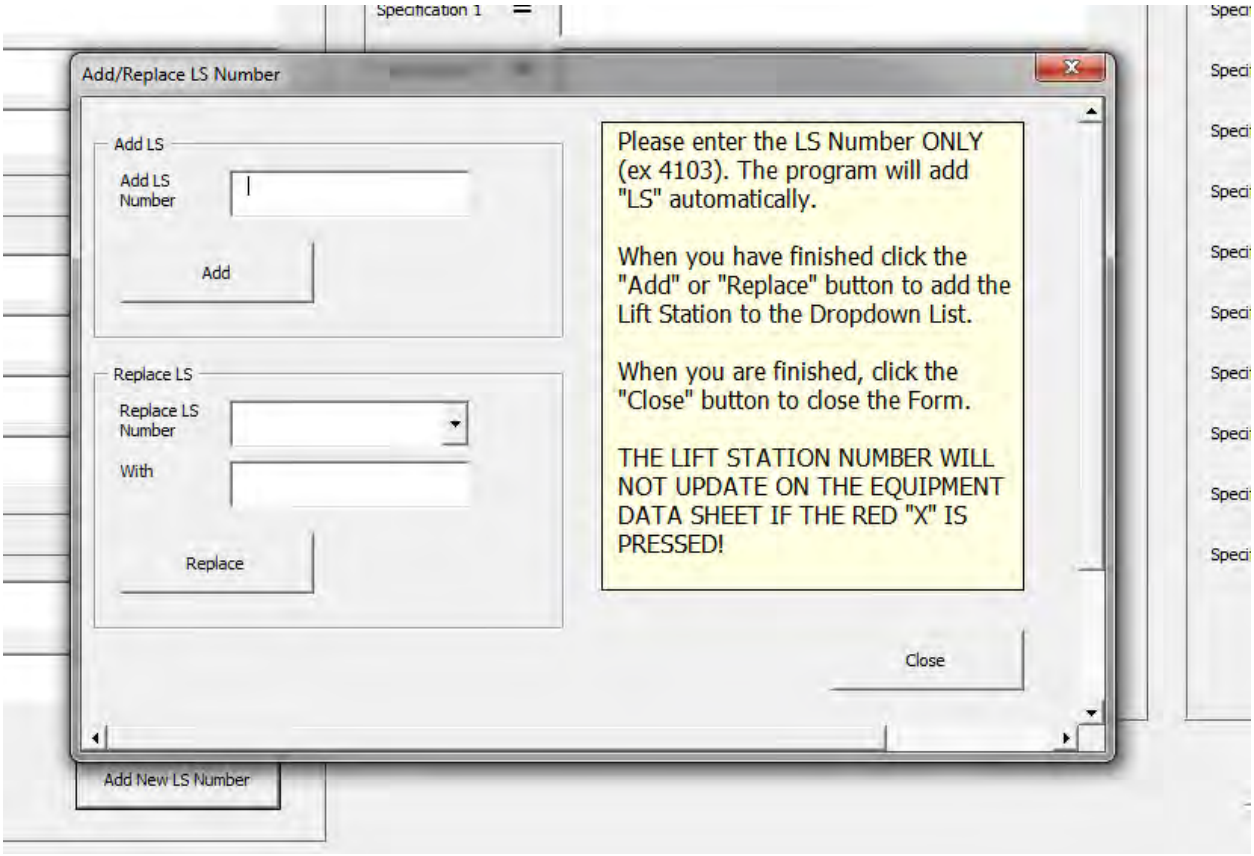


Figure 3 – Add/Replace LS Number Form

NOTE: The first time a new lift station is added/replaced to the system, the Equipment Data Sheet User Form must be refreshed before the new lift station number will appear in the LS Number dropdown list. To do this simply close and re-open the Equipment Data Sheet User Form by pressing the "Cancel" button and then again clicking on the "Click Here to Add Assets" button. Refreshing the form will refresh the text fields, so it is advised to add/replace the lift station number BEFORE adding data for a new asset.

Step 3: *Using the Specification Reference Tool to Complete the Asset Specification Section*

The Specification Reference Tool is a dynamic reference table that allows the user to quickly and easily locate additional attributes that are specific to the asset, **Figure 4**. The procedure for completing the Asset Specification section are as follows:

1. Locate the asset from the Asset Selection dropdown list. Items in the dropdown list are the same as the Asset Tag list located in Appendix A, and the selection should match the first part of the "Asset Description" exactly. Items in the Asset Selection dropdown list may be keyword searched by typing in the first few letters of the asset. The reference table may be cleared by clicking the "Clear/Refresh" button.
    a. The specification reference fields will populate automatically once the asset is selected from the Asset Selection dropdown list. These are the specific asset attributes to be determined by the CONTRACTOR.

2. Complete the applicable text fields in the Specifications Section. Specification 1 should correspond to the Specification 1 reference, Specification 2 with the Specification 2 reference, and so forth. The specifications may be cleared by clicking the "Clear Attribute Data" button.
    a. If a specification has a specific unit it will be denoted next to the specification reference with a bracket [ ] and should be included.

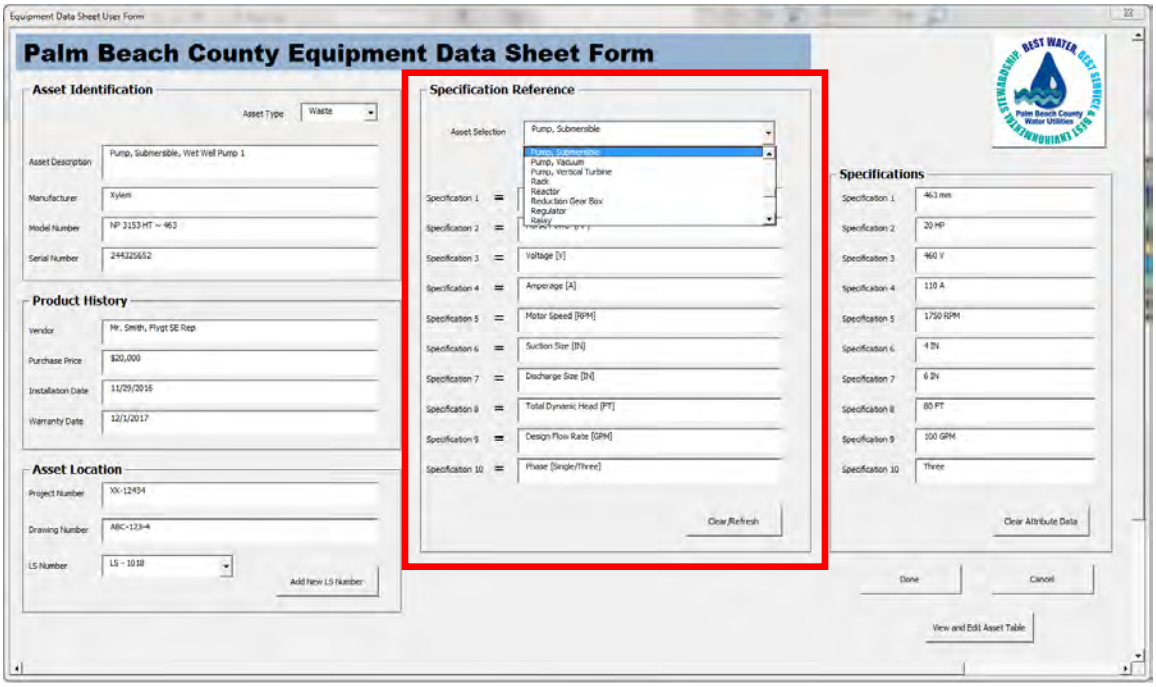


Figure 4 – Specification Reference Tool

Step 4: *Sending the Asset Data to the Asset Table*

Once the Asset Identification, Product History, Asset Location, and Specification Fields are complete, and the Asset is ready to be added to the system, simply press the "Done" button located on the bottom right hand corner of the Equipment Data Sheet User Form, **Figure 5**. At that point the data will be sent to the asset table, all of the fields in the Equipment Data Sheet with the exception of the Asset Type will be refreshed, and the user can begin adding the next asset.

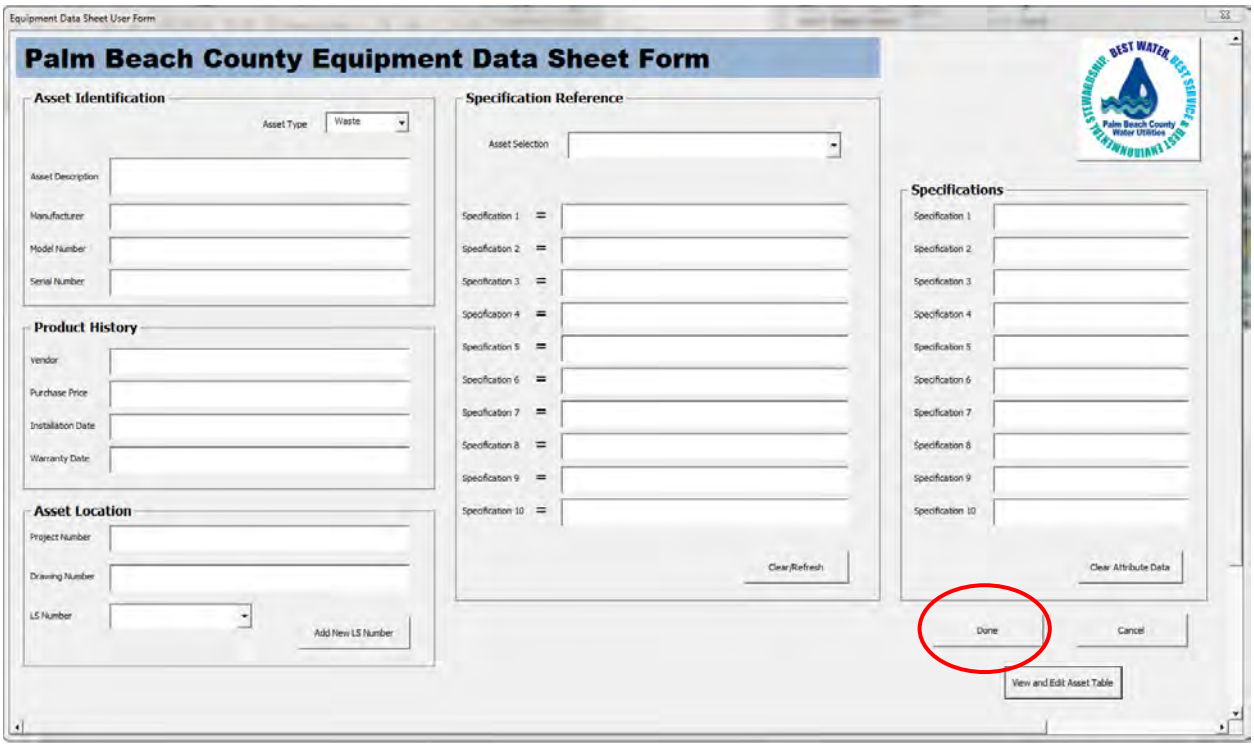


Figure 5 – Sending Data to the Asset Table

2.3 VIEWING AND EDITING DATA IN THE ASSET TABLE

Data that has been sent to the asset table can be viewed and edited at any time in the Asset Table Lookup Form (**Figure 6**) by clicking on the "View and Edit Asset Table" button located under the "Done" button in the lower right hand corner of the Equipment Data User Form (Figure 2).

The Asset Table Lookup Form allows the user to view the entire asset table to date in a tabular form and make any edits as necessary. To make edits to the asset table perform the following procedure, **Figure 7**:

1. Navigate and select the desired row of data in the asset table by either using the scroll bars in the asset table window and clicking on row, or by clicking the forward and back buttons (<<< / >>>) located in the bottom left hand corner of the Lookup Form.

2. The selected data will be highlighted in blue and will automatically populate Asset Selection Value fields below the asset table window.

3. To make an edit select the desired Asset Selection field(s) and overwrite the data by deleting the existing data and entering in the new correct data.

4. Next click the "Click to Edit Table" button located at the bottom of the Asset Table Lookup Form and the asset table will be updated with the new data entered in the Asset Selection Field(s).

5. To exit the Asset Table Lookup Form and resume adding assets to the Equipment Data User Form, simply press the "Close" button in the bottom right hand corner.

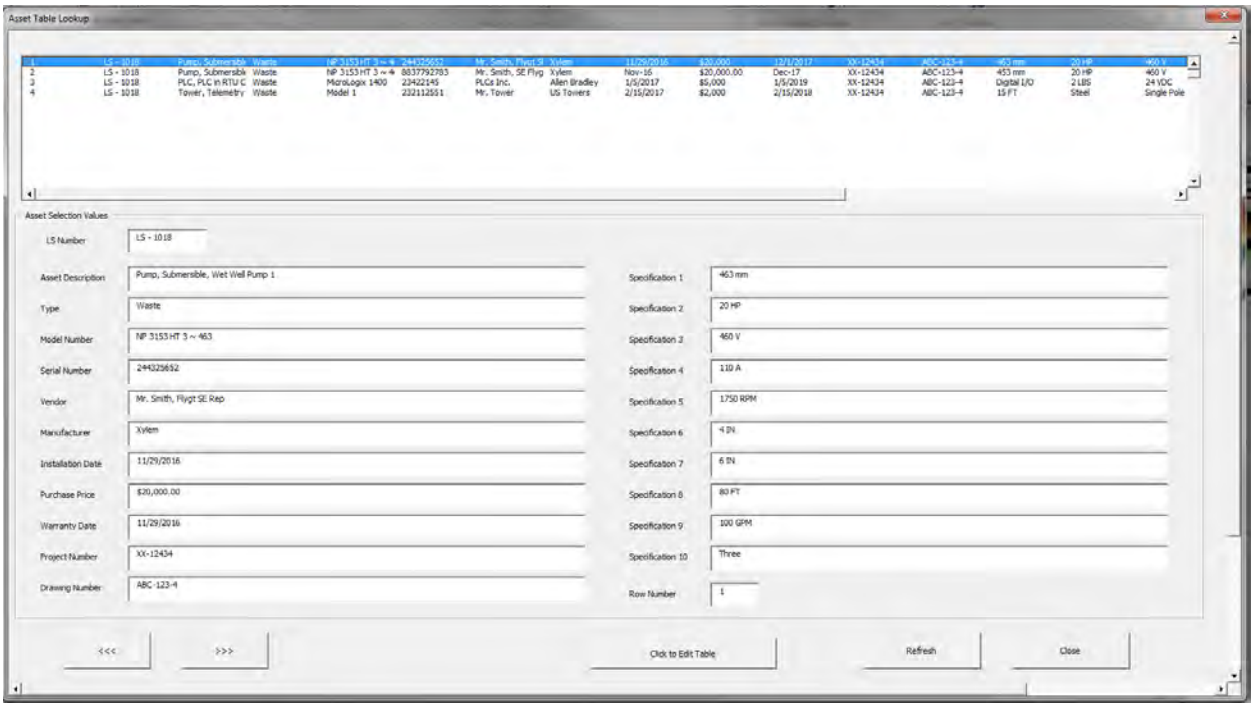


Figure 6 – Asset Table Lookup Form

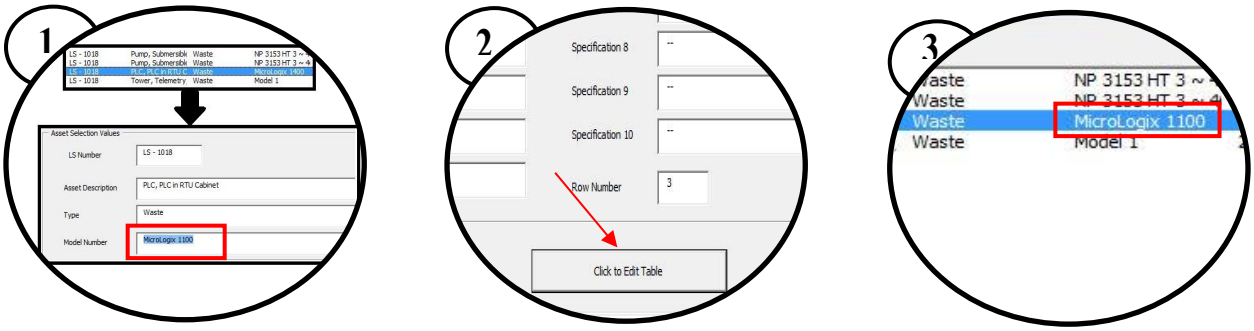


Figure 7 – Steps to Edit Data Within the Asset Table Lookup Form

SECTION 3

ELECTRONIC EQUIPMENT DATA SHEET SUBMITTAL PROCEDURE

The draft electronic equipment data sheet file must be submitted for each lift station prior to the lift station startup. The revised electronic equipment data file addressed the Owner's comments on the draft must be submitted at the lift station startup. The final electronic equipment data sheet files must be provided to the Owner prior to final completion.

APPENDIX A

ASSET TAG LIST

- Actuator
- Air Conditioning (Package)
- Air Handler
- Air Release Valve
- Alarm
- Ammoniator
- Analyzer
- Auger
- Auto Flusher
- Automatic Transfer Switch
- Backflow Preventer
- Bar Screen
- Bar Screen Shock Relay
- Battery Charger Unit
- Belt Filter Press
- Blower
- Boat
- Boat, Pontoon
- Boiler
- Breaker
- Burner
- Calibration Column
- Camera
- Cart
- Cart, Golf
- Cart, Passenger
- Cart, Utility
- Catalyst Monitor
- Catalytic Converter
- Channel Monster
- Compressor
- Condenser
- Contactor
- Container
- Control Cabinet
- Control Panel

- Controller
- Conveyor
- Dampener
- Defibrillator
- Diffuser
- Display
- Distiller
- Dryer
- Electrical Panel
- Elevator
- Emergency Shower Eye Wash
- Enclosure
- Engine
- Exhaust Fan
- Fencing
- Filter
- Filter Hood
- Fire Alarm
- Flame Arrestor
- Flow Meter
- Flow Meter Controller
- Flow Transmitter
- Fork Lift
- Fuel Monitor
- Furnace
- Gas Cleaner
- Gate
- Gate Operator
- Gear Box
- Generator
- Grate
- Grit Classifier
- Grit Separator
- Grounding Reel, Retractable
- Harmonic Filter
- Hatch
- Heat Exchanger
- Heater
- Heating Panel
- Heating Ventilation & Air Conditioning (HVAC)

- Hoist
- Hopper
- Hydrant
- Hydraulic Pressure Booster
- Hydrocyclone
- Ice Machine
- Incubator
- Injector
- Inverter
- Ladder
- Level Monitor
- Level Transmitter
- Lift
- Light
- Light Pole
- Lime Silo
- Load Bank
- Macerator
- Manhole
- Mixer
- Monitor
- Motor
- Odor Control Unit
- Oven/Lab
- Ozone Destructor
- Panel
- pH Meter
- Pipe
- Pipe, Clay
- Pipe, DI
- Pipe, Fiberglass Reinforced Plastic
- Pipe, Galvanized
- Pipe, High Density Polyethylene
- Pipe, PVC
- Pipe, Stainless
- Portable Fire Extinguisher
- Power Conditioner
- Power Disconnect
- Power Monitor
- Pressure Transmitter Indicator

- Pressure Vessel Train
- Pressure Washer
- Probe
- Programmable Logic Controller
- Pump
- Pump, Centrifugal
- Pump, Diaphragm
- Pump, Fuel
- Pump, Positive Displacement
- Pump, Progressive Cavity
- Pump, Submersible
- Pump, Vacuum
- Pump, Vertical Turbine
- Rack
- Reactor
- Reduction Gear Box
- Regulator
- Relay
- Remote Transmitter Unit
- Roll Up Door
- Roto Screen
- Rotameter
- Sampler
- Scale
- Scraper Mechanism Clarifier
- SDI Meter
- Sensor
- Separator
- Silencer
- Slaker
- Sludge Press
- Solar Panel
- Solenoid
- Starter
- Strainer
- Surge Voltage Protector
- Switch, Limit
- Switch, Transfer
- Switchgear
- Tank

- Tank, Air
- Tank, Chemical
- Tank, Fuel
- Tank, Hydropneumatic
- Tank, Reclaim
- Tank, Surge
- Tank, Water
- Temperature Transmitter
- Thickener
- Tower
- Trailer
- Transceiver
- Transformer
- Uninterrupted Power Supply
- Valve
- Valve, Butterfly
- Valve, Check
- Valve, Gate
- Valve, Plug
- Valve, Pressure Relief
- Valve, Pressure Sustaining
- Vapor, Heater
- Variable Frequency Drive
- Venturi
- Vibration Transmitter
- Vibrator
- Volt Meter
- Waste Gas Torch
- Water Heater
- Water Meter
- Water Softener
- Water Softener Timer
- Weather Station
- Well
- Well, Deep Injection
- Well, Monitoring
- Well, Production
- Wet Well
- Winch

SECTION 02 00 00

EXISTING UTILITIES AND UNDERGROUND STRUCTURES

PART 1 - GENERAL

1.1 REQUIREMENTS

A. The plans depict the approximate locations of known existing subsurface utilities, structures and other facilities.

1.2 RELATED SECTIONS

A. **Section 31 23 16.13 - Trenching, Backfilling and Compaction**.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

3.1 CONTRACTOR'S RESPONSIBILITIES

A. Notify the OWNER's of such utilities at least 48 hours in advance of conducting construction near these existing utilities.

B. Locate cables, ducts, conduits, pipelines, casings, irrigation system components, etc., in advance of the proposed construction in cooperation with the OWNER's of such utilities and facilities.

C. Notify the ENGINEER of any substantial changes in the vertical or horizontal orientation of existing utilities that would require a deviation in the Contract Documents.

D. Repair all damage done to existing utilities or facilities mentioned above at no additional expense to the OWNER.

E. Collect State Plane Coordinate data for existing facilities and depict the data on the record drawings.

3.2 OBSTACLES

A. Obstacles encountered not shown on the Drawings which may cause a revision to final grades may be considered grounds for compensation to the CONTRACTOR on a force account (equipment rental) basis for the time expended to re-lay any pipe necessary. Such compensation will be agreed to by the OWNER prior to proceeding with the modified construction.

END OF SECTION

SECTION 02 01 00

MISCELLANEOUS WORK AND CLEANUP

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. Furnish all labor, materials, equipment and incidentals required to do the miscellaneous work not specified in other sections but obviously necessary for the proper completion of the work.

B. The CONTRACTOR shall perform the work in accordance with other sections of this Technical Specification when applicable. When no applicable Technical Specification exists, the CONTRACTOR shall perform the work in accordance with the best modem practice and/or as directed by the OWNER.

C. The work of this section includes but is not limited to, the following:

1. Job photographs.

2. Protection and/or removal and reinstallation of signs, lampposts and mailboxes.

3. Crossing and relocating existing utilities.

4. Restoring of roadways and pavement.

5. Protection and bracing of utility poles.

6. Restoring easements and rights-of-way.

7. Temporary facilities.

8. Cleaning up.

9. Incidental work.

D. The CONTRACTOR's unit bid prices for the work described in other sections shall include costs associated with this section. It shall be the CONTRACTOR's responsibility to develop his/her costs for this work based on investigations prior to the bid.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Materials required for this section shall be the same quality of materials that are to be restored. Where possible and approved by the OWNER, the CONTRACTOR may re-use existing materials that are removed and acceptable for reuse.

2.2 RESTORATION OF ROADWAYS AND PAVEMENT

A. The CONTRACTOR shall repair and/or replace existing roadways, and other paved areas of asphalt and/or concrete, disturbed unnecessarily by the construction as determined by the OWNER. Paved drives shall be repaved to the limits and thicknesses existing prior to construction. Gravel drives shall be replaced and regraded to the limits and thicknesses existing prior to construction. Driveways shall be replaced to the right-of-way line.

2.3 PROTECTION AND BRACING OF UTILITY POLES

A. The CONTRACTOR shall be responsible for making all arrangements with the proper utility companies for the bracing and protection of all utility poles that may be damaged or endangered by the CONTRACTOR's operations. Work under this item shall include the related removal and reinstallation of guy wires or support poles.

2.4 RESTORING EASEMENTS AND RIGHTS-OF-WAY

A. The CONTRACTOR shall be responsible for all damage to private property due to his operations, where such damage was not unavoidable as determined by the OWNER. The CONTRACTOR shall protect from injury all walls, fences, cultivated shrubbery and vegetables, fruit trees, asphalt and/or concrete pavement, underground facilities, such as water pipe, or other utilities which may be encountered along the route. If removal and replacement are required, it shall be done in a workmanlike manner so that replacement is equivalent to that which existed prior to construction.

B. The CONTRACTOR shall be responsible for replacing existing lawn and sod surfaces damaged by construction, where such damage was not unavoidable as determined by the OWNER. These areas shall be maintained, if necessary, until all work under this Contract has been completed and accepted. Any additional work required to restore property to the original condition shall be performed by the CONTRACTOR.

C. Existing trees, shrubs, plants, and bushes outside of easements shall be fully protected.

2.5 TEMPORARY FACILITIES

A. The CONTRACTOR shall furnish, install, maintain and remove all temporary facilities required for the proper completion of the work.

2.6 CLEANING UP

A The CONTRACTOR shall remove all construction material, excess excavation, equipment and other debris remaining on the job as a result of construction operations and shall restore the site of the work to a neat and orderly condition.

2.7 INCIDENTAL WORK

A The CONTRACTOR shall perform all incidental work not otherwise specified, but obviously necessary, for the proper completion of the work described in these Technical Specifications.

END OF SECTION

SECTION 02 41 00

DEMOLITION

PART 1 - GENERAL

1.1 THE REQUIREMENT

A. The CONTRACTOR shall demolish existing facilities and portions of facilities as indicated, in accordance with the Contract Documents.

B. The CONTRACTOR shall be responsible for requesting and obtaining all required demolition, hauling, transport, and disposal permits required from local, state, or federal regulatory agencies. The CONTRACTOR shall be responsible for all permit fees associated with demolition activities.

C. Demolition work shall be performed at the proposed lift station site as required.

1.2 COORDINATION

A. The CONTRACTOR shall carefully coordinate the demolition in areas where existing facilities and utilities shall remain operational. The demolition indicated in the Contract Documents is not all inclusive and the CONTRACTOR shall be responsible to perform the work indicated plus that which can be reasonably inferred from the Contract Documents as necessary to complete the work. The Technical Specifications and Drawings identify the major facilities that shall be demolished, but auxiliary utilities are not necessarily shown.

B. The CONTRACTOR shall note that Drawings used to indicate demolition are based on record drawings of the existing facilities which have been reproduced to show existing conditions and to clarify the scope of work as much as possible. Prior to bidding the CONTRACTOR may conduct a site visit to verify the exactness of the Drawings, the scope of work, and the extent of auxiliary utilities.

C. While demolition is being performed, the CONTRACTOR shall provide adequate access for the continued operation and maintenance of equipment. The CONTRACTOR shall erect and maintain fences, warning signs, barricades, and other devices around the area as required for the protection of the CONTRACTOR's employees, the OWNER's personnel and the general public. The CONTRACTOR shall remove all such protection when demolition activities are complete, or as work progresses, or when directed by the ENGINEER.

1.3 CONTRACTOR SUBMITTALS

A. All submittals shall be in accordance with **Section 01 33 00 – Submittals**. Demolition activities and procedures shall be submitted to the ENGINEER for approval. The procedures shall provide for safe conduct of the work, careful removal and disposition of materials and equipment, protection of existing facilities which are to remain undisturbed, coordination with existing facilities to remain in service, and timely disconnection and reconnection of utility services. The procedures shall include a detailed description and time schedule of the methods and equipment to be used for each operation and the sequence of operation.

1.4 DISPOSAL

A. The CONTRACTOR shall be responsible for the offsite disposal of all debris resulting from demolition in compliance with all local, state, and federal codes and requirements. No materials or equipment shall be disposed on-site.

PART 2 – PRODUCTS

Not Used.

PART 3 – EXECUTION

3.1 GENERAL

A. The CONTRACTOR shall coordinate demolition work with the OWNER and ENGINEER. Unless otherwise indicated, the CONTRACTOR shall be responsible for the sequence of demolition activities. All demolition shall be performed in accordance with applicable safety rules and regulations.

B. The CONTRACTOR shall insure that any utilities connected to structures, equipment, and facilities to be removed or abandoned shall be rendered inoperable before proceeding with demolition.

C. The CONTRACTOR shall take precautions to avoid damage to adjacent facilities and to limit the demolition activities to the extent indicated. If demolition beyond the scope indicated is required, the CONTRACTOR shall obtain approval from the ENGINEER prior to commencing work.

3.2 PROTECTION OF EXISITNG FACILITIES

A. Before beginning any demolition work, the CONTRACTOR shall carefully survey the existing facilities and examine the Specifications and Drawings to

determine the extent of demolition and coordination with the work. Existing facilities not subject to demolition shall be protected and maintained in accordance with the Contract Documents. Damages to existing facilities shall be repaired to their previous condition or replaced at no additional cost to the OWNER.

B. Persons shall be afforded safe passages around areas of demolition.

C. Structural elements shall not be overloaded. The CONTRACTOR shall be responsible for shoring, bracing, or adding new supports as may be required for adequate structural support as a result of any demolition work performed under this Contract. The CONTRACTOR shall remove all temporary protection when the work is complete or when so authorized by the ENGINEER.

D. The CONTRACTOR shall carefully consider all bearing loads and capacities before placement of equipment and material on site. In the event of any questions as to whether an area to be loaded has adequate bearing capacity, the CONTRACTOR shall consult with the ENGINEER prior to the placement of such equipment or material.

E. The CONTRACTOR shall provide and maintain temporary safety barriers and other safety and security devices as necessary to protect the public and project personnel from injury due to demolition work. The CONTRACTOR shall protect from damage all existing work, equipment, and improvements that are to remain and restore all damage caused by the demolition work at no cost to the OWNER.

3.3 DEMOLITION

A. The Contract Documents indicate existing facilities to be demolished. Auxiliary utilities are not necessarily indicated. The CONTRACTOR shall verify the scope of the work to remove the equipment indicated; coordinate its shutdown, removal, replacement, or relocation, and submit an outage plan.

B. Below-grade areas and voids resulting from demolition of structures shall be completely filled. All fill and compaction shall be in accordance with **Section 31 00 00 – Earthwork**. After fill and compaction, surfaces shall be graded to meet adjacent contours and to provide flow to surface drainage structures, or as shown.

C. When existing pipe is permanently removed, the CONTRACTOR shall plug all resulting open ends whether or not shown. Where removed piping is exposed, the remaining piping shall be blind-flanged or fitted with a removable cap or plug.

D. When existing piping is permanently removed from existing structures, the CONTRACTOR shall fill all resulting openings in the structure and repair any damage such that the finished structure shall appear as a new homogeneous unit with little or no indication of where the new and old materials join. The openings

in water-bearing structures shall be filled with non-shrink grout to be watertight and reinforced as required or shown. In all locations where the surface of the grout will be exposed to view, the non-shrink grout shall be recessed approximately ½-inch and the recessed area filled with cement mortar grout.

E. All electrical demolition shall be conducted by the CONTRACTOR in a safe and proper manner at all times to avoid injury from electrical shock to the OWNER's and CONTRACTOR's personnel. Electrical equipment to be shut off for a period of time shall be tagged, locked out, and sealed with a crimped wire and lead seal and made inoperable. At no time shall electrical wiring or connections which are energized or could become energized be accessible to CONTRACTOR, OWNER, or other personnel without suitable protection or warning signs.

3.4 ABANDONMENT

A. Facilities to be abandoned shall be prepared as indicated on the drawings.

3.5 DISPOSAL

A. Minimize interference with roads, streets, walks, and other adjacent occupied or used facilities when performing demolition and removal of debris. Roads, streets and walks shall not be closed or obstructed without permission of the OWNER/Governing Authority. Alternate routes shall be provided around closed or obstructed traffic ways.

B. Site debris rubbish and other materials resulting from demolition operations shall be legally removed, transported and disposed of at the CONTRACTOR's expense. Structures and equipment to be demolished shall be cleaned prior to demolition and the wash water properly disposed of. No trace of these structures shall remain prior to reconstruction.

C. Refuse, debris, and waste materials resulting from demolition and site clearing operations shall not be buried on-site.

3.6 OCCUPANCY AND POLLUTION CONTROL

A. Water sprinkling, temporary enclosures, chutes, and other suitable methods shall be used to limit dust and dirt rising and scattering in the work areas. The CONTRACTOR shall comply with government regulations pertaining to environmental protection.

B. Water shall not be used when it creates hazardous or objectionable conditions such as ice, flooding, or pollution.

3.7 CLEANING

A. During and upon completion of work, the CONTRACTOR shall promptly remove tools and equipment, surplus materials, rubbish, debris, and dust and shall leave areas affected by work in a clean, approved condition. The CONTRACTOR shall grade site to meet adjacent contours and provide for surface drainage.

B. Adjacent structures shall be cleaned of dust, dirt, and debris caused by demolition, as directed by the ENGINEER or governing authorities, and adjacent areas shall be returned to condition existing prior to start of work.

C. The CONTRACTOR shall clean and sweep the access roadways used during the work on a daily basis. The CONTRACTOR shall be responsible for keeping all materials on the project site. In the event materials are carried over onto off-site roadways or walkways, the CONTRACTOR shall sweep and clean such roadways.

D. All interrupted utilities shall be returned to their pre-demolition state and temporary services shall be disconnected, unless otherwise specified.

END OF SECTION

SECTION 02 41 19

ELECTRICAL DEMOLITION

PART 1 – GENERAL

1.01 GENERAL REQUIREMENTS

A. Contractor shall take precautionary and safety measures to assure the safety of his personnel. All wires shall be identified and disconnected from power sources before removal.

B. Contractor shall coordinate with the Owner and Engineer.

C. The general demolition scope shall also include the following minimum requirements whether indicated on plans or not.

1. Before demolition, Contractor shall verify that the equipment is no longer needed or that the demolition will not adversely affect operation.

2. Removal of all exposed unused conduit. Removal of all abandoned wire within raceways, cabinets, outlet boxes, trenches and the like associated with equipment shown to be removed on plans.

3. Demolition of all concealed cable and wire. Remove conductors. Plug all raceways with concrete or grout.

4. Removal of all hangers and support systems which are not needed as a result of the demolition.

5. Contractor shall cover all openings as a result of demolition and removals including but not limited to the following:

a. Cabinets and enclosures

b. Wall and masonry openings.

c. Cut conduit, instrumentation line, etc. flush with slab, fill with concrete, patch and paint holes in walls.

D. Operational Systems

1. To the fullest extent possible, all required systems shall remain operational. Contractor shall replace and/or repair existing facilities which may be damaged due to equipment removals.

2. Where required wiring passes through or uses enclosures or raceways shown for demolition. Contractor shall provide raceways and wire as required to keep those systems operational.

3. Contractor shall remove existing equipment in an orderly, planned and coordinated fashion. All replacement equipment shall be on site and ready to install immediately after the removal of existing equipment.

4. Where demolition interrupts the normal automatic control of the station, Contractor shall provide full time manual control until automatic control is restored. Contractor shall obtain permission of the Owner before removing automatic control.

1.02 SPECIFIC EQUIPMENT REMOVALS

A. The following include but do not limit the specific pieces of equipment for the removal and disposition.

1. Demolition of the existing lift station systems.
2. Demolition, and replacement, of the existing power service at all stations, unless indicated to be reused.

1.03 DISPOSITION OF EQUIPMENT

A. Except as otherwise indicated, all removed or demolished electrical equipment shall become the property of the Contractor. All rubble shall be disposed of by the Contractor.

B. Contractor shall load, transport, and dispose of all or demolished equipment including all enclosed gear, cabinets, raceways, wire and cable, supports, MCC sections, starters, circuit breakers, buckets, panel covers, light fixtures, rigid galvanized steel conduit and the like.

END OF SECTION

SECTION 03 00 00

GENERAL CONCRETE CONSTRUCTION

PART 1 - GENERAL

1.1 DESCRIPTION

A. This Section includes materials, installation, and testing of formwork, reinforcing steel, joints, concrete, finishing, and curing for general concrete construction.

1.2 SUBMITTALS

A. Submit the following shop drawings in accordance with **Section 01 33 00 - Submittals.**

B. Prepare concrete mix designs and laboratory 7-day and 28-day compressive tests. Submit mix design in writing for review by the OWNER at least 15 days before placing of any concrete.

C. Submit manufacturer's catalog data and descriptive literature for form ties, spreaders, corner formers, form coatings, curing compound, bond breakers, joint sealant, joint filler, epoxy bonding compound, and epoxy anchor adhesive.

D. Submit mill test certificates identifying chemical and physical analyses of each load of reinforcing steel delivered. If mill test reports are unavailable and the quantity of steel for a structure exceeds five (5) tons, provide a laboratory test to prove conformance with the specified ASTM standard.

E. Submit reinforcing bending lists and placing drawings for all reinforcing. Placing drawings shall indicate all openings (mechanical, electrical, equipment, and architectural) including additional reinforcing at openings and corner bar arrangements at intersecting walls, slabs, and footings indicated in the typical detail and structural drawings. Placing drawings shall be coordinated with the concrete placing schedule. Each bending list and placing drawing submitted shall be complete for each major element of a structure (grade slabs, footings, walls, deck, floor, or roof slabs) including dowels and corner bars. Furnishing such lists shall not be construed that the lists will be reviewed for accuracy. 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 in the Drawings and as specified. Placing drawings shall be prepared by the CONTRACTOR and shall not incorporate photocopies of the Drawings.

F. Submit six (6) copies of a report from a testing laboratory verifying that aggregate material conforms to the specified gradations or characteristics.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Nondomestic Cement and Additives

1. The use of nondomestic cement and additives in concrete may be permitted only after review of a written request to use such materials. The request to use nondomestic materials shall include a chemical analysis that indicates the material meets the Technical Specifications. Certifications that state the nondomestic materials meet the project requirements will not be accepted.

2. Test reports for concrete materials shall be current to within three months of inclusion into the project and shall be identifiable to the materials supplied.

B. Formwork

1. Design forms according to ACI 347.

2. Class I Forms: Use steel forms, ply form, or smooth-surface plywood ¾-inch minimum thickness for straight surfaces and ½-inch minimum thickness for curved surfaces.

3. Class II Forms: Use plywood in good condition, metal, or smooth-planed boards free from large or loose knots with tongue and groove or ship lap joints.

4. Class II forms may be used for exterior concrete surfaces that are one (1) foot or more below finished grade. Use Class I or Class II forms for all other surfaces.

5. Coat forms with form release agent.

C. Form Ties

1. Locate tapered form ties on exposed surfaces in a uniform pattern.

2. 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.

3. CONTRACTOR shall be responsible for water-tightness of the form ties and any repairs needed.

D. Bond Breaker

1. Bond breaker shall be a nonstaining type which will provide positive bond prevention, such as Williams Tilt-Up Compound, as manufactured by Williams Distributors, Inc., Seattle, Washington; Silcoseal 77, as manufactured by SCA Construction Supply Division, Superior Concrete Accessories, Franklin Park, Illinois; or equal.

E. Form Release Agent

1. Form release agent shall effectively prevent absorption of moisture and prevent bond with the concrete. Agent shall be nonstaining and nontoxic after 30 days.

2. For steel forms, release agent shall prevent discoloration of the concrete due to rust.

F. Reinforcing Steel

1. Reinforcement shall conform to ASTM A615 or A706, Grade 60.

2. Fabricate reinforcing in accordance with the current edition of the Manual of Standard Practice, published by the Concrete Reinforcing Steel Institute. Bend reinforcing steel cold.

3. Deliver reinforcing steel to the site bundled and with identifying tags.

G. Tie Wire

1. Tie wire shall be 16-gauge minimum, black, soft annealed.

H. Bar Supports

1. Bar supports in walls and slabs shall be galvanized and with plastic coated tips. Use concrete supports for reinforcing in concrete placed on grade.

I. Joint Sealant for Concrete Structures

1. Joint sealant shall be a multipart, gray, nonstaining, nonsagging, gun grade polyurethane sealant, which cures at ambient temperature to a firm, flexible, resilient, tear-resistant rubber. Sealant shall comply with ASTM C920, Type M, Grade P, Class 25 for horizontal joints and Grade NS,

Class 25 for vertical joints and be recommended by the manufacturer for continuous immersion in water.

Characteristic or Parameter	Technical Requirements
Pot life	1 to 3 hours
Hardness	35 Shore A, ±5, ASTM D2240
Elongation	650%, ASTM D412
Tensile strength	200 psi, ASTM D412
Peel strength on concrete	No adhesion loss at 25 pounds
Temperature service range	40°F to 167°F
Immersion in water	Continuous

2. Sealant shall be Tremco Vulkem 227 or Sikaflex-2CNS (for Grade NS, Class 25), Sikaflex-2CSL of Sika Corporation or Vulkem 245 (for Type M, Grade P, Class 25), or equal.

3. Troweling of sealants into joints will not be permitted.

J. Expansion Joint Filler

1. Joint filler shall be preformed, bituminous conforming to ASTM D994.

K. Cement

1. Use Portland cement that conforms to ASTM C150, Type I/II.

2. Use only one (1) brand of cement in any individual structure.

3. Maximum tricalcium aluminate shall not exceed 8percent. The maximum percent alkalies shall not exceed 0.6 percent.

L. Aggregates

1. Aggregates shall be natural rock, sand, or crushed natural rock and shall comply with ASTM C33. The minimum amount of CaCO3 shall be 65% in large aggregate and 50% in concrete screenings.

M. Water and Ice

1. Use water and ice that is 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. Water shall not contain more than 500 mg/L of chlorides or more than 500 mg/L of sulfate.

N. Concrete Admixtures

1. Concrete shall contain a water-reducing admixture conforming to ASTM C494, Type A. The amount of admixture added to the concrete shall be in accordance with the manufacturer's recommendations. Admixture shall be BASF Corporation Polyheed series, Sika Plastiment, or equal.

2. Mineral Admixture: Class A concrete shall contain a mineral admixture, fly ash Class F, conforming to ASTM C618, not to exceed or replace more than 20 percent of the cement material required without the mineral admixture.

3. Do not use any admixture that contains chlorides or other corrosive elements in any concrete. Admixtures shall be nontoxic after 30 days.

O. Bonding Compound

1. Epoxy bonding compound shall be Sikadur 32 Hi-Mod, Sika Chemical Corporation, Lyndhurst, New Jersey; Concresive by BASF; Duralcrete by Euclid Chemical Company; or equal.

P. Concrete Mix Design

1. Conform to ASTM C94, except as modified by these specifications.

2. Air content as determined by ASTM C231 shall be two (2) percent

3. Maximum water-cement ratio for Class A concrete = 0.45 by weight.

4. Use classes of concrete as described in the following table:

Class	**Type of Work**	**28-Day Compressive Strength (in psi)**	**Minimum Cement Content (in lbs per C.Y.)**
A	Concrete for all structures and concrete not otherwise specified.	4,000	564
B	Pavement	3,000	500
C	Miscellaneous unreinforced concrete.	2,000	376

5. Measure slump in accordance with ASTM C143. Slump shall be as follows:

Slab on grade or heavy sections wider (in plan view) than 3 feet	4 inches maximum
Footings, walls, and suspended slabs	4 inches maximum
Pavement	3 inches maximum
Floor grout	4 inches maximum

6. Proportion and produce the concrete to have a maximum slump as shown. 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 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.

7. Aggregate size shall be ¾-inch maximum for slabs and sections eight (8) inches thick and less. Aggregate size shall be one (1) inch maximum for slabs and sections greater than eight (8) inches and less than 17 inches. Aggregate size shall be 1½ inches maximum for all larger slabs and sections. Aggregate size for grout shall be maximum ⅜-inch.

8. Combined aggregate grading shall be as shown in the following table:

	Maximum Aggregate Size			
	1½"	**1"**	**¾"**	**⅜"**
Aggregate Grade per ASTM C33	467	57	67	8

9. 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.

Q. Curing Compound

1. Curing compound shall conform to ASTM C309, Type 1-D, Class A.

2. Curing compound shall be compatible with required finishes and coatings.

R. Mats, Paper, and Sheeting for Curing

1. Burlap mats shall conform to AASHTO M182.

2. Sisal-kraft paper and polyethylene sheets shall conform to ASTM C171.

S. Reinforcing Dowel Adhesive

1. Dowel anchor adhesive shall be HIT-RE 500-SD by Hilti; SET-XP by Simpson Strong Tie Company, Inc.; or equal.

PART 3 – EXECUTION

3.1 FORM TOLERANCES

A. 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. The following table indicates tolerances or allowable variations from dimensions or positions of structural concrete work:

	Maximum Tolerance (inch)
Sleeves and inserts	+1/4 -1/4
Projected ends of anchors	+1/4 -0.0
Anchor bolt setting	+1/4 -1/4
Finished concrete, all locations	+1/4 -1/4 in 10 feet
	Max ±1-inch in total length

C. The planes or axes from which the above tolerances are to be measured shall be as follows:

Sleeves and inserts:	Centerline of sleeve or insert.
Projected ends of anchors:	Plane perpendicular to the end of the anchor as located in the Drawings.
Anchor bolt setting:	Centerline of anchor bolt.
Finish concrete:	The concrete surface as defined in the Drawings.

D. Where equipment is to be installed, comply with manufacturer's tolerances if more restrictive than above.

3.2 FORM SURFACE PREPARATION

A. Clean form surfaces to be in contact with concrete of foreign material prior to installation.

B. Coat form surfaces in contact with concrete with a release agent prior to form installation.

3.3 FORM REUSE

A. Reuse only forms that provide a uniform surface texture on exposed concrete surfaces. Apply light sanding or other surface treatment between uses for uniform texture. Plug unused tie rod holes with corks, shave flush, and sand the concrete

surface side. Do not patch forms other than filling tie rod holes, except in the case of Class II forms. Do not use metal patching discs on Class I forms.

3.4 REMOVAL OF FORMS

A. Forms and shoring for elevated structural slabs shall remain in place until the concrete has reached a compressive strength equal to the specified 28-day compressive strength as determined by field cured test cylinders. Do not remove supports and reshore. The following table indicates the minimum allowable time after the last cast concrete is placed before forms, shoring, or wall bracing may be removed:

Sides of footings and encasements	24 hours
Walls	48 hours
Structural slabs	10 days (forms only)
Shoring for structural slabs	Until concrete strength reaches specified 28-day strength
Wall bracing	Until top or roof slab concrete reaches specified 28-day strength

B. Do not remove forms from concrete that has been placed with 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.

3.5 FORMED OPENINGS

A. Openings shall be of sufficient size to permit final alignment of pipes or other items without deflection or offsets of any kind. Allow space for packing where items pass through the wall to ensure water tightness. Provide openings with continuous keyways and water stops. Provide a slight flare to facilitate grouting and the escape of entrained air during grouting. Provide formed openings with reinforcement as indicated in the typical structural details. Reinforcing shall be at least two (2) inches clear from the opening surfaces and encased items.

3.6 EMBEDDED ITEMS

A. Set anchor bolts and other embedded items accurately and hold securely in position until the concrete is placed and set. Check all special castings, channels, or other metal parts that are to be embedded in the concrete prior to and again after concreting. Check nailing blocks, plugs, and strips necessary for the attachment of trim, finish, and similar work prior to concreting.

3.7 BEVELED EDGES (CHAMFER)

A. Form ¾-inch beveled edges on exposed concrete edges and corners, beam soffit corners, and where indicated in the Drawings. Reentrant corners in concrete members shall not have fillets, unless otherwise shown in the Drawings. The top edges of slabs, walkways, beams, and walls may be beveled with an edging trowel in lieu of using chamfer strips.

3.8 INSTALLATION OF EXPANSION JOINT FILLER

A. Install in joint in accordance with the manufacturer's printed instructions. Attach to concrete with a bonding agent recommended by the joint sealant and joint filler manufacturer for compatibility.

3.9 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. 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.

C. 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.

D. After the sealant has been applied, remove the masking tape and any sealant spillage.

3.10 PLACING REINFORCEMENT

A. Place reinforcing steel in accordance with the current edition of Recommended Practice for Placing Reinforcing Bars, published by the Concrete Reinforcing Steel Institute.

B. Place reinforcing in accordance with the following, unless otherwise indicated:

1. Reinforcement indicated in the Drawings is continuous through the structure to the farthest extent possible. Terminate bars and hooks two (2) inches clear from faces of concrete.

C. Reinforcing steel, before being positioned and just prior to placing concrete, shall be free from loose mill and rust scale and from any coatings that may destroy or reduce the bond. Clean reinforcing steel by sandblasting or wire brushing and remove mortar, oil, or dirt to remove materials that may reduce the bond.

D. Do not straighten or rebend reinforcing steel in the field.

E. Position reinforcing steel in accordance with the 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, in addition to those shown in the 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 his own expense.

F. Place reinforcement a minimum of two (2) inches clear of any metal pipe or fittings.

3.11 READY-MIXED CONCRETE

A. Conform to ASTM C94.

3.12 PLACING CONCRETE

A. Conform to ACI 304.

3.13 PUMPING CONCRETE

A Conform to ACI 304.2R-91.

3.14 WEATHER REQUIREMENTS

A. Conform to ACI 305 for placing during hot weather.

B. Conform to ACI 306 for placing during cold weather.

3.15 BONDING TO OLD CONCRETE

A. Coat the contact surfaces of structural sections with epoxy bonding compound when noted in the Drawings. The method of preparation and application of the bonding compound shall conform to the manufacturer's printed instructions and recommendations for specific application for this project.

3.16 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 in the Drawings. After the machinery has been set in position and placed at the proper elevation by steel wedges, fill the space between the bottom of the machinery base and the original pour of concrete with a pourable nonshrink grout. Grout and grouting procedure shall be in accordance with API 686, Chapter 4, paragraphs 3.6 and 3.7, and Chapter 5.

3.17 CONCRETE FINISHES

A. Complete concrete surfaces in accordance with the following schedule unless noted otherwise on the Drawings:

Finish Designation	Area Applied
F-1	Exterior walls not exposed to view.
F-3	Walls of structures or buildings exposed to view. Underside of formed floors or slabs.
F-4	Exterior and interior surfaces to be coated.
S-4	Slabs and floors of structures or buildings exposed to view.
E-1	Exposed edges. EXCEPTION: edges normally covered with earth.
E-2	Top of walls, beams, and similar unformed surfaces.

B. Finish F-1: Repair defective concrete, fill depressions deeper than ½-inch, and fill tie holes.

Finish F-3: In addition to Finish F-1, remove fins, fill depressions ¼-inch or deeper, fill depressions and airholes with mortar. Dampen surfaces and then spread a slurry consisting of one (1) part cement and 1½ parts sand by damp loose volume, over the surface with clean burlap pads or sponge rubber floats. Remove any surplus by scraping and then rubbing with clean burlap.

Finish F-4: Repair defective concrete, remove fins, fill depressions 1/16-inch or deeper, fill tie holes, remove mortar spatter, and remove bulges higher than 1/16-inch.

Finish S-4: Steel trowel finish without local depressions or high points and apply a light hair-broom finish. Do not use stiff bristle brooms or brushes. Leave hair-broom lines parallel to the direction of slab drainage.

Finish E-1: Provide chamfer or beveled edges.

Finish E-2: Strike smooth and float to an F-3 or F-4 finish.

3.18 CURING CONCRETE

A. Conform to ACI 308.

B. Water cure with burlap mats unless optional curing methods are permitted.

C. Do not use curing compound on surfaces that are to be coated in accordance with **Section 09900 - Painting**.

D. It is the responsibility of the CONTRACTOR to select the appropriate curing method in response to climatical and/or site conditions occurring at the time of concrete placement. Take appropriate measures as described in ACI 305 and 306 for protecting and curing concrete during hot and cold weather.

3.19 CONCRETE TESTS

A. Concrete quality testing will be performed on the concrete by an independent testing laboratory as follows:

1. Frequency of Sampling: Cast six (6) – 4-inch x 8-inch concrete test cylinders from each 50 cubic yards, or fraction thereof, of each class of concrete placed in any one day. Sampling and curing of cylinders shall conform to ASTM C31.

2. Strength Testing: Test cylinders in accordance with ASTM C39. Test (1) one cylinder at seven (7) days for information; test three (3) cylinders at 28 days for acceptance; and hold two (2) cylinders for verification. Strength acceptance will be based on the average of the strengths of the three (3) cylinders tested at 28 days. If (1) one cylinder of a 28-day test manifests evidence of improper sampling, molding, or testing, other than low strength, discard it and use a reserve cylinder for the test result.

3. Determine concrete slump by ASTM C143 with each strength test sampling and as required to establish consistency.

4. Determine air content of the concrete using ASTM C231 to verify the percentage of air in the concrete immediately prior to depositing in forms.

5. The average value of concrete strength tests shall be equal to or greater than the specified 28-day strength. No test shall be less than 90 percent of the specified 28-day strength.

B. To facilitate concrete sampling and testing, the CONTRACTOR shall:

1. Furnish labor to assist the independent testing laboratory in obtaining and handling samples at the project site.

2. Advise the independent testing laboratory in advance of concrete placing operations to allow for scheduling and completion of quality testing.

3. Provide and maintain facilities for safe storage and proper curing of concrete test specimens on the project site, as required by ASTM C31.

END OF SECTION

SECTION 03 06 00

REINFORCED CONCRETE

PART 1 - GENERAL

1.1 THE REQUIREMENT

A. Work necessary for furnishing and placing reinforced concrete, complete.

1.2 SUBMITTALS

A. Product Data:

1. Curing compound data and manufacturer's application instructions.

2. Water stop.

B. Samples:

1. Splice, joint, and fabricated cross of each size, shape, and fitting of water stop(s) proposed for use.

C. Quality Control:

1. Complete data on the concrete mix in accordance with ASTM C94, Option B.

2. Ready mix delivery tickets for each truck with the following information:

a. Name of concrete firm.

b. Serial number of ticket.

c. Date.

d. Truck number.

e. Specific class of concrete.

f. Amount of concrete.

g. Time loaded.

h. Water added.

i. Time loaded.

3. Request for use of coarse aggregate if other than one (1) inch.

4. Water stop manufacturer's written instructions for product shipment, storage, handling, installation and repair.

5. Joint filler and primer manufacturer's written instructions for product shipment, storage, handling, application, and repair.

PART 2 - PRODUCTS

2.1 CONCRETE

A. Ready-mixed meeting ASTM C94, Option B, and these Technical Specifications.

B. Portland Cement, Type II.

C. Mix Design:

1. Minimum allowable 28-day compressive field strength is 4,000 psi when cured and tested in accordance with ASTM C31 and C39.

2. Coarse aggregate size is one (1) inch. Other aggregate gradations must be submitted for review and approved in writing before use.

3. Slump range is three (3) to five (5) inches.

4. Air entrainment shall be between four (4) percent and six (6) percent by volume.

5. Maximum water-cement ratio is 0.46 by weight.

6. Minimum cement content is 540 pounds per cubic yard.

D. Mixing:

1. Minimum 70 and maximum 270 revolutions of mixing drum.

2. Nonagitating equipment is not allowed.

2.2 REINFORCING STEEL

A. ASTM A615, Grade 60, deformed bars of sizes shown and dimensions indicated on the Drawings and in compliance with applicable provisions of ACI 315 and ACI 318.

B. Provide concrete blocks of same strength as concrete mix to support reinforcing bars.

C. Do not use broken concrete, brick, or stone.

2.3 EXPANSION JOINT FILLER

A. ASTM D994, ½-inch thick, or as shown.

2.4 NONSHRINK GROUT

A. Color shall match finished concrete.

B. Manufacturer shall be Master Builder Co. Master Flow 928, or approved equal.

2.5 FORMS

A. Use new plywood for exposed areas, and new shiplap or plywood for unexposed areas.

B. Materials shall produce tight forms and an acceptable finish.

2.6 FORM TIES

A. On exposed surfaces locate in uniform pattern or as shown.

B. Form Tie Design:

1. Construct so tie remains embedded in the wall, except for a removable portion at each end.

2. Provide fixed conical or spherical type inserts that remain in contact with forming material.

3. Construct so no metal is within one (1) inch of concrete surface when forms, inserts, and tie ends are removed.

4. Ties shall withstand all pressures and limit deflection of forms to acceptable limits.
5. Flat bar ties for panel forms shall have plastic or rubber inserts with a minimum depth of one (1) inch and sufficient dimensions to permit proper patching of the tie hole.

C. Wire ties are not acceptable.

2.7 GALVANIZED SHEET METAL WATER STOPS

A. 16-gauge, hot dipped galvanized sheet metal, 6-inches wide, unless otherwise shown.

B. Provide galvanized self-tapping sheet metal screws for securing 12-inch laps.

2.8 PREMOLDED JOINT FILLER

A. Bituminous type per ASTM D994 or D1751.

PART 3 - EXECUTION

3.1 FORMS

A. Construction:

1. Accurate to dimensions and elevations required and strong and unyielding.

2. Make joints tight to prevent escape of mortar and to avoid formation of fins.

3. Brace as required to prevent distortion during concrete placement.

B. Form Removal:

1. Remove after concrete has obtained 28-day strength or approval is obtained in writing from the ENGINEER.

2. Remove forms with care to prevent scarring and damaging the surface.

3.2 PLACING REINFORCING STEEL

A. Place reinforcing steel as shown in accordance with CRSI Recommended Practice for Placing Reinforcing Bars, except as modified herein.

B. Splices and Laps:

1. Top bars are defined as any horizontal bar placed such that 12-inches of fresh concrete is cast below in any single hour.

2. Horizontal wall bars are considered top bars.

3. Lap top bars 45 diameters or minimum 24-inches.

4. Lap all other bars 32 diameters or minimum 18-inches.

5. Tie splices with 18-gauge annealed wire as specified in CRSI Standard.

3.3 PLACING CONCRETE

A. Meet ACI 318, except as modified herein.

B. Prior to placing concrete, remove water from excavation and debris and foreign material from forms. Check reinforcing steel for proper placement and correct any discrepancies.

C. Before depositing new concrete on old concrete, clean surface using sandblast or bushhammer or other mechanical means to obtain a ¼-inch rough profile, and pour a cement-sand grout to minimum depth of one (1) inch over the surface. Proportion cement and sand as in the concrete mix.

D. Place concrete as soon as possible after leaving mixer, without segregation or loss of ingredients, without splashing forms or steel above, and in layers not more than two (2) feet deep. Place within 1½ hours after adding cement to mix.

E. Maximum vertical drop to final placement is eight (8) feet.

F. Do not place concrete when the ambient temperature is below 40 degrees F or approaching 40 degrees F and falling, without special protection to keep concrete above 40 degrees F.

G. Remove and replace concrete damaged by freezing.

3.4 COMPACTION

A. Vibrate concrete as follows:

1. Apply approved vibrator at points spaced not farther apart than vibrator's effective radius.

2. Apply close enough to forms to vibrate surface effectively but not damage form surfaces.

3. Vibrate until concrete becomes uniformly plastic.

4. Vibrator must penetrate fresh placed concrete and into previous layer of fresh concrete below.

3.5 CONSTRUCTION JOINTS

A. Locate as shown or as approved.

B. Maximum spacing between construction joints shall be 40 feet.

3.6 INSTALLATION OF WATER STOPS

A. General:

1. Join water stops at intersections to provide continuous seal.

2. Center water stop on joint.

3. Secure water stop in correct position to avoid displacement during concrete placement.

4. Repair or replace damaged water stop.

5. Vibrate concrete to obtain impervious concrete in the vicinity of all joints.

6. Joints in Footings and Slabs:

a. Install in construction joints unless otherwise shown.

b. During concrete placement, make a visual inspection of the entire water stop area.

c. Limit concrete placement to elevation of water stop in first pass, vibrate the concrete under the water stop, lift the water stop to confirm full consolidation without voids, then place remaining concrete to full height of slab.

d. Apply procedure to full length of plastic water stops.

B. Galvanized Steel Water Stops.

1. Install in construction joints unless otherwise shown.

2. Place water stops in wall construction joints by tamping into place immediately after the pour is completed and before concrete has begun to set.

3. Puddle each side to level the concrete and assure that the water stop is properly embedded.

4. Place water stop in other joints and secure in forms prior to placing concrete.

5. Where metal water stops are spliced, lap at least 12 inches and secure together with sheet metal screws.

6. After the concrete has set to the point where the surface can be cut with a broom or a stream of water, cut off the surface to a rough finish, minimum roughness of ¼-inch amplitude, with all laitance removed and the concrete left clean.

3.7 EXPANSION JOINT INSTALLATION

A. General:

1. Premolded Joint Filler:

a. Sufficient in width to completely fill the joint space.

b. If a water stop is in the joint, cut premolded joint filler to butt tightly against the water stop and the side forms.

2. Precut premolded joint filler to the required depth at locations where joint filler or sealant is to be applied.

3. Form cavaties for joint filler with either precut, premolded joint filler, or smooth removable accurately-shaped material.

4. Vibrate concrete thoroughly along the joint form to produce a dense, smooth surface.

B. Premolded Joint Filler:

1. Install in accordance with the manufacturer's written instructions.
2. Bituminous Type:

a. Drive nails approximately 1½ feet on center through the filler to provide anchorage embedment into concrete prior to concrete placement.

b. Secure premolded joint filler in forms before concrete is placed.

c. Install in walks, at changes in direction at intersections, and at each side of driveway entrances.

3.8 FINISHING

A. Walls:

1. Screed surfaces to true level planes.

2. After initial water has been absorbed, float with wood float and trowel with steel trowel to smooth finish free from trowel marks.

3. Do not absorb wet spots with neat cement.

B. Exterior Slabs:

1. Bull float with wood float, wood trowel, and lightly trowel with steel trowel.

2. Finish with broom to obtain non-skid surface.

3. Finish exposed edges with steel edging tool.

3.9 FINISHING AND PATCHING FORMED SURFACES

A. Areas Subject to Water:

1. Remove forms, knock off fins or projections from surface of exposed areas, and rub surfaces with wood float or burlap sack to provide uniform surface texture.

2. Cut out honeycombed and defective areas.

3. Cut edges perpendicular to surface at least one (1) inch deep. Do not feather edges.

4. Soak area to be patched for 24 hours, then allow surface to drain free of standing water.

5. Patch with specified color matched nonshrink grout.

6. Cure grout as recommended by grout manufacturer.

3.10 PROTECTION AND CURING

A. Protect fresh concrete from direct rays of sunlight, drying winds, and wash by rain.

B. Keep concrete slabs continuously wet for a seven (7) day period. Intermittent wetting is not acceptable.

C. Cure formed surfaces with an approved curing compound applied in accordance with the manufacturer's directions as soon as forms are removed and finishing is completed.

3.11 FIELD TESTS

A. Evaluation of Concrete Field Strength:

1. The OWNER may have test cylinders taken and tested by an approved testing laboratory to verify concrete strength.

2. Acceptance and evaluations of concrete strength shall be in accordance with ACI 318.

END OF SECTION

SECTION 03 60 00

GROUT

PART 1 – GENERAL

1.1 REQUIREMENTS

A. The CONTRACTOR shall furnish provide grout, complete and in place, in accordance with the Contract Documents.

B. The following types of grout are covered in this Section:

1. Non-Shrink Grout: This type of grout is to be used wherever grout is indicated, unless another type is specifically referenced.

2. Cement Grout.

3. Epoxy Grout.

4. Topping Grout and Concrete Fill.

5. Grout for Abandonment of Piping.

1.2 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

A. Specifications, codes, and standards shall be as listed in **Section 03 60 00 – Reinforced Concrete**, and as indicated herein.

1.3 CONTRACTOR SUBMITTALS

A. Furnish submittals in accordance with **Section 01 33 00 – Submittals**.

B. Shop Drawings: Include certified test results verifying compliance with the compressive strength, shrinkage, and expansion requirements herein; and manufacturer's literature containing instructions and recommendations on the mixing, handling, placement, and appropriate uses for each type of non-shrink and epoxy grout proposed for the work.

1.4 QUALITY ASSURANCE

A. Field Tests:

1. Compression test specimens will be taken during construction from the first placement of each type of grout, and at intervals thereafter selected by

the ENGINEER to insure continued compliance with these Technical Specifications. The specimens will be made by the ENGINEER or its representative.

2. Compression tests and fabrication of specimens for cement grout and non-shrink grout will be performed in accordance with ASTM C109 - Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in or 50-mm Cube Specimens) at intervals during construction selected by the ENGINEER. A set of three specimens will be made for testing seven (7) days, 28 days, and each additional time period as appropriate.

3. Compression tests and fabrication of specimens for epoxy grout will be performed in accordance with ASTM C579 -Test Methods for Compressive Strength of Chemical Resistant Mortars and Monolithic Surfacing, Method B, at intervals during construction selected by the ENGINEER. A set of three specimens will be made for testing at seven (7) days, and each earlier time period as appropriate.

4. All grout which fails to meet requirements is subject to removal and replacement at no increased cost to the OWNER.

5. The cost of all laboratory tests on grout will be borne by the OWNER, but the CONTRACTOR shall assist the ENGINEER in obtaining specimens for testing. The CONTRACTOR shall be responsible for the cost of testing and inspection of Defective Work which has been replaced. The CONTRACTOR shall furnish all materials necessary for fabricating the test specimens.

B. Construction Tolerances: Construction tolerances shall be in accordance with **Section 03 00 00 – General Concrete Construction**, unless indicated otherwise.

PART 2 - PRODUCTS

2.1 CEMENT GROUT

A. Cement Grout: Cement grout shall be composed of one-part cement, three parts sand, and the minimum amount of water necessary to obtain the desired consistency. Where needed to match the color of adjacent concrete, white Portland cement shall be blended with regular cement as needed. The minimum compressive strength at 28 days shall be 4000 psi.

B. Cement grout materials shall be as indicated in **Section 03 00 00 – General Concrete Construction**, except that no cement from kilns burning metal-rich hazardous waste fuel shall be used.

2.2 PREPACKAGED GROUTS

A. Non-Shrink Grout:

1. Non-shrink grout shall be a prepackaged, inorganic, non-gas-liberating, non-metallic, cement-based grout requiring only the addition of water. Cement from kilns burning metal-rich hazardous waste fuel shall not be used. Manufacturer's instructions shall be printed on each bag or other container in which the materials are packaged. The specific formulation for each class of non-shrink grout herein shall be that recommended by the manufacturer for the particular application.

2. Class A non-shrink grouts shall have a minimum 28-day compressive strength of 5000 psi; shall have no shrinkage (0.0 percent) and a maximum 4.0 percent expansion in the plastic state when tested in accordance with ASTM C827 - Test Method for Early Volume Change of Cementitious Mixtures; and shall have no shrinkage (0.0 percent) and a maximum of 0.2 percent expansion in the hardened state when tested in accordance with CRD C621 - Corps of ENGINEERs Specification for Non-shrink Grout.

3. Class B non-shrink grouts shall have a minimum 28-day compressive strength of 5000 psi and shall meet the requirements of CRD C621.

4. Application:

   a. Class A non-shrink grout shall be used for the repair of all holes and defects in concrete members which are water bearing or in contact with soil or other fill material, grouting under all equipment base plates, and at all locations where grout is required by the Contract Documents except where Class B non-shrink grout and epoxy grout are specifically required. Class A non-shrink grout may be used in place of Class B non-shrink grout for all applications.

   b. Class B non-shrink grout shall be used for the repair of all holes and defects in concrete members which are not water-bearing and not in contact with soil or other fill material, grouting under all base plates for structural steel members, and grouting railing posts in place.

B. Epoxy Grout:

1. Epoxy grout shall be a pourable, non-shrink, 100 percent solids system. The epoxy grout system shall have three components: resin, hardener, and specially blended aggregate, all premeasured and prepackaged. The resin component shall not contain any non-reactive diluents. Resins containing

butyl glycidyl ether (BGE) or other highly volatile and hazardous reactive diluents are not acceptable. Variation of component ratios is not permitted unless specifically recommended by the manufacturer. Manufacturer's instructions shall be printed on each container in which the materials are packaged. Epoxy grout shall be BurkEpoxy Anchoring Grout by The Burke Company.

2. The chemical formulation of the epoxy grout shall be that recommended by the manufacturer for the particular application.

3. The mixed epoxy grout system shall have a minimum working life of 45 minutes at 75 degrees F.

4. The epoxy grout shall develop a compressive strength of 5000 psi in 24 hours and 10,000 psi in seven days when tested in accordance with ASTM C 579, Method B. There shall be no shrinkage (0.0 percent) and a maximum 4.0 percent expansion when tested in accordance with ASTM C827.

5. The epoxy grout shall exhibit a minimum effective bearing area of 95 percent. This shall be determined by a test consisting of filling a two (2) inch diameter by four (4) inch high metal cylinder mold covered with a glass plate coated with a release agent. A weight shall be placed on the glass plate. At 24 hours after casting, the weight and plate shall be removed and the area in plan of all voids measured. The surface of the grout shall be probed with a sharp instrument to locate all voids.

6. The peak exotherm of a two (2) inch diameter by four (4) inch high cylinder shall not exceed 95 degrees F when tested with 75 degrees F material at laboratory temperature. The epoxy grout shall exhibit a maximum thermal coefficient of 30 x 10 – six (6) inches/inch/degree F when tested according to ASTM C531 - Test Method for Linear Shrinkage and Coefficient of Thermal Expansion of Chemical- Resistant Mortars, Grouts, and Monolithic Surfacing or ASTM D696 - Test Method for Coefficient of Linear Thermal Expansion of Plastics.

7. Application: Epoxy grout shall be used to embed all anchor bolts and reinforcing steel required to be set in grout, and for other applications specifically required in the Contract Documents.

2.3 TOPPING GROUT AND CONCRETE FILL

A. Grout for topping of slabs and concrete fill for built-up surfaces of tank, channel, and basin bottoms shall be composed of cement, fine aggregate, coarse aggregate, water, and admixtures. All materials and procedures for concrete in **Section 03 00 00 – General Concrete Construction** shall apply except as noted otherwise herein.

B. Topping grout and concrete fill shall contain a minimum of 564 pounds of cement per cubic yard with a maximum water cement ratio of 0.45. Where concrete fill is thicker than three (3) inches, site work concrete in accordance with **Section 03 06 00 – Reinforced Concrete** may be used if accepted by the ENGINEER.

C. Coarse aggregate shall be graded as follows:

U.S. STANDARD SIEVE SIZE	PERCENT BY WEIGHT PASSING
1/2"	100
3/8”	90-100
No. 4	20-55
No. 8	5-30
No. 16	0-10
No. 30	0

D. Final mix design shall be determined by trial mix design under supervision of the approved testing laboratory.

E. Strength: Minimum compressive strength of topping grout and concrete fill at the end of 28 days shall be 3,000 psi.

2.4 GROUT OF ABANDONMENT OF PIPING

A. Grout shall be made with Type II Portland Cement, masonry sand, properly sized clean aggregate and potable water. In no case shall local on-site sand / dirt, rock or stones or non-potable water be utilized. Grout mix shall not contain calcium chloride or other materials that can contribute to corrosion of existing prestressing wires in PCCP pipe. Grout shall be pumped until flowing through other end of pipe to ensure pipe is full.

2.5 CURING MATERIALS

A. Curing materials shall be in accordance with **Section 03 06 00 – Reinforced Concrete** for cement grout and be as recommended by the manufacturer of prepackaged grouts.

2.6 CONSISTENCY

A. The consistency of grout shall be as necessary to completely fill the space to be grouted for the particular application. Dry pack consistency is such that the grout is plastic and moldable but will not flow. Where "dry pack" is required by the Contract Documents, it shall mean a grout of that consistency; the type of grout to be used shall be as indicated herein for the particular application.

B. The slump for topping grout and concrete fill shall be adjusted to match placement and finishing conditions but shall not exceed four (4) inches.

2.7 MEASUREMENT OF INGREDIENTS

A. Measurements for cement grout shall be made accurately by volume using containers. Shovel measurement shall not be allowed.

B. Prepackaged grouts shall have ingredients measured by means recommended by the manufacturer.

PART 3 - EXECUTION

3.1 GENERAL

A. All surface preparation, curing, and protection of cement grout shall be in accordance with **Section 03 06 00 – Reinforced Concrete**. The finish of the grout surface shall match that of the adjacent concrete.

B. The manufacturer of Class A non-shrink grout and epoxy grout shall provide on-site technical assistance upon request.

C. Base concrete or masonry must have attained its design strength before grout is placed, unless authorized by the ENGINEER.

3.2 GROUTING PROCEDURES

A. Prepackage Grouts: All mixing, surface preparation, handling, placing, consolidation, curing, and other means of execution for prepackaged grouts shall be done according to the instructions and recommendations of the manufacturer.

B. Base Plate Grouting:

1. For base plates, the original concrete shall be blocked out or finished off a sufficient distance below the plate to provide for a one (1) inch thickness of grout or a thickness as indicated on the Drawings.
2. After the base plate has been set in position at the proper elevation by steel wedges or double nuts on the anchor bolts, the space between the bottom of the plate and the original pour of concrete shall be filled with non-shrink-type grout. The mixture shall be of a trowelable consistency and be tamped or rodded solidly into the space between the plate and the base concrete. A backing board or stop shall be provided at the back side of the space to be filled with grout. Where this method of placement is not practical or where required by the ENGINEER, alternate grouting methods shall be submitted for acceptance.

C. Topping Grout

1. All mechanical, electrical, and finish work shall be completed prior to placement of topping or concrete fill. The base slab shall be given a roughened textured surface by sandblasting or hydroblasting, exposing the aggregates to ensure bonding to the base slab.

2. The minimum thickness of grout topping and concrete fill shall be one inch. Where the finished surface of concrete fill is to form an intersecting angle of less than 45 degrees with the concrete surface it is to be placed against, a key shall be formed in the concrete surface at the intersection point. The key shall be a minimum of 3½ inches wide by 1½-inches deep.

3. The base slab shall be thoroughly cleaned and wetted prior to placing topping and fill. No topping concrete shall be placed until the slab is completely free from standing pools or ponds of water. A thin coat of neat cement grout shall be broomed into the surface of the slab just before topping of fill placement. The topping and fill shall be compacted by rolling or tamping, brought to established grade, and floated. Grouted fill for tank and basin bottoms where scraping mechanisms are to be installed shall be screeded by blades attached to the revolving mechanism of the equipment in accordance with the procedures outlined by the equipment manufacturer after the grout is brought to the established grade.

4. Topping grout placed on sloping slabs shall proceed uniformly from the bottom of the slab to the top, for the full width of the placement.

5. The surface shall be tested with a straight edge to detect high and low spots which shall be immediately eliminated. When the topping and fill has hardened sufficiently, it shall be steel troweled to a smooth surface free from pinholes and other imperfections. An approved type of mechanical trowel may be used as an assist in this operation, but the last pass over the surface shall be by hand-troweling. During finishing, no water, dry cement, or mixture of dry cement and sand shall be applied to the surface.

3.3 CONSOLIDATION

A. Grout shall be placed in such a manner, for the consistency necessary for each application, so as to assure that the space to be grouted is completely filled.

END OF SECTION

SECTION 09 00 00

PAINTING

PART 1 - GENERAL

1.1 WORK INCLUDED

A. This section covers the specifications for painting and finishing of interior and exterior items and surfaces.

B. Painting includes shop and field painting of conveyors, hoppers, supports, exposed steel and ironwork, and primed metal surfaces of equipment installed under mechanical work.

C. Paint all exposed surfaces, except as otherwise indicated, whether or not colors are designated. If not designated, colors will be selected by the ENGINEER from standard colors available for the coatings required.

D. Painting shall be done at such times as the CONTRACTOR and ENGINEER may agree upon in order that dust-free and neat work be obtained. Painting shall be done strictly in accordance with the manufacturer's instruction and shall be performed in a manner satisfactory to the ENGINEER.

1.2 RELATED REQUIREMENTS

A. **Section 01 33 16 - Approved Materials.**

1.3 SUBMITTALS

A. In addition to manufacturer's data, application instructions, and label analysis for each coating material, submit samples for review by ENGINEER for color and texture only. Resubmit samples as requested until required sheen color and texture is achieved.

1.4 DELIVERY AND STORAGE

A. Deliver materials to job site in new, original, and unopened containers bearing manufacturer's name, trade name, and label analysis. Store where directed in accordance with manufacturer's instructions. All paint materials used on the job shall be kept in single place which shall be kept neat and clean. All oily rags, waste or debris shall be removed every night and all precautions taken to avoid the danger of fire.

PART 2 - PRODUCTS:

2.1 MATERIALS

A. Paint manufacturers mentioned in the following specifications are set up as standards of quality. Products of other manufacturers may be submitted to the ENGINEER for approval. When other manufacturer's products are submitted, they shall comply with the following:

1. The film thickness designated and/or the number of coats to be applied shall not be decreased.

2. There shall not be a change from the generic type of coating specified.

3. The full name of each product and descriptive literature be submitted.

4. Manufacturer's recommendations as to which finish coat should be used with a particular primer shall be observed. In all cases, the prime coat and finish coat shall be from the same manufacturer. All paint shall be mildew resistant.

5. When thinning is necessary, only the products for the particular purpose, and by the manufacturer furnishing the paint, shall be allowed. All thinning shall be done strictly in accordance with the manufacturer's instructions and with the full knowledge and approval of the ENGINEER.

PART 3 - EXECUTION:

3.1 PREPARATION

A. All surfaces to be painted shall be prepared in a workmanlike manner with the objective of obtaining a smooth, clean and dry surface. No painting shall be done before the prepared surfaces are approved by the ENGINEER.

B. Metal: 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. Cleaned metal shall be primed or pretreated immediately after cleaning to prevent new rusting. All ferrous metals shall be sandblasted to near white (SSPC-SP-10-63), in the field prior to application of primer, pretreatment or paint. All nonferrous metals, whether to be shop or field primed, shall be solvent cleaned prior to the application of the pretreatment and/or primer. No prepared surface that has been approved by the ENGINEER for painting or coating, shall be left uncoated for more than five hours after approval.

C. Bituminous Pavement: Immediately before application of the paint, the surface shall be dry and free from dirt, grease, oil, laitance, or other foreign material which would reduce the bond between the paint and the pavement. The area to be painted shall be cleaned by sweeping and blowing or by other methods as required to remove all dirt, laitance, and loose materials.

D. Metal surfaces except stainless steel, galvanizing or aluminum, shall be painted including piping, conduit and supports. Those items which are furnished with factory shop applied finish coats shall not be painted in the field if the shop finish is intact and unmarred; however, if the shop coat is damaged in any way, it shall be touched up or replace as directed by the ENGINEER. Threaded surfaces shall be thoroughly cleaned after assembly and painted. Perform preparation and cleaning procedures in strict accordance with the coating manufacturer's instruction for each substrate condition.

3.2 APPLICATION

A. General:

1. Mix, prepare, and store painting and finishing materials in accordance with manufacturer's directions.

2. Apply painting and finishing materials in accordance with the manufacturer's directions. Use applicators and techniques best suited for the material and surfaces to which applied.

3. Workmanship for applying paint shall be of professional quality. The painter shall apply each coat at the rate recommended by the manufacturer smoothly without runs, sag, or holidays. If the material has thickened or must be diluted for use with a spray gun, the coating shall be built up to the same thickness as achieved with undiluted materials. In other words, one gallon of paint as originally furnished by the manufacturer shall not cover a greater square foot area when applied by spray gun than when applied unthinned by brush. Deficiencies in film thickness shall be corrected by the application of additional coat or coats of paint. On masonry, application rates will vary according to the surface texture; however, in no case shall the manufacturer's stated coverage rate be exceeded. Before succeeding coats are applied to a surface, the preceding coat shall have been approved by the ENGINEER.

4. Drying time shall be construed to mean "under normal conditions". Where conditions are other than normal because of the weather or because painting must be done in confined space, longer drying times will be necessary. Additional coats of paint shall not be applied, nor shall units be placed in service until paints are thoroughly dry.

B. Pavement Marking:

1. The paint shall be mixed in accordance with the manufacturer's instruction and applied to the pavement with a marking machine at the rate of 110 to 140 square feet per gallon. The addition of thinner will not be permitted.

2. A period of 24 hours shall elapse between placement of bituminous surface course or seal coat and application of the paint.

3. The edges of the markings shall not vary from a straight line more than ½-inch in 50 feet, and the dimensions shall be within a tolerance of plus or minus five (5) percent.

3.3 PAINT SCHEDULE

A. Paint for exposed ductile/cast iron pipe for water and wastewater mains shall be in accordance with **Section 01 33 16 – Approved Materials and Equipment List**. Surface preparation shall be in accordance with the paint manufacturer's recommendations.

B. Corrosion barrier system for concrete structures shall be in accordance with **Section 01 33 16 – Approved Materials and Equipment List**. Surface preparation shall be in accordance with the paint manufacturer's recommendations.

END OF SECTION

SECTION 26 00 00

BASIC ELECTRICAL REQUIREMENTS

PART 1 GENERAL

1.1 RELATED SECTIONS

A. Requirements specified within this section apply to all sections in **Division 26**, ELECTRICAL and **Section 40 90 00 - Process Instrumentation and Controls** – General Provisions. Work specified herein shall be performed as if specified in the individual sections.

1.2 DESIGN REQUIREMENTS

A. All electronic boards as part of electrical equipment shall meet the atmospheric conditions of the space the equipment is installed in. All electronic boards which are not installed in a conditioned environment shall be fungus-resistant.

B. All electrical equipment shall be rated for the conditions the equipment is installed in.

1.3 STANDARDS, CODES, PERMITS, AND REGULATIONS

A. Perform all work; furnish and install all materials and equipment in full accordance with the latest applicable rules, regulations, requirements, and specifications of the following:

1. Local Laws and Ordinances.
2. State and Federal Laws.
3. National Electrical Code (NEC).
4. State Fire Marshal.
5. Underwriters' Laboratories (UL).
6. National Electrical Safety Code (NESC).
7. American National Standards Institute (ANSI).
8. National Electrical Manufacturer's Association (NEMA).
9. National Electrical CONTRACTOR'S Association (NECA) Standard of Installation.

10. Institute of Electrical and Electronics Engineers (IEEE).

11. Insulated Cable Engineers Association (ICEA).

12. Occupational Safety and Health Act (OSHA).

13. National Electrical Testing Association (NETA).

14. American Society for Testing and Materials (ASTM).

15. Florida Building Code, including Broward County amendments.

B. Conflicts, if any, which may exist between the above items, will be resolved at the discretion of the ENGINEER.

C. Wherever the requirements of the Specifications or Drawings exceed those of the above items, the requirements of the Specifications or Drawings govern. Code compliance is mandatory. Construe nothing in the Contract Documents as permitting work not in compliance with these codes.

D. Obtain all permits and pay all fees required by any governmental agency having jurisdiction over the work. Arrange all inspections required by these agencies. On completion of the work, furnish satisfactory evidence to the ENGINEER that the work is acceptable to the regulatory authorities having jurisdiction.

1.3 ELECTRICAL COORDINATION

A. Work Provided Under this Contract:

1. Demolish the existing lift station electrical and instrumentation for three (3) existing lift stations (LS 980, 981, 1051). Turn over demolished items to the owner at the owner's discretion and properly dispose of all demolished items not wanted by the Owner.

2. Provide and install complete electrical power system for three (3) lift stations as shown on drawings.

3. Coordinate with FPL engineer for existing electrical services disconnect, new electrical services and electrical upgrade. FPL engineer contact information is Raegan Reeves, Email: Raegan.Reeves@fpl.com, Ph: 561-479-4511

4. Provide and install all electrical equipment indicated on the drawings and as described in the specifications including new utility meters, main disconnect switches, lift station control panels with Remote Telemetry Units (RTU's), terminal junction boxes, control transformers, level transmitters, pressure transmitters for water service and force main, floats, solar panels, lighting and antenna, etc. complete in place for three (3) lift stations.

5. Provide and install new Automatic Transfer Switches (ATS) for three (3) lift stations.

6. Install Owner provided generators with 316 stainless steel mounting anchor bolts. Contractor shall provide and install necessary 316 stainless steel junction boxes on the Owner provided generators for connection as shown on the drawings.

7. Provide and install new grounding system as shown on drawings complete in place.

8. Provide and install all electrical required to support instrumentation and control system as shown on the drawings complete in place.

9. Provide all miscellaneous electrical including switches, terminations, fittings, wiring, conduit, junction box, GFI outlets, mounting supports, etc., not specified but obviously necessary for a complete working system in place.

10. Provide spare parts as per Drawing E-10, 1, J.

B. Temporary Power:

1. Provide temporary power for all office trailers and for all construction areas if required.

C. Emergency Power:

1. Not required.

1.4 SUBMITTALS

A. Quality Control Submittals:

1. Voltage Field Test Results.

2. Factory test certification and reports for all major electrical equipment.

3. Site test certification and reports as specified in other **Division 26**, ELECTRICAL sections.

B. The following information shall be provided for all electrical equipment:

1. A copy of each specification section, with addendum updates included, and all referenced and applicable sections, with addendum updates included, with each paragraph check-marked to indicate specification compliance or marked to indicate requested deviations from specification

requirements. Check- marks (√) shall denote full compliance with a paragraph as a whole. If deviations from the specifications are indicated, and therefore requested by the Contractor, each deviation shall be underlined and denoted by a number in the margin to the right of the identified paragraph. The remaining portions of the paragraph not underlined shall signify compliance on the part of the Contractor with the specifications. The submittal shall be accompanied by a detailed, written justification for each deviation.

2. Electrical equipment submittals shall be made by specification section. Submit one package per specification section and do not group multiple specification sections under one submittal package.

1.5 ENVIRONMENTAL CONDITIONS

A. Wet wells are classified as Class 1 Division 2 areas by NFPA 820. The installation shall meet all requirements set forth for that classification as described in NEC article 500.

1.6 INSPECTION OF THE SITE AND EXISTING CONDITIONS

A. The Electrical Drawings were developed from past record drawings and information supplied by the OWNER. Verify all scaled dimensions prior to submitting bids.

B. Before submitting a bid, visit the site and determine conditions at the site and at all existing structures in order to become familiar with all existing condition and electrical system which will, in any way or manner, affect the work required under this Contract. No subsequent increase in Contract cost will be allowed for additional work required because of the CONTRACTOR's failure to fulfill this requirement.

C. Carry out any work involving the shutdown of the existing services to any piece of equipment now functioning in existing areas at such time as to provide the least amount of inconvenience to the OWNER. Do such work when directed by the ENGINEER.

D. After award of Contract, locate all existing underground utilities at each area of construction activity. Protect all existing underground utilities during construction. Pay for all required repairs without increase in Contract cost, should damage to underground utilities occur during construction.

1.7 RESPONSIBILITY

A. The CONTRACTOR shall be responsible for:

1. Complete systems in accordance with the intent of these Contract Documents.

2. Coordinating the details of facility equipment and construction for all Specification Divisions which affect the work covered under Division 26, ELECTRICAL.

3. Furnishing and installing all incidental items not actually shown or specified, but which are required by good practice to provide complete functional systems.

1.8 INTENT OF DRAWINGS

A. Electrical plan Drawings show only general location of equipment, devices, and raceway, unless specifically dimensioned. The CONTRACTOR shall be responsible for the proper routing of raceway, subject to the approval of the ENGINEER.

B. All electrical equipment sizes and characteristics have been based on manufacturer Square D. If the CONTRACTOR chooses to and is allowed to substitute, the CONTRACTOR shall be responsible for fitting all the equipment in the available space as shown on the Drawings.

PART 2 - PRODUCTS

2.1 GENERAL

A. Provide materials and equipment listed by UL wherever standards have been established by that agency.

B. Equipment Finish:

1. Provide manufacturers' standard finish and color, except where specific color is indicated.

2. If manufacturer has no standard color, provide equipment with ANSI No. 61, light gray color.

PART 3 - EXECUTION

3.1 GENERAL

A. Electrical Drawings show general locations of equipment, devices, and raceway, unless specifically dimensioned.

B. Install work in accordance with NECA Standard of Installation, unless otherwise specified.

3.2 LOAD BALANCE

A. Drawings and Specifications indicate circuiting to electrical loads and distribution equipment.

B. Balance electrical load between phases as nearly as possible on switchboards, panel boards, motor control centers, and other equipment where balancing is required.

C. When loads must be reconnected to different circuits to balance phase loads, maintain accurate record of changes made, and provide circuit directory that lists final circuit arrangement.

3.3 CHECKOUT AND STARTUP

A. Startup:

1. Demonstrate satisfactory operation of all 240 or 480-volt electrical equipment. Participate with other trades in all startup activities.

2. Assist the Instrumentation and Control (I&C) Contractor in verifying signal integrity of all control and instrumentation signals.

END OF SECTION

SECTION 26 00 50

BASIC ELECTRICAL MATERIALS AND METHODS

PART 1 - GENERAL

Provide all electrical equipment as specified in this specification unless otherwise shown on the drawings.

1.1 REFERENCES

A. The following is a list of standards that may be referenced in this section:

1. American National Standards Institute (ANSI):

   a. C55,1, Standard for Shunt Power Capacitors.

   b. C62.11, Standard for Metal-Oxide Surge Arrestors for AC Circuits.

   c. Z55.1, Gray Finishes for Industrial Apparatus and Equipment.

2. American Society for Testing and Materials (ASTM):

   a. A167, Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.

   b. A240, Standard Specification for Heat-Resisting Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels.

   c. A570, Standard Specification for Steel, Sheet, and Strip, Carbon, Hot-Rolled, Structural Quality.

3. Federal Specifications (FS):

   a. W-C-596, Connector, Receptacle, Electrical.

   b. W-S-896E, Switches, Toggle, Flush Mounted.

4. National Electrical Contractor's Association, Inc. (NECA): 5055, Standard of Installation.

5. National Electrical Manufacturers Association (NEMA):

a. 250, Enclosures for Electrical Equipment (1000 Volts Maximum).

b. AB 1, Molded Case Circuit Breakers, and Molded Case Switches.

c. CP I, Shunt Capacitors.

d. ICS 2, Industrial Control Devices, Controllers, and Assemblies.

e. KS 1, Enclosed Switches.

f. LA I, Surge Arrestors.

g. PB 1, Panelboards.

h. ST 20, Dry-Type Transformers for General Applications.

i. WD I, General Requirements for Wiring Devices.

6. National Fire Protection Association (NFPA): 70, National Electrical Code (NEC).

7. Underwriters Laboratories, Inc. (UL):

a. 67, Standard for Panelboards.

b. 98, Standard for Enclosed and Dead-Front Switches.

c. 198C, Standard for Safety High-Intermpting-Capacity Fuses, Current-Limiting Types.

d. 198E, Standard for Class Q Fuses.

e. 486E, Standard for Equipment Wiring Terminals.

f. 489, Standard for Molded Case Circuit Breakers and Circuit Breaker Enclosures.

g. 508, Standard for Industrial Control Equipment.

h. 810, Standard for Capacitors.

i. 943, Standard for Ground-Fault Circuit Interrupters.

j. 1059, Standard for Terminal Blocks.

k. 1561, Standard for Dry-Type General-Purpose and Power Transformers.

1.2 SUBMITTALS

A. Shop Drawings:

1. Device boxes for use in hazardous areas.

2. Junction and pull boxes used at, or below, grade.

3. Hardware.

4. Terminal junction boxes.

5. Panelboards and circuit breaker data.

6. Fuses.

7. Contactors.

8. Transformers.

9. All other miscellaneous material part of this project.

10. Wire pulling compound.

1.3 QUALITY ASSURANCE

A. UL Compliance: Materials manufactured within scope of Underwriters Laboratories shall conform to UL Standards and have an applied UL listing mark.

B. Hazardous Areas: Materials and devices shall be specifically approved for hazardous areas of the class, division, and group shown and of a construction that will ensure safe performance when properly used and maintained.

PART 2 - PRODUCTS

2.1 OUTLET AND DEVICE BOXES

A. Sheet Steel: Not used.

B. Cast Metal:

1. Box: Cast ferrous metal.

2. Cover: Gasketed, weatherproof, cast ferrous metal, with stainless steel screws.

3. Hubs: Threaded.

4. Lugs (Cast Mounting) Manufacturer:

a. Crouse-Hinds; Type FS or FD.

b. Appleton; Type FS or FD.

C. Cast Aluminum:

1. Material:

a. Box: Cast, copper-free aluminum.

b. Cover: Gasketed, weatherproof, cast copper-free aluminum with stainless steel screws.

2. Hubs: Threaded.

3. Lugs: Cast mounting.

4. Manufacturers:

a. Crouse-Hinds; Type FS-SA or FD-SA.

b. Appleton; Type FS or FD.

D. PVC-Coated Sheet Steel: Not used.

E. Nonmetallic:

1. Box: PVC.

2. Cover: PVC, weatherproof, with stainless steel screws.

3. Manufacturer: Carlon; Type FS or FD, with Type E98 or E96 covers.

2.2 JUNCTION AND PULL BOXES

A. Outlet Boxes Used as Junction or Pull Box: As specified under Article OUTLET AND DEVICE BOXES.

B. Large Sheet Steel Box: NEMA 250, Type 1.

1. Not used.

C. Large Cast Metal Box: NEMA 250, Type 4.

1. Box: Cast malleable iron, hot-dip galvanize finished, with drilled and tapped conduit entrances.

2. Cover: Hinged with screws.

3. Hardware and Machine Screws: ASTM A167, Type 316 stainless steel.

4. Manufacturers, Surface Mounted Type:

a. Crouse-Hinds; Series W.

b. O.Z./Gedney; Series Y.

5. Manufacturers, Recessed Type:

a. Crouse-Hinds; Type WJBF.

b. O.Z./Gedney; Series YR.

D. Large Stainless Steel Box: NEMA 250, Type 4X.

1. Box: 14-gauge, ASTM A240, Type 304 stainless steel.

2. Cover: Hinged with screws.

3. Hardware and Machine Screws: ASTM A167, Type 304 stainless steel.

4. Manufacturers:

a. Hoffman Engineering Co.

b. Robroy Industries.

E. Large Steel Box: NEMA 250, Type 4.

1. Box: 12-gauge steel, with white enamel painted interior and gray primed exterior, over phosphated surfaces, with final ANSI Z55.1, No. 61 gray enamel on exterior surfaces.

2. Cover: Hinged with screws.

3. Hardware and Machine Screws: ASTM A167, Type 316 stainless steel.

4. Manufacturers:

   a. Hoffman Engineering Co.

   b. Robroy Industries.

F. Large Nonmetallic Box:

1. NEMA 250, Type 4X.

2. Box: High-impact, fiberglass-reinforced polyester or engineered thermoplastic, with stability to high heat.

3. Cover: Hinged with screws.

4. Hardware and Machine Screws: ASTM A167, Type 316 stainless steel.

5. Conduit hubs and mounting lugs.

6. Manufacturers:

   a. Crouse-Hinds; Type NJB.

   b. Carlon; Series N, C, or H.

   c. Robroy Industries.

G. Concrete Box:

1. Box: Reinforced, cast concrete.

2. Cover: Cast iron.

3. Cover Marking: ELECTRICAL, TELEPHONE, or as shown.

4. Manufacturers:

   a. Brooks Products Inc.; No. 36/36T.

   b. Qwikset; W 17.

2.3 WIRING DEVICES

A. Switches:

1. NEMA WD I and FS W-S-896E.

2. Specification grade, totally-enclosed, ac type, with quiet tumbler switches and screw terminals.

3. Capable of controlling 100 percent tungsten filament and fluorescent lamp loads.

4. Rating: 20 amps, 120/277 volts.

5. Color:

a. Office Areas: Ivory.

b. Other Areas: Brown.

6. Switches with Pilot Light: 125-volt, neon light with red jewel, or lighted toggle when switch is ON.

7. Manufacturers:

a. Bryant.

b. Leviton.

c. Hubbell.

d. Pass and Seymour.

e. Arrow Hart.

B. Receptacle, Single and Duplex:

1. NEMA WD 1 and FS W-C-596.

2. Specification grade, two-pole, three-wire grounding type with screw type wire terminals suitable for No. 10 AWG.

3. High strength, thermoplastic base color.

4. Color:

a. Office Areas: Ivory.

b. Other Areas: Brown.

5. Contact Arrangement: Contact to be made on two sides of each inserted blade without detent.

6. Rating: 125 volts, NEMA WD 1, Configuration 5-20R, 20 amps.

7. Manufacturers:

a. Bryant.

b. Leviton.

c. Hubbell.

d. Pass and Seymour.

e. Sierra.

f. Arrow Hart.

C. Receptacle, Ground Fault Circuit Interrupter: Duplex, specification grade, tripping at 5 mA.

1. Color: Ivory.

2. Rating: 125 volts, NEMA WD 1, Configuration 5-20R, 20 amps, capable of interrupting 5,000 amps without damage.

3. Size: For 2-inch by 4-inch outlet boxes.

4. Standard Model: NEMA WD 1 with No. 12 AWG copper USE/RHH/RHW-XLPE insulated pigtails and provisions for testing.

5. Feed-Through Model: NEMA WD 1, with No. 12 AWG copper USE/RHH/RHW-XLPE insulated pigtails and provisions for testing.

6. Manufacturers:

a. Pass and Seymour.

b. Bryant.

c. Leviton.

d. Hubbell.

e. Arrow Hart.

D. Receptacle, Special-Purpose: Not used.

2.4 DEVICE PLATES

A. General: Sectional type plates not permitted.

B. Plastic:

1. Material: Specification grade, 0.10-inch minimum thickness, noncombustible, thermosetting.

2. Color: To match associated wiring device.

3. Mounting Screw: Oval-head metal, color matched to plate.

C. Metal:

1. Material: Specification grade, one-piece, 0.040-inch nominal thickness stainless steel.

2. Finish: ASTM A167, Type 302/304, satin.

3. Mounting Screw: Oval-head, finish matched to plate.

D. Cast Metal:

1. Material: Malleable ferrous metal, with gaskets.

2. Screw: Oval-head stainless steel.

E. Engraved:

1. Character Height: 3/16 inch.
2. Filler: Black.

F. Weatherproof:

1. For Receptacles: Gasketed, cast metal or stainless steel, with individual cap over each receptacle opening.

2. Mounting Screw: Stainless steel.

a. Cap Spring: Stainless steel.

b. Manufacturers:
i) General Electric.

ii) Bryant.

iii) Hubbell.

iv) Sierra.

v) Pass and Seymour.

vi) Crouse-Hinds; Type WLRD or WLRS.

vii) Bell.

viii) Arrow Hart.

3. For Switches: Gasketed, cast metal incorporating external operator for internal switch.

a. Mounting Screw: Stainless steel.

b. Manufacturers:

i) Crouse-Hinds; DS-181 or DS-185.

ii) Appleton; FSK-LVTS or FSK-IVS.

G. Raised Sheet Metal: 1/2-inch high zinc- or cadmium-plated steel designed for one-piece drawn type sheet steel boxes.

2.5 CIRCUIT BREAKER, INDIVIDUAL, 0 TO 600 VOLTS

A. NEMA AB I, UL 489 listed for use at location of installation.

B. Minimum Interrupt Rating: As shown or as required.

C. Thermal-magnetic, quick-make, quick-break, indicating type, showing ON/OFF and TRIPPED indicating positions of the operating handle.

D. Suitable for use with 75 degrees C wire at full NFPA 70, 75 degrees C ampacity.

E. Locking: Provisions for padlocking handle.

F. Multipole breakers to automatically open all poles when an overload occurs on one-pole.

G. Enclosure: NEMA 250, Type 12, Industrial Use, 4X - outdoors, wet locations and corrosive areas, unless otherwise shown.

H. Interlock: Enclosure and switch shall interlock to prevent opening cover with switch in the ON position.

I. Do not provide single-pole circuit breakers with handle ties where multipole circuit breakers are shown.

2.6 FUSE, 0 TO 600 VOLTS

A. Current-limiting, with 200,000 ampere rms interrupting rating.

B. Provide to fit mountings specified with switches and features to reject Class H fuses.

C. Motor and Transformer Circuits, 0- to 600-Volt:

1. Amperage: 0 to 600.

2. UL 198E, Class RK-1, dual element, with time delay.

3. Manufacturers:
   a. Bussmann; Type LPS-RK.

   b. Littlefuse; Type LLS-RK.

D. Motor and Transformer Circuits, 0- to 250-Volt:

1. Amperage: 0 to 600.

2. UL 198E, Class RK-1, dual element, with time delay.

3. Manufacturers:

   a. Bussmann; Type LPN-RK.

   b. Littlefuse; Type LLN-RK.

E. Feeder and Service Circuits, 0- to 600-Volt:

1. Amperage: 0 to 600.

2. UL 198E, Class RK-I, dual element, with time delay.

3. Manufacturers:

a. Bussmann; Type LPS-RK.

b. Littlefuse; Type LLS-RK.

F. Feeder and Service Circuits, O- to 250-Volt:

1. Amperage: 0 to 600.

2. UL 198E, Class RK-I, dual element, with time delay.

3. Manufacturers:

a. Bussmann; Type LPN-RK.

b. Littleluse; Type LLN-RK.

G. Feeder and Service Circuits, 0- to 600-Volt:

1. Amperage: 601 to 6,000.

2. UL 198C, Class L, double O-rings and silver links.

3. Manufacturers:
a. Bussmann; Type KRP-C.

b. Littlefuse; Type KLPC.

2.7 PUSHBUTTON, INDICATING LIGHT, AND SELECTOR SWITCHES

A. Contact Rating: NEMA ICS 2, Type A600.

B. Selector Switch Operating Lever: Standard.

C. Indicating Lights: LED type Push-to-test.

D. Pushbutton Color:

1. ON or START: Black.

2. OFF or STOP: Red.

E. Pushbuttons and selector switches lockable in the OFF position where indicated.

F. Legend Plate:

1. Material: Aluminum.

2. Engraving: 11 character/spaces on one line, 14 character/spaces on each of two lines, as required, indicating specific function.

3. Letter Height: 7/64 inch.

G. Manufacturers:

1. Heavy-Duty, Oiltight Type:

a. General Electric; Type CR 104P.

b. Square D; Type T.

c. Cutler-Hammer; Type 10250T.

2. Heavy-Duty, Watertight, and Corrosion-Resistant Type:

a. Square D; Type SK.

b. General Electric; Type CR 104P.

c. Cutler-Hammer; Type E34.

d. Crouse-Hinds; Type NCS.

2.8 TERMINAL JUNCTION BOX

A. Cover: Hinged, unless otherwise shown.

B. Terminal Blocks: Provide separate connection point for each conductor entering or leaving box.

1. Spare Terminal Points: 25 percent.

C. Interior Finish: Paint with white enamel or lacquer.

2.9 TERMINAL BLOCK (0 TO 600 VOLTS)

A. UL 486E and UL 1059.

B. Size components to allow insertion of necessary wire sizes.

C. Capable of termination of all control circuits entering or leaving equipment, panels, or boxes.

D. Screw clamp compression, dead front barrier type, with current bar providing direct contact with wire between the compression screw and yoke.

E. Yoke, current bar, and clamping screw of high strength and high conductivity metal.

F. Yoke shall guide all strands of wire into terminal.

G. Current bar shall ensure vibration-proof connection.

H. Terminals:

1. Capable of wire connections without special preparation other than stripping.

2. Capable of jumper installation with no loss of terminal or rail space.

3. Individual, rail mounted.

I. Marking system allowing use of preprinted or field-marked tags.

J. Manufacturers:

1. Weidmuller.

2. Ideal.

3. Electrovert.

2.10 MAGNETIC CONTROL RELAY

A. NEMA ICS 2, Class A600 (600 volts, 10 amps continuous, 7,200VA make, 720VA break), industrial control with field convertible contacts.

B. Time Delay Relay Attachment:

1. Pneumatic type, timer adjustable from 0.2 to 60 seconds (minimum).

2. Field convertible from ON delay to OFF delay and vice versa.

C. Latching Attachment: Mechanical latch having unlatching coil and coil clearing contacts.

D. Manufacturers:

1. Cutler-Hammer; Type M-600.

2. General Electric; Type CR120B.

2.11 ELAPSED TIME METER

A. Drive: Synchronous motor.

B. Range: 0 to 99,999.9 hours, nonreset type.

C. Mounting: Semiflush, panel.

D. Manufacturers:

1. Redington (Stemco); Model 711-0130

2.12 MAGNETIC CONTACTOR

A. NEMA ICS 2, UL 508.

B. Electrically operated, electrically held.

C. Main Contacts:

1. Power driven in one direction with gravity dropout.

2. Silver alloy with wiping action and arc quenchers.

3. Continuous-duty, rated 30 amperes, 600-volt.

4. Three-pole.

D. Control: Two-wire.

E. One normally open and one normally closed auxiliary contacts rated 10 amperes at 480-volt.

F. Enclosure: NEMA 250, Type 12, unless otherwise shown.

G. Manufacturers:

1. Westinghouse; Class A211.

2. General Electric; CR 353.

3. Allen-Bradley; Bulletin 500 Line.

2.13LOW VOLTAGE, SECONDARY SURGE PROTECTIVE EQUIPMENT

A. NEMA LA1, ANSI C62. 11.

B. Surge Capacitor:

1. Impregnated with non-PCB, biodegradable dielectric fluid.

2. Integral discharge resistor which will drain residual voltage to 50 volts crest in less than I minute after disconnection from circuit.

C. Arrestor: High strength metal oxide valve elements enclosed in high strength, corrosion resistant, molded resin housing.

D. Equip capacitor and arrestor with mounting nipple, flat washer, and nut suitable for knockout or bracket mounting.

2.14 SUPPORT AND FRAMING CHANNELS

A. Material:

1. Dry indoors - galvanized.

2. All Other Areas: ASTM A167, Type 316 stainless steel or as shown on the drawings.

B. Finish:

1. Dry indoors - galvanized.

2. All Other Areas: ASTM A167, Type 316 stainless steel or as shown on the drawings.

C. Inserts: Continuous.

D. Beam Clamps: Gray cast iron.

E. Manufacturers:

1. B-Line.

2. Unistrut.

2.15 NAMEPLATES

A. Material: Laminated plastic.

B. Attachment Screws: Stainless steel.

C. Color: White, engraved to a black core.

D. Engraving:

1. Pushbuttons/Selector Switches: Name of drive controlled on one, two, or three lines, as required.

2. Panelboards: Panelboard designation, service voltage, and phases.

E. Letter Height:

1. Pushbuttons/Selector Switches: 1/8 inch.

2. Panelboards: 1/4 inch.

2.16 SURGE PROTECTION DEVICE

A. This section describes the material and installation requirements for surge protection devices (SPD) in switchboards, panelboards, and motor control centers for the protection of all AC electrical circuits.

B. SPD shall be listed and component recognized in accordance with UL 1449 3rd edition and UL 1283.

C. SPD shall be installed and warranted by and shipped from the electrical distribution equipment manufacturer's factory.

D. SPD shall provide surge current diversion paths for all modes of protection; L-L, L-N, L-G, N-G in WYE systems, and L-L, L-G in DELTA systems.

E. SPD shall be modular in design. Each module shall be fused with a surge rated fuse.

F. A UL approved disconnect switch shall be provided as a means of disconnect in the switchboard device only.

G. SPD shall meet or exceed the following criteria:

1. Maximum surge current capability (single pulse rated) shall be:

   a. Service entrance switchboard 300kA

   b. Branch panelboards 150kA

   c. Motor control centers 80kA

2. UL 1449 Listed and Recognized Component Suppression Voltage Ratings shall not exceed the following:

Voltage	L-N	L-G	N-G
208Y/120	400V	400V	400V
480Y/277	800V	800V	800V

H. SPD shall have a minimum EMI/RFI filtering of -44dB at 100kHz with an insertion ration of 50:1 using MIL STD. 220A methodology.

I. SPD shall be provided with 1 set of NO/NC dry contacts.

J. SPD shall have a warranty for a period of five years, incorporating unlimited replacements of suppressor parts if they are destroyed by transients during the warranty period. Warranty will be the responsibility of the electrical distribution equipment manufacturer.

K. Approved manufactures are:

1. ASCO

PART 3 - EXECUTION

3.1 GENERAL

A. Install equipment in accordance with NECA 5055.

3.2 OUTLET AND DEVICE BOXES

A. Install suitable for conditions encountered at each outlet or device in the wiring or raceway system, sized to meet NFPA 70 requirements.

B. Size:

1. Depth: Minimum 2 inches, unless otherwise required by structural conditions. Box extensions not permitted.

a. Hollow Masonry Construction: Install with sufficient depth such that conduit knockouts or hubs are in masonry void space.

2. Ceiling Outlet: Minimum 4-inch octagonal sheet steel device box, unless otherwise required for installed fixture.

3. Switch and Receptacle: Minimum 2-inch by 4-inch sheet steel device box.

C. Locations:

1. Drawing locations are approximate.

2. To avoid interference with mechanical equipment or structural features, relocate outlets as directed by ENGINEER.

3. Light Switch: Install on lock side of doors.

4. Light Fixture: Install in symmetrical pattern according to room layout unless otherwise shown.

D. Mounting Height:

1. General:

a. Measured to centerline of box.

b. Where specified heights do not suit building construction or finish, mount as directed by ENGINEER.

2. Light Switch: 48 inches above floor.

3. Thermostat: 54 inches above floor.

4. Telephone Outlet: 6 inches above counter tops or 15 inches above floor.

5. Wall Mounted Telephone Outlet: 52 inches above floor.

6. Convenience Receptacle:

a. General Interior Areas: 15 inches above floor.

b. General Interior Areas (Counter Tops): Install device plate bottom or side flush with top of splashback, or 6 inches above countertops without splashback.

c. Industrial Areas, Workshops: 48 inches above floor.

d. Outdoor, All Areas: 24 inches above finished grade.

7. Special-Purpose Receptacle: 54 inches above floor or as shown.

E. Install plumb and level.

F. Flush Mounted:

1. Install with concealed conduit.

2. Install proper type extension rings or plaster covers to make edges of boxes flush with finished surface.

3. Holes in surrounding surface shall be no larger than required to receive box.

G. Support boxes independently of conduit by attachment to building structure or structural member.

H. Install bar hangers in frame construction, or fasten boxes directly with wood screws on wood, bolts and expansion shields on concrete or brick, toggle bolts on hollow masonry units, and machine screws threaded into steelwork.

I. Threaded studs driven in by powder charge and provided with lock washers and nuts are acceptable in lieu of expansion shields.

J. Provide plaster rings where necessary.

K. Boxes embedded in concrete or masonry need not be additionally supported.

L. Install stainless steel mounting hardware in industrial areas.

M. Boxes Supporting Fixtures: Provide means of attachment with adequate strength to support fixture.

N. Open no more knockouts in sheet steel device boxes than are required; seal unused openings.

O. Box Type (Steel Raceway System):

1. Exterior Locations:

a. Exposed Raceways: Cast metal.

b. Concealed Raceways: Cast metal.

c. Concrete Encased Raceways: Cast metal.

d. Class I, II, or III Hazardous Areas: Cast metal.

2. Interior Dry Locations:

a. Exposed Rigid Conduit: Cast metal.

b. Exposed EMT: Sheet steel.

c. Concealed Raceways: Sheet steel.

d. Concrete Encased Raceways: Cast metal.

e. Lighting Circuits, Ceiling: Sheet steel.

f. Class I, II, or III Hazardous Areas: Cast metal.

3. Interior Wet Locations:

a. Exposed Raceways: Cast metal.

b. Concealed Raceways: Cast metal.

c. Concrete Encased Raceways: Cast metal.

d. Lighting Circuits, Ceiling: Sheet steel.

f. Class I, II, or III Hazardous Areas: Cast metal.

4. Cast-In-Place Concrete Slabs: Sheet steel.

P. Box Type (Rigid Aluminum Raceway System): Cast aluminum.

Q. Box Type (Nonmetallic Raceway System):

1. Corrosive Locations: Nonmetallic.

2. Exposed Raceways: Nonmetallic.

3. Concealed Raceways: Nonmetallic.

4. Concrete Encased Raceways: Nonmetallic.

R. Box Type, Corrosive Locations (PVC-Coated Rigid Galvanized Steel Raceway System): PVC coated cast metal.

3.3 JUNCTION AND PULL BOXES

A. Install where shown and where necessary to terminate, tap-off, or redirect multiple conduit runs.

B. Install pull boxes where necessary in raceway system to facilitate conductor installation.

C. Install in conduit runs at least every 150 feet or after the equivalent of three right-angle bends.

D. Use outlet boxes as junction and pull boxes wherever possible and allowed by applicable codes.

E. Installed boxes shall be accessible.

F. Do not install on finished surfaces.

G. Install plumb and level.

H. Support boxes independently of conduit by attachment to building structure or structural member.

I. Install bar hangers in frame construction, or fasten boxes directly with wood screws on wood, bolts and expansion shields on concrete or brick, toggle bolts on hollow masonry units, and machine screws or welded threaded studs on steelwork.

J. Threaded studs driven in by powder charge and provided with lock washers and nuts are acceptable in lieu of expansion shields.

K. Boxes embedded in concrete or masonry need not be additionally supported.

L. At or Below Grade:

1. Install boxes for below grade conduits flush with finished grade in locations outside of paved areas, roadways, or walkways.

2. If adjacent structure is available, box may be mounted on structure surface just above finished grade in accessible but unobtrusive location.

3. Obtain ENGINEER's written acceptance prior to installation in paved areas, roadways, or walkways.

4. Use boxes and covers suitable to support anticipated weights.

M. Flush Mounted:

1. Install with concealed conduit.

2. Holes in surrounding surface shall be no larger than required to receive box.

3. Make edges of boxes flush with final surface.

N. Mounting Hardware:

1. Noncorrosive Interior Areas: Galvanized.

2. All Other Areas: Stainless steel.

O. Location/Type:

1. Finished, Indoor, Dry: NEMA 250, Type 1.

2. Unfinished, Indoor, Dry: NEMA 250, Type 12.

3. Unfinished, Indoor and Outdoor, Wet and Corrosive: NEMA 250, Type 4X.

4. Unfinished, Indoor and Outdoor, Wet, Dust, or Oil: NEMA 250, Type 13.

5. Unfinished, Indoor and Outdoor, Hazardous: NEMA 250, Type 7 and Type 9, where indicated.

6. Corrosive Locations: Nonmetallic.

3.4 WIRING DEVICES

A. Switches:

1. Mounting Height: See Paragraph OUTLET AND DEVICE BOXES.

2. Install with switch operation in vertical position.

3. Install single-pole, two-way switches such that toggle is in up position when switch is on.

B. Receptacles:

1. Install with grounding slot down except where horizontal mounting is shown, in which case install with neutral slot up.

2. Ground receptacles to boxes with grounding wire only.

3. Weatherproof Receptacles:

a. Install in cast metal box.

b. Install such that hinge for protective cover is above receptacle opening.

4. Ground Fault Interrupter: Install feed-through model at locations where ground fault protection is specified for "downstream" conventional receptacles.

5. Special-Purpose Receptacles: Install in accordance with manufacturer's instructions.

C. Multioutlet Surface Raceway System:

1. Install in accordance with manufacturer's instructions.

2. Wire alternate outlets to each circuit where two-circuit, three-wire supply is shown.

3.5 DEVICE PLATES

A. Securely fasten to wiring device; ensure a tight fit to the box.

B. Flush Mounted: Install with all four edges in continuous contact with finished wall surfaces without use of mats or similar materials. Plaster fillings will not be acceptable.

C. Surface Mounted: Plate shall not extend beyond sides of box unless plates have no sharp corners or edges.

D. Install with alignment tolerance to box of 1/16 inch.

E. Engrave with designated titles.

F. Types (Unless Otherwise Shown):

1. Office: Stainless Steel.

2. Exterior: Weatherproof.

3. Interior:

    a. Flush Mounted Boxes: Stainless Steel.

    b. Surface Mounted, Cast Metal Boxes: Cast metal.

    c. Surface Mounted, Sheet Steel Boxes: Stainless Steel.

    d. Surface Mounted, Nonmetallic Boxes: Plastic.

3.6 PUSHBUTTON, INDICATING LIGHT, AND SELECTOR SWITCH

A. Heavy-Duty, Oiltight Type: Locations (Unless Otherwise Shown): Nonhazardous, indoor, dry locations, including motor control centers, control panels, and individual stations.

B. Heavy-Duty, Watertight, and Corrosion-Resistant Type:

1. Locations (Unless Otherwise Shown): Nonhazardous, outdoor, or normally wet areas.

2. Mounting: NEMA 250, Type 4X enclosure.

3.7 TERMINAL JUNCTION BOX

A. Install in accordance with Paragraph JUNCTION AND PULL BOXES.

B. Label each block and terminal with permanently attached, nondestructible tag.

C. Do not install on finished outdoor surfaces.

D. Location:

1. Finished, Indoor, Dry: NEMA 250, Type 1.

2. Unfinished, Indoor, Dry: NEMA 250, Type 12.

3. Unfinished, Indoor and Outdoor, Wet and Corrosive: NEMA 250, Type 4X.

4. Unfinished, Indoor and Outdoor, Wet, Dust, or Oil: NEMA 250, Type 13.

3.8 SUPPORT AND FRAMING CHANNEL

A. Furnish zinc-rich primer; paint cut ends prior to installation, where applicable.

B. Install where required for mounting and supporting electrical equipment and raceway systems.

3.9 MOTOR SURGE PROTECTION

A. Ground in accordance with NFPA 70.

B. Low Voltage: Ground terminals to equipment bus.

END OF SECTION

SECTION 26 05 19

CONDUCTORS

PART 1 - GENERAL

Provide all electrical equipment as specified in this specification unless otherwise shown on the drawings.

1.1 REFERENCES

A. The following is a list of standards that may be referenced in this section:

1. American National Standards Institute (ANSI): 386, Standard for Separable Insulated Connector Systems for Power Distribution Systems Above 600V.

2. American Society for Testing and Materials (ASTM):

a. A167, Standard Specification for Stainless and Heat Resisting Chromium-Nickel-P1ated Steel Plate, Sheet, and Strip.

b. B3, Standard Specification for Soft or Annealed Copper Wire.

c. B8, Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft.

d. B263, Standard Test Method for Determination of Cross- Sectional Area of Stranded Conductors.

3. Association of Edison Illuminating Companies (AEIC):

a. CS 5, Crosslinked Polyethylene Insulated Shielded Power Cables Rated 5 Through 35 kV.

b. CS 6, Ethylene- Propylene-Rubber-Insulated Shielded Power Cables Rated 5 Through 69 kV.

4. Insulated Cable Engineer's Association, Inc. (ICEA): T-29-250, Procedure for Conducting Vertical Cable Tray Flame Test With a Theoretical Heat Input of 210,000 Btu/hour.

5. Institute of Electrical and Electronics Engineers, Inc. (IEEE):

a. 48, Standard Test Procedures and Requirements or High-Voltage Alternating Current Cable Terminations.

b. 404, Standard for Cable Joints for Use with Extruded Dielectric Cable Rated 5,000V through 46,000V and Cable Joints for Use with Laminated Dielectric Cable Rated 2,500V through 500,000V.

6. National Electrical Contractors Association, Inc. (NECA): 5055, Standard of Installation.

7. National Electrical Manufacturers' Association (NEMA):

a. CC 1, Electric Power Connectors for Substations.

b. WC 3, Rubber-insulated Wire and Cable for the Transmission and Distribution of Electrical Energy.

c. WC 5, Thermoplastic Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy.

d. WC 7, Crosslinked-Thermosetting-Polyethylene-lnsulated Wire and Cable for the Transmission and Distribution of Electrical Energy.

e. WC 8, Ethylene-Propylene-Rubber Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy.

f. WC 55, Instrumentation Cables and Thermocouple Wire.

8. National Fire Protection Association (NFPA): 70, National Electrical Code (NEC).

9. Underwriters Laboratories, Inc. (UL):

a. 13, Standard for Safety Power-Limited Circuit Cables.

b. 44, Standard for Safety Rubber-Insulated Wires and Cables.

c. 62, Standard for Safety Flexible Cord and Fixture Wire.

d. 486A, Standard for Safety Wire Connector and Soldering Lugs for Use with Copper Conductors.

e. 486B, Standard for Safety Wire Connectors and Soldering Lugs for Use with Aluminum Conductors.

f. 510, Standard for Safety Insulating Tape.

g. 854, Standard for Safety Service-Entrance Cables.

h. 910, Standard for Safety Test Method for Fire and Smoke Characteristics of Electrical and Optical-Fiber Cables Used in Air Handling Spaces.

i. 1072, Standard for Safety Medium-Voltage Power Cables.

j. 1277, Standard for Safety Electrical Power and Control Tray Cables with Optional Optical-Fiber Members.

k. 1581, Standard for Safety Reference Standard for Electrical Wires, Cables, and Flexible Cords.

1.2 SUBMITTALS

A. Shop Drawings:

1. Wire and cable descriptive product information.

2. Wire and cable accessories descriptive product information.

3. Manufactured wiring systems descriptive product information.

4. Manufactured wire systems rating information.

5. Manufactured wire systems dimensional drawings.

6. Manufactured wire systems special fittings.

B. Quality Control Submittals:

1. Certified Factory Test Report for conductors 600 volts and below.

2. Certified Factory Test Report per AEIC CS6, including AEIC qualification report for conductors above 600 volts.

1.3 UL COMPLIANCE

A. Materials manufactured within scope of Underwriters Laboratories shall conform to UL Standards and have an applied UL listing mark.

PART 2 - PRODUCTS

2. 1 CONDUCTORS 600 VOLTS AND BELOW

A. Conform to applicable requirements of NEMA WC 3, WC 5, and WC 7.

B. Conductor Type:

1. 120- and 277-Volt Lighting, No. 10 AWG and Smaller: Stranded copper.

2. 120-Volt Receptacle Circuits, No. 10 AWG and Smaller: Stranded copper.

3. All Other Circuits: Stranded copper.

C. Insulation: Type THHN/THWN, except for sizes No. 6 and larger, with XHHW insulation.

D. Direct Burial and Aerial Conductors and Cables:

1. Type USE/RHH/RHW insulation, UL (54 listed, Type RHW-2/USE-2.

2. Conform to physical and minimum thickness requirements of NEMA WC

E. Flexible Cords and Cables:

1. Type SOW-A50 with ethylene propylene rubber insulation in accordance with UL 62.

2. Conform to physical and minimum thickness requirements of NEMA WC 8.

F. Cable Tray Conductors and Cables: Type TC.

2.2 600-VOLT RATED CABLE

A. General:

1. Type: TC, meeting requirements of UL 1277, including Vertical Tray Flame Test at 20,000 Btu/hr, and NFPA 70, Article 340, or UL 13 Listed Power Limited Circuit Cable meeting requirements of NFPA 70, Article 725.

2. Permanently and legibly marked with manufacturer's name, maximum working voltage for which cable was tested, type of cable, and UL listing mark.

3. Suitable for installation in open air, in cable trays, or conduit.

4. Minimum Temperature Rating: 90 degrees C dry locations, 75 degrees C wet locations.

5. Overall Outer Jacket: PVC, flame-retardant, sunlight- and oil-resistant.

B. Wire and Connectors:

1. Cable shall be rated for 600 volts and shall meet the requirements below:

2. Conductors shall be stranded

3. All wire shall be brought to the job in unbroken packages and shall bear the data of manufacturing; not older than 12 months.

4. Type of wire shall be XHHW or THHN, rated 75 degrees C suitable for wet locations except where required otherwise by the drawings.

5. No wire smaller than No. 12 gauge shall be used unless specifically indicated.

6. Conductor metal shall be copper.

7. 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.

C. Type l-Multiconductor Control Cable:

1. Conductors:

a. No. 14 AWG, seven-strand copper.

b. Insulation: 15-mil PVC with 4-mil nylon.

c. UL 1581 listed as Type THHN/THWN rated VW-I.

d. Conductor group bound with spiral wrap of barrier tape.

e. Color Code: In accordance with NEMA WC 5, Method 1, Sequence K-2.

2. Cable: Passes the ICEA T-29-520 210,000 Btu/hr Vertical Tray Flame Test.

3. Cable Sizes:

No. of Conductors	Max. Outside Diameter (inches)	Jacket Thickness (mils)
3	0.41	45
5	0.48	45
7	0.52	45
12	0.72	60
19	00.83	60
25	1.00	60
37	1.15	80

4. Manufacturers:

   a. Okonite Co.

   b. Rome Cable.

D. Type 2-Multiconductor Power Cable:

1. Conductors:

   a. Class B stranded, coated copper.

   b. Insulation: Chemically crosslinked ethylene-propylene with Hypalon jacket.

   c. UL 1581 listed as Type EPR, rated VW-1.

   d. Color Code: Conductors, size No. 8 AWG and smaller, colored conductors, NEMA WC5 Method 1, color 5 per Article POWER CONDUCTOR COLOR CODING. Conductors, size No. 6 AWG and larger, NEMA WC5, Method 4.

2. Cable pass the ICEA T-29-520 210,000 Btu/hr Vertical Tray Flame Test.

3. Cable Sizes:

Conductor Size	Minimum Ground Wire Size	No. of Conductors	Max.Outside Diameter (Inches)	Nominal Jacket Thickness (Mils)
12	12	2 3 4	0.42 0.45 0.49	45 45 45

10	10	2 3 4	0.54 0.58 0.63	60 60 60
8	10	3 4	0.66 0.72	60
6	8	3 4	0.74 0.81	60
4	6	3 4	0.88 0.97	60 80
2	6	3 4	1.01 1.11	80
1/0	6	3 4	1.22 1.35	80
2/0	4	3 4	1.32 1.46	80
4/0	4	3 4	1.56 1.78	80

4. Manufacturers:

   a. Okonite Co.

   b. Pome Cable.

E. Type B-No. 16 AWG, Twisted, Shielded Pair (TSP), Instrumentation Cable: Single pair, designed for noise rejection for process control, computer, or data log applications meeting NEMA WC 55 requirements.

1. Outer Jacket: 45-mil nominal thickness.

2. Individual Pair Shield: 1.35-mil, double-faced aluminum/synthetic polymer overlapped to provide 100 percent coverage.

3. Dimension: 0.31-inch nominal OD.

4. Conductors:

   a. Bare soft annealed copper, Class B, seven-strand concentric, meeting requirements of ASTM B8

   b. 20 AWG, seven-strand tinned copper drain wire.

   c. Insulation: 15-mil nominal PVC.

   d. Jacket: 4-mil nominal nylon.

e. Color Code: Pair conductors black and red.

5. Manufacturers:

a. Okonite Co.

b. Alpha Wire Corp.

6. The following test shall be performed on instrumentation and control system cables. All tests shall be end-to-end test of installed cables with the ends supported in free air, not adjacent to any ground object. All test data shall be recorded on forms acceptable to the Engineer. Complete records of all tests shall be made and delivered to the Engineer.

a. Continuity tests shall be performed by measuring wire/shield loop resistances of signal cable as the wires, taken one at a time, are shorted to the channel shield. No loop resistance measurement shall carry by more than $\pm$2 ohms from the calculated average loop resistance valve.

b. Insulation resistance tests shall be performed by using a 500 volt megohmeter to measure the insulation resistance between each channel wire and channel shield, between individual channel shields in a multi-channel cable, between each individual channel and the overall cable shield in multi-channel cable, between each wire and ground, and between each shield and ground. Values of resistance less than 10 megohms shall be unacceptable.

2.3 GROUNDING CONDUCTORS

A. Equipment: Stranded copper with green, match the insulation type of the Phase conductors.

B. Direct Buried: Bare tinned copper.

2.4 ACCESSORIES FOR CONDUCTORS 600 VOLTS AND BELOW

A. Tape:

1. General Purpose, Flame Retardant: 7-mil, vinyl plastic, Scotch Brand 33, rated for 90 degrees C minimum, meeting requirements of UL 510.

2. Flame Retardant, Cold and Weather Resistant: 8.5-mil, vinyl plastic, Scotch Brand 88.

3. Arcs and Fireproofing:

a. Not used.

B. Identification Devices:

1. Sleeve: Permanent, PVC, yellow or white, with legible machine-printed black markings.

2. Marker Plate: Nylon, with legible designations permanently hot stamped on plate.

3. Grounding Conductor: Permanent green heat-shrink sleeve, 2-inch minimum.

C. Connectors and Terminations:

1. Nylon, Self-Insulated Crimp Connectors:

a. Manufacturers and Products:

i. Thomas & Betts; Sta-Kon.

ii. Burndy; Insulink.

iii. ILSCO.

2. Nylon, Self-Insulated, Crimp Locking-Fork, Torque-Type Terminator:

a. Manufacturers and Products:

i. Thomas & Betts; Sta-Kon.

ii. Burndy; Insulink.

iii. ILSCO.

D. Cable Lugs:

1. In accordance with NEMA CC I.

2. Rated 600 volts of same material as conductor metal.

3. Insulated, Locking-Fork, Compression Lugs:

a. Manufacturers and Products:

i. Thomas & Betts; Sta-Kon.

ii. ILSCO; ILSCONS.

4. Un-insulated Crimp Connectors and Terminators:

a. Manufacturers and Products:

i. Square D; Versitide.

ii. Thomas & Betts; Color-Keyed.

iii. ILSCO.

5. Un-insulated, Bolted, Two-Way Connectors and Terminators:

a. Manufacturers and Products:

i. Thomas & Betts; Locktite.

ii. Burndy; Quiklug.

iii. ILSCO.

E. Cable Ties: Nylon, adjustable, self-locking, and reusable.

1. Manufacturers and Product: Thomas & Betts; TY-RAP.

F. Heat Shrinkable Insulation: Thermally stabilized, crosslinked polyofin.

1. Manufacturers and Product: Thomas & Betts; SHRINK-KON.

2.5 PULLING COMPOUND

A. Nontoxic, non-corrosive, noncombustible, nonflammable, wax-based lubricant; UL listed.

B. Suitable for rubber, neoprene, PVC, polyethylene, hypalon, CPE, and lead-covered wire and cable.

C. Suitable for zinc-coated steel, aluminum, PVC, bituminized fiber, and fiberglass raceways.

D. Manufacturers and Products:

1. Ideal Co.; Yellow 77.

2. Polywater, Inc.

3. Cable Grip Co.

2. 6 WARNING TAPE

A. As specified in Section 26 05 33, RACEWAYS.

2.7 SOURCE QUALITY CONTROL

A. Conductors 600-Volts and Below: Test in accordance with UL 44 and 854 Standards.

PART 3 - EXECUTION

3.1 GENERAL

A. Conductor installation to be in accordance with NECA 5055.

B. Conductor and cable sizing shown is based on copper conductors, unless noted otherwise.

C. Do not exceed cable manufacturer's recommendations for maximum pulling tensions and minimum bending radii.

D. Tighten screws and terminal bolts in accordance with UL 486A for copper conductors.

E. Cable Lugs: Provide with correct number of holes, bolt size, and center-to-center spacing as required by equipment terminals.

F. Bundling: Where single conductors and cables in manholes, hand holes, vaults, and other indicated locations are not wrapped together by some other means, bundle conductors from each conduit throughout their exposed length with cable ties placed at intervals not exceeding 18 inches on center.

G. Ream, remove burrs, and clear interior of installed conduit before pulling wires or cables.

3.2 POWER CONDUCTOR COLOR CODING

A. Conductors 600 Volts and Below:

1. No. 6 AWG and Larger: Apply general purpose, flame retardant tape at each end, and at accessible locations wrapped at least six full overlapping turns, covering an area 1-1/2 to 2 inches wide.

2. No. 8 AWG and Smaller: Provide colored conductors.

3. Colors:

System	Conductor	Color
All Systems	Equipment Grounding	Green
240/120 Volts Single-Phase, Three-Wire	Grounded Neutral One Hot Leg Other Hot Leg	White Black Red
208Y/120 Volts Three-Phase, Four-Wire	Grounded Neutral Phase A Phase B Phase C	White Black Red Blue
240/120 Volts Three-Phase, Four-Wire Delta, Center Tap Ground on Single-Phase	Grounded Neutral Phase A High (wild) Leg Phase C	White Black Orange Blue
480Y/277 Volts Three-Phase, Four-Wire	Grounded Neutral Phase A Phase B Phase C	Gray Brown Purple Yellow
NOTE: Phase A, B, C implies direction of positive phase rotation		

4. Tracer: Outer covering of white with an identifiable colored strip other than green in accordance with NFPA 70.

3.3 CIRCUIT IDENTIFICATION

A. Circuits Appearing in Circuit Schedules: identify power, instrumentation, and control conductor circuits, using circuit schedule designations, at each termination and in accessible locations such as manholes, hand holes, panels, switchboards, motor control centers, pull boxes, and terminal boxes.

B. Circuits Not Appearing in Circuit Schedules:

1. Assign circuit name based on device or equipment at load end of circuit.

2. Where this would result in same name being assigned to more than one circuit, add number or letter to each otherwise identical circuit name to make it unique.

C. Method:

1. Conductors No. 3 AWG and Smaller: Identify with sleeves.

2. Cables, and Conductors No. 2 AWG and Larger:

a. Identify with marker plates.

b. Attach marker plates with nylon tie cord.

3. Taped-on markers or tags relying on adhesives not permitted.

3.4 CONDUCTORS 600 VOLTS AND BELOW

A. Install 10 AWG or 12 AWG conductors for branch circuit power wiring in lighting and receptacle circuits.

B. Do not splice incoming service conductors and branch power distribution conductors No. 6 AWG and larger unless specifically indicated or approved by ENGINEER.

C. Connections and Terminations:

1. Install wire nuts only on solid conductors.

2. Install nylon self-insulated crimp connectors and terminators for instrumentation, control, and power circuit conductors No. 6 AWG and smaller.

3. Install un-insulated crimp connectors and terminators for instrumentation, control, and power circuit conductors No. 4 AWG through No. 2/0 AWG.

4. Install un-insulated, bolted, two-way connectors and terminators for power circuit conductors No. 4/0 AWG and larger.

5. Install un-insulated bolted, two-way connectors for motor circuit conductors No. 12 and larger.

6. Tape insulates all un-insulated connections.

7. Place no more than one conductor in any single-barrel pressure connection.

8. Install crimp connectors with tools approved by connector manufacturer.

9. Install terminals and connectors acceptable for type of material used.

10. Compression Lugs:

    a. Attach with a tool specifically designed for purpose.

    b. Tool shall provide complete controlled crimp and shall not release until crimp is complete.

    c. Do not use plier type crimpers.

D. Do not use soldered mechanical joints.

E. Splices and Terminations:

1. Indoors: Use general purpose, flame retardant tape.

2. Outdoors: Use flame retardant, cold- and weather-resistant tape.

F. Cap spare conductors and conductors with UL listed end caps.

G. Cabinets, Panels, and Motor Control Centers:

1. Remove surplus wire, bridle and secure.

2. Where conductors pass through openings or over edges in sheet metal, remove bums, chamfer edges, and install bushings and protective strips of insulating material to protect the conductors.

H. Control and Instrumentation Wiring:

1. Where terminals provided will accept such lugs, terminate control and instrumentation wiring, except solid thermocouple leads, with insulated, locking-fork compression lugs.

2. Terminate with methods consistent with terminals provided, and in accordance with terminal manufacturer's instructions.

3. Locate splices in readily accessible cabinets or junction boxes using terminal strips.

4. Where connections of cables installed under this section are to be made under Section 40 90 00, PROCESS INSTRUMENTATION AND CONTROLS, leave pigtails of adequate length for bundled connections.

5. Cable Protection:

a. Under Infinite Access Floors: May be installed without bundling.

b. All Other Areas: Install individual wires, pairs, or triads in flex conduit under the floor or grouped into bundles at least 1/2-inch in diameter.

c. Maintain integrity of shielding of instrumentation cables.

d. Ensure grounds do not occur because of damage to jacket over the shield.

I. Extra Conductor Length: For conductors to be connected by others, install minimum 6 feet of extra conductor in freestanding panels and minimum 2 feet in other assemblies.

3.5 UNDERGROUND DIRECT BURIAL CABLE

A. Install in trench as required.

B. Warning Tape: Install approximately 12 inches above cable, aligned parallel to, and within 12 inches of centerline of the run.

3.6 CABLE TESTING

A. Visual and Mechanical Inspection:

1. Inspect Each Individual Exposed Power Cable No. 6 and Larger For:

a. Physical damage.

b. Proper connections in accordance with single-line diagram.

c. Cable bends not in conformance with manufacturer's minimum allowable bending radius where applicable.

d. Color coding conformance with specifications.

e. Proper circuit identification.

2. Mechanical Connections For:

a. Proper lug type for conductor material.

b. Proper lug installation.

c. Bolt torque level in accordance with NETA ATS, Table 10. 1, unless otherwise specified by manufacturer.

3. Shielded Instrumentation Cables For:

a. Proper shield grounding.

b. Proper terminations.

c. Proper circuit identification.

4. Control Cables For:

a. Proper termination.

b. Proper circuit identification.

5. Cables Terminated Through Window Type CTs: Verify that neutrals and grounds are terminated for correct operation of protective devices.

B. Electrical Tests for Conductors No. 6 and Larger:

1. Insulation Resistance Tests:

a. Test each conductor with respect to ground and to adjacent conductors per IEEE 118 procedures for 1 minute.

b. Evaluate ohmic values by comparison with conductors of same length and type.

c. Investigate values less than 50 megohms.

d. Utilize 1,000V dc megohmmeter for 600V insulated conductors.

2. Continuity test by ohmmeter method to ensure proper cable connections.

END OF SECTION

SECTION 26 05 26

GROUNDING

PART 1 - GENERAL

Provide all electrical equipment as specified in this specification unless otherwise shown on the drawings.

1.1 REFERENCES

A. The following is a list of standards which may be referenced in this section:

1. American National Standards Institute (ANSI): C2, National Electrical Safety Code (NESC).

2. National Fire Protection Association (NFPA): 70, National Electrical Code (NEC).

1.2 SUBMITTALS

A. Shop Drawings:

1. Product Data:

a. Exothermic weld connectors.

b. Mechanical connectors.

1.3 UL COMPLIANCE

A. Materials manufactured within scope of Underwriters Laboratories shall conform to UL Standards and have an applied UL listing mark.

PART 2 - PRODUCTS

2.1 GROUND ROD

A. Material: Copper clad.

B. Diameter: 5/8 inch.

C. Length: 20 feet.

2.2 GROUND CONDUCTORS

A. Bare tinned copper.

2.3 CONNECTORS

A. Exothermic Weld Type:

1. Outdoor Weld: Suitable for exposure to elements or direct burial.

2. Indoor Weld: Utilize low-smoke, low-emission process.

3. Manufacturers:

a. Erico Products, Inc.; Cadweld amd Cadweld Exolon.

b. Thermoweld.

B. Mechanical Type: Split-bolt, saddle, or cone screw type; copper alloy material.

1. Manufacturers:

a. Burndy Corp.

b. Thomas and Betts Co.

2.4 GROUNDING WELLS

A. Ground rod box complete with cast iron riser ring and traffic cover marked GROUND ROD.

B. Manufacturers:

1. Christy Co.; No. G5.

2. Lightning and Grounding Systems, Inc.; I-R Series.

PART 3 - EXECUTION

3.1 GENERAL

A. Grounding shall be in compliance with NFPA 70 and ANSI C2.

B. Ground electrical service neutral at service entrance equipment to supplementary grounding electrodes.

C. Ground each separately derived system neutral to nearest effectively grounded building structural steel member or separate grounding electrode.

D. Bond together system neutrals, service equipment enclosures, exposed non-current-carrying metal parts of electrical equipment, metal raceways, ground conductor in raceways and cables, receptacle ground connections, and metal piping systems.

E. Shielded Power Cables: Ground shields at each splice or termination in accordance with recommendations of splice or termination manufacturer.

F. Shielded Control Cables:

1. Ground shield to ground bus at power supply for analog signal.

2. Expose shield minimum I inch at termination to field instrument and apply heat shrink tube.

3. Do not ground control cable shield at more than one point.

3.2 WIRE CONNECTIONS

A. Ground Conductors: Install in conduit containing power conductors and control circuits above 50 volts.

B. Nonmetallic Raceways and Flexible Tubing: Install an equipment grounding conductor connected at both ends to non current-carrying grounding bus.

C. Connect ground conductors to raceway grounding bushings.

D. Extend and connect ground conductors to ground bus in all equipment containing a ground bus.

E. Connect enclosure of equipment containing ground bus to that bus.

F. Bolt connections to equipment ground bus.

G. Bond grounding conductors to metallic enclosures at each end, and to intermediate metallic enclosures.

H. Junction Boxes: Furnish materials and connect to equipment grounding system with grounding clips mounted directly on box, or with 3/8-inch machine screws.

3.3 MOTOR GROUNDING

A. Extend equipment ground bus via grounding conductor installed in motor feeder raceway; connect to motor frame.

B. Nonmetallic Raceways and Flexible Tubing: Install an equipment grounding conductor connected at both ends to non current-carrying grounding bus.

C. Motors Less Than 10 hp: Furnish mechanical-type terminal connected to conduit box mounting screw.

D. Motors 10 hp and Above: Tap motor frame or equipment housing; furnish mechanical-type terminal connected with minimum 5/16-inch brass threaded stud with bolt and washer.

E. Circuits 20 Amps or Above: Tap motor frame or equipment housing; install solderless terminal with minimum 5/16-inch diameter bolt.

3.4 GROUND RODS

A. Install full length with conductor connection at upper end.

B. Install with connection point below finished grade, unless otherwise shown.

3.5 GROUNDING WELLS

A. Install inside buildings, asphalt, and paved areas.

B. Install riser ring and cover flush with surface.

C. Place 9 inches crushed rock in bottom of each well.

3.6 CONNECTIONS

A. General:

1. Above grade Connections: Use either exothermic weld or mechanical-type connectors.

2. Below grade Connections: Install exothermic weld type connectors.

3. Remove paint, dirt, or other surface coverings at connection points to allow good metal-to-metal contact.

4. Notify ENGINEER prior to backfilling ground connections.

B. Exothermic Weld Type:

1. Wire brush or file contact point to bare metal surface.

2. Use welding cartridges and molds in accordance with manufacturer's recommendations.

3. Avoid using badly worn molds.

4. Mold to be completely filled with metal when making welds.

5. After completed welds have cooled, brush slag from weld area and thoroughly clean joint.

C. Mechanical Type:

1. Apply homogeneous blend of colloidal copper and rust and corrosion inhibitor before making connection.

2. Install in accordance with connector manufacturer's recommendations.

3. Do not conceal mechanical connections.

3.7 METAL STRUCTURE GROUNDING

A. Ground metal sheathing and exposed metal vertical structural elements to grounding system.

B. Bond electrical equipment supported by metal platforms to the platforms.

C. Provide electrical contact between metal frames and railings supporting pushbutton stations, receptacles, and instrument cabinets, and raceways carrying circuits to these devices.

3.8 MANHOLE AND HANDHOLE GROUNDING

A. Install one ground rod inside each.

B. Ground Rod Floor Protrusion: 4 to 6 inches above floor.

C. Make connections of grounding conductors fully visible and accessible.

D. Connect all non current-carrying metal parts, and any metallic raceway grounding bushings to ground rod with No. 6 AWG copper conductor.

3.9 SURGE PROTECTION EQUIPMENT GROUNDING

A. Connect surge arrestor ground terminals to equipment ground bus.

3.10 INSTRUMENT GROUND - SURGE SUPPRESSION

A. Connect all instrument surge protection with #6 insulated copper ground wire (in conduit where above grade) to closest plant ground system

3.11 BONDING

A. Bond to Main Conductor System:

1. All roof mounted ventilators, fans, air handlers, masts, flues, cooling towers, handrails, and other sizeable metal objects.

2. Roof flashing, gravel stops, insulation vents, ridge vents, roof drains, soil pipe vents, and other small metal objects if located within 6 feet of main conductors or another grounded object.

3. Provide air terminals as required.

B. Bond steel columns or major framing members to grounding system per National Electrical Code.

C. Bond each main down conductor to grounding system.

3.12 GROUNDING SYSTEM

A. Grounding Conductor:

1. Completely encircle building structure.

2. Bury minimum 30” below finished grade.

3. Minimum 2 feet distance from foundation walls.

B. Interconnect ground rods by direct-buried copper cables.

C. Connections:

1. Install ground cables continuous between connections.

2. Exothermic welded connections to ground rods, cable trays, structural steel, handrails, and buried and nonaccessible connections.

3. Provide bolted clamp type mechanical connectors for all exposed secondary connections.

4. Use bolded offset parapet bases or through-roof concealed base assemblies for air terminal connections.

5. Provide interconnections with electrical and telephone systems and all underground water and metal pipes.

6. Provide electric service arrestor ground wire to building water main.

END OF SECTION

SECTION 26 05 33

RACEWAYS

PART 1 - GENERAL

Provide all electrical equipment as specified in this specification unless otherwise shown on the drawings.

1.1 REFERENCES

A. The following is a list of standards which may be referenced in this section:

1. American Association of State Highway and Transportation Officials (AASHTO): Division I, Standard Specifications for Highway Bridges, Fourteenth Edition.

2. American National Standards Institute (ANSI):

   a. C80.1, Rigid Steel Conduit-Zinc Coated.

   b. C80.3, Electrical Metallic Tubing-Zinc Coated.

   c. CS0.5, Rigid Aluminum Conduit.

   d. C80.6, Intermediate Metal Conduit (IMC)-Zinc Coated.

3. American Society for Testing and Materials (ASTM):

   a. A123 El, Standard Specification for Zinc-Coated (Galvanized) Coatings on Iron and Steel Products.

   b. C857, Standard Practice for Minimum Structural Design Loading for Underground Precast Concrete Utility Structures.

4. National Electrical Contractor's Association, Inc. (NECA): 5055, Standard of Installation.

5. National Electrical Manufacturers Association (NEMA):

   a. RN 1, Polyvinyl-Chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit and Intermediate Metal Conduit.

   b. TC 2, Electrical Plastic Tubing (EPT) and Conduit (EPC-40 and EPC-80).

c. TC 3, PVC Fittings for Use with Rigid PVC Conduit and Tubing.

d. TC 6, PVC and ABS Plastic Utilities Duct for Underground Installation.

e. VE 1, Metallic Cable Tray Systems.

6. National Fire Protection Association (NFPA): 70, National Electrical Code. (NEC)

7. Underwriters Laboratories, Inc. (UL):

a. 1, Standard for Safety Flexible Metal Conduit.

b. 6, Standard for Safety Rigid Metal Conduit.

c. 360, Standard for Safety Liquid-Tight Flexible Steel Conduit.

d. 514B, Standard for Safety Fittings for Conduit and Outlet Boxes.

e. 514C, Standard for Safety Nonmetallic Outlet Boxes, Flush-Device Boxes, and Covers.

f. 651, Standard for Safety Schedule 40 and 80 PVC Conduit.

g. 651A, Standard for Safety Type EB and Rigid PVC Conduit and HDPF Conduit.

h. 797, Standard for Safety Electrical Metallic Tubing.

i. 870, Standard for Safety Wireways, Auxiliary Gutters, and Associated Fittings.

j. 1242, Standard for Safety Intermediate Metal Conduit.

k. 1660, Standard for Safety Liquid-Tight Flexible Nonmetallic Conduit.

1.2 SUBMITTALS

A. Shop Drawings:

1. Manufacturer's Literature:

a. Rigid galvanized steel conduit.

b. Rigid aluminum conduit.

c. PVC Schedule 40 conduit.

d. Flexible metal, liquid-tight conduit.

e. Flexible, nonmetallic, liquid-tight conduit.

f. Conduit fittings.

g. Wireways.

2. Precast Manholes and Handholes:

a. Dimensional drawings and descriptive literature.

b. Traffic loading calculations.

c. Accessory information.

3. Conduit Layout:

a. Not used.

1.3 UL COMPLIANCE

A. Materials manufactured within scope of Underwriters Laboratories shall conform to UL Standards and have an applied UL listing mark.

PART 2 - PRODUCTS

2.1 CONDUIT AND TUBING

A. Rigid Galvanized Steel Conduit (RGS):

1. Meet requirements of ANSI C80.1 and UL6.

2. Material: Hot-dip galvanized, with chromated protective layer.

B. Electric Metallic Tubing (EMT):

1. Not used.

C. PVC Schedule 80 Conduit:

1. Meet requirements of NEMA TC 2 and UL 651.

2. UL listed for concrete encasement, underground direct burial, concealed or direct sunlight exposure, and 90 degrees C insulated conductors.

D. HDPE Schedule 80 Conduit:

1. HDPE conduit shall be durable and flexible.

2. Continuous lengths on reels

3. Join segments with heat fusion

4. Material: HDPE with inner and outer smooth wall

5. Color: Gray

6. Manufacturers:

a. Duraline

E. Flexible Metal, Liquid-Tight Conduit:

1. UL 360 listed for 105 degrees C insulated conductors.

2. Material: Galvanized steel, with an extruded PVC jacket.

F. Flexible, Nonmetallic, Liquid-Tight Conduit:

1. Material: PVC core with fused flexible PVC jacket.

2. UL 1660 listed for:

a. Dry Conditions: 80 degrees C insulated conductors.

b. Wet Conditions: 60 degrees C insulated conductors.

3. Manufacturers:

a. Carlon; Carflex or X-Flex.

b. T & B; Xtraflex LTC or EFC.

2.2 FITTINGS

A. Rigid Galvanized Steel and Intermediate Metal Conduit:

1. General:

   a. Meet requirements of UL 514B.

   b. Type: Threaded, galvanized. Set screw fittings not permitted.

2. Bushing:

   a. Material: Malleable iron with integral insulated throat, rated for 150 degrees C.

   b. Manufacturers:

      i. Thomas & Betts; Type BIM.

      ii. O.Z./Gedney; Type HB.

3. Grounding Bushing:

   a. Material: Malleable iron with integral insulated throat rated for 150 degrees C, with solderless lugs.

   b. Manufacturers:

      i. Appleton; Series GIB.

      ii. O.Z. Gedney; Type HBLG.

4. Conduit Hub:

   a. Material: Malleable iron with insulated throat.

   b. Manufacturers:

      i. O.Z. Gedney; Series CH.

      ii. T & B; Series 370.

5. Conduit Bodies:

   a. Material: Malleable iron, sized as required by NFPA 70.

   b. Manufacturers (For Normal Conditions):

      i. Appleton; Form 35 threaded Unilets.

      ii. Crouse-Hinds; Form 7 or 8 threaded condulets.

iii. Killark; Series O Electrolets.

c. Manufacturers (For Hazardous Locations):

i. Appleton.

ii. Crouse-Hinds.

iii. Killark.

6. Couplings: As supplied by conduit manufacturer.

7. Conduit Sealing Fitting Manufacturers:

a. Appleton; Type EYF, EYM, or ESU.

b. Crouse-Hinds; Type EYS or EZS.

c. Killark; Type EY or EYS.

8. Drain Seal Manufacturers:

a. Appleton; Type SF.

b. Crouse-Hinds; Type EYD or EZD.

9. Drain/Breather Fitting Manufacturers:

a. Appleton; Type ECDB.

b. Crouse-Hinds; ECD.

10. Expansion Fitting Manufacturers:

a. Deflection/Expansion Movement:

i. Appleton; Type DF.

ii. Crouse-Hinds; Type XD.

b. Expansion Movement Only:

i. Appleton; Type XJ.

ii. Crouse-Hinds; Type XJ.

11. Cable Sealing Fittings:

    a. To form watertight nonslip cord or cable connection to conduit.

    b. For Conductors With OD of 1/2 Inch or Less: Neoprene bushing at connector entry.

    c. Manufacturers:

        i. Crouse-Hinds; CGBS.

        ii. Appleton; CG-S.

B. Electric Metallic Tubing:

    1. Not used.

C. PVC Conduit and Tubing:

    1. Meet requirements of NEMA TC-3.

    2. Type: PVC, slip-on.

D. PVC-Coated Rigid Galvanized Steel Conduit:

    1. Not used.

E. Flexible Metal, Liquid-Tight Conduit:

    1. Metal insulated throat connectors with integral nylon or plastic bushing rated for 105 degrees C.

    2. Insulated throat and sealing O-rings.

    3. Long design type extending outside of box or other device at least 2 inches.

    4. Manufacturer: T & B; Series 5300.

F. Flexible, Nonmetallic, Liquid-Tight Conduit: Meet requirements of UL 514B.

    1. Type: One-piece fitting body, complete with lock nut, O-ring, threaded ferrule, sealing ring, and compression nut.

    2. Manufacturers:

a. Carlon; Type LT.

b. Kellems; Polytuff.

c. T & B; LT Series.

G. Watertight Entrance Seal Device:

1. New Construction:

a. Material: Oversized sleeve, malleable iron body with sealing ring, pressure ring, grommet seal, and pressure clamp.

b. Manufacturer: O.Z./Gedney; Type FSK or WSK, as required.

2. Gored-Hole Application:

a. Material: Assembled dual pressure disks, neoprene sealing ring, and membrane clamp.

b. Manufacturer: O.Z./Gedney; Series CSM.

H. Hazardous Locations: Approved for use in the atmosphere involved.

1. Manufacturer: Crouse-Hinds; Type ECGJH.

I. Corrosive Locations:

1. Material: Rigid galvanized steel.

2. Manufacturers:

a. Robroy Industries.

b. Carlon.

c. Crouse-Hinds.

2.3 ACCESSORIES

A. Duct Bank Spacers:

1. Type: Nonmetallic, interlocking, for multiple conduit sizes.

2. Suitable for all types of conduit.

3. Manufacturer: Underground Device, Inc.; Type WUNPEECE.

B. Identification Devices:

1. Raceway Tags:

a. Material: Permanent, nylon.

b. Shape: Round.

c. Raceway Designation: Pressure stamped, embossed, or engraved.

d. Tags relying on adhesives or taped-on markers not permitted.

2. Warning Tape:

a. Material: Polyethylene, 4-mil gauge.

b. Color: Red.

c. Width: Minimum 6-inch.

d. Designation: Warning on tape that electric circuit is located below tape.

e. Manufacturers:

i. Blackburn, Type RT.

ii. Griffolyn Co.

3. Buried Raceway Marker:

a. Material: Sheet bronze, consisting of double-ended arrows, straight for straight runs and bent at locations where runs change direction.

b. Designation: Incise to depth of 3/32 inch, ELECTRIC CABLES. in letters 1/4-inch high.

c. Minimum Dimension: 1/4-inch thick, 10 inches long, and 3/4-inch wide.

C. Raceway Coating:

1. Material: Bitumastic or plastic tape coating.

2. Manufacturers:

a. Koppers bitumastic; No. 505.

b. Scotchwrap; No. 51, plastic tape.

D. Wraparound Duct Band:

1. Material: Heat-shrinkable, cross-linked polyolefin, precoated with hot-melt adhesive.

2. Manufacturer: Raychem; Type TWDB.

PART 3 - EXECUTION

3.1 GENERAL

A. Conduit and Tubing sizes shown are based on the use of copper conductors. Reference Section 26 05 19, CONDUCTORS.

B. All installed Work shall comply with NECA 5055.

C. Crushed or deformed raceways not permitted.

D. Maintain raceway entirely free of obstructions and moisture.

E. Immediately after installation, plug or cap raceway ends with watertight and dust-tight seals until time for pulling in conductors.

F. Aluminum Conduit: Do not install in direct contact with concrete or earth. Apply two coats of bitumastic paint or install heat shrink tubing to all aluminum conduits where contact with concrete wall or floor slabs.

G. Sealing Fittings: Provide drain seal in vertical raceways where condensate may collect above sealing fitting.

H. Avoid moisture traps where possible. When unavoidable in exposed conduit runs, provide junction box and drain fitting at conduit low point.

I. Group raceways installed in same area.

J. Proximity to Heated Piping: Install raceways minimum 12 inches from parallel runs.

K. Follow structural surface contours when installing exposed raceways. Avoid obstruction of passageways.

L. Run exposed raceways parallel or perpendicular to walls, structural members, or intersections of vertical planes.

M. Block Walls: Do not install raceways in same horizontal course with reinforcing steel.

N. Install watertight fittings in outdoor, underground, or wet locations.

O. Paint threads, before assembly of fittings, of galvanized conduit or IMC installed in exposed or damp locations with zinc-rich paint or liquid galvanizing compound.

P. All metal conduit to be reamed, burrs removed, and cleaned before installation of conductors, wires, or cables.

Q. Do not install raceways in concrete equipment pads, foundations, or beams.

R. Horizontal raceways installed under floor slabs shall lie completely under slab, with no part embedded within slab.

S. Install concealed, embedded, and buried raceways so that they emerge at right angles to surface and have no curved portion exposed.

3.2 INSTALLATION IN CAST-IN-PLACE STRUCTURAL CONCRETE

A. Minimum cover 1-1/2 inches.

B. Provide support during placement of concrete to ensure raceways remain in position.

C. Floor Slabs:

1. Outside diameter of conduit not to exceed one-third of the slab thickness.

2. Separate conduit by minimum six times conduit outside diameter, except at crossings.

3.3 CONDUIT APPLICATION

A. Diameter: Minimum 3/4 inch.

B. Exposed:

1. Rigid galvanized steel.

C. Underground:

1. PVC schedule 80

D. Directional Bored:

1. HDPE schedule 80

3.4 CONNECTIONS

A. For motors, wall or ceiling mounted fans and unit heaters, dry type transformers, electrically operated valves, instrumentation, and other equipment where flexible connection is required to minimize vibration:

1. Conduit Size 4 Inches or Less: Flexible metal, liquid-tight conduit.

2. Conduit Size Over 4 Inches: Nonflexible.

3. Corrosive Areas: Flexible, nonmetallic, liquid or PVC-coated metallic, liquid-tight.

4. Length: 18-inch minimum, 60-inch maximum, of sufficient length to allow movement or adjustment of equipment.

B. Lighting Fixtures in Dry Areas: Flexible steel, nonliquid-tight conduit.

C. Outdoor Areas, Process Areas Exposed to Moisture, and Areas Required to be Oiltight and Dust-Tight: Flexible metal, liquid-tight conduit.

D. Transition From Underground or Concrete Embedded to Exposed: Rigid galvanized steel conduit with two coats of bitumastic or plastic tape coating.

E. Under Equipment Mounting Pads: Rigid galvanized steel conduit.

F. Exterior Light Pole Foundations: Rigid galvanized steel conduit.

3.5 PENETRATIONS

A. Make at right angles, unless otherwise shown.

B. Notching or penetration of structural members, including footings and beams, not permitted.

C. Fire-Rated Walls, Floors, or Ceilings: Fire-stop openings around penetrations to maintain fire-resistance rating.

D. Apply single layer of wraparound duct band to all metallic conduit in contact with concrete floor slabs to a point 2 inches above concrete surface.

E. Concrete Walls, Floors, or Ceilings (Aboveground): Provide nonshrink grout dry-pack, or use watertight seal device.

F. Entering Structures:

1. General: Seal raceway at the first box or outlet with minimum 2 inches thick expandable plastic compound to prevent the entrance of gases or liquids from one area to another.

2. Concrete Roof or Membrane Waterproofed Wall or Floor:

a. Provide a watertight seal.

b. Without Concrete Encasement: Install watertight entrance seal device on each side.

c. With Concrete Encasement: Install watertight entrance seal device on the accessible side.

d. Securely anchor malleable iron body of watertight entrance seal device into construction with one or more integral flanges.

e. Secure membrane waterproofing to watertight entrance seal device in a permanent, watertight manner.

3. Heating, Ventilating, and Air Conditioning Equipment:

a. Penetrate equipment in area established by manufacturer.

b. Terminate conduit with flexible metal conduit at junction box or condulet attached to exterior surface of equipment prior to penetrating equipment.

c. Seal penetration with silicone type sealant.

4. Corrosive-Sensitive Areas:

a. Seal all conduit passing through chlorine and ammonia room walls.

b. Seal all conduit entering equipment panel boards and field panels containing electronic equipment.

c. Seal penetration with silicone type sealant.

5. Existing or Precast Wall (Underground): Core drill wall and install a watertight entrance seal device.

6. Nonwaterproofed Wall or Floor (Underground, without Concrete Encasement):

a. Provide Schedule 40 galvanized pipe sleeve, or watertight entrance seal device.

b. Fill space between raceway and sleeve with an expandable plastic compound on each side.

7. Manholes and Handholes:

a. Metallic Raceways: Provide insulated grounding bushings.

b. Nonmetallic Raceways: Provide bell ends flush with wall.

c. Install such that raceways enter as near as possible to one end of wall, unless otherwise shown.

3.6 SUPPORT

A. Support from structural members only, at intervals not exceeding NFPA 70 requirements, and in any case not exceeding 10 feet. Do not support from piping, pipe supports, or other raceways.

B. Multiple Adjacent Raceways: Provide ceiling trapeze. For trapeze-supported conduit, allow 40 percent extra space for future conduit.

C. Provide and attach wall brackets, strap hangers, or ceiling trapeze as follows:

1. Wood: Wood screws.

2. Hollow Masonry Units: Toggle bolts.

3. Concrete or Brick: Expansion shields, or threaded studs driven in by powder charge, with lock washers and nuts.

4. Steelwork: Machine screws.

D. Nails or wooden plugs inserted in concrete or masonry for attaching raceway not permitted. Do not weld raceways or pipe straps to steel structures. Do not use wire in lieu of straps or hangers.

3.7 BENDS

A. Install concealed raceways with a minimum of bends in the shortest practical distance with long radius elbows.

B. Make bends and offsets of longest practical radius.

C. Install with symmetrical bends or cast metal fittings.

D. Avoid field-made bends and offsets, but where necessary, make with acceptable hickey or bending machine. Do not heat metal raceways to facilitate bending.

E. Make bends in parallel or banked runs from same center or centerline with same radius so that bends are parallel.

F. Factory long radius elbows may be installed in parallel or banked raceways if there is change in plane of run, and raceways are same size.

G. PVC Conduit:

1. Bends 30-Degree and Larger: Provide factory-made long radius elbows.

2. 90-Degree Bends: Provide rigid steel long radius elbows.

3. Use manufacturer's recommended method for forming smaller bends.

H. Flexible Conduit: Do not make bends that exceed allowable conductor bending radius of cable to be installed or that significantly restricts conduit flexibility.

3.8 EXPANSION/DEFLECTION FITTINGS

A. Provide on all raceways at all structural expansion joints, and in long tangential runs.

B. Provide expansion/deflection joints for 50 degrees F maximum temperature variation.

C. Install in accordance with manufacturer's instructions.

3.9 PVC CONDUIT

A. Solvent Welding:

1. Provide manufacturer recommended solvent; apply to all joints.

2. Install such that joint is watertight.

B. Adapters:

1. PVC to Metallic Fittings: PVC terminal type.

2. PVC to Rigid Metal Conduit or IMC: PVC female adapter.

C. Belied-End Conduit: Bevel the unbelled end of the joint prior to joining.

3.10 PVC-COATED RIGID STEEL CONDUIT

A. Not used.

3.11 TERMINATION AT ENCLOSURES

A. Cast Metal Enclosure: Provide manufacturer's premolded insulating sleeve inside metallic conduit terminating in threaded hubs.

B. Sheet Metal Boxes, Cabinets, and Enclosures:

1. Rigid Galvanized Conduit:

a. Provide one lock nut each on inside and outside of enclosure.

b. Install grounding bushing.

c. Provide bonding jumper from grounding bushing to equipment ground bus or ground pad; if neither ground bus nor pad exists, connect jumper to lag bolt attached to metal enclosure.

d. Install insulated bushing on ends of conduit where grounding is not required.

e. Provide insulated throat when conduit terminates in sheet metal boxes having threaded hubs.

2. Electric Metallic Tubing: Provide gland compression, insulated connectors.

3. Flexible Metal Conduit: Provide two screw type, insulated, malleable iron connectors.

4. Flexible, Nonmetallic Conduit: Provide nonmetallic, liquid-tight strain relief connectors.

5. PVC Schedule 40 Conduit: Provide PVC terminal adapter with lock nut.

C. Motor Control Center, Switchboard, Switchgear, and Free-Standing Enclosures: Terminate conduit entering bottom with grounding bushing; provide a grounding jumper extending to equipment ground bus or grounding pad.

3.12 UNDERGROUND RACEWAYS

A. Grade: Maintain minimum grade of 4 inches in 100 feet, either from one manhole, handhole, or pull box to the next, or from a high point between them, depending on surface contour.

B. Cover: Maintain minimum 2-foot cover above conduit and concrete encasement, unless otherwise shown.

C. Make routing changes as necessary to avoid obstructions or conflicts.

D. Couplings: In multiple conduit runs, stagger so that couplings in adjacent runs are not in same transverse line.

E. Union type fittings not permitted.

F. Spacers:

1. Provide preformed, nonmetallic spacers, designed for such purpose, to secure and separate parallel conduit runs in a trench or concrete encasement.

2. Install at intervals not greater than that specified in NFPA 70 for support of the type conduit used, but in no case greater than 10 feet.

G. Support conduit so as to prevent bending or displacement during backfilling or concrete placement.

H. Installation with Other Piping Systems:

1. Crossings: Maintain minimum 12-inch vertical separation.

2. Parallel Runs: Maintain minimum 12-inch separation.

3. Installation over valves or couplings not permitted.

I. Metallic Raceway Coating: At couplings and joints and along entire length, apply wraparound duct band with one-half tape width overlap to obtain two complete layers.

J. Concrete Encasement: As specified in Section 03310, CAST-IN-PLACE CONCRETE.

1. Concrete Color: Gray, dust top of concrete ductbank with powdered red concrete dye before concrete sets and trowel dry onto top of ductbank.

K. Backfill:

1. As specified in Section 02221, TRENCH BACKFILL.

2. Do not backfill until inspected by ENGINEER.

3.13 EMPTY RACEWAYS

A. Provide permanent, removable cap over each end.

B. Provide PVC plug with pull tab for underground raceways with end bells.

C. Provide nylon pull cord.

D. Identify, as specified in Paragraph IDENTIFICATION DEVICES, with waterproof tags attached to pull cord at each end, and at intermediate pull point.

3.14 IDENTIFICATION DEVICES

A. Raceway Tags:

1. Identify origin and destination.

2. Install at each terminus, near midpoint, and at minimum intervals of every 50 feet of exposed Raceway, whether in ceiling space or surface mounted.

3. Provide nylon strap for attachment.

B. Warning Tape: Install approximately 12 inches above underground or concrete-encased raceways. Align parallel to, and within 12 inches of, centerline of runs.

C. Buried Raceway Markers:

1. Install at grade to indicate direction of underground raceways.

2. Install at all bends and at intervals not exceeding 100 feet in straight runs.

3. Embed and secure to top of concrete base, sized 14 inches long, 6 inches wide, and 8 inches deep; top set flush with finished grade.

3.15 PROTECTION OF INSTALLED WORK

A. Protect products from effects of moisture, corrosion, and physical damage during construction.

B. Provide and maintain manufactured watertight and dust-tight seals over all conduit openings during construction.

C. Touch up painted conduit threads after assembly to cover nicks or scars.

END OF SECTION

SECTION 26 36 23

AUTOMATIC TRANSFER SWITCH

PART 1 - GENERAL

1.01 SCOPE

A. The Contractor shall furnish and install Automatic Transfer Switches (ATS) having the ratings, features/accessories and enclosures as specified herein and as shown on the contract drawings.

1.02 REFERENCES

A. The following is a list of standards which may be referenced in this section:

1. American National Standards Institute (ANSI):
   a. C37.90. I, Surge Withstand Capacity (SWC) Tests for Protective Relays and Relay Systems.
   b. Z55.1, Gray Finishes for Industrial Apparatus and Equipment.

2. National Electrical Manufacturers Association (NEMA):
   a. ICS 1, General Standards for Industrial Control and Systems.
   b. ICS 2, Standards for Industrial Control Devices, Controllers, and Assemblies.
   c. ICS 6, Enclosures for Industrial Control and Systems.
   d. 250, Enclosures for Electrical Equipment (1,000 Volts Maximum).

3. National Fire Protection Association (NFPA): 70, National Electrical Code (NEC).

4. Underwriters Laboratories, Inc. (UL): 1008, Automatic Transfer Switches.

5. Uniform Building Code (UBC): Section 2312, Earthquake Requirements.

1.03 SUBMITTALS-FOR REVIEW/APPROVAL

A. The following information shall be submitted to the Engineer:

1. Master drawing index

2. Dimensioned outline drawing

3. Schematic diagram

4. Component list

5. Conduit entry/exit locations

6. Assembly ratings including:
   a. Short-circuit rating
   b. Voltage
   c. Continuous current.

B. Submit four (4) copies of the above information.

1.04 SUBMITTALS-FOR INFORMATION

A. When requested by the Engineer the following product information shall be submitted:

1. Descriptive bulletins

2. Product data sheets.

1.05 SUBMITTALS-FOR CLOSEOUT

A. The following information shall be submitted for record purposes:

1. Final (as-built) drawings and information for items listed in Section 1.3.

2. Wiring diagrams

3. Certified production test reports

4. Installation information

5. Seismic certification and equipment anchorage details.

B. Submit four (4) copies of the above information.

1.06 QUALITY ASSURANCE

A. The manufacturer of the automatic transfer switch shall be the manufacturer of the major components within the assembly.

B. For the equipment specified herein, the manufacturer shall be ISO 9000, 9001 or 9002 certified.

C. The manufacturer of this equipment shall have produced similar electrical equipment for a minimum period of five (5) years. When requested by the Engineer, an

acceptable list of installations with similar equipment shall be provided demonstrating compliance with this requirement.

1.07 REGULATORY REQUIREMENTS

A. A certificate of compliance with UL 1008 must be submitted for the transfer switches to be supplied. The certificate is not required if the manufacturer's published data submitted and approved reflect a UL 1008 listing. Proof of UL 1008 listing does not, however, relieve the Contractor of compliance with other provisions of this specification.

1.08 DELIVERY, STORAGE AND HANDLING

A. Equipment shall be handled and stored in accordance with manufacturer's instructions. One (1) copy of these instructions shall be included with the equipment at time of shipment.

1.09 OPERATION AND MAINTENANCE MANUALS

A. Four (4) copies of the equipment and maintenance manuals shall be provided.

B. Operation and maintenance manuals shall include the following information:

1. Instruction books and/or leaflets

2. Recommended renewal parts list

3. Drawings and information required by section 1.06.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Lakeshore

B. Eaton

C. No “alternate” or substitute products will be considered.

2.02 RATINGS

A. Refer to electrical drawing for ATS interrupting rating.

B. The voltage rating of the transfer switch shall be no less than the system voltage rating. The continuous current rating of the transfer switch shall be no less than the maximum continuous current requirements of the system.

C. The transfer switch shall be 100% equipment rated for continuous duty as shown on the drawings and shall conform to the applicable requirements of UL 1008 for emergency system total load.

D. All pilot devices and relays shall be of the industrial type with self-cleaning contacts and rated 10-amperes.

E. The automatic transfer switches shall be fully rated to protect all types of loads, inductive and resistive, from loss of continuity of power, without derating, either open or enclosed.

2.03 CONSTRUCTION

A. The transfer switches shall consist of completely enclosed contact assemblies and a separate control logic panel. The contact assemblies shall be operated by a non-fused motor operator or stored energy mechanism and be energized only momentarily during transfer, providing inherently double throw switching action. Control power for all transfer operations shall be derived from the line side of the source to which the load is being transferred.

B. Transfer switches shall be capable of being operated manually under full load conditions. Manual operation shall be accomplished via a permanently affixed manual operator or integrally mounted pushbutton operators located on the face of the contact assemblies. Removable manual operating handles and handles which move in the event that electrical operators should suddenly become energized while performing a manual transfer operation are not acceptable. The manual operator shall provide the same contact-to-contact transfer time as provided under normal automatic operation to prevent possible flashovers from switching the main contacts slowly. In addition, provisions shall be made to allow disengagement of the electrical operator during manual operation.

C. Each transfer switch shall be positively interlocked both mechanically and electrically to prevent simultaneous closing of both sources under either automatic or manual operation. Main contacts shall be mechanically locked in position in both normal and emergency positions. A neutral position shall not be possible under normal electrical operation unless a delayed transition accessory is required for switching highly inductive loads. Each transfer switch shall have a manual neutral position for load circuit maintenance. A transfer switch position indicator shall be visible from the front of the switch to show to which source the transfer switch is connected.

D. All three-phase four-wire transfer switches used on systems with ground fault equipment shall be true four-pole switched neutral type with all four poles for each source being fully rated and connected to a common shaft. The fourth (neutral) pole contacts shall be of identical construction as, and operate simultaneously with, the main power contacts. Add-on or overlapping neutral contacts are not acceptable.

E. Inspection and replacement of all separate arcing contacts (moving and stationary) shall be possible from the front of the transfer switch.

F. An electronic sensing and control logic panel shall be separately mounted from the power switching portion of the transfer switch. The two sections shall be connected by control cables with plug-in connectors. The control section shall be capable of being disconnected from the power section for maintenance purposes.

G. The logic circuit shall utilize electronic components mounted on printed circuit boards to accomplish functions such as timing, time delays, and voltage and frequency monitoring. LEDs shall be furnished to indicate the operation of each solid-state function. Modifications shall be available for field installation without voiding the UL label.

H. The transfer switch shall be equipped with a voltage selection plug making it suitable for operation on standard voltages from 208 through 600 volts AC, 50 or 60 hertz, by placing the voltage selection plug in the proper voltage receptacle.

I. Transfer switches applied as service entrance switches shall be provided with overcurrent trip units and a service entrance label. An external key-operated selector switch shall be provided to disconnect the power supplies. Indicators shall be provided to show the availability of each source as well as breakers in a tripped or disconnected position. Provide a neutral disconnect link for three-pole solid neutral switches, and a neutral-to-ground main bonding jumper for all switches to meet UL service entrance requirements. Ground fault protection shall be provided for all switches rated 1000 amperes or more applied on 480Y/277-volts AC systems in accordance with NEC Article 230-95.

2.04 DRAWOUT DESIGN

A. Not used.

2.05 WIRING/TERMINATIONS

A. Terminal blocks shall conform to NEMA ICS 4. Terminal facilities shall be arranged for entrance of external conductors from the top or bottom of the enclosure. The main transfer switch terminals shall be suitable for the termination of conductors shown on the plans.

2.06 SEQUENCE OF OPERATION

A. The transfer switch shall automatically transfer its load circuit to an emergency or alternate power supply upon failure of its normal or preferred source.

B. Upon loss of phase-to-phase voltage of the normal source to 80% of nominal, and after a time delay, adjustable from 0.5 to 15 seconds, to override momentary dips and/or outages, a 10-ampere, 30-Vdc contact shall close to initiate starting of the emergency or standby source power plant. Transfer to the alternate source shall take place immediately upon attainment of 90% of rated voltage and frequency of that source. For switches not involving engine generator sets as power plants, transfer shall occur after an adjustable time delay of 1 to 60 seconds to override momentary dips and outages.

C. When the normal source has been restored to 90% of rated voltage, and after a time delay, adjustable from 0.5 to 32 minutes (to ensure the integrity of the normal power source), the load shall be retransferred to the normal source.

D. A time delay, adjustable from 0.5 to 32 minutes, shall delay shutdown of the emergency or standby power source after retransfer to allow the generator to run unloaded for cool-down, after which the generator shall be automatically shut down.

E. If the emergency or standby power should fail while carrying the load, transfer to the normal power supply shall be made instantaneously upon restoration of the normal source to satisfactory conditions.

2.07 ENCLOSURE

A. Each transfer switch shall be provided in enclosures suitable for locations as indicated on the drawings and as described below.

1. NEMA 1 surface or flush mounted general purpose enclosures primarily intended for indoor use.

2. NEMA 12 dust-tight enclosures intended for indoor use primarily to provide protection against circulating dust, falling dirt and dripping noncorrosive liquids.

3. NEMA 3R raintight enclosures intended for outdoor use primarily to provide protection against rain, sleet and damage from external ice formation.

4. NEMA 4 and NEMA 4X (316 stainless steel) watertight enclosures intended for indoor or outdoor use primarily to provide protection against windblown dust and rain, splashing rain, hose-directed water, and damage from external ice formation.

B. Refer to the electrical drawing for type of enclosure.

2.08 FINISH

A. NEMA 1, 12 or 3R enclosures shall be painted with the manufacturer's standard painting procedures to ensure suitability for environmental conditions as referenced in the plans. Color shall be light gray ANSI 61. NEMA 4 or 4X shall be stainless steel, non-painted.

2.09 ACCESSORIES

A. The following logic and options shall be supplied:

1. The logic of the transfer switch shall function via a microprocessor. Where shown on the drawings provide electronic transfer device equal to Cutler-Hammer type IQ Transfer. The set points shall be field adjustable without the use of special tools. The switch shall have a multi-tap voltage selection plug for ease of voltage adjustment in the field. LED lights shall be included on the exterior of the switch to show:
   Normal Source Available
   Emergency Source Available
   Normal Source Connected
   Emergency Source Connected
   Load Energized.
   A digital readout shall display each option as it is functioning. Readouts shall display actual line-to-line voltage, line frequency and timers. When timers are functioning, the microprocessor shall display the timer counting down. All set points can be re-programmed from the front of the switch when the switch is in the program mode. A test pushbutton shall be included as part of the microprocessor.

   a. Provide a time delay transfer from the normal power source to the emergency power source (0 seconds to 30 minutes). This option does not effect the engine start circuit.

   b. Provide a timer to override a momentary power outage or voltage fluctuation (0 seconds to 120 seconds).

   c. Provide a time delay transfer from the emergency power source to the normal power source (0 seconds to 30 minutes).

   d. Provide a timer to allow the generator to run unloaded after re-transfer to the normal power supply (1 second to 30 minutes).

   e. Provide single-phase under voltage and under frequency sensing on the emergency power source. Voltage shall be factory set at 90% pickup and 80% dropout. Frequency sensing shall be set at 58-hertz pickup and 56-hertz dropout.

f. Provide a pilot light to indicate that the switch is in the normal position as an integral part of the microprocessor.

g. Provide a pilot light to indicate that the switch is in the emergency position as an integral part of the microprocessor.

h. Provide a pilot light to indicate that the normal power is available as an integral part of the microprocessor.

i. Provide a pilot light to indicate that the emergency power is available as an integral part of the microprocessor.

j. Provide auxiliary relay contacts that are energized when the power is available on the normal source.

k. Provide auxiliary relay contacts that are energized when the power is available on the emergency source.

B. The following features shall be provided:

1. Time delay normal to emergency, adjustable

2. Time delay emergency to normal, adjustable

3. Green pilot light to indicate switch in normal position and red pilot light to indicate switch in emergency position

4. White pilot lights marked "Normal Source" and "Emergency Source" to indicate that respective source voltages are available

5. Tripped position indicating lights for both sources

6. Relay auxiliary contacts (2 NO and 2 NC) to indicate transfer switch position and the availability of each source.

C. When the alternate source is an engine generator, the following features shall also be provided:

1. Time delay engine start, adjustable

2. Time delay engine cool off, adjustable

3. Engine start contact

4. Frequency/voltage relay for emergency source, frequency adjustable from 45 to 60 Hz and voltage fixed at 90% pickup, 70% dropout

5. Delayed transition time delay, adjustable from 0 to 120 seconds, to allow disconnection of the load during transfer in either direction to prevent excessive inrush currents due to out-of-phase switching of large inductive loads

6. Four-position selector switch permitting four (4) modes of transfer switch operation: TEST (simulates normal power outage), AUTO (standard automatic operation), OFF (de-energizes control relays and opens the engine start circuit for maintenance purposes), ENGINE START (retains transfer switch in normal position and initiates a testing of the engine start circuit). Furnish white pilot light for OFF indication.

D. A transfer switch position indicator shall be visible from the front of the switch.

E. Provide preferred source selector (source 1 or source 2, or none).

2.10 COMMUNICATIONS

A. Where shown on the drawings, provide in the transfer switch a microprocessor-based unit capable of communicating phase and ground current, peak demand, present demand, energy consumption, contact status, and mode of trip.

B. Provide communications capability to monitor the normal and emergency switch position and normal and emergency source availability. Additional communications capability shall be provided to bypass time delays during transfer or retransfer, and to initiate engine start for no-load or load testing of the transfer switch from a remote master computer.

PART 3 - EXECUTION

3.01 FACTORY TESTING

A. The following standard factory tests shall be performed on the equipment provided under this section. All tests shall be in accordance with the latest version of UL and NEMA standards.

1. Insulation check to ensure the integrity of insulation and continuity of the entire system

2. Visual inspection to ensure that the switch matches the specification requirements and to verify that the fit and finish meet quality standards

3. Mechanical tests to verify that the switch's power sections are free of mechanical hindrances

4. Electrical tests to verify the complete electrical operation of the switch and to set up time delays and voltage sensing settings of the logic

B. The manufacturer shall provide three (3) certified copies of factory test reports.

3.02 INSTALLATION

A. Install in accordance with manufacturer’s instructions.

END OF SECTION

SECTION 31 00 00

EARTHWORK

PART 1 - GENERAL

1.1 THE REQUIREMENT

A. The CONTRACTOR shall perform all earthwork indicated and required for construction of the work, complete and in place, in accordance with the Contract Documents.

1.2 CONTRACTOR SUBMITTALS

A. The Contractor shall submit samples of all materials proposed to be used in the work in accordance with the requirements in **Section 01 33 00 - Submittals**. Sample sizes shall be as determined by the testing laboratory.

PART 2 - PRODUCTS

2.1 SUITABLE FILL AND BACKFILL MATERIAL REQUIREMENTS

A. General: Fill, backfill, and embankment materials shall be suitable selected or processed clean, fine earth, rock, or sand, free from grass, roots, brush, or other vegetation.

B. Fill and backfill materials to be placed within six (6) inches of any structure or pipe shall be free of rocks or unbroken masses of earth materials having a maximum dimension larger than three (3) inches.

C. Suitable Materials: Materials not defined as unsuitable below are defined as suitable materials and may be used in fills, backfilling, and embankment construction subject to the indicated limitations. In addition, when acceptable to the ENGINEER, some of the material listed as unsuitable may be used when thoroughly mixed with suitable material to form a stable composite.

D. Suitable materials may be obtained from on-site excavations, may be processed on-site materials, or may be imported. If imported materials are required to meet the quantity requirements of the project, the CONTRACTOR shall provide the imported materials at no additional expense to the OWNER, unless a unit price item is included for imported materials in the bidding schedule.

E. The following types of suitable materials are defined:

1. Type A (¾- inch minus granular backfill): Crushed rock or gravel, and sand with the gradation requirements below. The material shall have a minimum sand equivalent value of 28 and a minimum R-value of 78. If the sand equivalent value exceeds 35, the R-value requirement is waived.

Sieve Size	Percentage Passing
3/4-Inch	100
No. 4	30-50
No. 200	0-10

2. Type B (Class I crushed stone): Manufactured angular, crushed stone, crushed rock, or crushed slag with the following gradation requirements. The material shall have a minimum sand equivalent value of 75.

Sieve Size	Percentage Passing
3/4-Inch	100
No. 4	30-50
No. 200	0-5

3. Type C (sand backfill): Sand with 100 percent passing a ⅜-inch sieve, at least 90 percent passing a Number 4 sieve, and a sand equivalent value not less than 30.

4. Type D: Not used.

5. Type E (pea gravel backfill): Crushed rock or gravel with 100 percent passing a ½-inch sieve and not more than 10 percent passing a Number 4 sieve.

6. Type F (coarse drainrock): Crushed rock or gravel meeting the following gradation requirements:

Sieve Size	Percentage Passing
2-inch	100
1-1/2-inch	90-100
1-inch	20-55
3/4-inch	0-15
No. 200	0-3

7. Type G (aggregate base): Crushed rock aggregate base material of such nature that it can be compacted readily by watering and rolling to form a firm, stable base for pavements. At the option of the CONTRACTOR, the grading for either the 1½-inch maximum size or ¾-inch maximum size

gradation shall be used. The sand equivalent value shall be not less than 22, and the material shall meet the following gradation requirements:

	Percentage Passing	
1-1/2-inch Sieve Size	Max. 3/4-inch Gradation	Max. Gradation
2-inch	100	-
1-1/2-inch	90-100	-
1-inch	-	100
3/4-inch	50-85	90-100
No. 4	25-45	35-55
No. 3	10-25	10-30
No. 2	2-9	2-9

8. Type H (graded drainrock): Drainrock shall be crushed rock or gravel, durable and free from slaking or decomposition under the action of alternate wetting or drying. The material shall be uniformly graded and shall meet the following graduation requirements:

Sieve Size	Percentage Passing
1-inch	100
3/4-inch	90-100
3/8-inch	40-100
No. 4	25-40
No. 8	18-33
No. 30	5-15
No. 50	0-7
No. 200	0-3

The drainrock shall have a sand equivalent value not less than 75. The area of the drainrock immediately beneath hydraulic structures shall be stabilized to provide a firm, smooth surface upon which to construct reinforced concrete floor slabs. The CONTRACTOR shall use, at its option, one (1) of the asphalt types listed below:

	Type 1	Type 2	Type 3
Designation	SC-800	SC-250	RS-1
Spray Temperature (^{o}F)	175-255	165-200	70-120
Coverage (gal/sq yd)	0.50	0.50	0.50

If the surface remains tacky, sufficient sand shall be applied to absorb the excess asphalt.

9. Type I: Any other suitable material as defined herein.

10. Type J (cement-treated backfill): Material which consists of Type H material, or any mixture of Types B, C, G, and H materials which has been cement-treated so that the cement content of the material is not less than five (5) percent by weight when tested in accordance with ASTM D 2901 - Test Method for Cement Content of Freshly Mixed Soil Cement. The ultimate compressive strength at 28 days shall be not less than 400 psi when tested in accordance with ASTM D 1633 - Test Method for Compressive Strength of Molded Soil - Cement Cylinders.

11. Type K (topsoil): Stockpiled topsoil material obtained at the site by removing soil to a depth not exceeding two (2) feet. Removal of the topsoil shall be done after the area has been stripped of vegetation and debris.

12. Type L (controlled low strength material): Controlled low strength material, if required.

13. Type M (aggregate subbase): Crushed rock aggregate subbase material that can be compacted readily by watering and rolling to form a firm stable base. The sand equivalent value shall be not less than 18 and the material shall meet the following gradation requirements:

Sieve Size	Percentage Passing
3-inch	100
2-1/2-inch	87-100
No. 4	35-95
No. 200	0-29

14. Type N (trench plug): Low permeable fill material, a non-dispersible clay material having a minimum plasticity index of 10.

2.2 UNSUITABLE MATERIAL

A. Unsuitable materials include the materials listed below.

1. Soils which, when classified under ASTM D 2487, fall in the classifications of Pt, OH, CH, MH, or OL.

2. Soils which cannot be compacted sufficiently to achieve the density specified for the intended use.

3. Materials that contain hazardous or designated waste materials including petroleum hydrocarbons, pesticides, heavy metals, and any material which may be classified as hazardous or toxic according to applicable regulations.

4. Soils that contain greater concentrations of chloride or sulfate ions, or have a soil resistivity or pH less than the existing on-site soils.

5. Topsoil, except as allowed below.

2.3 USE OF FILL, BACKFILL, AND EMBANKMENT MATERIAL TYPES

A. The CONTRACTOR shall use the types of materials as designated herein for all required fill, backfill, and embankment construction hereunder.

B. Where these Technical Specifications conflict with the requirements of any local agency having jurisdiction or with the requirements of a pipe material manufacturer, the ENGINEER shall be immediately notified. In case of conflict between types of pipe embedment backfills, the CONTRACTOR shall use the agency specified backfill material if that material provides a greater degree of structural support to the pipe, as determined by the ENGINEER. In case of conflict between types of trench or final backfill types, the CONTRACTOR shall use the agency-specified backfill material if that material provides the greater in-place density after compaction.

C. Fill and backfill types shall be used in accordance with the following provisions:

1. Embankment fills shall be constructed of Type I material, as defined herein, or any mixture of Type I and Type A through Type H materials.

2. Pipe zone backfill, as defined under Paragraph 3.4 "Pipe and Utility Trench Backfill" below, shall consist of the following materials for each pipe material listed below.

a. Mortar coated pipe, concrete pipe, and uncoated ductile iron pipe shall be provided Type A or B pipe bedding and embedment backfill material.

b. Coal tar enamel coated pipe, polyethylene encased pipe, tape wrapped pipe, and other non-mortar coated pipe shall be backfilled with Type C bedding and embedment zone backfill material.

c. Plastic pipe and vitrified clay pipe shall be backfilled with Type B bedding and embedment zone backfill material. Vitrified clay pipe shall be backfilled with Type B material to the top of the pipe zone.

d. Where pipelines are installed on grades exceeding four (4) percent, and where backfill materials are graded such that there is less than 10 percent passing a Number 4 sieve, trench plugs of Type J, L, or N material shall be provided at maximum intervals of 200 feet unless indicated otherwise.

3. Trench zone backfill for pipelines as defined under Paragraph 3.4 "Pipe and Utility Trench Backfill" shall be Type I backfill material or any of Types A through H backfill materials or any mixture thereof, except:

   a. Type K material may be used for trench zone backfill in agricultural areas unless otherwise shown or specified.

4. Final backfill material for pipelines under paved areas, as defined under "Pipe and Utility Trench Backfill" shall be Type G backfill material. Final backfill under areas not paved shall be the same material as that used for trench backfill, except that Type K material shall be used for final backfill in agricultural areas unless otherwise indicated.

5. Trench backfill and final backfill for pipelines under structures shall be the same material as used in the pipe zone, except where concrete encasement is required by the Contract Documents.

6. Aggregate base materials under pavements shall be Type G material constructed to the thicknesses indicated. Aggregate subbase shall be Type M material.

7. Backfill around structures shall be Type I material, or Types A through Type H materials, or any mixture thereof, except as shown.

8. Backfill used to replace pipeline trench over-excavation shall be a layer of Type F material with a six (6) inch top filter layer of Type E material or filter fabric to prevent migration of fines for wet trench conditions or the same material as used for the pipe zone backfill if the trench conditions are not wet.

9. The top six (6) inches of fill on reservoir roofs, embankment fills around hydraulic structures, and all other embankment fills shall consist of Type K material, topsoil.

10. Filter fabric shall be Mirafi 140 N, Mirafi 700X**,** or equal.

2.4 MATERIALS TESTING

A. All soils testing of samples submitted by the CONTRACTOR will be done by a testing laboratory of the CONTRACTOR’s choice approved by the OWNER at the CONTRACTOR’s expense. At its discretion, the ENGINEER may request that the CONTRACTOR supply samples for testing of any material used in the work.

B. Particle size analysis of soils and aggregates will be performed using ASTM D 422 - Method for Particle-Size Analysis of Soils.

C. Determination of sand equivalent value will be performed using ASTM D 2419 - Test Method for Sand Equivalent Value of Soils and Fine Aggregate.

D. Unified Soil Classification System: References in this Section to soil classification types and standards shall have the meanings and definitions indicated in ASTM D 2487 - Classification of Soils for Engineering Purposes. The CONTRACTOR shall be bound by all applicable provisions of said ASTM D 2487 in the interpretation of soil classifications.

E. The testing for chloride, sulfate, resistivity, and pH will be done in accordance with accepted State laboratory standards and procedures.

PART 3 - EXECUTION

3.1 EXCAVATION - GENERAL

A. General: Except when specifically provided to the contrary, excavation shall include the removal of all materials of whatever nature encountered, including all obstructions of any nature that would interfere with the proper execution and completion of the work. The removal of said materials shall conform to the lines and grades indicated or ordered. Unless otherwise indicated, the entire construction site shall be stripped of all vegetation and debris, and such material shall be removed from the site prior to performing any excavation or placing any fill. The CONTRACTOR shall furnish, place, and maintain all supports and shoring that may be required for the sides of the excavations. Excavations shall be sloped or otherwise supported in a safe manner in accordance with applicable State safety requirements and the requirements of OSHA Safety and Health Standards for Construction (29CFR1926).

3.2 REMOVAL AND EXCLUSION OF WATER

A. The CONTRACTOR shall remove and exclude water, including stormwater, groundwater, irrigation water, and wastewater, from all excavations. Dewatering wells, wellpoints, sump pumps, or other means shall be used to remove water and continuously maintain groundwater at a level at least two (2) feet below the bottom of excavations before the excavation work begins at each location. Water shall be removed and excluded until backfilling is complete and all field soils testing has been completed.

B. The CONTRACTOR shall dispose of water from the work in a suitable manner without damage to adjacent property. CONTRACTOR shall be responsible for obtaining any permits that may be necessary to dispose of water. No water shall be drained into work built or under construction without prior consent of the ENGINEER. Water shall be filtered using an approved method to remove sand and fine-sized soil particles before disposal into any drainage system.

3.3 STRUCTURE, ROADWAY, AND EMBANKMENT EXCAVATION

A. Excavation Beneath Structures and Embankments: Except where otherwise indicated for a particular structure or ordered by the ENGINEER, excavation shall be carried to the grade of the bottom of the footing or slab. Where indicated or ordered, areas beneath structures or fills shall be over-excavated. The subgrade areas beneath embankments shall be excavated to remove not less than the top six (6) inches of native material and where such subgrade is sloped, the native material shall be benched. When such over-excavation is indicated, both over-excavation and subsequent backfill to the required grade shall be performed by the CONTRACTOR. When such over-excavation is not indicated but is ordered by the ENGINEER, such over-excavation and any resulting backfill will be paid for under a separate unit price bid item if such bid item has been established; otherwise payment will be made in accordance with a negotiated price. After the required excavation or over-excavation has been completed, the exposed surface shall be scarified to a depth of six (6) inches, brought to optimum moisture content, and rolled with heavy compaction equipment to obtain 95 percent of maximum density.

B. Excavation Beneath Paved Areas: Excavation under areas to be paved shall extend to the bottom of the aggregate base or subbase, if such base is called for; otherwise it shall extend to the paving thickness. After the required excavation has been completed, the top twelve inches of exposed surface shall be scarified, brought to optimum moisture content, and rolled with heavy compaction equipment to obtain 95 percent of maximum density. The finished subgrade shall be even, self-draining, and in conformance with the slope of the finished pavement. Areas that could accumulate standing water shall be regraded to provide a self-draining subgrade.

C. Notification of ENGINEER: The CONTRACTOR shall notify the ENGINEER at least three (3) days in advance of completion of any structure excavation and shall allow the ENGINEER a review period of at least one (1) day before the exposed foundation is scarified and compacted or is covered with backfill or with any construction materials.

3.4 PIPELINE AND UTILITY TRENCH EXCAVATION

A. General: Unless otherwise indicated or ordered, excavation for pipelines and utilities shall be open-cut trenches with widths as indicated.

B. Trench Bottom: Except when pipe bedding is required, the bottom of the trench shall be excavated uniformly to the grade of the bottom of the pipe bedding. Excavations for pipe bells and welding shall be made as required.

C. Open Trench: The maximum amount of open trench permitted in any one (1) location shall be 500 feet, or the length necessary to accommodate the amount of pipe installed in a single day, whichever is greater. All trenches shall be fully backfilled at the end of each day or, in lieu thereof, shall be covered by heavy steel

plates adequately braced and capable of supporting vehicular traffic in those locations where it is impractical to backfill at the end of each day. **Trenching shall be performed in a manner to allow continuous access to the residential lots.** The above requirements for backfilling or use of steel plate will be waived in cases where the trench is located further than 100 feet from any travelled roadway or occupied structure. In such cases, however, barricades and warning lights meeting safety requirements shall be provided and maintained.

D. Trench Over-Excavation: Where trenches are indicated to be over-excavated, excavation shall be to the depth indicated, and backfill shall be installed to the grade of the bottom of the pipe bedding.

E. Over-Excavation: When ordered by the ENGINEER, whether indicated on the Drawings or not, trenches shall be over-excavated beyond the depth and/or width shown. Such over-excavation shall be to the dimensions ordered. The trench shall then be backfilled to the grade of the bottom of the pipe bedding. Over-excavation less than six (6) inches below the limits on the Drawings shall be done at no increase in cost to the OWNER. When the over-excavation ordered by the ENGINEER is six (6) inches or greater below the limits shown, or wider, additional payment will be made to the CONTRACTOR. Said additional payment will be made under separate unit price bid items for over-excavation if such bid items have been established; otherwise payment will be made in accordance with a negotiated price.

F. Where pipelines are to be installed in embankments, fills, or structure backfills, the fill shall be constructed to a level at least one foot above the top of the pipe before the trench is excavated.

G. If a moveable trench shield is used during excavation operations, the trench width shall be wider than the shield so that the shield is free to be lifted and then moved horizontally without binding against the trench sidewalls. If the trench walls cave in or slough, the trench shall be excavated as an open excavation with sloped sidewalls or with trench shoring, as indicated and as required by the pipe structural design.

3.5 OVER-EXCAVATION NOT ORDERED OR INDICATED

A. Any over-excavation carried below the grade ordered or indicated, shall be backfilled to the required grade with the indicated material and compaction. Such work shall be performed by the CONTRACTOR at no additional cost to the OWNER.

3.6 EXCAVATION IN LAWN AREAS

A. Where excavation occurs in lawn areas, the sod shall be carefully removed, dampened, and stockpiled to preserve it for replacement. Excavated material may be placed on the lawn; provided, that a drop cloth or other suitable method is employed to protect the lawn from damage. The lawn shall not remain covered for

more than 72 hours. Immediately after completion of backfilling and testing of the pipeline, the sod shall be replaced and lightly rolled in a manner so as to restore the lawn as near as possible to its original condition. CONTRACTOR shall provide new sod in kind if stockpiled sod has not been replaced within 72 hours.

3.7 EXCAVATION IN VICINITY OF TREES

A. Except where trees are indicated to be removed, trees shall be protected from injury during construction operations. No tree roots over two (2) inches in diameter shall be cut without express permission of the ENGINEER. Trees shall be supported during excavation by any means previously reviewed by the ENGINEER.

3.8 EXPLOSIVES AND BLASTING

A. Blasting is not permitted.

3.9 DISPOSAL OF EXCESS EXCAVATED MATERIAL

A. The CONTRACTOR shall remove and dispose of all excess excavated material at a site selected by the CONTRACTOR and reviewed by the ENGINEER.

B. The CONTRACTOR shall obtain all required permits, landowner and agency approvals for disposal of excess material, and pay all costs associated with the removal and disposal.

3.10 BACKFILL - GENERAL

A. Backfill shall not be dropped directly upon any structure or pipe. Backfill shall not be placed around or upon any structure until the concrete has attained sufficient strength to withstand the loads imposed. Backfill around water retaining structures shall not be placed until the structures have been tested, and the structures shall be full of water while backfill is being placed.

B. Except for drainrock materials being placed in over-excavated areas or trenches, backfill shall be placed after all water is removed from the excavation, and the trench sidewalls and bottom have been dried to a moisture content suitable for compaction.

C. If a moveable trench shield is used during excavation, pipe installation and backfill operations, the shield shall be moved by lifting the shield free of the trench bottom or backfill and then moving the shield horizontally. The CONTRACTOR shall not drag trench shields along the trench causing damage or displacement to the trench sidewalls, the pipe, or the bedding and backfill.

D. Immediately prior to placement of backfill materials, the bottoms and sidewalls of trenches and structure excavations shall have all loose sloughing, or caving soil and

rock materials removed. Trench sidewalls shall consist of excavated surfaces that are in a relatively undisturbed condition before placement of backfill materials.

3.11 PLACING AND SPREADING OF BACKFILL MATERIALS

A. Backfill materials shall be placed and spread evenly in layers not exceeding 18 inches. When compaction is achieved using mechanical equipment, the layers shall be evenly spread so when compacted each layer shall not exceed six (6) inches in thickness.

B. During spreading, each layer shall be thoroughly mixed as necessary to promote uniformity of material in each layer. Pipe zone backfill materials shall be manually spread around the pipe so that when compacted the pipe zone backfill will provide uniform bearing and side support.

C. Where the backfill material moisture content is below the optimum moisture content, water shall be added before or during spreading until the proper moisture content is achieved.

D. Where the backfill material moisture content is too high to permit the specified degree of compaction the material shall be dried until the moisture content is satisfactory.

3.12 COMPACTION OF FILL, BACKFILL, AND EMBANKMENT MATERIALS

A. Each layer of Types A, B, C, G, H, I, and K backfill materials as defined herein, where the material is graded such that at least 10 percent passes a No. 4 sieve, shall be mechanically compacted to the indicated percentage of density. Equipment that is consistently capable of achieving the required degree of compaction shall be used and each layer shall be compacted over its entire area while the material is at the required moisture content.

B. Each layer of Type E, F, and J backfill materials shall be compacted by means of at least two (2) passes from a flat plate vibratory compactor. When such materials are used for pipe zone backfill, vibratory compaction shall be used at the top of the pipe zone or at vertical intervals of 24 inches, whichever is the least distance from the subgrade.

C. Flooding, ponding, or jetting shall not be used for fill on roofs, backfill around structures, backfill around reservoir walls, for final backfill materials, or aggregate base materials.

D. Equipment weighing more than 10,000 pounds shall not be used closer to walls than a horizontal distance equal to the depth of the fill at that time. Hand operated power compaction equipment shall be used where use of heavier equipment is impractical or restricted due to weight limitations.

E. Backfill around and over pipelines that is mechanically compacted shall be compacted using light, hand operated, vibratory compactors and rollers. After completion of at least two (2) feet of compacted backfill over the top of pipeline, compaction equipment weighing no more than 8,000 pounds may be used to complete the trench backfill.

F. Compaction Requirements: The following compaction test requirements shall be in accordance with ASTM D 1557 – Standard Test Methods for Laboratory Compaction Characteristics of Soil using Modified Effort, Using a 10 pound Rammer and 18 inch drop for Type A, B, C, G, H, I, K, M, and N materials and in accordance with ASTM D 4253 - Test Methods for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table, and D 4254 - Test Methods for Minimum Index Density and Unit Weight of Soils and Calculation of Relative Density, for Type B, E, F, and J materials. Where agency or utility company requirements govern, the highest compaction standards shall apply.

Location or Use of Fill	Percentage of Maximum Density	Percentage of Relative Density
Pipe embedment backfill for flexible pipe	95	70
Pipe bedding and over-excavated zones under bedding for flexible pipe, including trench plugs	95	70
Pipe embedment backfill for rigid pipe	90	55
Pipe zone backfill portion above embedment for rigid pipe	95	70
Pipe bedding and over-excavated zones under bedding for rigid pipe	95	70
Final backfill, beneath paved areas or Structures	98	70
Final backfill, not beneath paved areas or structures	90	55
Trench zone backfill, beneath paved areas and structures, including trench plugs	98	70

Trench zone backfill, not beneath paved areas or structures, including trench plugs	95	70
Embankments and fills	90	55
Embankments and fills beneath paved areas or structures	98	70
Topsoil (Type K material)	80	N.A.
Aggregate base or subbase (Type G or M material)	95	N.A.

3.13 PIPE AND UTILITY TRENCH BACKFILL

A. Pipe Zone Backfill

1. The pipe zone is defined as that portion of the vertical trench cross-section lying between a plane six (6) inches below the bottom surface of the pipe and a plane at a point six (6) inches above the top surface of the pipe. The bedding is defined as that portion of pipe zone backfill material between the trench subgrade and the bottom of the pipe. The embedment is defined as that portion of the pipe zone backfill material between the bedding and a level line as indicated.

2. After compacting the bedding the CONTRACTOR shall perform a final trim using a stringline for establishing grade, such that each pipe section when first laid will be continually in contact with the bedding along the extreme bottom of the pipe. Excavation for pipe bells and welding shall be made as required.

3. The pipe zone shall be backfilled with the indicated backfill material. The CONTRACTOR shall exercise care to prevent damage to the pipeline coating, cathodic bonds, and the pipe itself during the installation and backfill operations.

4. If a moveable trench shield is used during backfill operations the shield shall be lifted to a location above each layer of backfill material prior to compaction of the layer. The CONTRACTOR shall not displace the pipe or backfill while the shield is being moved.

B. Trench Zone Backfill: After the pipe zone backfills have been placed, backfilling of the trench zone may proceed. The trench zone is defined as that portion of the vertical trench cross-section lying between a plane six (6) inches above the top

surface of the pipe and a plane at a point 18 inches below the finished surface grade, or if the trench is under pavement, 18 inches below the roadway subgrade.

C. Final Backfill: Final backfill is all backfill in the trench cross-sectional area within 18 inches of finished grade, or if the trench is under pavement, all backfill within 18 inches of the roadway subgrade.

3.14 FILL AND EMBANKMENT CONSTRUCTION

A. The area where a fill or embankment is to be constructed shall be cleared of all vegetation, roots and foreign material. Following this, the surface shall be moistened, scarified to a depth of six (6) inches, and rolled or otherwise mechanically compacted. Embankment and fill material shall be placed and spread evenly in approximately horizontal layers. Each layer shall be moistened or aerated, as necessary. Unless otherwise approved by the ENGINEER, each layer shall not exceed six (6) inches of compacted thickness. The embankment, fill, and the scarified layer of underlying ground shall be compacted to 95 percent of maximum density.

B. When an embankment or fill is to be made and compacted against hillsides or fill slopes steeper than 4:1, the slopes of hillsides or fills shall be horizontally benched to key the embankment or fill to the underlying ground. A minimum of 12 inches normal to the slope of the hillside or fill shall be removed and re-compacted as the embankment or fill is brought up in layers. Material thus cut shall be re-compacted along with the new material at no additional cost to the OWNER. Hillside or fill slopes 4:1 or flatter shall be prepared in accordance with Paragraph A, above.

C. Where embankment or structure fills are constructed over pipelines, the first four (4) feet of fill over the pipe shall be constructed using light placement and compaction equipment that does not damage the pipe. Heavy construction equipment shall maintain a minimum distance from the edge of the trench equal to the depth of the trench until at least four (4) feet of fill over the pipe has been completed.

3.15 FIELD TESTING

A. General: All field soils testing will be done by a testing laboratory of the CONTRACTOR's choice approved by the OWNER at the CONTRACTOR's expense.

B. Where soil material is required to be compacted to a percentage of maximum density, the maximum density at optimum moisture content will be determined in accordance with Method C of ASTM D 1557. Where cohesionless, free draining soil material is required to be compacted to a percentage of relative density, the calculation of relative density will be determined in accordance with ASTM D 4253 and D 4254. Field density in-place tests will be performed in accordance with ASTM D 1556 - Test Method for Density of Soil in Place by the Sand-Cone ASTM

D 2922 - Test Methods for Density of Soil and Soil-Aggregate in Place By Nuclear Methods (Shallow Depth), or by such other means acceptable to the ENGINEER.

C. In case the test of the fill or backfill show non-compliance with the required density, the CONTRACTOR shall accomplish such remedy as may be required to insure compliance. Subsequent testing to show compliance shall be by a testing laboratory approved by the OWNER and shall be at no additional cost to the OWNER.

D. The CONTRACTOR shall provide test trenches and excavations including excavation, trench support, and groundwater removal for the field soils testing operations. The trenches and excavations shall be provided at the locations and to the depths required.

E. Compaction tests shall be performed at minimum intervals of 200 feet horizontally and 24 inches vertically for pipe trenches, unless otherwise required by the ENGINEER. Compaction tests beneath structures, concrete pads and roadways shall be performed at minimum intervals of one (1) test every 150 square feet, horizontally, unless otherwise required by the ENGINEER.

END OF SECTION

SECTION 31 10 00

SITE PREPARATION

PART 1 - GENERAL

1.1 REQUIREMENTS

A. The work of this Section includes all those measures required during the CONTRACTOR's initial move onto the sites to protect existing fences, houses and associated improvements, streets, and utilities down slope of construction areas from damage due to boulders, trees or other objects dislodged during the construction process; clearing, grubbing and stripping; and regrading of certain areas to receive embankment fill.

1.2 SITE INSPECTION

A. Prior to moving onto the project sites, the CONTRACTOR shall visit and inspect the site conditions and review maps of the existing pipeline routes and facilities delineating the property and right-of-way lines.

PART 2 - PRODUCTS

2.1 SAFETY AND NOISE BARRIERS

A. If the proximity of existing structures will require construction of an appropriate safety barrier such as temporary fencing, berms, acoustic barriers, or similar facilities, the CONTRACTOR shall prepare a submittal to the ENGINEER with drawings that define the proposed safety measures prior to any construction activity.

PART 3 - EXECUTION

3.1 PRIMARY SITE ACCESS

A. The CONTRACTOR shall develop any necessary access to the site, including barrier facilities to be installed at the beginning of construction in order to prohibit entry of unauthorized persons.

B. Utility Interference: Where existing utilities interfere with the work of this Section, the work shall be stopped and the ENGINEER notified of such interference before proceeding in accordance with the Contract Documents.

3.2 CLEARING, GRUBBING, AND STRIPPING

A. All construction areas shall be cleared of grass and weeds to at least a depth of six inches and cleared of structures, concrete or masonry debris, trees, logs, upturned stumps, loose boulders, and any other objectionable material of any kind which would interfere with the performance or completion of the work, create a hazard to safety, impair the work's subsequent usefulness, or obstruct its operation. Loose boulders within 10 feet of the top of cut lines shall be removed from the site. Trees and other natural vegetation outside the actual lines of construction shall be protected from damage during construction, as directed by the ENGINEER.

B. Within the limits of clearing, the areas below the natural ground surface shall be grubbed to a depth necessary to remove all stumps, roots, buried logs, and all other objectionable material. Septic tanks, drain fields and connection lines, and any other underground structures, debris or waste shall be totally removed if they are found on the site. All objectionable material from the clearing and grubbing process shall be removed from the site and wasted in approved safe locations.

C. Unless otherwise shown or specified, native trees larger than three inches in diameter at the base shall not be removed without the ENGINEER's approval. The removal of any trees, shrubs, fences, or other improvements outside of rights-of-way as deemed necessary by the CONTRACTOR, shall be arranged with the OWNER, removed, and replaced by the CONTRACTOR at its sole expense.

3.3 OVER EXCAVATION, REGRADING, AND BACKFILL UNDER FILL AREAS

A. After the fill areas have been cleared, grubbed, and excavated as specified, the areas to receive fill will require over excavation, regrading, and backfill, consisting of the removal and/or stockpiling of undesirable soils. The ground surface shall be recontoured for keying the fill and removing severe or abrupt changes in the topography of the site. The over excavated volumes to a level of one (1) foot below the existing ground contours shall be backfilled.

END OF SECTION

SECTION 31 11 00

CLEARING AND GRUBBING

PART 1 - GENERAL

1.1 SCOPE

A. The work to be performed consists of the clearing of or the clearing and grubbing of the area along the alignment of construction designated on the Contract Drawings.

1. Clearing - Where clearing only is required it shall consist of the cutting and removal of all trees, stumps, shrubs, brush, logs, hedges, and the removal and subsequent replacement of all fences, posts, mail boxes, newspaper boxes, plant life, landscaping, grass and other loose or projecting material from the designated area. Also included is the removal of asphalt and concrete pavement, sidewalks, bicycle paths and other such transportation corridors constructed of shellrock, stone block or other materials.

2. Clearing and Grubbing - Clearing and grubbing shall consist of clearing the surface of the ground of the designated areas of all trees, stumps, down timber, logs, snags, brush, undergrowth, hedges, grass, weeds, rocks, fences, structures, surface and subsurface debris and rubbish of any nature, natural obstructions or such material which, in the opinion of the ENGINEER, is unsuitable, including grubbing of stumps, roots, matted roots, foundations, and disposal from the project of all spoil materials resulting from clearing and grubbing, by burning or otherwise.

1.2 RELATED SECTIONS

A. **Section 02 00 00: Existing Utilities and Underground Structures.**

B. **Section 31 23 16.13: Trenching, Backfilling and Compaction**.

1.3 REFERENCES

A. FDOT Standard Specifications for Road and Bridge Construction.

1.4 REGULATORY REQUIREMENTS

A. Conform to all federal, state, regional and local codes applicable to the removal, transportation and disposal of debris.

B. Coordinate all clearing work with utility companies having facilities within the immediate area.

PART 2 - MATERIALS

2.1 MATERIALS

A. All materials required to be brought to the site for filling of holes caused by grubbing or otherwise shall be consistent with materials of the surrounding area.

PART 3 - EXECUTION

3.1 SCHEDULE

A. The CONTRACTOR shall schedule clearing and grubbing work a satisfactory distance in advance of the pipe laying operations. All scheduling shall be coordinated with the ENGINEER.

3.2 PREPARATION

A. Existing plant life and features designated to remain are to be tagged or clearly identified in an acceptable manner.

3.3 PROTECTION

A. Protect existing utilities and other improvements to remain in place from damage. Protect survey bench marks and existing structures from damage or displacement.

B. Protect existing trees, shrubs, bushes, brush, hedges, other plant growth and features designated to remain after work in the immediate area is complete. Avoid unnecessary cutting, breaking or skinning of roots, skinning or bruising of bark, and smothering by stockpiling construction materials or excavated materials.

C. Restore damaged improvements to their original condition. Provide temporary guards as necessary to protect trees and vegetation to be left standing.

D. Water trees and other vegetation to remain within the limits of the Contract Work as required to maintain their health during the course of construction.

E. Protect roots over 1½ inch diameter cut during construction. Coat the cut faces with an emulsified asphalt, or other acceptable coating, formulated for use on damaged plant tissues. Temporarily cover exposed roots with wet burlap to prevent roots from drying out.

3.4 SPOIL MATERIALS

A. All materials to be disposed of by removal from the site shall be disposed of by the CONTRACTOR at the CONTRACTOR's sole expense. The CONTRACTOR shall obtain and file with the ENGINEER, permission obtained in writing from the property OWNER for the use of private property for this purpose. In no case shall any discarded materials be left in windrows or piles adjacent to or within the project limits. The manner and location of disposal of materials shall be subject to review by the ENGINEER and shall not create an unsightly or objectionable view.

3.5 CLEARING

A. Clear the area of all objectionable materials. Trees unavoidably falling outside the area of work must be cut up, removed and disposed of in a satisfactory manner. Trees, stumps and brush shall be cut to a height of not more than twelve (12) inches above the ground. The grubbing of stumps and roots is required.

B. Fences shall be removed and disposed of as directed by the ENGINEER. Fence wire shall be neatly rolled and the wire and posts stored on the project if they are to be used again, or stored at a designated location if the fence is to remain the property of the OWNER.

C. Clear all areas required for access to the site and execution of the work or where otherwise noted on the Contract Drawings. Remove paving, curbs, sidewalks and paths where required and replace where specified.

3.6 CLEARING AND GRUBBING

A. In areas designated to be cleared and grubbed, all stumps, roots, buried logs, rocks, brush, grass and other unsatisfactory materials shall be removed.

B. All holes remaining after the grubbing operation in embankment areas shall have the sides broken down to flatten out the slopes, and shall be filled with acceptable material, moistened and properly compacted in layers to the density required. The same construction procedure shall be applied to all holes remaining after grubbing in excavation areas where the depth of holes exceeds the depth of the proposed excavation.

C. Carefully and cleanly cut roots and branches of trees indicated to be left standing, only where such roots and branches obstruct the new construction.

D. Strip topsoil to whatever depths encountered in a manner to prevent intermingling with the underlying subsoil or other objectionable material. Remove heavy growths of grass from areas before stripping.

E. Where trees are indicated to be left standing, stop topsoil stripping a sufficient distance away to prevent damage to the main root system.

F. Fill depressions caused by clearing and grubbing operations with satisfactory soil material. Place fill material in horizontal layers not exceeding six (6) inches loose depth and thoroughly compact to a density equal to adjacent undisturbed ground.

3.7 REMOVAL

A. Remove debris, rock and extracted plant life from the site and dispose of appropriately.

END OF SECTION

SECTION 31 22 19

FINISH GRADING

PART 1 - GENERAL

1.1 WORK INCLUDED

A. The CONTRACTOR shall supply, place, compact and roll finish grade materials prior to landscaping work.

B. Finish grade sub-soil.

C. Cut out areas to receive stabilizing base course materials for paving and sidewalks.

D. Place, finish grade and compact topsoil.

1.2 RELATED WORK

A. **Section 31 25 00: Temporary Erosion and Sedimentation Control**.

B. **Section 31 23 16.13: Trenching, Backfilling and Compaction**.

C. **Section 32 92 23: Sod**.

1.3 PROTECTION

A. The CONTRACTOR shall prevent damage to existing fences, trees, landscaping, natural features, survey bench marks, pavement, utility lines and sprinkler systems. Any damage to such items shall be corrected by the CONTRACTOR at no expense to the OWNER.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Topsoil shall be friable loam, free of subsoil, roots, grass, excessive amounts of weeds, stones and foreign matter, with an acidity range (pH) of 5.5 to 7.5, containing a minimum of four (4) percent and a maximum of 25 percent organic matter. Use topsoil stockpiled on site if conforming to these requirements, or as directed by the ENGINEER.

PART 3 - EXECUTION

3.1 SUB-SOIL PREPARATION

A. Rough grade sub-soil to allow for a maximum amount of natural settlement and compaction. Eliminate uneven areas and low spots. Remove debris, roots, branches, stones and other items larger than two (2) inches in size. Remove sub-soil contaminated with petroleum products.

B. Cut out areas which are to receive stabilizing base to sub-grade elevation for paving and sidewalks.

C. Bring sub-soil to required levels, profiles and contours. Make changes in grade gradual. Blend slopes in to level areas.

D. Slope grade away from buildings a minimum of four (4) inches in 10 feet, unless indicated otherwise on the Drawings or as directed by the ENGINEER.

3.2 PLACING TOPSOIL

A. Place topsoil in the area where seeding, sodding and planting is to be performed. Place to the following minimum depths, up to finished grade elevations:

1. Six (6) inches for seeded areas (Not Used).

2. Five (5) inches for sodded areas.

3. 24 inches for shrub beds.

4. 18 inches for flower beds.

B. Use topsoil in a dry state. Place during dry weather.

C. Fine grade topsoil eliminating rough and low areas to ensure positive drainage. Maintain levels, profiles and contours of subgrades.

D. Remove stones, roots, grass, weeds, debris and other foreign material when spreading.

E. Manually spread topsoil around trees, plants, buildings and other structures to prevent damage which may be caused by grading equipment. Lightly compact placed topsoil.

3.3 SURPLUS MATERIAL

A. Remove surplus sub-soil and topsoil from the site. Leave stockpile areas and the entire job site clean and raked, ready to receive landscaping.

END OF SECTION

SECTION 31 23 16.13

TRENCHING BACKFILLING AND COMPACTION

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Furnish labor, materials and equipment to excavate for all underground piping and conduit.

B. Place and compact granular beds and fills over pipelines and conduits.

C. Dewater excavations as required to maintain dry conditions.

D. In order to avoid existing operational utilities, it may be necessary for pipe to be laid up to twelve (12) inches deeper than the cover specified. At such time the CONTRACTOR is not allowed extra compensation for additional excavation involved, whether the utilities were indicated on the Drawings or not.

E. Density tests for determination of the specified compaction shall be made by a testing laboratory approved by the ENGINEER.

1.2 RELATED WORK

A. **Section 31 23 19: Dewatering**.

1.3 SITE COMPACTION TESTING

A. Testing of compacted fill materials is required in accordance with these Technical Specifications.

B. If results of tests taken during the progress of the work indicate compacted materials do not meet specified requirements, such defective work will be removed, replaced and re-tested as directed by the ENGINEER and at the CONTRACTOR's sole expense.

C. Compacted fill is to be tested before proceeding with the placement of surface materials.

1.4 PROTECTION

A. Protect trees, hedges, shrubs, lawns, areas to receive plantings, rock out-croppings and other features remaining as part of the final landscaping.

B. Protect survey bench marks and existing structures, roads, sidewalks, paving and curbs against damage from vehicular or foot traffic. Install and maintain proper bridging, planking and to provide access to buildings. Maintain access to streets and driveways.

C. Protect excavations by shoring, bracing, sheet piling underpinning, or by other methods, as required to prevent cave-ins or loose soil from falling into excavations.

D. Underpin or otherwise support adjacent structures which may be damaged by excavation work. This includes other utilities.

E. Notify the ENGINEER of any unexpected sub-surface conditions. Discontinue work in the area until the ENGINEER provides notification to resume work.

PART 2 - PRODUCTS

2.1 BEDDING AND FILL MATERIALS

A. Bedding Materials: Provide granular material, 100 percent passing a No. 4 sieve, free of organic matter and compacted to 95 percent density. Use a minimum of twelve inches of bedding material as measured from the bottom of the pipe bell to natural earth. Bedding material shall support the pipe as shown in the details of the Drawings.

B. Selected Backfill: After pipe joints have been inspected and given preliminary approval by the ENGINEER, and sufficient time has elapsed for setting of joints, if necessary, backfilling shall be performed, together with tamping, until fill is placed to an elevation at least one foot above the top of the pipe bell. During this initial stage of backfilling, approved granular materials or loose free soil from lumps, clods or stones shall be deposited in layers approximately six (6) inches thick and compacted by manually operated machine tampers actuated by compressed air, or by other suitable means. Tampers and machines shall be suitable for the work and subject to approval by the ENGINEER prior to use.

C. Backfill Material: Furnish excavated material, free from roots and rocks larger than 3½ inches in size and building debris.

D. Fill Under Landscaped Areas: Provide material free from alkalis, salts and petroleum products. Use sub-soil excavated from the site only if it conforms to the specified requirements.

PART 3 - EXECUTION

3.1 PREPARATION AND LAYOUT

A. Establish the limits of excavations by area and elevation. Identify datum elevation.

B. Set lines and levels. Maintain survey benchmarks, monuments and other reference points.

C. Clear the site of all trees, shrubs, paving and objectionable material which interfere with the prosecution of the work. Vegetation not interfering with the construction shall be protected from damage.

3.2 UTILITIES

A. Before starting excavation operations, establish the location and extent of underground utilities existing in the area of work.

B. Notify the ENGINEER if utility lines which are in the way of the excavation are uncovered.

C. Protect active utility services uncovered by the excavation.

D. Remove abandoned utility lines from areas of excavation. Cap, plug or seal such lines as directed by the ENGINEER and identify at grade.

E. Accurately locate and record the location of abandoned utility lines and active utility lines that are re-routed, re-located or extended on Project Record Documents.

F. Accurately locate and record the location on Project Record Documents of active utility lines whose locations are not accurately reflected on the Drawings.

3.3 TRENCHING

A. Ensure that trenching does not interfere with normal 45 degree bearing splay of any building foundation.

B. Excavate in accordance with lines and grades shown on the Drawings or specified in these Technical Specifications.

C. Cut trenches sufficiently wide to enable safe and proper installation of pipe and to allow for thorough inspection. Trim and shape the trench bottom and leave it free of irregularities, lumps and projections. Excavate whatever substances are encountered to the dimensions and depths specified or shown on the Drawings.

D. Do not disturb soil within the branch spread of existing trees or shrubs that are to remain. If it is necessary to excavate through roots, perform work by hand and cut roots with a sharp axe.

E. When complete, notify the ENGINEER for inspection of excavations. Correct unauthorized excavations as directed, at no cost to the OWNER.

F. Pipe bedding shall be the proper material and shall extend a minimum of four (4) inches below the bottom of the pipe and shall be compacted to 98% per AASHTO T-180.

G. Where encountered in the trench bed, rock shall be excavated to a depth of ½ of the pipe diameter, but in no case less than six (6) inches below the bottom of the pipe. All undercut trench excavations shall be backfilled and tamped with suitable materials and compacted to 98% per AASHTO T-180.

H. Density testing of pipe bedding shall occur every 400 feet.

I. Keep pipe laying operations as close to the excavation operation as possible.

J. All trench excavations shall comply with OSHA Standards.

K. The CONTRACTOR shall provide all trench and structural bracing, sheeting or shoring necessary to construct and protect the excavation, existing utilities, structures and private property as required. Sheeting shall be removed or cut off by the CONTRACTOR during backfilling. A sheeting/shoring plan signed and sealed by a Florida Professional Engineer shall be submitted prior to commencing Work.

3.4 DEWATERING

A. Keep trenches dry. Provide necessary dewatering equipment including wellpoints, pumps, piping and temporary drains.

B. Do not discharge drainage water into municipal sewers without municipal approval. Ensure water does not contain unacceptable levels of suspended solids.

C. Direct surface drainage away from excavated areas in such a manner as to not create a nuisance to adjacent property or public thoroughfares.

D. Control the grading in and adjacent to excavations to prevent water from running into excavated areas or onto adjacent properties or into public thoroughfares.

E. Furnish and operate suitable pumps to keep excavations free of water until piping has been placed and backfilling is complete.

F. Noise Abatement: The CONTRACTOR shall furnish, install, and maintain throughout the course of the work, mufflers, noise-control enclosures, or other noise control methods, measures, and features on and around all dewatering pumps and their prime movers such that steady noise emanating from this equipment does not exceed the permissible sound levels defined in the local County ordinances.

3.5 BACKFILLING

A. Do not start backfilling until piping has been inspected by the ENGINEER.

B. Maintain trenches free of debris, wood, rocks over 3½ inches in diameter and water.

C. Backfill as early as possible after pipe installation to allow maximum time for natural settlement and compaction. Backfill on both sides of the pipe simultaneously.

D. After backfill has reached a point one foot above the top of the pipe, a variation in the procedure of the placement and amount of compaction of fill may be permitted by the ENGINEER, depending upon the location of the work and the danger from subsequent settlement, as follows:

E. Backfill requirements shall match the trench details shown on the Contract Drawings.

F. Density testing of backfill shall occur every 400 feet and at each lift.

END OF SECTION

SECTION 31 23 19

DEWATERING

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Furnish all permits, labor, equipment, and materials, and perform dewatering as required to ensure that all work is performed in the dry.

B. The CONTRACTOR shall not discharge water from dewatering operations in any manner that will:

1. Adversely affect the water quality of adjoining water bodies.

2. Violate federal, state or local laws and regulations.

3. Allow discharge to flow onto private property.

4. Hamper the movement of traffic.

5. Damage portions of the work previously constructed.

1.2 RELATED WORK

A. **Section 31 23 16.13: Trenching, Backfilling and Compaction**.

PART 2 – PRODUCTS

Not Used.

PART 3 - EXECUTION

3.1 CONTRACTOR shall submit proposed method for dewatering pipe trenches for review by the ENGINEER prior to instituting any such operations. Methods may include wellpoints, sump pumps, bedding rock or other methods approved by the ENGINEER. If a dewater sock method is used, the sock must be grouted in place when work is complete. Wellpoint holes must be grouted or sand wash backfilled.

3.2 CONTRACTOR shall provide all labor, materials, tools and equipment necessary to properly control the quality of the discharge from dewatering operations.

3.3 All dewatering shall be accomplished by the use of sanded well points and other techniques deemed necessary by the CONTRACTOR to properly dewater the trench excavations.

3.4 Noise Abatement: The CONTRACTOR shall furnish, install, and maintain throughout the course of the work, mufflers, noise-control enclosures, or other noise control methods, measures, and features on and around all dewatering pumps and their prime movers such that steady noise emanating from this equipment does not exceed the permissible sound levels defined in the local County ordinances.

END OF SECTION

SECTION 31 23 23.33

FLOWABLE FILL

PART 1 – GENERAL

1.1 THE SUMMARY

A. The CONTRACTOR shall provide Controlled Low Strength Material (CLSM), complete and in place, in accordance with the Contract Documents.

B. CLSM shall be placed where indicated and may be used, if the ENGINEER approves, for the following purposes:

1. Normal CLSM with high slump, non-segregating consistency that readily flows and fills voids and difficult to reach places: pipe zone fill, trench zone fill, pipe abandonment, structure backfill, and structure cavity fill.

2. Foundation CLSM is used where higher early strengths are required and future excavation is not likely to be required.

1.2 DEFINITIONS

A. Flowable Fill: is defined as Controlled Low Strength Material or CLSM.

1.3 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

A. Furnish submittals in accordance with Section 01 33 00 – Submittals.

B. FDOT Standard Specifications for Road and Bridge Construction - Section 121

1.4 CONTRACTOR SUBMITTALS:

A. CLSM mix designs which show the proportions and gradations of materials proposed for each type of CLSM indicated. Each mix design shall be accompanied by independent laboratory test results of the indicated properties.

B. If the CONTRACTOR proposes to provide lower strength CLSM with aggregates that do not conform to ASTM C 33 - Concrete Aggregate, Shop Drawings shall include a testing program that will be used to control the variability of the aggregates. The testing program shall be acceptable to the ENGINEER.

1.5 QUALITY ASSURANCE

A. Testing will be performed by a testing laboratory selected by CONTRACTOR, except as otherwise indicated in the Contract Documents.

B. If tests of the CLSM show non-compliance with the specifications, the CONTRACTOR shall make changes as may be required to achieve compliance. Performing and paying for subsequent testing to show compliance shall be the CONTRACTOR's responsibility.

C. Correlation Tests

1. The CONTRACTOR shall perform a field correlation test for each mix of CLSM used in pipe zone, trench zone, or backfill used in amounts greater than 100 cubic yards or when CLSM is required to support traffic or other live loads on the fill less than 7 days after placing CLSM.

2. Laboratory and field tests shall be performed on samples taken from the same CLSM batch mix. Tests shall be performed by a laboratory at the CONTRACTOR's expense.

3. Testing shall be performed once each 24 hours for 2 days and once per week thereafter until the CLSM mix reaches the maximum design strength.

a. Compression testing shall be in accordance with ASTM D 4832 - Preparation and Testing of Soil-Cement Slurry Test Cylinders.

b. Setting test shall be in accordance with ASTM C 403 - Time of Setting of Concrete Mixtures by Penetration Resistance.

c. Density tests shall be in accordance with ASTM C 138 - Unit Weight, Yield and Air Content (Gravimetric) of Concrete.

PART 2 - PRODUCTS

2.1 CONTROLLED LOW STRENGTH MATERIAL

A. CLSM shall be a mixture of cement, pozzolan, coarse and fine aggregate, admixtures, and water, mixed in accordance with ASTM C 94 - Ready Mixed Concrete.

B. Composition: The following parameters shall be within the indicated limits and as necessary to produce the indicated compressive strengths.

1. Mix proportions as necessary.

2. Entrained air content shall be between 5 percent minimum and 35 percent maximum.

3. Water reducing agent content as necessary.

C. Properties

1. Density shall be between 100 PCF minimum and 145 PCF maximum.

2. Slump shall be as required by the CONTRACTOR's methods, but shall not promote segregation nor shall slump exceed 9 inches.

3. Compressive strength at 28 Days:

a. Normal CLSM: Between 100 psi minimum and 300 psi maximum. Unless specifically indicated otherwise, CLSM shall be Normal CLSM.
b. Foundation CLSM: 1,000 psi minimum.

2.2 CEMENT

A. Cement shall be Type I or II in accordance with ASTM C 150 - Portland Cement.

2.3 POZZOLAN

A. Pozzolan shall be Type F or C in accordance with ASTM C 618 - Flyash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Portland Cement Concrete. Pozzolon content, by weight, in Normal CLSM shall not be greater than cement content.

2.4 AGGREGATE

A. Aggregate shall consist of a well graded mixture of crushed rock, soil, or sand, with a nominal maximum size of 3/8-inch. One hundred percent shall pass the 1/2-inch sieve; no more than 30 percent shall be retained on the 3/8-inch sieve; and no more than 12 percent shall pass the number 200 sieve. If more than 5 percent of the aggregate passes the number 200 sieve, the material passing the number 200 sieve shall have a plasticity index of less than 0.73 (liquid limit-20), when tested in accordance with ASTM D 4318 - Liquid Limit, Plastic Limit, and Plasticity Index of Soils. Aggregate shall be free from organic matter and shall not contain more alkali, sulfates, or salts than the native materials at the Site.

2.5 ADMIXTURES

A. Air entraining admixtures shall be in accordance with ASTM C 260 - Air-Entraining Admixtures for Concrete.

B. Water reducing admixtures shall be in accordance with ASTM C 494 - Chemical Admixtures for Concrete.

2.6 WATER

A. Water shall be potable, clean, and free from objectionable quantities of silt, organic matter, alkali, salt, and other impurities.

PART 3 - EXECUTION

3.1 PREPARATION

A. Subgrade and compacted fill to receive CLSM shall be prepared according to Section 31 00 00 – Earthwork.

3.2 BATCHING, MIXING AND DELIVERY

A. Batching, mixing, and delivery of CLSM shall conform to ASTM C 94. CLSM shall be mixed at a batch plant acceptable to the ENGINEER and shall be delivered in standard transit mix trucks.

3.3 PLACEMENT

A. CLSM shall be placed by tailgate discharge, conveyor belts, pumped, or other means. CLSM shall be directed in place by vibrator, shovel, or rod to fill crevices and pockets. Avoid over-consolidation which causes separation of aggregate sizes.

B. CLSM shall be continuously placed against fresh material unless otherwise approved by the ENGINEER. When new material is placed against existing CLSM, the placement area shall be free from loose and foreign material. The surface of the existing material shall be soaked a minimum of one hour before placement of fresh material but no standing water shall be allowed when placement begins.

C. Temperature of the CLSM shall be between 50 and 90 degrees F, when placed. CLSM shall not be placed when the air temperature is below 40 degrees F. No CLSM shall be placed against frozen subgrade or other materials having temperature less than 32 degrees F.

3.4 FINISHING

A. The finish surface shall be smooth and to the grade indicated or directed by the ENGINEER. Surfaces shall be free from fins, bulges, ridges, offsets, and honeycombing. Finishing by wood float, steel trowel, or similar methods is not required.

3.5 CURING

A. CLSM shall be kept damp for a minimum of 7 Days or until final backfill is placed.

3.6 PROTECTION

A. CLSM shall be protected from freezing for 72 hours after placement.

B. No fill or loading shall be placed on CLSM until probe penetration resistance, as measured in accordance with ASTM C 803 - Standard Test Method for Penetration Resistance of Hardened Concrete, meets the design strength.

C. CLSM shall be protected from running water, rain, and other damage until the material has been accepted and final fill completed.

END OF SECTION

SECTION 31 25 00

EROSION CONTROL (VEGETATIVE)

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

A. The CONTRACTOR shall provide erosion protection including fertilizing, sodding, seeding, and mulching for all disturbed areas that are not to be paved or otherwise treated in accordance with the Contract Documents.

1.2 RELATED REQUIREMENTS

A. **Section 32 92 23: Sod**.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Fertilizer: Fertilizer shall be a commercial, chemical type, uniform in composition, free flowing, conforming to state and federal laws and suitable for application with equipment designed for that purpose. Fertilizer shall have a guaranteed analysis showing not less than 11 percent nitrogen, 8 percent available phosphoric acid, and 4 percent water-soluble potash.

B. Mulch: Mulch shall be a fibrous, wood cellulose product produced for this Purpose. It shall be dyed green and shall contain no growth or germination inhibiting substances, and shall be manufactured so that when thoroughly mixed with seed, fertilizer, and water, in the proportions specified it will form homogenous slurry which is capable of being sprayed.

PART 3 - EXECUTION

3.1 GENERAL

A. Weather Conditions: Fertilizing, seeding or mulching operations will not be permitted when wind velocities exceed 15 miles per hour or when the ground is unduly wet, or otherwise not in tillable conditions.

B. Soil Preparation: The ground to be seeded shall be graded in conformance with the Drawings and shall be loose and reasonably free of large rocks, roots, and other material which will interfere with the work.

C. Method of Application: Fertilizer and mulch may be applied separately (Dry Method), or they may be mixed together with water and the homogeneous slurry applied by spraying (Hydraulic Method), except that all slopes steeper than three (3) units horizontal to one (1) unit vertical shall be stabilized by the hydraulic method.

3.2 DRY METHOD

A. Fertilizing: The fertilizer shall be spread uniformly at the rate of 800 pounds. per acre (approximately 1 pound per 55 square feet). The fertilizer shall be raked in and thoroughly mixed with the soil to a depth of approximately two inches prior to the application of seed or mulch.

B. Mulch Application: Mulch shall be applied at the rate of 1,500 lb. (air dried weight) per acre (approximately 1 pound per 30 square feet).

3.3 HYDRAULIC METHOD

A. The hydraulic method consists of the uniform application by spraying of a homogenous mixture of water, fertilizer and mulch. The slurry shall be prepared by mixing the ingredients in the same proportions as specified above. The slurry shall have the proper consistency to adhere to the earth slopes without lumping or running. Mixing time of materials shall not exceed 45 minutes from the tie the seeds come into contact with the water in the mixture to the complete discharge of the slurry onto the slopes; otherwise the batch shall be recharged with seed. The mixture shall be applied using equipment containing a tank having a built-in, continuous agitation and recirculation system, and a discharge system which will allow application of the slurry to the slopes at a continuous and uniform rate. The application rates of the ingredients shall be the same as those specified for the Dry Method. The nozzle shall produce a spray that does not concentrate the slurry nor erode the soil.

3.4 WATERING

A. Upon completion of the sodding, the entire area shall be soaked to saturation by a fine spray. The new planting shall be kept watered by a sprinkling system on the site during dry weather or whenever necessary for proper establishment of the planting until final project acceptance. At no time shall the planting be allowed to dry out. Care shall be taken to avoid excessive washing or puddling on the surface and any such damage caused thereby shall be repaired by the CONTRACTOR at no additional cost to the OWNER.

3.5 MAINTENANCE PRIOR TO FINAL ACCEPTANCE

A. The CONTRACTOR shall maintain the planted areas in a satisfactory condition until final acceptance of the project. Such maintenance shall include the filling, leveling, and repairing of any washed or eroded areas, as may be necessary, and sufficient watering to maintain the plant materials in a healthy condition. The ENGINEER may require replanting of any areas in which the establishment of the vegetative ground cover does not appear to be developing satisfactorily.

END OF SECTION

SECTION 32 01 17

PAVEMENT REPAIR AND RESURFACING

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Cutting, removing, protecting and replacing existing pavements encountered including roadways, driveways, sidewalks, curbs and combination curb and gutter.

B. Repair work shall be kept current with the backfilling operation so as to maintain pedestrian and vehicular traffic.

1.2 RELATED WORK

A. **Section 32 16 33: Driveway and Other Removal and Replacement**.

1.3 REFERENCE STANDARDS

A. AASHTO M81 - Penetration Graded Asphalt Cement.

B. AASHTO M140 - Emulsified Asphalt.

C. FDOT Road and Bridge Construction - Section 330 – Hot Bituminous Mixtures General.

D. Construction Requirements.

E. FDOT Road and Bridge Construction - Section 916-1 – Bituminous Materials.

F. FDOT Road and Bridge Construction - Section 347 – Portland Cement Concrete.

1.4 TESTING AND INSPECTION

A. Testing and inspection of asphalt pavement mixes and testing of placed stabilized base course and asphalt pavement will be performed by an independent testing laboratory appointed and paid for in accordance with these Technical Specifications. Testing and inspection will be performed so as to minimize disruption of the work.

B. Provide testing laboratory with access to the mixing plant for verification of weights or proportions, character of materials used and determination of temperatures used in the preparation of asphalt concrete mix.

C. When required by the ENGINEER, the testing laboratory will perform laboratory tests on proposed asphalt pavement mixes to determine conformity with FDOT Standards.

D. The testing laboratory will perform one series of compaction tests for stabilizing base course and for asphalt pavement. The CONTRACTOR shall pay for costs of additional testing as required due to improper performance of the work.

E. When stabilizing base course or a portion thereof that has been placed and compacted in accordance with these Technical Specifications, notify the testing laboratory to perform density tests. Do not place asphalt pavement until the results of tests have been accepted by the ENGINEER.

F. If compaction tests indicate that stabilizing base course or asphalt paving do not meet specified requirements, the defective work shall be removed and replaced with acceptable work and the costs thereof, including all additional testing, will be paid by the CONTRACTOR.

PART 2 - PRODUCTS

2.1 GENERAL

A. Materials shall be of the same or better grade, type and quality as those removed, no muck will be allowed.

B. Temporary paving shall consist of cold mixed, sand/asphalt pavement. Liquid asphalt shall be grade RC-70 and sand shall conform to the requirements of FDOT Specifications for fine aggregates.

C. Tack coat shall be Emulsified Asphalt, Grades RS-2 or CRS-2 conforming to FDOT Standard Specifications. The application rate shall be from 0.02 to 0.08 gallons per square yard.

D. Prime coat, if applied, shall consist of one coat of RC-70 or RC-250 applied at the rate of not less than 0.10 gallons per square yard for limerock bases, and not less than 0.15 gallons per square yard for shell bases.

PART 3 - EXECUTION

3.1 ASPHALTIC CONCRETE

A. Pavements, including all surface courses and base courses, shall be removed to a line back three (3) feet from each edge of the trench, unless otherwise shown on the Contract Drawings, cut straight, clean and square with a power saw or other tools and equipment suitable for the work; and in State roads, removal shall comply with the requirements set forth in the permit issued by the authority having jurisdiction over the roadway.

B. Street, roadway or alley pavements cut and removed in connection with trench excavations shall be replaced and restored using one (1) of the appropriate methods described as follows:

1. For pavement repair and resurfacing within private road right-of-ways, the CONTRACTOR shall excavate the previously placed and compacted backfill and temporary paving to the required depth below the road surface, and replace or restore the cut base course with a limerock base compacted to a minimum thickness of eight (8) inches placed in two (2) layers unless otherwise specified. Alleys shall be restored with a minimum six (6) inch thick base course. During rolling, the base course shall be wetted as necessary to secure the greatest possible compaction. After rolling, the entire surface shall be thoroughly scarified to a depth of not less than three (3) inches and shaped to conform to the required line and grade, then watered and rolled again. Rolling and watering shall continue until the entire depth of the base course is bonded and compacted into an unyielding mass.

   a. If at any time the subgrade material becomes mixed with the base course materials, the CONTRACTOR shall dig out and remove the mixture, reshape and compact the subgrade and replace the materials removed with clean shell base which shall be watered and rolled until satisfactorily compacted, all at the CONTRACTORs sole expense.

   b. After the base course is completed, a surface course of asphaltic concrete shall be placed in the restoration section and the thickness of the new section shall not be less than the existing surface, or one inch, whichever provides for the greatest depth. Existing surfacing of other types shall be replaced with asphaltic concrete, except rigid pavement shall be restored in kind unless otherwise directed by the ENGINEER.

   c. 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 deviation from the grade of the pavement surface. The completed surface shall match the line and grade of the existing surface. When pavement is removed to the edge of the roadway, the replaced base course shall extend at least 12 inches beyond the edge of the surfacing.

d. When the trench parallels an asphalt surfaced arterial roadway, the width of the surface replacement shall extend the full width of a roadway. Beyond the normal trench limits, the existing surface course shall be removed to a depth of at least one (1) inch and replaced with the new surface course. The surfacing shall conform to the requirements of Asphalt Pavement.

2. For pavement repair and resurfacing within existing F.D.O.T right-of-way, the CONTRACTOR shall place a flowable fill base slab in lieu of the limerock base as specified under Paragraph 1 above. The slab shall be at least eight (8) inches thick and not less than two (2) feet wider than the trench or excavation in order to provide a minimum bearing on undisturbed subgrade of one (1) foot on each side of the trench. The slab shall be constructed with F.D.O.T approved flowable fill mix. The finished grade of the slab shall be two (2) inches below the existing pavement surface. The surface course shall then be restored with a Type S-III asphaltic concrete surface course three inches in compacted thickness.

3. Rigid pavement shall be replaced in kind with Class I concrete, using high early-strength cement. The base course for rigid pavement shall be replaced with limerock base material and compacted to a thickness to match the existing base.

4. Non-surfaced streets, alleys, parking areas and driveways shall be restored with six inches of compacted base material placed in the top of the trench.

5. Pavement restoration in County roads shall conform to all requirements of Palm Beach County as set forth in active Utility Permits and per the details included in the Contract Drawings.

6. Temporary paving will be required along portions of the work route where the original paved surface is removed, and the temporary paving shall be placed the same day the trench is backfilled. The trench shall be backfilled up to a level one (1) inch below the existing pavement surface and a temporary cold-mixed sand/asphalt pavement shall be constructed up to the level of the existing pavement surface. The temporary pavement shall be maintained by the CONTRACTOR in a condition satisfactory to the ENGINEER until its removal and replacement, which will be made within 60 days with permanent pavement.

3.2 CONCRETE

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 not more than one (1) foot beyond the edge of the trench or excavation. 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.

B. Concrete sidewalks, walkways, driveways, and curbs shall be restored using Class I concrete. Expansion joint materials shall conform to the requirements of ASTM-D1751.

C. Replaced portions of these items shall conform to the lines, grades and cross sections of the removed portions. Concrete sidewalks and walkways shall be four inches thick; concrete driveways and driveway ribbons shall be six (6) inches thick. Replaced concrete curb and/or gutter shall joint neatly to the remaining sections. All concrete shall be finished to match adjacent construction and be in conformance with the requirements of the FDOT Concrete Specification.

3.3 MISCELLANEOUS ITEMS

A. Pedestrian or School Crossings: Where the pipe route crosses or interferes with school or pedestrian crossings, extreme care shall be taken by the CONTRACTOR to insure the safety of school children and other pedestrians.

B. Pavement Marking: Pavement markings removed or obliterated by the CONTRACTOR's operations shall be replaced at the CONTRACTOR's expense.

3.4 GRASS, SHRUBBERY, TREES, ETC.

A. Grass and shrubbery shall be restored to the condition existing prior to making the excavation. All shrubbery, ornamental trees and other plantings shall be fully protected. If it is necessary for the CONTRACTOR to remove grass, shrubbery or plants to accomplish the work, they shall be satisfactorily replaced before the work will be accepted or paid for.

3.5 PROTECTION OF EXISTING IMPROVEMENTS

A. The CONTRACTOR is responsible for the protection of all pavements, sidewalks and other improvements within the work area. All damage done 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 its own expense. The CONTRACTOR, for its own protection

should advise the ENGINEER, in writing, of any damaged pavement or other facilities prior to working in an area where such damage exists.

3.6 CLEANUP

A. Cleanup is a part of this Contract. No payment will be made until the cleanup is complete to the satisfaction of the OWNER and the ENGINEER.

END OF SECTION

SECTION 32 11 13

STABILIZED SUBGRADE

PART 1 - GENERAL

1.1 WORK INCLUDED

A. The work specified in this Section consists of the construction of a stabilized roadway subgrade where required as part of roadway re-construction. Construction shall be to the uniformity, density, and bearing ratio specified herein.

B. Roadways to be re-constructed shall be stabilized to a compacted depth of 12-inches below the base course. The stabilizing shall be FDOT Type B. The required bearing ratio shall be obtained by constructing the subgrade of select materials salvaged from the existing roadway, or by stabilizing the subgrade material with the addition and mixing in of suitable stabilizing material.

PART 2 - PRODUCTS

2.1 MATERIALS

A. The type of stabilizing material shall be in accordance with Paragraph 2.1.E herein and shall meet the following requirements:

B. Use of Materials from Existing Base Materials:

1. When the utilizing materials from an existing base, this work shall be done prior to the spreading of any additional commercial or local materials. Removal of any section of existing base will not be required until the need for it in maintaining traffic is fulfilled.

2. The use of materials from an existing base may be in combination with the designated type of stabilizing.

C. Commercial Materials:

1. Materials to be used may be either commercial limerock, limerock overburden, or crushed shell.

2. Limerock and Limerock Overburden:

a. The percentage of carbonates of calcium and magnesium shall be at least 10 percent.

b. The plasticity index shall not exceed 10 percent.

c. The gradation shall be such that 0.97 percent of these materials will pass a 1½ inch sieve.

3. Crushed Shell shall be mollusk shell meeting the following:

a. The use of steamed shell is not permitted.

b. At least 97 percent by weight of the total material shall pass a one (1) inch screen and at least 50 percent by weight of the total material shall be retained on a No. 4 sieve.

c. Not more than 7.5 percent by weight of the total material shall pass the No. 200 sieve.

d. If the shell meets the above requirements without crushing, then crushing will not be required.

D. Local Material:

1. Local materials used for stabilizing may be high-bearing-value soils or sand-clay material.

2. The material passing the 40-mesh sieve shall have a liquid limit not greater than 30 and a plasticity index not greater than 10.

3. No blending of materials to meet these requirements will be permitted unless authorized by the ENGINEER.

4. When blending is permitted, the blended material shall be tested and approved before being spread on the roadway.

E. Type B Stabilization:

1. The type of materials, commercial or local, shall be at the CONTRACTOR's option.

2. Bearing value determinations shall be made by the Limerock Bearing Ratio Method.

3. It is the CONTRACTOR's responsibility that the finished roadbed section meets the bearing value requirements, regardless of the quantity of stabilizing materials added.

4. After the roadbed grading operations have been substantially completed, the CONTRACTOR shall make its own determination as to the quantity, if any, of stabilizing materials necessary for compliance with the bearing value requirements.

5. The CONTRACTOR shall notify the ENGINEER of the approximate quantity of stabilizing material to be added. The spreading and mixing in of such materials shall meet the approval of the ENGINEER as to uniformity and effectiveness.

PART 3 - EXECUTION

3.1 PREPARATION

A. Prior to the beginning of stabilizing operations, the area to be stabilized shall have been constructed to an elevation such that upon completion of stabilizing operations the completed stabilized subgrade will conform to the lines and grades of the existing road subgrade.

B. Prior to the spreading of any additive stabilizing material, the surface of the roadbed shall be brought to a plane approximately parallel to the plane of the proposed finished surface.

C. The subgrade to be stabilized may be processed in one course, unless the equipment and methods being used do not provide the required uniformity, particle size limitation, compaction, and other desired results, in which case, the processing shall be done in more than one course.

3.2 APPLICATION

A. Stabilizing Material:

1. When additive stabilizing materials are required, they shall be spread uniformly over the area to be stabilized.

2. When materials from an existing base are to be utilized, such materials shall be placed and spread prior to the addition of other stabilizing additives.

3. Commercial stabilizing material shall be spread by the use of mechanical spreaders except that where use of such equipment is not practical, other

means of spreading may be used, but only upon written approval of the proposed alternate method.

B. Mixing:

1. Mixing shall be done with rotary tillers or other suitable equipment. The area to be stabilized shall be thoroughly mixed throughout the entire depth and width of the stabilizing limits.

2. Mixing will be required regardless of whether the existing soil, or any select soils placed within the limits of the stabilized sections, have the required bearing value without the addition of stabilizing materials.

3. As an exception to the above, where the subgrade is of rock, the ENGINEER may direct that mixing be waived and no payment made for stabilization of such sections of the roadway.

C. At the completion of mixing, all particles of material within the limits of the area to be stabilized shall pass a 3½ - Nc ring. Any particles not meeting this requirement shall be removed from the stabilized area or shall be broken down so as to meet this requirement.

D. After mixing is complete and requirements for bearing value, uniformity, and particle size have been satisfied, the stabilized area shall be compacted in accordance with Paragraph 3.3.B.

E. Materials shall be compacted at a moisture content permitting the specified compaction. If the moisture content of the material is improper for attaining the specified density, either water shall be added or the material shall be permitted to dry until the proper moisture content for the specified compaction is reached.

F. The completed stabilized subgrade shall be shaped to conform to the finished lines, grades, and cross section indicated on the Drawings. The subgrade shall be checked by the use of elevation stakes, or other means approved by the ENGINEER.

G. Requirements for Condition of Completed Subgrade:

1. After stabilization and compaction, subgrade shall be firm and substantially unyielding to the extent that it will support construction equipment and have the required bearing value.

2. All soft and yielding material, and any other portions of the subgrade that will not compact readily, shall be removed and replaced with suitable material and the whole subgrade brought to line and grade, with proper allowance for subsequent compaction.

H. After completion of the subgrade, the CONTRACTOR shall maintain it free from ruts, depressions, and damage resulting from the hauling or handling of materials, equipment, tools, etc.

I. The CONTRACTOR shall maintain the required density until the base is placed. Such responsibility shall include any repair or replacement of curb and gutter, sidewalk, etc., which may be necessary in order to re-compact the subgrade in the event of underwash or other damage occurring to the previously compacted subgrade.

3.3 FIELD QUALITY CONTROL

A. Bearing Value Requirements:

1. Bearing value samples will be obtained and tested at completion of satisfactory mixing of the stabilized area.

2. For any area where the bearing value is deficient or in excess of the tolerances established herein, additional stabilizing material shall be spread and mixed in accordance with 3.2.B. This shall be done for the full width of the roadway being stabilized and laterally for a distance of 50 feet beyond the limits of the area in which the bearing value is deficient.

3. The following undertolerances from the specified bearing value will be allowed as based on tests performed on samples obtained after mixing operations have been completed:

Specified Bearing Value	Undertolerances
LBR 40	5.0

B. Density Requirements:

1. Within the entire limits of the width and depth of the areas to be stabilized, the minimum density acceptable at any location will be 98 percent of the maximum density as determined by AASHTO T 180, Test Method D.

END OF SECTION

SECTION 32 11 23

LIMEROCK BASE

PART 1 - GENERAL

1.1 WORK INCLUDED

A. The work specified in this Section consists of the construction of a compacted base course composed of limerock. It shall be constructed upon the prepared subgrade in accordance with these Technical Specifications and in conformity with the lines and grades of the existing road to be re-constructed.

1.2 QUALITY ASSURANCE

A. Laboratory analysis shall be complete and the material accepted by the ENGINEER prior to placement.

PART 2 - PRODUCTS

2.1 MATERIALS

A. The material used in limerock base courses shall be material classified as either Miami Oolite Formation or Ocala Formation. However, only one (1) formation may be used on the contract.

B. Composition:

1. The limerock material shall contain not more than 0.5 percent of organic material or objectionable matter and shall show no tendency to air slake or undergo any chemical change under exposure to weather.

2. Limerock material shall contain not less than 60 percent of carbonates of calcium and magnesium. The maximum percentage of water sensitive clay material shall be 3 percent.

C. Gradation:

1. At least 97 percent by weight of the material shall pass a 3½ inch sieve and the material shall be graded uniformly down to dust.

2. Fine material shall consist entirely of dust.

3. All crushing required to meet such size requirements shall be done before the material is placed within the right-of-way.

D. Limerock Material:

1. Limerock shall be uniform in quality and shall not contain cherty or other extremely hard pieces or lumps, balls, or pockets of sand or clay size material in sufficient quantity as to be detrimental to prevent proper bonding, finishing or strength of the limerock base.

2. Limerock shall be non-plastic and the liquid limit (LL) shall not exceed 35.

3. Limerock shall have an average LBR value not less than 100.

PART 3 - EXECUTION

3.1 GENERAL

A. All equipment necessary for the proper construction of the work shall be used on the project and shall be in first class working condition.

B. Base shall be constructed to the full width of the existing road to be re-constructed.

3.2 PERFORMANCE

A. Limerock shall be transported to the site, over rock previously placed, and dumped on the end of the preceding spread. No hauling over the subgrade or dumping on the subgrade shall be done.

B. Spreading Limerock:

1. Limerock shall be spread uniformly, and all segregated areas of fine or coarse rock shall be removed and replaced with well-graded rock.

2. The total compacted thickness of the base shall be eight (8) inches. The base shall be constructed in two courses, each not more than five (5) inches in compacted thickness.

3. The thickness of the first course shall be approximately ½ the total thickness of the finished base, or enough additional to bear the weight of the construction equipment without disturbing the subgrade.

C. Compacting and Finishing Base:

1. For single course base, after spreading is completed, the entire surface shall be scarified and shaped to produce the required grade and cross section after compaction.

2. For double course base, the first course shall be cleaned of foreign material, bladed and brought to a surface cross section approximately parallel to that of the finished base. Prior to spreading material for the upper course, density tests for the lower course shall be made to determine that the required compaction has been obtained. After spreading the second course, its surface shall be finished and shaped so as to produce the required grade and cross section after compaction and free of scabs and laminations.

D. Moisture Content:

1. When the material does not have the proper moisture content to insure the required density, wetting or drying will be required.

2. If the material is deficient in moisture, water shall be added and uniformly mixed in by discing the base course to its full depth.

3. If the material contains excess moisture, such excess shall be reduced or removed until the required moisture content is attained before being compacted.

4. Wetting or drying operations shall involve manipulation of the entire width and depth of the base.

E. When proper conditions of moisture are attained, the material shall be compacted to a density of not less than 98 percent of the maximum density as determined by AASHTO T-180.

F. Density Tests:

1. During final compaction, if blading is necessary to obtain the true grade and cross section, the compacting operations shall be completed prior to making the density determinations on the finished base.

2. At least three (3) density determinations shall be made on each day's final operations on each course, and the density determinations shall be made at more frequent intervals if deemed necessary by the ENGINEER.

G. Correction of Defects:

1. If at any time the subgrade should become mixed with the base course, the CONTRACTOR shall dig out and remove the mixture, reshape and

compact the subgrade, and replace the materials removed with clean base material, which shall be shaped and compacted as specified above.

2. If cracks appear in the base either before or after priming which in the opinion of the ENGINEER would impair the structural integrity of the base course, the CONTRACTOR shall remove such cracks by re-scarifying, re-shaping, adding base material where necessary, and re-compacting.

H. The finished surface of the base course shall be checked with a template cut to required crown and cross section and with a ten (10) foot straight-edge laid parallel to the centerline of the road.

I. All irregularities greater than ¼ inches shall be corrected by scarifying and removing or adding limerock as required, after which the entire area shall be re-compacted as specified above.

J. Thickness Determinations:

1. The thickness of the compacted base shall be measured at intervals of not more than 200 feet. Measurements shall be taken at various points on the cross sections prior to the application of the prime coat.

2. Measurements shall be taken in holes through the base of not less than three (3) inches in diameter.

3. Where the compacted base is deficient by more than ½ inches from the thickness specified, the CONTRACTOR shall correct such areas by scarifying and adding limerock. The base shall be scarified and rock added for a distance of 100 feet in each direction from the edge of the deficient area. The affected areas shall then be brought to the required state of compaction and to the required thickness and cross section.

K. Priming and Maintaining:

1. The prime coat shall be applied only when the base meets the specified density requirements and the moisture content in the top half of the base does not exceed 90 percent of the optimum moisture content of the base material. At the time of priming, the base shall be firm and unyielding.

2. The CONTRACTOR is responsible for assuring that the true crown and grade are maintained with no rutting or other distortion, and that the base meets all the requirements at the time the surface course is applied.

END OF SECTION

SECTION 32 12 16

PAVING AND SURFACING

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Furnishing all labor, materials, equipment and supplies and performing all operations for the construction of pavement under this Contract.

1.2 RELATED WORK

A. **Section 31 23 16.13: Trenching, Backfilling and Compaction**.

B. **Section 32 16 13: Concrete Curb and Gutter Restoration**.

C. **Section 32 01 17: Pavement Repair and Resurfacing**.

1.3 REFERENCED SPECIFICATIONS

A. FDOT Standard Specifications for Road and Bridge Construction, Latest Edition.

PART 2 - PRODUCTS

2.1 BASE MATERIAL

A. Limerock meeting the requirements of Section 911 of the FDOT Standard Specifications.

2.2 PRIME AND TACK COATS

A. Supply prime and tack coats conforming to Section 300 of the FDOT Standard Specifications.

2.3 ASPHALTIC CONCRETE

A. Use materials for type S-1, modified asphaltic concrete meeting the requirements of Section 331 of the FDOT Standard Specifications.

B. Restrict oversized aggregate by scalping screens having an opening of ¾-inches square. Coarse aggregate: ¾ -inches passing, ½-inches retained – 0 percent by

weight. Balance the percent weight of coarse aggregate by adjusting the remaining size.

C. For restoration of pipe trench crossings, the asphalt types and thicknesses shall at a minimum match the existing roadway being restored.

2.4 CONCRETE FOR CURBS AND SIDEWALKS

A. Meet the requirements of FDOT Standards for Class I concrete.

2.5 EQUIPMENT

A. Use equipment suitable for the operations of pavement replacement and related work.

2.6 QUALITY CONTROL

A. Quality control is the CONTRACTOR's responsibility. Make every effort to produce the best quality work as specified on the Drawings and in these Technical Specifications.

B. Obtain the services of an independent testing laboratory to perform density tests on the compacted subgrade and base course at locations designated by the ENGINEER.

PART 3 - EXECUTION

3.1 SUBGRADE STABILIZATION

A. Prepare, grade, stabilize and compact the pavement subgrade to the lines and grades as shown on the Drawings.

B. Compact subgrade to not less than 98 percent of the maximum density as determined by AASHTO T-180. Stabilize the subgrade to provide a minimum bearing value of LBR 40.

C. Density tests shall be taken for each lift in each lane of traffic, at a minimum.

3.2 LIMEROCK BASE

A. Prepare, grade and compact all base materials to the required lines and grades in accordance with Section 200 of the FDOT Standard Specifications.

B. Compact base to not less than 98 percent of the maximum density per AASHTO T-180. Base shall provide a minimum bearing value of LBR 100.

D. Density tests shall be taken for each lift in each lane of traffic, at a minimum.

3.3 PRIME AND TACK COATS

A. Apply to the base a prime coat with cover material in accordance with Section 300 of the FDOT Standard Specifications.

B. If required by the ENGINEER, apply a tack coat in accordance with Section 300 of the FDOT Standard Specifications.

3.4 ASPHALTIC CONCRETE SURFACE COURSE (ACSC)

A. Construct asphaltic concrete surface course to the thickness specified.

B. Construct asphaltic concrete surface course in accordance with Sections 320 and 330 of the FDOT Standard Specifications.

3.5 CONCRETE CURBING

A. Form, place and cure concrete curbs in accordance with Section 520 of the FDOT Standard Specifications.

END OF SECTION

SECTION 32 16 13

CONCRETE CURB AND GUTTER RESTORATION

PART 1 - GENERAL

1.1 SCOPE

A. The work to be performed includes the installation of all concrete curb and/or valley gutter removed and/or damaged during the course of construction of the work.

B. The CONTRACTOR shall exercise reasonable care in removing curb and gutter and shall dispose of all removed materials appropriately.

C. If any portion of concrete curb and/or gutter is damaged or cut, the entire length of curb and/or gutter must be replaced. No patching of existing curb or gutter will be allowed.

1.2 REFERENCES

A. Florida Department of Transportation (FDOT) Standard Specifications for Road and Bridge Construction, Latest Edition, Section 347, "Portland Cement Concrete".

PART 2 - MATERIALS

2.1 CONCRETE

A. The concrete used shall be Class I (3,000 psi in 28 days) in accordance with FDOT Standard Specification Section 347.

PART 3 - EXECUTION OF WORK

3.1 GENERAL

A. The curb face shall be equal to the face of the adjacent undisturbed curb, and the type (i.e., stand up curb or gutter curb) shall be replaced in kind to a condition equal to or better than that which existed previously. Curb that is broken or cracked during construction operations shall be removed and disposed of by the CONTRACTOR at his own expense.

END OF SECTION

SECTION 32 16 23

CONCRETE SIDEWALK RESTORATION

PART 1 - GENERAL

1.1 SCOPE

A. Removal and installation of concrete sidewalk. Sidewalk shall be replaced to the same width as the original sidewalk.

1.2 REFERENCES

A. Florida Department of Transportation (FDOT) Standard Specifications for Road and Bridge Construction, Latest Edition, Section 347, "Portland Cement Concrete".

PART 2 - PRODUCTS

2.1 ACCEPTABLE MATERIALS

A. Concrete shall be Class I (3,000 psi in 28 days) in accordance with FDOT Standard Specification Section 347.

PART 3 - EXECUTION OF WORK

3.1 GENERAL

A. Exercise reasonable care in removing sidewalks and shall dispose of removed materials appropriately.

B. All removed and damaged sidewalk shall be replaced with four (4) inches thick 2,500 psi concrete (6 inches thick at driveways and within major road right-of-way) to the widths required.

C. The sidewalk finish shall match as near as possible the original finish.

D. Sidewalk broken or cracked as a result of the construction operations shall be removed and disposed of by the CONTRACTOR at his own expense. All removed and damaged sidewalk shall be replaced.

END OF SECTION

SECTION 32 16 33

DRIVEWAY AND OTHER REMOVAL AND REPLACEMENT

PART 1 – GENERAL

1.1 REQUIREMENTS INCLUDED

A. Driveways within Private (P.U.D.) and County Road Right-of-Ways:

1. All residential and commercial driveways within County or private road right-of-ways that are paved with concrete or asphalt and cut by the construction shall have a minimum of eight (8) inches of limerock base.

2. The thickness of the base from the property back and in all easements shall be equal to the thickness of the original base.

3. The base course for asphalt driveways shall be compacted to a minimum of 98 percent of the maximum density as determined by AASHTO Method T-180.

4. Limerock for pavement base shall conform to the FDOT Standard Specifications.

5. The substitution of shell will not be permitted where the existing base material is limerock.

6. The cost of all asphalt, concrete or other driveway material replacements, and other removals and replacements, shall be included in the cost of the various applicable items of work, unless a separate bid item is provided.

B. Driveways within State and Federal Road Right-of-Way:

1. All residential and commercial driveways within State and Federal road right-of-way that are paved with concrete or asphalt and cut by the construction shall have a minimum of six (6) inches of flowable fill base.

2. The thickness of the base from the property back and in all easements shall be equal to the thickness of the original base.

3. The flowable fill base course for asphalt driveways shall be permitted to compact and harden to the minimum F.D.O.T. specifications.

4. Flowable fill for pavement base shall conform to the FDOT Standard Specifications and requirements.

5. The cost of all asphalt, concrete or other driveway material replacements, and other removals and replacements, shall be included in the cost of the various applicable items of work, unless a separate bid item is provided.

1.2 ASPHALT DRIVEWAYS

A. The wearing surface for asphalt residential and commercial driveways within Private and County right-of-way shall be 1½ inches of Type SP-9.5 asphalt.

B. The wearing surface for asphalt driveway turnouts within FDOT right-of-way shall be two (2) inches of Type SP-12.5 asphalt.

1.3 CONCRETE DRIVEWAYS

A. Concrete for driveways shall be 3,000 psi.

B. The concrete for driveways shall be a minimum of four (4) inches thick from the property line back and six (6) inches thick from the property line to the edge of pavement.

C. The concrete driveway replacement shall be no less than the thickness removed, but not less than that specified above. Concrete shall be cut with a saw.

1.4 OTHER REMOVALS

A. All driveways other than asphalt or concrete within Private and County right-of-way shall be restored with a minimum depth of eight (8) inches of shell or limerock base.

B. Driveway surface course shall be replaced with like materials.

C. Road shoulders and alleys of shell, limerock, stabilized soil or gravel, where disturbed, shall be restored with like materials as removed. There shall be no mixing of unlike materials. The disturbed area shall be replaced with the appropriate materials to a minimum depth to restore it to a condition equal to or better than conditions existing prior to beginning work.

D. Roadways other than paved streets where disturbed shall be replaced with like materials to a minimum compacted thickness of eight (8) inches. There shall be no mixing of unlike materials. These roadways shall be compacted to a minimum of 98 percent of the maximum density as determined by AASHTO Method T-180.

1.5 STABILIZED SHOULDER RESTORATION

A. Provide a stabilized shoulder to a thickness and having a minimum bearing value of 50 psi Florida Bearing Value.

B. Stabilizing shall be Type C Stabilization as defined in the FDOT Standard Specifications.

C. Compaction shall be by rolling with a combination of steel wheel and rubber tire rollers until a minimum density of 98 percent of the maximum density is reached as tested under AASHTO T-180.

D. Compaction and finishing shall be in accordance with the FDOT Standard Specifications.

1.6 SWALES AND DRAINAGE DITCHES

A. The right-of-way shall be left in as good or better condition than prior to construction.

B. The finished excavated area shall be replaced with the clean fill or existing suitable material as existed when work began.

C. Where swales, shoulders and ditches are disturbed, they shall be stabilized in a manner that will afford protection against erosion.

D. Existing elevations on all drainage ditches and culverts affected by this construction shall be measured prior to construction.

E. As-built elevations shall be submitted upon completion of this construction.

END OF SECTION

SECTION 32 17 23

PAVEMENT MARKING AND TRAFFIC SIGNS

PART 1 - GENERAL

1.1 SCOPE

A. Provide all pavement stripping, traffic signs and parking stall wheel stops specified herein, and as required for a complete installation.

1.2 QUALITY CONTROL

A. The phrase "DOT Specifications" shall refer to the Florida Department of Transportation Standard Specifications for Road and Bridge Construction. The DOT Specifications, are referred to herein and are hereby made a part of this Contract to the extent of such references, and shall be as binding upon the CONTRACTOR as though reproduced herein in their entirety.

1.3 CERTIFICATION

A. The CONTRACTOR shall furnish the manufacturer's certification that all signs furnished conform to these Technical Specifications and shall replace or repair at its expense all signs that fail to meet this requirement.

PART 2 - PRODUCTS

2.1 PAVEMENT MARKING

A. Paint for pavement strips shall be Sherwin-Williams or Tnemec traffic paint or approved equal.

2.2 REFLECTIVE MARKERS

A. Reflective markers shall be installed in the pavement in accordance with DOT and County requirements.

2.3 TRAFFIC SIGNS

A. General:

1. Traffic regulating signs shall conform to the colors, dimensions and requirements of the Manual on Uniform Traffic Control Devices (ANSI) and displaying the lettering and symbols indicated on the Drawings.

B. Sign Panels and Support members:

1. Sign panels and support members shall conform to Aluminum Association Alloy 6061-T6.

C. Bolts:

1. Bolts shall conform to Aluminum Association Alloy 2024-T4 with an anodic coating 0.0002-inches thick minimum and chromate sealed.

D. Nuts:

1. Nuts shall conform to Aluminum Association Alloy 6269-T9.

E. Reflective Sheeting:

1. Reflective sheeting shall conform to DOT Type "A" requirements.

F. Construction Warning Signs:

1. The CONTRACTOR shall install traffic and warning signs during construction in accordance with OSHA, DOT and County requirements.

PART 3 - EXECUTION

3.1 FABRICATION

A. Preparation of sign blanks and fabrication of reflectorized faces shall conform to the applicable requirements of DOT Sections 700-4 and 700-5.

3.2 INSTALLATION

A. Signs and supports shall be erected in accordance with the details shown on the Drawings and as specified herein.

END OF SECTION

SECTION 32 31 13

CHAIN LINK FENCING

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

A. The CONTRACTOR shall furnish and install black vinyl coated chain link fencing, as shown and specified including all appurtenant work, complete, all in accordance with the requirements of the Contract Documents.

B. All fencing and required accessories and components shall be black vinyl coated.

C. The CONTRACTOR shall provide and maintain the current level or a greater level of perimeter site security and restricted public access at all times throughout construction of the project. At no time shall any portion of the site perimeter be provided without a secure and continuous fence at the end of each day. The cost to furnish and install all required permanent and temporary fencing shall be at the sole expense of the CONTRACTOR.

1.2 RELATED REQUIREMENTS

A. **Section 01 33 16: Approved Materials and Equipment List.**

B. **Section 01 33 00: Submittals**.

1.3 CONTRACTOR SUBMITTALS

A. Shop drawings of typical fence and fence corner post construction shall be submitted prior to fabrication according to the provisions of **Section 01300 – Submittals**.

PART 2 - PRODUCTS

2.1 GENERAL

A. Fencing shall be six (6) feet high, unless otherwise shown. All fencing materials shall be hot-dip galvanized and vinyl-coated after fabrication. All materials and components shall be new, first quality items specifically manufactured for the intended application.

2.2 MATERIAL

A. Fence fabric shall be No. 9 gage galvanized steel wire, two (2) inch mesh. The fabric shall have a knuckled finish on the top edge and a twisted and barbed finish on the bottom edge. Galvanized wire shall be black vinyl coated unless specified otherwise on the Drawings.

B. Fabric ties shall be No. 9 galvanized steel wire, spaced 14 inches apart on posts and 24 inches apart on rails. Aluminum ties will not be permitted. A continuous No. 7 gauge galvanized steel wire shall be interlaced with the fabric or attached to the fabric with clips along the extreme bottom of the fence.

C. All posts shall be one-piece without circumferential welds, and shall be as follows:

1. Line posts shall be 2½ inch Schedule 40 pipe.

2. End and corner posts shall be three (3) inch Schedule 40 pipe.

D. Top rail, bottom rail, and braces shall be 1⅝-inch Schedule 40 pipe.

E. Tension bars shall by 3/16-inch x ¾-inch galvanized steel.

F. Nuts, bolts and screws shall be of steel, hot-dipped galvanized after fabrication, minimum size ⅜-inch diameter.

G. Concrete shall have a minimum compressive strength of 3,000 psi at 28 days.

2.3 VINYL-COATED FENCE

A. Vinyl fabric, posts, and accessories shall meet Federal Specification RR-F-191K-GEN.

B. Vinyl coated posts and rails shall be Schedule 40 or SS40 construction.

C. Fence fabric, posts, and accessories shall be polyvinylchloride (PVC) coated over 2.9 zinc coated steel.

D. Fabric: Mesh shall be two (2) inch gauge specified.

E. PVC coated wire shall be uniform color and capable of being woven into fabric without the PVC coating cracking, crazing or peeling.

F. PVC coating shall not shrink more than 1/16-inch per foot of length, demonstrate a significant visual change in color or gloss, or exhibit breaks, cracks, crazing, crumbling, or other visual forms of failure.

2.4 VINYL FENCE FABRIC

A. All vinyl fence fabric shall be applied in a manner that results in a fused and bonded adherence.

B. Fabric, posts, rails, and accessories shall be black in color.

C. Vinyl fence fabric shall meet the following specifications:

	Core Inches 0.005	Finish Wire Gauge	PVC Thickness (in.)	Breaking Strength (lb.)
Zinc coated steel	0.148	9	0.006	1,290

D. Accessories and hardware are to include latches, hinges, stops, and keepers and shall be vinyl coated over zinc-coated steel or aluminum-coated steel in conformance with the materials being used to accomplish the installation.

PART 3 - EXECUTION

3.1 INSTALLATION

A. All earth, brush, or other obstructions which interfere with the proper alignment of construction of fences shall be removed and disposed of at the expense of the CONTRACTOR.

B. Line posts shall be spaced at not more than 10 foot intervals, measured from center to center of the posts and generally parallel to the ground slope. Posts shall be set plumb and shall be centered in 12-inch diameter concrete encasement extending 36 inches to the ground.

C. Changes in the fence lines, were the horizontal angle is 15 degrees or more, shall be considered as corners and corner posts shall be installed.

D. Bracing shall be provided at all end, and corner posts, the latter in both directions. Horizontal brace rails shall be set midway between top rail and ground running from the corner or end post to first line post. Diagonal tension members shall connect tautly between posts below horizontal braces.

E. Corner posts shall be installed in lieu of line posts at intervals not exceeding 500 feet and shall be braced horizontally in both directions.

F. The chain-link fabric shall be fastened on the side of the posts as shown or as designated by the ENGINEER. The fabric shall be stretched and securely fastened to the posts, and, between the posts, the top and bottom edges of the

fabric shall be fastened to the top rail and tension wire, respectively. The tension wires shall be stretched tight with turnbuckles at the end and corner posts. The bottom tension wire shall be installed on a straight grade between posts.

G. The fabric shall be fastened to the end and corner posts with stretcher bars and stretcher bar bands spaced at approximately 14 inches on line posts and at approximately 18 inches on tension wires.

H. Encasement concrete for footings shall be placed immediately after mixing in a manner such that there will be no concentration of the large aggregates. The concrete shall be consolidated by tamping or vibrating in an approved manner. Concrete for footings may be placed without forms, providing the ground is firm enough to permit excavation to neat line dimensions. Prior to placing the concrete, the earth around the hole shall be thoroughly moistened. The concrete shall completely fill the hole and top surfaces of the concrete encasement shall be sloped outward to shed water and shall have a neat appearance. Not less than seven (7) days shall elapse after placing the concrete footings before the fence fabric is fastened to the posts.

I. Any galvanized coating damaged during construction of the fencing shall be repaired by application of molten Galvo-Weld; Galvinox; or equal.

J. Any black vinyl coating damaged during construction of the fencing shall be repaired to a condition acceptable to the OWNER.

END OF SECTION

SECTION 32 92 23

SOD

PART I - GENERAL

1.1 REQUIREMENTS

A. Work included: prepare finish grades for sod, deliver and install sod, maintain sod.

1.2 QUALITY ASSURANCE

A. Standards: Federal Specification (FS) 0-F-241q (1), Fertilizer mixed, Commercial.

B. Testing Agency: Independent Testing Laboratory.

C. Requirements of State and Local Regulatory Agencies: Materials shall conform to the requirements established by the State Department of Agriculture.

1.3 SUBMITTALS

A. Certificates:

1. Growers Certification:

a. Grass species, location of field from which sod is cut, and date of cutting.

b. Compliance with State and Federal quarantine restrictions.

2. Manufacturer’s certification of fertilizer and herbicide composition and application rates.

1.4 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver sod on pallets.

B. Protect roots from exposure to wind or sun.

C. Protect sod against dehydration, contamination and heating during transportation and delivery.

D. Do not deliver more sod than can be installed within 24 hours.

E. Keep stored sod moist and under shade or covered with moistened burlap.

F. Do not stack sod more than two (2) feet deep.

G. Do not tear, stretch, or drop sod.

1.5 JOB CONDITIONS

A. Begin installation of sod only after proceeding related work is accepted by the OWNER's representative.

B. Environmental Requirements:

1. Install sod during months acceptable to common industry practice.

2. DO NOT INSTALL SOD UNTIL IRRIGATION SYSTEM CAN PROVIDE IMMEDIATE WATERING OF SODDED AREAS.

C. Protection: Erect signs and barriers against excessive pedestrian or vehicular traffic.

1.6 GUARANTEE

A. Guarantee sod for period of ninety (90) days after date of final acceptance by OWNER's representative.

B. Replacement sod under this guarantee shall be guaranteed for ninety (90) days after date of final acceptance by OWNER's representative.

C. Repair damage to other plants during sod replacement at no cost to OWNER.

PART 2 - PRODUCTS

2.1 SOD

A. Grass Species:

1. Stenotaphrum secundatum "St. Augustine – 'Floratam.'"

2. Paspalum notatum “Bahia Grass.”

3. Cynodon dactylon “Bermuda 419.”

B. American Sod Producers Association (ASPA) Grade: Nursery Grown or Approved equal.

C. Furnished in pads of the following dimensions:

1. Size:

a. Length: 24 inches.

b. Width: 16 inches.

c. Thickness: 1½ inches excluding top growth and thatch.

2. Grown in native, completely organic "muck" soil, with minimum 1½ inch soil intact on al roots; not stretched, broken, or torn.

D. Uniformly mowed height when harvested:

1. St. Augustine: 2½ inches.

2. 419 Bermuda: 1½ inches.

E. Thatch: Maximum ½-inch uncompressed.

F. Inspected and found free of diseases, nematodes, pests and pest larvae, by entomologist of State Department of Agriculture.

G. Weeds: Free of torpedo grass, Bermuda grass, nut grass or any other species of plant other than that specified.

H. Dense, well developed root systems; stems uniform in color, leaf texture and density.

2.2 WATER

A. Free of substance harmful to plant growth; free from chemicals or minerals that stain or discolor.

2.3 FERTILIZER

A. Provide commercial grade fertilizer uniform in composition, dry and in a free-flowing condition for application by suitable equipment, delivered in unopened bags or containers, each fully labeled and complying with Florida state fertilizer laws.

B. LESCO INC. 12-2-14 Turf Fertilizer; 50 percent polymer coated, slow-release nitrogen to include minor elements (or approved equal).

2.4 HERBICIDES

A. ROUNDUP as manufactured by Monsanto Company and approved by the State Department of Agriculture and/or the OWNER's representative.

PART 3 - EXECUTION

3.1 INSPECTION

A. Verify topsoil placement and fine grading operations are complete. Verify all other preceding work required is complete and accepted by the OWNER's representative.

3.2 PREPARATION

A. Verify finish grades are to specified elevations.

B. Wet soil surface uniformly to a depth of two (2) inches to three (3) inches or until upper surface is reasonable wet and compacted, before installing sod.

C. Roll soil with 100 pound. Roller; make two (2) passes as necessary.

3.3 INSTALLATION

A. Locate all trees and palms (existing or newly planted) in areas to be sodded and paint a 36-inch diameter circle on the soil around the trunk of each species. Located all shrub and groundcover planting beds and paint a line along the outside limits of mulch (see planting details for additional information). Do not install sod within any painted areas.

B. Install sod species as indicated on planting plans and these Technical Specifications within 48 hours of harvesting from field.

C. Begin sodding berms at bottom of slopes and install parallel to contours.

D. Lay first row of sod in straight line with long dimension of pads parallel to slope contours; continue laying sod accordingly.

E. Butt side and end joints flush and tight. Do not allow ends to curl or break.

F. Stagger end joints in adjacent rows. Do not stretch or overlap sod.

G. Peg sod on slopes with a ratio of 3:1 or greater using a minimum or two (2) stakes per square yard using six (6) inches minimum nursery grade bamboo stakes.

H. Sod installed adjacent to planting beds should be a minimum distance of 18 inches from the first row of shrubs.

I. Cut a 36-inch diameter clean, round, saucer around each tree or palm planted in sodded areas to provide for mulch. Install a clean edge around all planting beds to provide smooth, flowing lines. Corners and angles shall be rounded. Do not injure root ball or cut sprinkler or utility lines. Rake and remove sod pieces and trimmings immediately after operations are complete.

J. Water sod immediately after installing.

K. Roll sod, except on pegged areas, with roller weighting not more than 100 pounds per foot of roller wither; make two (2) passes.

L. Water sod and soil to depth of four (4) inches within four hours after rolling.

3.4 LAWN ESTABLISHMENT

A. Watering:

1. Keep soil uniformly moist for the first two (2) weeks after planting.

2. After two (2) weeks, supplement rainfall to produce total of approximately 1½ inches of water per week or until sod has fully acclimated.

3. Monitor all newly sodded areas to insure that the irrigation system or manual watering operations are providing sufficient water to sod until acceptance by the OWNER's representative.

B. Mowing:

1. Sod shall not be mowed for a period of three (3) weeks after installation.

2. The initial mowing should remove approximately two (2) inches of leaf nut no more than 40 percent of leaf shall be removed in any single mowing.

3. The CONTRACTOR shall maintain all newly sodded areas until final acceptance by the OWNER's representative. Sod shall be mowed based on the following:

a. St. Augustine: every seven (7) days mow to three (3) inches.

C. Re-sod areas larger than 1-square foot not having uniform stand of grass.

D. Weed Eradication: CONTRACTOR shall be responsible to insurance that all newly sodded areas are maintained in a seed-free condition until acceptance by the OWNER's representative. Apply herbicides only upon approval by the OWNER's representative.

E. The CONTRACTOR's maintenance period shall begin immediately after sod in stalled and extend until acceptance by the OWNER's representative.

3.5 FERTILIZING

A. Apply specified fertilizer three (3) weeks after sod installation. Broadcast at rate of 1½ pounds of nitrogen per 1,000 square feet of sod. Water to saturate all fertilized areas immediately after installation.

3.6 CLEANING

A. Immediately clean spills from paved and finished surface areas.

B. Remove debris and excess materials from project site.

C. Dispose of protective barricades and warning signs at termination of sod establishment.

3.7 FINAL INSPECTION AND ACCEPTANCE

A. Request final inspection for acceptance when all specified work is completed.

B. Replace rejected sod areas as directed by the OWNER's representative.

END OF SECTION

SECTION 33 10 30.13

SANITARY SEWER CLEANING AND TESTING

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Perform all pipeline flushing, testing and inspection, complete for sanitary sewer system piping as specified herein and in accordance with the requirements of the Contract Documents.

B. The responsibility for conveying, using and disposing of water from the OWNER-designated source to the point of usage for cleaning and testing operations is the CONTRACTOR's.

1.2 REFERENCE SPECIFICATIONS, CODES AND STANDARDS

A. APWA / AGC Standard Specifications for Public Works Construction, Latest Edition.

1.3 SUBMITTALS

A. The CONTRACTOR shall provide a minimum 48–hour advance written notice of proposed testing schedules and testing procedures for review and concurrence of the ENGINEER. The CONTRACTOR's proposed plans for water conveyance, control, and disposal shall also be submitted in writing.

B. Submittals required herein shall be in accordance with **Section 01300-Submittals**.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Temporary valves, bulkheads, or other water control equipment and materials shall be as specified herein and/or as determined by the CONTRACTOR subject to the ENGINEER's review. No materials shall be used which would be injurious to pipeline structure and future function.

PART 3 - EXECUTION

3.1 GENERAL

A. All testing shall be performed in the presence of the ENGINEER.

B. Unless otherwise provided herein, water for testing and flushing will be furnished by the OWNER; however, the CONTRACTOR shall make all necessary provisions for conveying the water from the OWNER – designated source to the points of use.

C. Where water from the County is not available, the CONTRACTOR shall furnish water by tank truck or barrels.

D. Release of water after successful tests shall be approved by the OWNER and ENGINEER.

3.2 FLUSHING AND CLEANING

A. The CONTRACTOR shall thoroughly flush all mains and appurtenances installed under this contract to the lowest manholes or as directed by the ENGINEER. The water used in flushing shall be pumped from the low manholes to a storm sewer, canal or gutter. All dirt, sand and debris pumped from the manhole shall be removed and disposed of properly. **Sewage pumping stations shall not be used for disposal of cleaning water.**

B. The CONTRACTOR shall flush the lines as often as required by the ENGINEER in order to remove all sand, dirt and debris from them.

3.3 INSPECTION

A. Each sewer line between manholes, upon completion or at such time as the ENGINEER may direct, but prior to its being included for partial payment, is to be cleaned and visually inspected by “lamping”. The sewer lines shall be dry, free from cracked or broken pipe, dirt, debris and visible leakage and shall be true to line and grade within the specified tolerances. All defects shall be corrected promptly at the CONTRACTOR’s expense

B. Subsequent to the visual inspection and prior to final Pavement Restoration, the CONTRACTOR shall test for deflection between manholes of its internal diameter.

C. All gravity sewers with an invert greater than 16.0 feet below grade shall be videotaped.

END OF SECTION

SECTION 33 01 30.62

MANHOLE REHABILITATION

PART 1 - GENERAL

1.1 SCOPE

A. Manhole rehabilitation shall be accomplished by the application of materials that will improve the overall structural condition of the manhole. The intent of this portion of the work is to provide for aspects of sewer manhole rehabilitation and sealing using various procedures either singularly or in combination, including type of repair, methods of repair, materials and equipment as required for each manhole scheduled for rehabilitation as per each approved Work Authorization under this Contract.

1. Manhole Preparation: These work items include cleaning the manhole, sealing walls and patching the interior surfaces.

2. Manhole Repairs – Critical Leak Areas: These work items include repairing leaks in the wall to base areas, pipe penetrations and manhole joints.

3. Manhole Liners: These work items include installation of cementitious liners, cementitious/epoxy liners, and high density polyethylene (HDPE) liners.

4. Frame and Cover Repairs: These work items include the repair of frame and cover leaks, realigning and grouting frame, and frame and cover replacement.

1.2 SUBMITTALS

A. The Contractor shall submit shop drawings and other information as specified in accordance with Section 01300, "Submittals".

B. Qualification

1. The Qualification of the Manhole Rehabilitation Contractor shall be submitted prior to contract award. These qualifications shall include detailed description of the following:

a. Name, business address and telephone number of the Manhole Rehabilitation Contractor.

b. Name(s) of all supervisory personnel to be directly involved with Manhole Rehabilitation for this project.

c. The Contractor shall sign and date the information provided and certify that to the extent of his knowledge, the information is true and accurate, and that the supervisory personnel will be directly involved with and used on this project. Substitutions of personnel and/or methods will not be allowed without written authorization of the Owner.

d. Specialty technicians shall be certified by the equipment manufacturer and/or its authorized representative. Certifications shall be submitted to the Owner.

e. The Contractor shall provide upon Owner's request his references of previous wastewater lift station rehabilitation project lists going back at least five (5) years including his customers'/clients' name, address, and telephone number.

f. The Contractor shall have a State of Florida Underground Utility Contractor's License and must have been in business in the State of Florida for the last (5) five years in providing manhole rehabilitation contracting services utilizing the product being proposed for this bid.

C. Construction Procedures

1. The Contractor shall submit written descriptions of the construction method(s) and equipment to be used and locations required for equipment and material access.

PART 2 - PRODUCTS

2.1 MANHOLE FRAMES AND COVERS

A. All manhole frame and cover material and installation requirements shall be as indicated in Construction Drawings and as per approved Work Authorization.

2.2 PREPATORY INFILTRATION CONTROL PRODUCTS

A. Infiltration Control/Plugging Material

1. The infiltration control material shall be a rapid-setting, high-early-strength, hand-applied, cementitious material for stopping infiltrating water and making repairs in concrete, brick or other masonry constructed manholes. The material shall be non-shrinking, nonmetallic, and noncorrosive. It shall be formulated at the factory, and supplied in factory sealed and labeled pre-measured containers. The material shall have the following minimum requirements:

a. Compressive Strength - ASTM C109 - 600 psi at 1 hour 2,400 psi at 24 hours

b. Expansion - ASTM C327 - 0.10 percent Sulfate

c. Resistance - ASTM C267 - No weight loss after 15 cycles; 2,000 ppm

d. Freeze/Thaw Resistance - ASTM C666 - Method A: 100 cycles no visible damage

e. Pull-Out Strength – ASTM C234 - 14,000 pounds

f. Set Time - ASTM C191-92 - 45-60 seconds

2. Product shall be Premacast-Plug as manufactured by AP/M Permaform, P.O. Box 555, Johnston, IA 50131 (Tel. 800-662-6465); Strong-Seal Strong-Plug as manufactured by the Strong Company, Inc., 4505 Emmet Sauders Road, Pine Bluff, Arkansas 71601 (Tel. 800-982-8009); Preco-Plug as manufactured by Fosroc Incorporated, 150 Carley Court, Georgetown, Kentucky 40324 (Tel. 800-645-3954); or approved equal.

B. Chemical Grouting Material

1. Chemical Grouts may be used for stopping very active infiltration and shall be mixed per manufacturer's recommendations and as specified in Section 02322 Chemical Grout of Sewer Pipes. The chemical grout shall be an extremely low viscosity acrylamide resin with gel times from 5 seconds to several hours. Product shall be AV-100 Chemical Grout as manufactured by Avanti International, 822 Bay Star Boulevard, Webster, Texas 77598 (Tel. 800-877-2570) or approved equal.

C. Patching Material

1. Patching material shall be a rapid-setting, high-early-strength, corrosion resistant, hand-mixed and hand-applied cementitious material for filling voids and repairing inverts in concrete, brick, or other masonry constructed manholes. It shall be formulated at the factory, and supplied in factory sealed and labeled pre-measured containers. The material shall have the following minimum requirements:

a. Compressive Strength - ASTM C109 - 2,400 psi at 24 hours

b. Bond Strength - ASTM C 21 - 145 psi at 28 days

c. Applied Density - 105 plus or minus 5 pounds per cubic foot

d. Shrinkage - ASTM C596

e. Set Time - ASTM C191-92

2. Product shall be Permacast-Patch as manufactured by AP/M Permaform, Strong-Seal QSR as manufactured by The Strong Company, Inc., Preco-Patch as manufactured by Fosroc Incorporated, or approved equal.

2.3 APPROVED CORROSION BARRIER SYSTEMS

A. Rehabilitated manholes shall be coated with an approved corrosion barrier system as listed in Section 09910: Coatings – Sewer Systems.

PART 3 - EXECUTION

3.1 GENERAL

A. The Contractor shall perform all work in strict accordance with all applicable OSHA Standards. Particular attention is drawn to those safety requirements involving man entry in confined spaces.

B. Flow Control: Flow control, as specified in Section 02750, "Wastewater Flow Control" shall be exercised as required to ensure that no flowing sewage comes into contact with sections of the manhole under repair.

C. Prior to beginning work, the Owner will visually review the manhole and confirm the repair procedure indicated on the Work Order.

3.2 PREPARATION

A. General:

1. The casting and adjusting area of the manhole shall be sandblasted to remove any loose material and rust.

2. Prior to cleaning the manhole, a 2-inch mesh screen shall be installed at the manhole outlet to catch debris. The Contractor shall clean all accumulations of debris, such as dirt and grease, loose mortar, bricks and concrete, and dispose of properly.

3. The manhole surface shall be clean, structurally sound and free from oil, grease, loose mortar, paints, protective coatings, efflorescence, laitance and airing compounds. The condition of the manhole may require the use of an environmentally safe degreasing compound; if so, the surface shall be thoroughly rinsed to eliminate any residue.

4. Any existing manhole steps shall be removed when installing manhole liners.

5. When a cementitious liner or cementitious/epoxy liner is called for in the Work Order, manhole interior shall be high-pressure (4,000 psi) water cleaned and sand blasted to remove all deteriorated concrete and other loose material. As a minimum, four (4) inches of the manhole cover frame area shall also be cleaned by sand blasting. After the cleaning process, the concrete structure shall be washed with a 5-10 percent solution of muriatic acid. The structure shall be cleaned again with high pressure water to remove acid residual and any loose material. The Contractor shall make provisions during sand blasting operations to contain all sand. No sand shall be allowed into the sanitary sewer lines.

B. Sealing of Manholes Walls:

1. After the completion of the cleaning operation, manhole wall leaks shall be sealed by the following methods:

a. Plugging using the infiltration control material specified in Section 2.03, and/or

b. Patching using the material specified in Section 2.03, and/or

c. Chemical Grout Sealing (using material specified in Section 2.03)

i. Equipment: The basic equipment shall consist of chemical pumps, chemical containers, injection packers, hoses, valves, and all necessary equipment and tools required to seal manholes. The chemical injection pumps shall be equipped with pressure meters that will provide for monitoring pressure during the injection of the chemical sealants. When necessary, liquid bypass lines equipped with pressure-regulating bypass valves will be incorporated into the pumping system.

ii. Sealing Procedures (Precast Manholes): At each point of leakage within the manhole structure, a hole shall be carefully drilled from within the manhole and shall extend through the entire manhole wall. In cases where there are multiple leaks around the circumference of the manhole, fewer holes may be drilled, providing all leakage is stopped from these holes. Grout ports or sealant injection devices shall be placed in these previously drilled holes in such a way as to provide a watertight seal between the holes and the injection device. A hose, or hoses, shall be attached to the injection device from an injection pump. Chemical sealing materials as specified shall then be pumped through the hose until material refusal is recorded on the pressure gage mounted on the pumping unit or a predetermined quantity of sealant has been injected. Care shall be taken during the pumping operation to insure that excessive pressures do not develop and cause damage to the manhole structure. Upon completion of the injection, the ports shall be removed and the remaining holes filled with mortar and troweled flush with the surface of the manhole walls or other surfaces. The mortar used shall be a non-shrink patching mortar.

iii. Sealing Procedures (Brick and Block Manholes): When chemical grouting is used to seal random or isolated leaks or leaking sections of a brick or block manhole, it shall be done in accordance with "ii. Sealing Procedures", above.

2. All materials shall be mixed and applied in accordance with the manufacturer's written instruction. Leaks may be temporarily channeled through "bleed" pipes which are removed and plugged during the final repairs. The manhole sealing repair shall be acceptable to the Owner before additional work proceeds.

C. Patching: Loose material shall be removed from the area to be patched or repainted exposing a sound subbase. Holes or voids around steps, joints or pipes, spalled areas

and cavities caused by missing or broken brick shall be patched and missing mortar repainted using a non-shrink patching mortar specified in Section 2.3. Cracks not subject to movement and greater than 1/16 inch in width shall be routed out to a minimum width and depth of 2 inch and patched with non-shrink patching mortar.

3.3 FRAME AND COVER REPAIRS (REPLACEMENT)

A. Frame and Cover Repairs Include:

1. Realign, Grout, and Seal Manhole Casting (Frame): In most cases, when the cast iron frame and cover are in reusable condition and are not themselves sources of inflow, the leakage through the joint under the frame can be handled by removing and replacing the old mortar joint. When acceptable to the Owner, this shall be accomplished by excavating as necessary, lifting off the frame, thoroughly cleaning its bottom bearing surface, coating it with asphalt paint similar to the original coating, removing the old mortar from the top of the wall and replacing it with a 2-inch (nominal) layer of new mortar consisting of one part of Portland cement to three parts of clean, washed sand, mixed with an adequate amount of water and carefully resealing the frame in its correct position. Realignment may be horizontal or vertical. Vertical realignment may be required in order to raise the manhole frame and cover to the existing grade elevation.

2. Replace Manhole Ring and Cover and Install Seal: Where identified by the Owner, cast iron rings and covers shall be replaced by the Contractor. The Contractor shall remove and replace the entire assembly with a new frame and cover. The frame shall be set on the manhole wall as described in Paragraph 1 entitled "Realign, Grout, and Seal Manhole Casting (Frame)" above.

3.4 RUBBER CHIMNEY SEAL

A. Where so indicated by the Owner, a flexible rubber chimney sleeve shall be installed in manhole frame and chimney joint area with stainless steel expansion band to compress the sleeve and seal the chimney area between casting ring and manhole wall, or HDPE manhole liner.

3.5 INVERT REPLACEMENT

A. The Contractor shall remove existing channel and benches to the base of the manhole. Rebuild channel by reshaping channel invert and building new slope of shelves or benches. Work shall include aligning inflow and outflow ports in such a manner to prevent the deposition of solids at the transition point. All inverts shall follow the grades of the pipe entering the manholes. Changes in direction of the sewer and entering branch or branches shall have a true curve of as large a radius as the size of the manhole will permit, but will be shaped to allow easy entrance of maintenance equipment including buckets, TV camera, etc.

3.6 TESTING

A. After the specified rehabilitation work has been completed, the manholes shall be visually reviewed and tested in accordance with manufacturer's testing procedures by the Contractor in the presence of the Owner and found to be acceptable.

1. Visual Review:

a. All rehabilitated manholes shall be visually reviewed for water tightness against leakage of water into the manhole. All visible leaks and defects observed during the review shall be repaired to the Owner's satisfaction. There shall be no visible infiltration.

2. Testing and Verification of Liners:

a. The owner's inspector shall verify the thickness of Cementitious liners and, epoxy coatings with a wet gauge. Any area found to be less than the minimum prescribed thickness shall immediately receive the additional material needed. The resultant lined manhole wall shall be leak-free, smooth and free of honeycomb or areas of segregated aggregate. The HDPE plastic liner shall be securely embedded into the concrete to produce a continuous protective barrier. Epoxy coatings and the surface and welds of HDPE liners shall be tested at 10,000 volts with a holiday detector for pinholes and holidays. Any defects shall be promptly repaired and re-tested. Inspection and testing shall be performed by the Certified Applicator in the presence of the Owner.

END OF SECTION

SECTION 33 11 00

POTABLE WATER TRANSMISSION SYSTEM

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. The work covered by this section consists of providing all labor, equipment, materials, and performing all construction required to install the various piping, valves, fittings and accessories for potable water distribution mains as specified and shown on the Contract Drawings.

1.2 RELATED SECTIONS

A. **Section 01 11 00**: **Summary of Work.**

B. **Section 01 74 30**: **Testing Piping Systems.**

C. **Section 01 72 00**: **Project Record Drawings.**

D. **Section 02 00 00**: **Existing Utilities and Underground Structures.**

E. **Section 31 23 16.13**: **Trenching, Backfill and Compaction.**

1.3 SUBMITTALS REQUIRED

A. Submittals for the various types of pipe, fittings and restrained joints.

B. Catalog cuts and shop drawings for all valves and valve boxes.

C. Record drawings in accordance with **Section 01 72 00** – Project Record Drawings.

D. The manufacturer will furnish a sworn affidavit that the pipe, fittings and lining furnished under the Contract comply with all applicable provisions of the ANSI and/or AWWA Standards.

E. Reports of pressure tests, leakage tests and bacteriological clearance tests in accordance with **Section 01 74 30** - Testing Piping Systems.

F. Shop drawing submittals for materials listed as approved in the Water Utilities Department "Manual of Minimum Engineering and Construction Standards" are not required if the Contractor submits a signed "shop specification" form attached hereto.

1.4 JOB CONDITIONS

A. The Contractor will submit plans and schedules for approval by the Owner before any shutdown or any interruption in service takes place or any large flows and volumes of water are used for flushing or disinfection.

B. Design criteria for all pipe and fittings: 150 psi test pressure, ANSI laying condition Type 4, trench width of two feet (2') plus the pipe diameter.

C. Pipe and fittings shall be marked with the diameter, date of manufacture, and the name or trademark of the manufacturer.

PART 2 - PRODUCTS

2.1 DUCTILE IRON PIPE (D.I.P.)

A. Provide Class 350, special thickness class 50, conforming to ANSI A 21.51/AWWA C-151 for all pipe sixteen inches (16") in diameter or smaller. The pipe interior will have a cement mortar lining with a bituminous seal coat conforming to ANSI A 21.4/AWWA C 104. The pipe manufacturer shall determine additional pipe wall thickness as required by the design.

B. Provide Class 300, special thickness class 50, conforming to ANSI A 21.51/AWWA C-151 for all pipe larger than sixteen inches (16") in diameter. The pipe interior will have a cement mortar lining with a bituminous seal coat conforming to ANSI A 21.4/AWWA C 104. The pipe manufacturer shall determine additional pipe wall thickness as required by the design.

C. Furnish mechanical joint pipe or push-on pipe for below grade installations as shown on the drawings or as directed by the Owner. Joint lubrication shall be a furnished by the manufacturer.

D. Furnish flanged pipe for all above grade installations. All flanged joints shall have Toroseal gaskets.

2.2 RESTRAINED JOINTS

A. Provide ductile iron Class 350 restrained joint pipe. Where the drawings do not specify a type of restrained joint, but require a specified length of restraining, ductile iron restraints may be used.

2.3 FITTINGS

A. All fittings shall be ductile iron, cement lined with a bituminous seal coat, mechanical joint, Class 250 conforming to ANSI A21.10 and AWWA C-104/110/111.

B. Joints for fittings twenty-four inches (24") in diameter and under shall be restrained mechanical joint, except above ground fittings which shall be flanged.

C. Joints for fittings shall be restrained type in accordance with the schedule shown on the Contract Drawings.

2.4 GATE VALVES

A. Provide mechanical joint, iron body, resilient seat gate valves conforming to the latest edition of AWWA C-509, for all valves smaller than fourteen inches (14").

B. Gate valves smaller than four inches (4") shall conform to federal specifications W W-V-54D, Type 1, Class A, 125 psi steam pressure rating.

C. Furnish non-rising stem gate valves, with parallel seats, interior parts coated with thermo-setting epoxy, and mechanical joint ends.

D. Gate valves are to open left (counter-clockwise) with a two inch (2”) square operating nut. Unless otherwise shown, valves are to be set with their stems vertically above the centerline of the pipe.

E. Gate valves are to be carefully inspected, opened wide, then tightly closed, and all the nuts and bolts thereon tested for tightness.

F. Any gate valve that does not operate correctly will be removed and replaced at the Contractor's expense.

G. Valve operating nuts are to be brought within thirty inches (30") of finished grade.

H. Special care shall be taken by the Contractor to prevent joint material, stones, or other substances from becoming lodged in the valve seat.

I. Gate valves shall be tied to mains with approved restraints.

2.6 BUTTERFLY VALVES

A. Provide Class 150A mechanical joint butterfly valves conforming to the latest edition of AWWA C-504, suitable for buried service, for all valves larger than twelve inches (12") (except tapping valves).

B. Furnish butterfly valves with "O" ring shaft seals and cast iron body and disc.

C. Butterfly valves shall be tied to mains with tie rods or anchor tees.

D. Laying length of all classes shall be Table 2, short body.

E. Actual port diameter shall not be less than one inch (1") smaller than the nominal pipe size to which it is attached.

F. Valves shall be equipped with adjustable mechanical stop limiting devices in the operator to prevent over travel of the valve disc in the open and closed position. Disc position stops located in the valve body are not acceptable.

G. Valve bodies shall be constructed of ASTM A126 Class B cast iron and shall have two (2) integrally cast trunnions for shaft bearings.

H. Valve discs shall operate through a 90-1/4 degree angle from full closed to full open position.

I. Valve discs shall be alloy cast iron ASTM A436 Type 1, or ASTM A48, or ASTM A126 for valves on lines of nominal pipe sizes of twenty inches (20") and smaller.

J. Valve discs shall be ASTM A48 cast iron or ASTM A536 ductile iron for valves on lines of nominal pipe sizes of twenty-four inches (24") or larger.

K. Valve discs shall also be provided with a type 316 stainless steel seating edge for ASTM A48, A126 or A536 cast iron discs, and shall not have any hollow chambers which can entrap water.

L. Valve shafts shall be type 316 stainless steel. Shaft diameter shall meet minimum requirements established by AWWA Standard C504.

M. Valve shafts shall be one (1) piece for valves with nominal pipe sizes twenty inches (20") and smaller.

N. Valve shafts shall be two (2) piece for valves with nominal pipe sizes twenty-four inches (24") and larger.

O. Valve seats shall have the bond with the valve body tested with a seventy-five pound (75 lb.) pull in accordance with test procedures ASTM D-429 method B for valves with nominal pipe sizes twenty inches (20") and smaller.

P. For valves twenty-four inches (24") and larger, seats shall be retained in the body by mechanical means without retaining rings, segments, screws or hardware of any kind in the flow streams.

Q. Valve seats shall be field adjustable around the full circumference of the valve body without interruption for valves with nominal pipe sizes twenty-four inches (24") and larger.

R. Valve seats shall be replaceable without dismantling the operator, disc or shaft and without removing the valve from the line. The manufacturer shall certify that the valve seat is field replaceable as specified for valves with nominal pipe sizes twenty-four inches (24") and larger.

S. Valve bearings shall be sleeve type bearings, and shall be 100 percent nylon or Teflon for valves with nominal pipe sizes twenty inches (20") and smaller.

T. Valve bearings shall be Teflon lining with fiberglass backing for valves with nominal pipe sizes twenty-four inches (24") and larger. Valve bearings shall be self lubricating and bearing loads shall not exceed 20 percent of the compressible strength of the bearing or shaft material.

U. Valve shaft seals shall be self compensating split V-type, and shall be adjustable and replaceable without removing the operator and/or the shaft.

V. Valve shaft seals shall be the same elastomer as specified for the valve seats for the intended service.

W. Manual operators shall conform to AWWA C504, except where modified or supplemented herein, and shall be of the worm gear or traveling nut type and shall be self-locking to prevent the valve disc from creeping or fluttering when in any intermediate position between open and closed.

X. Manual operators shall be totally enclosed and permanently lubricated, and shall have a gear ratio and hand-wheel diameter designed to produce an output torque equivalent to the maximum valve shaft torque required to operate the valve under actual line pressures, velocities and flow direction with a minimum pull of forty pounds (40 lbs.) on the hand-wheel. The manufacturer shall submit calculations verifying compliance with this standard.

Y. For buried service, valves shall be totally enclosed, fully gasketed, grease packed and shall be designed to operate indefinitely when submerged under twenty feet (20') of water. Buried service operators shall be provided with a valve extension stem, AWWA Standard operating nut and valve box. The extension stem for buried service shall be sufficiently long to extend to within twelve inches (12") of the ground surface. Where required, valves shall be furnished with extension bonnets.

Z. Laying length of all classes shall be Table 2, short body.

AA. Valves shall be rated at not less than a 150 psi working pressure.

BB. Valves shall be the manually operated type opening counterclockwise.

CC. Valves shall be as manufactured by those shown in the Approved Materials and Equipment list.

2.7 TAPPING SLEEVES AND TAPPING VALVES

A. Provide ductile iron, mechanical joint x flanged tapping sleeves. Factory epoxy coated steel tapping sleeves are permissible on existing SDR-26 and SDR-21 PVC pipe only

B. Provide as a tapping valve a mechanical joint x flanged, iron body, resilient seat gate valve, conforming to those described in these Specifications.

C. Pressure test the tapping sleeve and valve at 150 psi for one (1) hour. The Owner and the Engineer (if applicable) must be given not less than forty eight (48) hours advance notice of the test and must be present to witness the test.

D. The pipe coupon will be carefully preserved and turned over to the Owner.

E. Provide double strap tapping saddles with AWWA threads and ball valve curb stop with operating nut gate valve for 1½ inch and 2 inch taps.

F. Provide double strap tapping saddle with AWWA threads and corporation stop with AWWA inlet threads for taps one inch (1") and smaller.

G. All taps must be not less than eighteen inches (18") from a fitting or bell.

H. The tapping line must be smaller than the tapped line, except as approved by the Owner and the Engineer.

I. A ductile iron tapping sleeve is required for all taps unless the tapping line is less than ½ the diameter of the line to be tapped. A steel tapping sleeve is permissible in those cases.

J. Cut-in tee construction may be required by the Owner depending on the circumstances and sizes involved.

2.8 VALVE BOXES

A. Provide cast iron valve boxes with screw type riser sections and a minimum inside shaft diameter of 5¼ inches for all valves four inches (4") and larger installed underground.

B. Furnish valve box lids with a 1½ inches deep skirt and the word "water" cast in the top.

C. Valve boxes are to be adjustable to fit the depth of earth cover over the valve and be designed and installed to prevent the transmission of surface loads directly to the valve or piping. Extensions shall be provided as required to meet grade.

D. Valve boxes are to be carefully centered over the valve-operating nut so as to permit a valve key to be easily fitted to the operating nut.

E. Valve box tops are to be set flush with finished grade, with allowance made for the settlement of surrounding backfill or surface. In paved areas, the top of the cover shall be set flush with the finished paving.

F. Valves lying outside of paved areas shall be provided with an eight inch (8") thick concrete collar surrounding the top of the valve box.

2.9 AIR RELEASE VALVE

A. Air release valves shall be of the automatic type unless otherwise specified.

B. Air release valves shall have cast iron bodies and stainless steel floats.

2.10 SAMPLE POINTS

A. Install sample taps required to take all necessary water samples at points designated on the Contract Drawings.

B. Provide ¾-inches type "K" copper tubing or Schedule 40 PVC for all in-line sample points.

C. The Contractor will make arrangements for a certified laboratory to take all water samples required for bacteriological tests.

D. Water main being tested must remain under line pressure throughout the test and until such time as regulatory agency approval to place the main in service has been received by the Owner.

E. Following the receipt of regulatory agency approval, the Contractor will remove all sample point tubing and install a brass plug on all sample point corporation stops.

2.11 FIRE HYDRANTS

A. Provide fire hydrants as shown on the Contract Drawings.

B. Hydrants are to be capable of delivering a flow of 500 gallons per minute with a residual pressure of not less than 20 psi.

C. Provide hydrants of the dry barrel "break away" type conforming to AWWA C-502, with two (2) each 2½- inch hose nozzles and one (1) each 4½- inch pumper nozzle. Nozzles are to be threaded, not leaded, and set with the centerline of the 4½- inch nozzle eighteen inches (18") above finished grade.

D. Furnish hydrants with an interior valve opening of 5¼- inch with a brass-to-brass threaded stationary seat.

E Hydrants are to be fitted with a mechanical joint connection per ANSI A21.11/AWWA C-111 with a bury depth not less than thirty inches (30”).

F. Fire hydrant branches (from the water main to the hydrant) are not to be less than six inches (6") in diameter, with a gate valve located as close as possible to the main.

G. Hydrants are to be suitably restrained.

H. Furnish hydrants that are free of corrosion and properly lubricated.

I. Paint hydrants the color as directed by the Owner prior to a final walk-through inspection.

J. Submit to the Owner a "Certificate of Compliance" from the hydrant manufacturer stating that the hydrant provided meets the Specifications stated herein.

K. Hydrants shall be placed so as to minimize their vulnerability to traffic. Provide four inch (4") diameter Schedule 40 galvanized steel pipe stanchions around hydrants where shown on the Contract Drawings or as required by the Owner. Set pipe stanchion bases in concrete and fill each stanchion with concrete.

L. Hydrants are to be located at or near road right-of-way lines with the pumper discharge nozzle facing the roadway.

M. Hydrants are not to be placed in sidewalks, bicycle paths or parking areas.

2.12 METER BOXES/VAULTS AND YOKES

Not used

2.13 BACKFLOW PREVENTION DEVICES

Not used

2.14 TRANSITION COUPLINGS

A. Heavy duty flexible couplings are acceptable for transition joints with existing facilities only.

B. Couplings must have stainless steel clamps only and be manufactured by Fernco, or approved equal.

PART 3 - EXECUTION

3.1 MARKING BY MANUFACTURER

A. Provide pipe with special markings indicating the weight, class of pipe, casting period, manufacturer's mark and the year the pipe was produced.

3.2 TESTING

A. All tests are to be made in the presence of the Owner and the Engineer (if applicable), unless waived in writing.

B. Notify the Owner not less than forth eight (48) hours prior to performing a test.

3.3 INSTALLATION

A. All work must conform to the latest revision of AWWA C-600.

B. A pre-construction meeting must be held prior to beginning any work. All necessary permits must be obtained and presented at the pre-construction meeting.

C. The Owner and the Engineer (if applicable) must be given not less than seventy two (72) hours' notice prior to beginning construction.

D. Avoid causing damage when loading and unloading pipe, fittings, valves and accessories.

E. Place pipe and fittings along the route of construction with spigots pointing in the direction of flow and situated to cause the least interference with pedestrian and vehicular traffic. Pipe shall be handled by mechanical equipment.

F. Clean and inspect all pipe to insure that no dirt or foreign material are in the finished line.

G. Groundwater and trench water are to be kept out of the pipe and the pipe kept closed with a test plug when work is not in progress.

H. Trenches are to be dewatered and the cost thereof included in the price for installing the water line. All pipes shall be laid in trenches having a dry and stable bottom.

I. Pipe is to be laid to line and grade with valves and hydrant stems plumb. Minimum cover is thirty-six inches (36") for pipes twelve inches (12") and larger and thirty-six inches (36") for pipes ten inches (10") and smaller, unless otherwise noted on the plans.

J. Deflections from a straight line or grade made necessary by field conditions are not to exceed the manufacturer's recommendations. If the specified alignment requires deflection in excess of that recommended by the manufacturer, provide fittings in accordance with these Specifications.

K. Commence laying of the water line immediately after the excavation is started and keep pipe laying closely behind the trenching.

L. Excavation may be stopped when, in the opinion of the Engineer, the trench is open too far in advance of the pipe laying operation. Pipe shall be fully supported along its entire length. Backfill shall be free of boulders and debris. Sharp or rocky material encountered in the base shall be replaced with proper bedding.

M. Damaged or unsound pipe or fittings will be removed and replaced by the Contractor at no additional cost to the Owner.

N. Remove from the pipe all lumps, blister, excess coating material and oil prior to jointing of the pipe.

O. Water lines are to be thrust blocked or restrained to prevent movement of lines under pressure. Provide thrust blocks, anchor blocks, or restrained joints at all bends, tees, crosses, wyes, plugs and behind all main line taps.

P. Provide support thrust blocks or restrained joints (megalugs or approved equal) at all main line valves, hydrant valves, tapping valves and tapping sleeves.

Q. All joints are to be watertight. Leaks or defects will be repaired immediately.

R. Pipe which has been disturbed after being laid will be taken up, the joints cleaned, and the pipe properly re-laid. Superfluous material inside the pipe must be flushed or removed by means of an approved follower or scraper after joints are made.

S Install fittings and pipe joints in strict accordance with the manufacturer's specifications and recommendations.

T. Place EMS magnetic markers horizontally twelve inches (12") above all bends and changes in alignment.

U. Unanticipated conflicts with other underground utilities must be immediately brought to the attention of the Owner and the Engineer (if applicable). Resolution of each conflict must receive prior approval from the Owner and the Engineer.

V. Any proposed deviations from the Contract Drawings must be approved by the Engineer and the Owner.

W. Maintain ten feet (10') horizontal separation (centerline of pipe to centerline of pipe) from sanitary sewer mains and ten feet (10') horizontal separation (outside of pipe to outside of pipe) from drainage pipes. Where ten feet (10') separation cannot be maintained between sanitary sewers and water mains, a lesser separation may be permitted provided restrained joint ductile iron pipe is used. Maintain fifteen feet (15') horizontal separation from buildings, top of bank of lakes and canals, and other structures, unless otherwise approved by the Owner.

X. Maintain eighteen inches (18") vertical separation (centerline of pipe to centerline of pipe) between all pipes, if possible. Where eighteen inches (18") separation cannot be maintained between gravity sewers and water mains, a six inch (6") separation may be permitted provided D.I.P. is used.

Y. Ductile Iron Pipe is required in the following circumstances:

1. Water mains sixteen inches (16”) in diameter or larger.

2. Water mains smaller than six inches (6”).

3. Within ten feet (10’) of gravity or pressure sewage pipes.

4. Within ten feet (10’) of storm sewers and exfiltration trenches.

5. Within fifteen feet (15’) of building structures. (near side of concrete footing).

6. Within fifteen feet (15’) of the top of canal and lake banks.

7. Crossings under any wastewater, reclaimed water, and storm drainage pipes with no joints within ten feet (10') of the crossing.

8. Crossings over wastewater, reclaimed water, and storm drainage pipes with less than eighteen inches (18") vertical separation with no joints within ten feet (10') of each other.

9. Jack and bores (mechanical joint with MEGALUGS or equal).

10. Within the right-of-way of major roads as determined by the Owner and as shown on the Contract Drawings.

11. Under existing or proposed paved areas, including bicycle paths, sidewalks and parking areas.

Z. Water mains shall not be laid in fuel contaminated areas.

AA. Unnecessary transitions between ductile iron pipe and PVC pipe that are not specified or required by the Contract Drawings are not permitted.

3.4 MISCELLANEOUS INSTALLATION CONDITIONS

A. New connections to existing mains are to be made using proper specials and fittings to suit the actual conditions.

B. Verify all pipe dimensions before ordering special fittings and couplings.

C. Locate existing in-line fittings and valves prior to starting trench work on a line to be connected to an existing fitting or valve.

D. Line tie-ins are to be done on a date and at a time approved by the Owner.

E. All connections to existing mains shall be made under the direct supervision of the Owner. Valves on existing mains shall be operated only by the Owner's personnel.

F. If service must be cut off to existing customers, the Owner must receive four (4) days prior notice to make necessary notifications. The Contractor may be required to assist the Owner in making notifications.

G. In the event of cutting off service to existing customers, the Contractor shall be ready to proceed with as much material pre-assembled as possible at the site to minimize the length of service interruption. Such connections may be required to be made at night to minimize the effects on existing customers. The Owner will postpone a service cut-off if the Contractor is not ready to proceed on schedule.

H. Local chlorination will be required for all pipe and fittings used to complete connections with potable water.

3.5 FIELD INSPECTION OF SYSTEM

A. Furnish and install temporary testing plugs or caps for the water line, all necessary pressure pumps, hose, pipe connections, meters, gauges and other similar equipment for conducting pressure and leakage tests and flushing of the new water lines.

B. Perform tests between valves and in sections not exceeding 1,500 lineal feet in length. Use potable water from a source approved for use by the Owner.

C. Mains tested shall either be physically separated from existing potable water lines or isolated from existing lines by a double valve arrangement.

D. Maintain a water line pressure of at least 150 psi for a period of not less than two (2) hours. All joints, fittings and thrust blocks must be exposed during the pressure test.

E. The maximum quantity of water that must be supplied into the tested pipe to maintain pressure within five (5) psi of the specified test pressure shall not exceed 50% of the applicable AWWA C-600 Standard.

F. Uncover and repair leaks evident at the surface regardless of the total leakage indicated by the test. Remove all pipe, valves, fittings and other materials found defective under the test at no additional expense to the Owner. Tests will be repeated until leakage has been reduced below the allowable amount.

G. The Contractor is responsible for the ultimate tightness of the water line within the preceding requirements. Necessary modifications to the foregoing procedure are subject to prior approval by the Engineer and the Owner.

H. Inspections will be scheduled for regular working hours only, except for nights when service interruptions are involved. Inspections will not be scheduled for weekends or holidays.

I. Inspectors will make routine passes on call to inspect such items as thrust blocks, material on-site and clearances between conflicting lines.

J. Scheduled inspections are required for jack and bores, pipe slippage through jack and bore casings, main line taps, pressure and leakage tests, flushing of sections of completed mains and any time an existing facility of the Owner is to be connected to.

3.6 CLEANING AND FLUSHING

A. Clean and Flush all lines prior to conducting pressure tests. The Owners personnel must be present and in control of all existing valves during the flushing operation.

B. Provide a minimum of forty eight (48) hours advance notice prior to flushing operations.

C. Thoroughly flush each run of pipe so as to remove all debris and foreign matter from the pipe. Introduce sufficient water into the mains to produce a flow velocity of not less than five feet per second (5 ft/sec). Maintain this rate of flow until the discharge is clear and no evidence of silt or foreign matter is visible.

D. Where fire hydrants or blow-offs are not available or are not of sufficient flow capacity to permit adequate flushing, the Contractor will open the water line and provide flumes or temporary piping sufficient to convey the flushing water to the nearest approved disposal point.

E. The Contractor is responsible for securing a flushing point capable of discharging the flushing water to a safe location approved for use by the Engineer and the Owner. Flushing water shall not be discharged in such a manner as to cause a public nuisance or a public inconvenience.

F. The Contractor is responsible for correcting any erosion or other damage which occurs as a result of the flushing operation.

3.7 DISINFECTION AND TESTS

A. After the completion of construction and pressure testing, but immediately before the system or unit is placed in operation, water lines must be disinfected.

B. Provide liquid chlorine, sodium hypochlorite solution, or dry hypochlorite as a disinfecting agent.

C. Disinfect piping by introducing the disinfecting agent into the water being pumped into the system in such a manner that the entire system will be filled with water containing a minimum chlorine concentration of 50 ppm at any point in the system. Allow the water to remain in the system for a minimum contact period of not less than eight (8) hours before the system is flushed out.

D. Following the specified contact period, thoroughly flush the piping with water until the residual chlorine measures less than two (2) ppm. Determine the amount of residual chlorine in accordance with standard tests using a standard orthotolodine test set.

E. Following disinfection and flushing as specified, collect samples of water from designated sample points in sterilized containers for forwarding to an independent, approved testing laboratory for bacteriological examination.

F. If repeated tests show the presence of coliform organisms, repeat or continue the disinfection until tests indicate the absence of coliform contamination.

G. The Contractor is responsible for collecting all samples for bacteriological testing.

H. The complete disinfection program and methods followed must be in accordance with directives of the Florida Department of Environmental Regulation, Division of Health and the Palm Beach County Health Department.

I. Final approval of the bacteriological testing is required from the Palm Beach County Health Department prior to placing the system into operation.

J. The maximum length of line allowed to be tested as one (1) section is 2,500 lineal feet.

3.8 CONCRETE

A. Provide ready-mixed concrete for thrust blocks, encasements, and protective slabs having a 28-day compressive strength not less than 2,500 psi.

3.9 FINAL CONNECTION

A. No connection of the new water main to an existing water main in service shall be made until all tests, including but not limited to pressure, leakage, and bacteriological clearance tests, have been completed and are approved. Thorough flushing of the new water main must also be completed.

3.10 RESTORATION AND CLEAN-UP

A. All areas disturbed by the Work shall be immediately cleaned and restored in to its original condition or better by the Contractor at no cost to the Owner.

END OF SECTION

SECTION 33 32 10

PUMP STATION - FALL PROTECTION SYSTEM

PART 1 - GENERAL

1.01 WORK INCLUDED

A. The work covered by this Section consists of furnishing all labor, equipment and materials, and performing all operations required for the installation and certification of an approved pump station grate system for fall protection (fall through prevention).

B. An approved fall protection system shall be installed within the wetwell hatch openings of the submersible wastewater pump station.

C. Prior to final acceptance of the fall protection system by OWNER, the CONTRACTOR will be required to remove and reinstall all pumps in order to demonstrate that the fall protection system does not cause an obstruction to the pumps.

D. The fall protection system shall be permanently and professionally installed using acceptable construction practices. The manufacturer shall certify that each fall protection system is installed as per the manufacturer's recommendations. The fall protection system shall be warranted for a minimum of ten (10) years for safety grates to include materials, workmanship and installation.

E. The pump station grate system must be furnished, installed and certified to meet OSHA Standards in CFR 29 – 1926 by the manufacturer. The manufacturer shall perform the installation or train and certify a CONTRACTOR to perform the installation of the fall protection system as per the manufacturer's instructions. Documentation of CONTRACTOR certification is to be submitted prior to the start of work.

1.02 RELATED WORK

A. **Section 01 11 00**: **Summary of Work.**

B. **Section 01 33 00**: **Submittals.**

C. Section 01 77 00: Project Close-Out.

1.03 SUBMITTALS

A. Submit shop drawings and other information for review in accordance with **Section 01 33 00** - Submittals, including hardware description and quantity, grate material and other applicable information.

1.04 CERTIFICATION

A. All pump station fall protection systems must be certified as to proper installation by the manufacturer of the fall protection system. Proof of certification for each installation must be provided as part of **Section 01 77 00** – **Contract Closeout.**

PART 2 - PRODUCTS

2.01 GENERAL

A. The pump station fall protection system shall be a safety grate product as described below or approved equal.

B. Each safety grate must have an engraved or embossed aluminum identification tag stating the date of installation, size of grate, name and contact information of the manufacturer. The inside of each wetwell hatch cover shall be fitted with an adhesive warning sign stating that the wetwell is equipped with a fall protection system and that the safety grate must be in place prior to leaving the station. The warning sign must be water and hydrogen sulfide gas resistant.

C. No more than six inches (6”) vertical clearance between the concrete top slab and the fall protection system shall be allowed. The fall protection system shall be centered on the hatch opening with no more than six inches (6”) horizontal clearance on either end between the concrete top slab edge and the fall protection system.

2.02 SAFETY GRATE

A. The Hinged Hatch Safety Grate is a permanent fall through prevention system that allows limited accessibility into the wetwell.

B. The fall through prevention system shall consist of a grate made of 6061-T6 aluminum and be designed to withstand a minimum pedestrian load of 300 lbs. per square foot. The grate openings shall be a minimum of four inches by six inches (4”x6”) to allow both visual inspection and limited accessibility for maintenance purposes when the grate is closed.

C. The grate will pivot on an aluminum hinge device with 316 Stainless Steel hardware that permits it to rotate upward 90 degrees and automatically lock in place. In its open position the grate will act as barrier to help prevent anyone from stepping into the hatch opening. An aluminum pull rod will be attached to the grate so the operator is positioned with the grate between him and the hatch's opening whenever he pulls on it to raise the grate. A 316 Stainless Steel rod will automatically engage to secure the grate in its open position, and can be lifted upward to permit the grate to close. The hatch cover will not be able to shut until the grate is closed--thereby insuring the grate is in position when the next operator opens the hatch cover.

D. The grate shall be powder coated with an OSHA safety orange or yellow color to increase visual awareness of the safety hazard.

E. A padlock hasp for owner-supplied padlock shall be provided.

F. All mounting hardware shall be manufactured of Type 316 Stainless Steel.

G. The safety grate system shall be installed by the manufacturer or the manufacturer shall train and certify a CONTRACTOR to perform the installation of the safety grate as per the manufacturer's instructions.

H. The safety grate system shall be manufactured by a company listed in the PBCWUD's Approved Materials and Equipment List.

PART 3 - EXECUTION

3.01 PREPARATION

A. The fall protection system must be anchored to the solid concrete top slab. If degraded concrete exists, the surface must be water blasted to reach a solid concrete surface suitable for anchoring in accordance with manufacturer's recommendations.

B. Prior to installation, the manufacturer/installer will provide and secure a temporary debris liner to prevent tools and hardware from entering the wetwell. The CONTRACTOR shall be responsible for damage to pumps, corrosion barrier coating, cables, floats, etc. due to dropped tools or hardware. Puncturing of the existing wetwell corrosion barrier coating to install the debris liner shall not be acceptable.

3.02 INSTALLATION

A. The grate and hatch frame shall be cast into the concrete top slab wall to allow for unobstructed removal of the pumps.

B. Prior to final acceptance of the fall protection system by MCU, the CONTRACTOR will be required to remove and reinstall all pumps in order to demonstrate that the fall protection system does not cause an obstruction to the pumps.

C. Provisions shall be made to protect against galling of hardware with similar metals. CONTRACTOR shall apply a Teflon or graphite based lubricant such as Neversieze to threads prior to assembly in accordance with manufacturer's recommendations.

D. A drill jig shall be used to ensure proper depth of bolt into concrete top slab.

E. Installation of the fall through prevention system shall be in accordance with the instructions provided by the manufacturer.

F. The complete grate assembly shall be warranted against defects in material, installation and workmanship for a period of ten (10) years from the date of installation.

END OF SECTION

SECTION 33 32 11

INSIDE DROP SYSTEM

PART 1 – GENERAL

A. Basic Application*:* INSIDE DROP SYSTEM is a plastic composite collection device that facilitates the controlled drop of effluent into the main stream flow of a sanitary manhole or wetwell. Adjustable stainless steel straps fully support the drop pipe.

PART 2 - PRODUCTS

A. Composition and Materials*:* DROP BOWL is fabricated from marine grade fiberglass. The clamping pipe supports are of 304 stainless steel with 18-8 stainless nuts and bolts.

The bowl size shall be determined by incoming pipe size and flow rates. The bowl shall be installed as per manufacturer's instructions using stainless steel fasteners. The appropriately sized drop pipe of SDR 35 PVC shall be securely attached to the manhole/wetwell wall using stainless steel adjustable clamping brackets and stainless steel fasteners. The connection of Drop Bowl to drop pipe shall be by flexible external pipe coupler. The turn-out at the base end of the drop pipe shall be accomplished with an appropriately angled PVC pipe elbow.

B. INSIDE DROP components consist of:

1. Standard size composite Drop Bowls
2. Stainless steel clamping brackets
3. Standard composite flume drop ends

Composite components are hand and chopper gun laminations of these properties:

Physical Properties of Unsaturated Polyester Resin Reinforced Laminates
(33 / 66 Glass / Resin 1.5 oz mat Laminates .125 in.)

Flexural Strength (psi) ASTM D790	27,100
Flexural Modulus (psi) ASTM D790	1,157,000
Tensile Strength (psi) ASTM D638	16,700
Tensile Modulus (psi) ASTM D638	1,457,000
Tensile Elongation (%) ASTM D638	1.54
Hardness, Barcol 934.1 ASTM D2583	55 - 60

Physical Properties of ISO Gel Coat

	Room Temperature Cured for 45 hours	Post Cured at 50_ for 24 hours
Tensile Strength	6,218	6,581
Elongation, %	2.70	1.90
Flexural Strength, psi	11,363	11,329
Heat Distortion, °F	0.544×10^6	0.713×10^6
Mandrel Flex, Mandrel Diameter in Inches	--	1.0

Stainless steel clamping bracket materials:

304 series non-magnetic stainless steel - 11GA
18-8 series non-magnetic stainless steel 3/8 x 18

PART 3 - EXECUTION

3.1 GENERAL

A. Select Drop Bowl of size appropriate to flow rate and pipe diameter. (The "A" Bowl 6" outlet will service up through full 8" inlets. Can be used for 10" and 12" inlet moderate flows. The "B" Bowl is sized to fit around 12" concrete pipe inlet.)

B. 1. Trim incoming pipe so that only 2" maximum protrudes into manhole.

2. For improved flow control, cut a "V" shaped notch at bottom edge of incoming pipe.

C. Center Drop Bowl directly under incoming pipe, allow approximately 1" clearance between pipe and bowl.

D. Attach Drop Bowl to manhole wall with 3/8" diameter stainless steel bolts in lead expansion anchors. (See following instructions).

1. Drill a 3/4"hole into the base material to the required depth.
2. Blow the hole clean of dust and other material.
3. Insert the anchor into the hole (Lead shield out).
4. Position the setting tool in the anchor. (The outer rim of the tool should seat onto the lead shield rim.)

5. Using the tool, set the anchor by driving the lead sleeve over the cone using several sharp hammer blows. (Be sure the anchor is at the required embedment depth.)
6. Position the fixture, insert screw or bolt and tighten.
7. Install brackets at 4ft intervals (min. of 2 brackets).

E. Cut and mount C-900 SDR 18 PVC drop pipe of diameter appropriate to Drop Bowl size and flow using RELINER adjustable stainless steel clamping brackets (RELINER clamping brackets will adjust to allow drop pipe to maintain correct stand off from wall).

F. Connection from Drop Bowl to drop pipe shall be by flexible external pipe connector, Fernco or pre-approved equal.

G. Install appropriate pipe elbow to provide smooth transition into wetwell beyond concrete fillet. Install pipe to the pump-off elevation.

H. Patch and/or repair penetrations or damaged corrosion barrier system as recommended by corrosion barrier system manufacturer.

I. Install optional drop bowl force main hood for high flow and/or force main connections to wetwell.

OPTIONAL DROP BOWL INSTALLATION KIT includes:

(8) 3/8 X 1" X 16 18-8 stainless hex cap screw full thread
(8) 3/8 18-8 stainless washers
(8) 3/8 16 x 1-1/4 lead tamp-in expansion anchors

3.2 MANUFACTURER

Manufacturer shall be RELINER® INSIDE DROP SYSTEM, or approved equal.

RELINER® is manufactured by Duran Inc. of Lyme, CT and is sold nationally through:

Best Management Products, Inc.
53 Mt. Archer Rd.
Lyme CT 06371
800-504-8008
860-434-0277
860-434-3195 Fax
duran@bestmp.com

Duran Inc.
53 Mt. Archer Rd.
Lyme CT 06371
Phone: (800) 504-8008, (860) 434-0277
Fax: (860) 434-3195
E Mail: duran@reliner.com
Web site: http://www.reliner.com

END OF SECTION

SECTION 33 34 00

FORCE MAINS

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Provide all labor, materials, equipment, supplies and perform all construction required to install the various piping, valves, appurtenances and accessories for the domestic wastewater force main as shown on the Drawings and specified herein.

1.2 RELATED SECTIONS

A. **Section 01 11 00: Summary of Work.**

B. **Section 01 33 16: Approved Materials and Equipment List.**

C. **Section 01 74 30: Testing Piping Systems.**

D. **Section 01 77 00: Project Close-Out.**

E. **Section 01 72 00: Project Record Drawings.**

F. **Section 02 00 00: Existing Utilities and Underground Structures.**

G. **Section 31 23 16.13: Trenching, Backfilling and Compaction.**

1.3 SUBMITTALS

A. Various types of pipe, fittings and restrained joints.

B. Record drawings in accordance with **Section 01 72 00 – Project Record Drawings**.

C. The manufacturer shall furnish a sworn affidavit that the pipe, fittings and lining furnished under the Contract complies with all applicable provisions of the ANSI and/or the AWWA.

D. Reports on pressure tests and leakage tests.

E. Shop drawing submittals for materials listed as approved in the Water Utilities Department Manual of Minimum Engineering and Construction Standards are not

required if the CONTRACTOR submits a signed shop specification form attached hereto.

1.4 JOB CONDITIONS

A. The CONTRACTOR shall submit plans and schedules for approval by the OWNER before any shutdown or any interruption in service takes place, or any large flows and volumes of water are utilized for cleaning and flushing.

B. Pipe and fittings shall be marked with the diameter, date of manufacture, and the name or trademark of the manufacturer.

PART 2 - PRODUCTS

2.1 PIPE

A. All wastewater force mains shall be constructed of either Polyvinyl Chloride Pipe (PVC) or Ductile Iron Pipe (DIP), as indicated on the Contract Drawings.

B. Refer to **Section 01 33 16 – Approved Materials and Equipment List** for a listing of force main pipe approved for use on this project.

2.2 FITTINGS

A. All fittings shall be epoxy lined, cement lined with a bituminous seal coat, mechanical joint, Class 250 conforming to ANSI A21.10 and AWWA C-104/110/111.

B. Joints for fittings twenty-four inches (24") in diameter and under shall be restrained mechanical joint, except above ground fittings which shall be flanged.

C. Joints for fittings shall be restrained type in accordance with the schedule shown on the Contract Drawings.

2.3 ADAPTERS

A. Where it is necessary to join pipe of different types, the necessary adapters shall be utilized. Adapters shall have ends conforming to the above specifications for the appropriate type of joint to receive the adjoining pipe.

B. Adapters joining two classes of pipe may be of the lighter class provided that the annular space in bell and spigot type joints will be sufficient for proper jointing.

C. Refer to the attached “Shop Specifications” for a listing of adapters approved for use on this project.

2.4 CHECK VALVES

Not used.

2.5 PLUG VALVES

Not Used.

2.6 RESILIENT SEAT GATE VALVES

A. GENERAL: Resilient-seated gate valves shall be provided.

B. Construction: Resilient-seated gate valves shall conform to ANSI/AWWA C 509 - Resilient-Seated Gate Valves for Water and Sewerage Systems. The valves shall be suitable for a design working water pressure of 200 psig, with flanged or mechanical joint ends. The valve body, bonnet, and disc shall be of cast iron or ductile iron and the disc or body shall be rubber-coated. Body and bonnet wall thickness shall be equal to or greater than the minimum wall thickness as listed in Table 2 of ANSI/AWWA C509. The stem, stem nuts, glands, and bushings shall be of bronze, with the stem seal per ANSI/AWWA C 509.

C. Refer to **Section 01 33 16 – Approved Materials and Equipment List** for a listing of resilient seat gate valves approved for use on this project.

2.7 DOUBLE DISC GATE VALVES

Not Used.

2.8 AIR RELEASE AND AIR VACUUM VALVES

A. Air release valves shall be of the automatic type unless otherwise specified and shall have cast iron bodies and stainless steel floats.

B. Refer to **Section 01 33 16 - Approved Materials and Equipment List** for a listing of air release valves and air vacuum valves approved for use on this project.

2.9 VALVE BOXES AND VALVE BOX COVERS

A. Cast iron valve boxes shall be provided for all valves installed underground. Valve boxes shall be adjustable to fit the depth of earth cover over the valve and shall be designed and installed so as to prevent the transmission of surface loads directly to the valve or the piping.

B. Valve boxes shall be carefully centered over the operating nut of the valve so as to permit a valve key to be easily fitted to the operating unit. The tops of valve

boxes shall be set flush with finished grade, with allowance made for the settlement of surrounding backfill or surface.

C. An eight (8) inch thick concrete collar shall surround the top of the valve box as shown on the Contract Drawings. Valve box lids shall have the word "SEWER" cast in the top.

D. Valve boxes located within paved surfaces shall be set to facilitate a vertical adjustment of 2.5 inches by rotating the top section of the box.

PART 3 - EXECUTION

3.1 MARKING BY MANUFACTURER

A. Provide pipe with special markings indicating the weight, class of pipe, casting period, manufacturer's mark and the year the pipe was produced.

3.2 TESTING

A. All tests are to be made in the presence of the OWNER and the ENGINEER (if applicable), unless waived in writing. Notify the OWNER not less than 48 hours prior to performing a test.

3.3 INSTALLATION

A. All work must conform to the latest revision of AWWA C600.

B. A pre-construction meeting must be held prior to beginning any work. All necessary permits must be obtained and presented at the pre-construction meeting. The OWNER and the ENGINEER (if applicable) must be given not less than 72 hours' notice prior to beginning construction.

C. Avoid causing damage when loading and unloading pipe, valves, fittings, and accessories. Place pipe and fittings along the route of construction with spigots pointing in the direction of flow and situated to cause the least interference with pedestrian and vehicular traffic. Pipe shall be handled by mechanical equipment. Clean and inspect all pipe to insure that no dirt or foreign material are in the finished line.

D. Groundwater and trench water shall be kept out of the pipe and the pipe kept closed with a test plug when work is not in progress. Trenches are to be dewatered and the cost thereof included in the price for installing the force main. All pipes shall be laid in trenches having a dry and stable bottom.

E. Pipe is to be laid to line and grade with valves plumb and level. Minimum cover is 36 inches for all pipes, unless otherwise noted on the Drawings.

F. Joint deflections from a straight line or grade made necessary by field conditions are not to exceed 75 percent of manufacturer's recommendations. The bending of pipe shall not be allowed. If the specified alignment requires deflection in excess of 75 percent of that recommended by the manufacturer, provide fittings in accordance with these Technical Specifications.

G. Commence laying of the force main immediately after the excavation is started and keep pipe laying closely behind the trenching.

H. Excavation may be stopped when, in the opinion of the ENGINEER, the trench is open too far in advance of the pipe laying operation. Pipe shall be fully supported along its entire length. Backfill shall be free of boulders and debris. Sharp or rocky material encountered in the base shall be replaced with proper bedding.

I. Damaged or unsound pipe or fittings will be removed and replaced by the CONTRACTOR at no additional cost to the OWNER. Remove from the pipe all lumps, blister, excess coating material and oil prior to jointing of the pipe.

J. Force mains are to be restrained to prevent movement of lines under pressure. Provide restrained joints at all bends, tees, crosses, wyes, plugs and main line taps. Provide support thrust blocks under all main line valves, tapping valves and tapping sleeves. All joints are to be watertight. Leaks or defects will be repaired immediately.

K. Pipe which has been disturbed after being laid will be taken up, the joints cleaned, and the pipe properly re-laid. Superfluous material inside the pipe must be flushed or removed by means of an approved follower or scraper after joints are made.

L. Install fittings and pipe joints in strict accordance with the manufacturer's specifications and recommendations.

M. Unanticipated conflicts with other underground utilities must be immediately brought to the attention of the OWNER and the ENGINEER (if applicable). Resolution of each conflict must receive prior approval from the OWNER and the ENGINEER. Any proposed deviations from the Drawings must be approved by the ENGINEER and the OWNER.

N. Maintain 10-foot horizontal separation (outside of pipe to outside of pipe) from water mains. Where 10-foot separation cannot be maintained between force mains and water mains, the ENGINEER may permit a lesser separation, provided restrained joint pipe is used. Maintain 15-foot horizontal separation between force mains and buildings, top of bank of lakes and canals, and other structures, unless otherwise approved by the OWNER.

O. Maintain 12 inches vertical separation (outside of pipe to outside of pipe) between all pipes, if possible. Where 12 inches vertical separation cannot be maintained, the ENGINEER may permit a lesser separation, provided restrained joint pipe and fittings are used.

3.4 MISCELLANEOUS INSTALLATION CONDITIONS

A. New connections to existing mains are to be made using proper specials and fittings to suit the actual conditions. Verify all pipe dimensions before ordering special fittings and couplings.

B. Locate existing in-line fittings and valves prior to starting trench work on a line to be connected to an existing fitting or valve. Line tie-ins are to be done on a date and at a time approved by the OWNER.

C. All connections to existing mains shall be made under the direct supervision of the OWNER. Valves on existing mains shall be operated only by the OWNER's personnel.

3.5 FIELD INSPECTION OF SYSTEM

A. Furnish and install temporary testing plugs or caps for the force main, all necessary pressure pumps, hose, pipe connections, meters, gauges and other similar equipment for conducting pressure and leakage tests and flushing of the new mains. Perform testing in accordance with the requirements of **Section 01670 – Testing Piping Systems.**

B. Inspections will be scheduled for regular working hours only. Inspections will not be scheduled for weekends or holidays. Inspectors will make routine passes on call to inspect such items as thrust blocks, material on-site and clearances between conflicting lines.

C. Scheduled inspections are required for jack and bores, pipe slippage through jack and bore casings, main line taps, pressure and leakage tests, flushing of sections of completed mains and any time an existing facility of the OWNER is to be connected to.

3.6 CONCRETE

A. Provide ready-mixed concrete for thrust blocks, encasements, and protective slabs having a 28-day compressive strength not less than 3,000 psi.

3.7 CLEANING AND FLUSHING

A. Cleaning and flushing of the force main shall be performed prior to pressure testing.

3.8 FINAL CONNECTION

A. No final connection of the new force main to an existing force main shall be made until all required cleaning and flushing has been completed and approved.

3.9 RESTORATION AND CLEAN-UP

A. All areas disturbed by the work shall be cleaned and restored in accordance with **Section 01 77 00 – Project Close-Out**.

END OF SECTION

SECTION 33 34 13.13

DUCTILE IRON PIPE

PART 1 - GENERAL

1.01 PERFORMANCE

A. Section generally defines CONTRACTOR's responsibilities unless otherwise indicated, for the following:

1. Ductile Iron Pipe (DIP).

1.02 RELATED SECTIONS

A. All of Division 1.

B. **Section 02 00 00** – Utility Construction.

C. **Section 31 23 16.13 -** Trenching, Bedding, and Backfill for Pipe.

D. **Section 33 34 00** – Force Mains

E. Appendices.

1.03 REFERENCES

A. ANSI/AWWA C104/A21.4, Latest Revision - Cement mortar lining for ductile iron pipe and fittings for water.

B. ANSI/AWWA C111/A21.11, Latest Revision - Rubber gasket joints for ductile iron and grey iron pressure pipe and fittings.

C. ANSI/AWWA C115/A21.15, Latest Revision - Flanged ductile iron and grey iron pipe with threaded flanges.

D. ANSI/AWWA C151/A21.51, Latest Revision - Ductile iron pipe, centrifugally cast in metal molds or sand lined molds for water and other liquids.

E. ANSI/AWWA C600, Latest Revision - Installation of ductile iron water mains and appurtenances.

PART 2 - PRODUCTS

2.01 MATERIALS

A. PIPE

1. Refer to **Section 01 33 16 – Approved Materials and Equipment List** for a listing of ductile iron pipe approved for use on this project.

2. Ductile iron pipe shall be designed in accordance with the requirements of ANSI/AWWA A21.51/C151 as applicable, and the supplemental requirements of this section.

3. Ductile iron pipe shall be Pressure Class 51 for sizes up to and including 12 inch and Pressure Class 350 for pipe sizes larger than 12 inch and shall conform to ANSI A21.51 and AWWA C-151.

4. Ductile iron pipe shall be of the diameter shown on the plans.

5. Ductile iron pipe shall be furnished complete with rubber gaskets or restraint gaskets where applicable.

6. Ductile iron pipe shall be supplied in lengths not less than 18 feet, having rubber ring type push-on joints, standard mechanical joints, restrained joints, threaded flanges, or ball joints as shown on the contract documents.

B. COATING AND LININGS

1. Exterior of buried pipe shall have factory applied bituminous coating, coal tar varnish or asphalt base paint, minimum one (1) mil thick.

2. Interiors of raw water, finished water and reclaimed water mains shall be cement lined.

3. Exterior coatings damaged in the field shall be repaired with a bituminous or coal tar repair coating. Interior coatings shall be repaired with a NSF 61 approved coating.

C. JOINTS

1. Joints in straight "Runs" of buried pipe shall be push-on with mechanical joints at fittings unless indicated otherwise on the Contract Documents. Pipe restraints shall be in accordance with Seacoast Utility Authority Specifications and as shown on the drawings and specified herein.

D. FLANGED PIPE

1. Flanged pipe shall be Class 53 and have threaded flanges with bolts and gaskets appropriate to the service use and maximum working pressure of the pipe.

2. All flanges shall be ductile iron.

PART 3 - EXECUTION

NOT USED

END OF SECTION

SECTION 33 34 13.23

POLYVINYL CHLORIDE PIPE AND FITTINGS

PART 1 – GENERAL

1.1 SCOPE OF WORK

A. Furnish labor, materials, equipment and incidentals to install the polyvinyl chloride (PVC) sewer pipe and fittings, complete as directed by the ENGINEER and as specified herein.

1.2 RELATED WORK

A. Section 31 23 16.13: Trenching, Backfilling and Compaction.

1.3 SUBMITTALS

A. Submit to the OWNER the name of the manufacturers and model number of all materials to be furnished.

1.4 REFERENCE STANDARDS

A. American Society for Testing and Materials (ASTM)

1. ASTM D1784- Standard Specification for Rigid Poly Vinyl Chloride (PVC) Compounds and Chlorinated Poly Vinyl Chloride (GPVC) Compounds.

2. ASTM D2321 - Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications.

3. ASTM D3034 - Standard Specification for Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings.

4. ASTM D3212 - Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals.

5. ASTM F477 - Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.

6. ASTM F679 - Standard Specification for Poly Vinyl Chloride (PVC) Large-Diameter Plastic Gravity Sewer Pipe and Fittings.

7. ASTM F758 - Standard Specification for Smooth-Wall Poly Vinyl Chloride (PVC) Plastic Underdrain Systems for Highway, Airport and Similar Drainage.

8. ASTM F789 - Standard Specification for Type PS-46 and Type PS-115 Poly Vinyl Chloride (PVC) Plastic Gravity Flow Sewer Pipe and Fittings.

9. ASTM F794 - Standard Specification for Poly Vinyl Chloride (PVC) Profile Gravity Sewer Pipe and Fittings Based on Controlled Inside Diameter.

10. Palm Beach County Water Utilities Department's – Uniform Policies and Procedures Manual, Chapter 4 Minimum Design and Construction Standards.

B. American Water Works Association (AWWA)

1. AWWA C110 – 08 - Standard for Ductile-Iron and Gray-Iron Fittings

2. AWWA C111/A21.11-06 - Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.

3. AWWA C900-99 - Installation of Ductile-Iron Water Mains and their Appurtenances.

C. National Sanitation Foundation (NSF)

1. NSF 14 - Plastic Piping System Components

D. Where reference is made to one (1) of the above standards, the revision in effect at the time of bid opening shall apply.

1.05 QUALITY ASSURANCE

A. The PVC pipe shall be furnished by manufacturers who are fully experienced, reputable and qualified in the manufacture of the PVC pipe to be furnished. The pipe shall be designed, constructed and installed in accordance with the best practices and methods and shall comply with this Section.

B. All PVC pipe and fittings shall be from a single manufacturer. The supplier shall be responsible for the provisions of all test requirements specified in the referenced ASTM Standards, as applicable. In addition, all PVC pipe to be installed under this Contract may be inspected at the plant for compliance with the requirements specified herein by an independent testing laboratory provided by the OWNER. The CONTRACTOR shall require the manufacturer's cooperation

in these inspections. The cost of plant inspection of all pipe approved for this Contract will be borne by the OWNER.

C. Inspections of the pipe may also be made by the OWNER after delivery. The pipe shall be subject to rejection at any time on account of failure to meet any of the requirements specified herein, 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 job at once.

1.06 DELIVERY, STORAGE AND HANDLING

A. Care shall be taken in shipping, handling and laying to avoid damaging the pipe and fittings. Any pipe damaged in shipment shall be replaced as directed by the OWNER.

B. Any pipe or fitting showing a crack or which has received a blow that may have caused an incipient fracture, even though no such fracture can be seen, shall be marked as rejected and removed at once from the work.

C. While stored, pipe shall be adequately supported from below at not more than three (3) feet intervals to prevent deformation. Pipe shall not be stacked higher than six (6) feet. Pipe and fittings shall be stored in a manner which will keep them at ambient outdoor temperatures. Temporary shading as required to meet this requirement shall be provided. Simple covering of the pipe and fittings which allows temperature buildup when exposed to direct sunlight will not be permitted.

PART 2 - PRODUCTS

2.1 POLYVINYL CHLORIDE (PVC) SDR 26 PIPE AND FITTINGS FOR GRAVITY SEWER

A. Pipe and fittings for gravity sewers shall be PVC, manufactured from polyvinyl chloride resin conforming to ASTM D1784. PVC pipe shall meet the requirements for ASTM D3034, SDR 26 and PVC fittings shall be SDR 35. The joints shall be integral bell elastomeric gasket joints manufactured in accordance with ASTMD3212 and ASTM F477. Straight pipe shall be furnished in lengths of not more than 13 feet and wyes shall be furnished in lengths of not more than three (3) feet. Saddle wyes will not be allowed.

B. PVC pipe and fittings shall have bell and spigot push-on joints. The bell shall consist of an integral wall section with a solid cross-section elastomeric gasket securely locked in place to prevent displacement during assembly. Elastomeric gaskets shall conform to ASTM F477 and ASTM D3212.

C. All fittings and accessories for sewers shall be bell and/or spigot configurations compatible with the pipe.

D. Each length of pipe and each fitting shall be marked with the name of the manufacturer, nominal size and SDR designation. All gaskets shall be marked with the name of the manufacturer, size and proper insertion direction.

2.2 POLYVINYL CHLORIDE (PVC) C-900 PIPE FOR GRAVITY SEWER

A. GENERAL

1. Refer to **Section 01 33 16 – Approved Materials and Equipment List** for a listing of PVC pipe approved for use on this project.

2. PVC pipe shall conform to ASTM D1785 and shall be made from a 12454A or 12454B virgin PVC compound which is a Type 1, Grade 1 plastic as defined by ASTM D1784. Rerun or reclaimed materials are not acceptable.

3. Pipe to be used shall comply with the National Sanitation Foundation Standard No. 14 and shall have markings on the pipe to indicate that it has been tested and is in compliance with this Standard.

4. Rubber gaskets shall conform to ASTM D3139. One (1) gasket shall be furnished with each length of elastomeric-gasket bell-end pipe.

5. Elastomeric gaskets shall be manufactured to conform to the requirements of ASTM F477. Gaskets shall be made from materials that are compatible with the PVC pipe material and with the lubricant to be used with the gasket.

6. Gaskets shall not support bacterial growth or affect the quality of the water to be transported.

7. All PVC material for pipe and couplings shall be green in color and as uniform as commercially practical in density and other physical properties.

8. PVC pipe shall be homogeneous throughout and free from voids, cracks, holes, foreign inclusions and other defects. Pipe surfaces shall be free of nicks and scratches.

9. Joining surfaces of spigots and joints shall be free of gouges and imperfections that could cause leakage.

10. Standard lengths of pipe shall be available of 18 feet, plus or minus one inch (1").

11. At least 85 percent of the total footage of pipe of any class and size shall be furnished in standard lengths. The remaining 15 percent in random lengths. Random lengths shall not be less than ten feet (10') long.

12. Wall thickness shall be in accordance with PS22-70, ASTM D2122, and ASTM D-2241.

13. Pipe ends shall be tapered to accept the gasket coupling.

14. Pipe shall bear identification markings that will remain legible after normal handling, storage, and installation. Markings shall be applied in a manner that will not weaken or damage the pipe. Marking shall be applied at intervals of not more than five feet (5') on the pipe. Pipe markings shall include the following information:

    a. Manufacturer's Name or Trademark.

    b. Nominal Size and O.D. base.

    c. PVC.

    d. Dimension Ratio (DR).

    e. AWWA Pressure Rating (PR).

    f. AWWA standard designation number (AWWA C900).

    g. NSF Logo.

PART 3 - EXECUTION

3.1 INSTALLATION OF PVC PIPE AND FITTINGS

A. No single piece of pipe shall be laid unless it is generally 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 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. 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.

C. PVC pipe and fittings shall be installed in accordance with requirements of the manufacturer, ASTM D2321 or as otherwise specified herein. As soon as the excavation is complete to normal grade of the bottom of the trench, bedding material 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 required. Blocking under the pipe will not be permitted. Horizontal and vertical final position tolerance shall be plus or minus 0.02 feet.

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 watertight plug or other approved means. Good alignment shall be preserved during installation. The deflection at joints shall not exceed 75% of that recommended by the manufacturer. Additional fittings shall be provided, if required, in crossing utilities which may be encountered upon opening the trench.

E. When cutting pipe is required, the cutting shall be done by machine, leaving a smooth cut at right angles to the axis of the pipe. Cut ends of pipe to be used with a bell shall be beveled to conform to the manufactured spigot end.

F. The OWNER may examine each bell and spigot end to determine whether any preformed joint has been damaged prior to installation. Any pipe having defective joint surfaces shall be rejected, marked as such, and immediately removed from the job site.

G. Each length of the pipe shall be shoved home against the pipe previously laid and held securely until enough backfill has been placed to hold the pipe in place. Joints shall not be "pulled" or "cramped".

H. 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.

I. Precautions shall be taken to prevent flotation of the pipe in the trench.

J. 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 screened gravel backfill. Trench boxes, moveable sheeting, shoring or plates shall not be allowed to extend below mid-diameter of the pipe. As trench boxes, moveable sheeting, shoring or plates are moved, screened gravel shall be placed to fill any voids created and the screened

gravel and backfill shall be re-compacted to provide uniform side support for the pipe.

3.2 JOINTING METHODS

A. PVC sewer pipe and fittings shall be jointed in accordance with the recommendations of the ASTM Standards, Latest Edition and detailed instructions of the manufacturer.

B. All concrete and mortared manhole connections shall be equipped with an integral O-ring or other sealant such that a positive watertight seal is established.

3.3 WYE BRANCHES, CHIMNEYS AND STUB

A. All fittings shall be furnished by the same manufacturer that furnishes the pipe, and may be required in a point repair without additional cost to the OWNER.

B. Wye branches shall be furnished and installed as directed by the OWNER.

C. PVC chimneys shall be installed according to the OWNER.

D. Ample time shall be given to the OWNER to obtain the exact location of each wye branch and chimney before it is covered up. Wye branches and chimneys, which are covered before the OWNER has had time to obtain their location, shall be exposed so that location measurements can be taken.

3.4 SERVICE CONNECTIONS

A. Service connections shall be installed at a minimum slope of one (1) percent at the locations and to the limits determined by the OWNER in the field.

B. Service connections shall be six (6) inches in diameter unless otherwise indicated by the OWNER.

END OF SECTION

SECTION 33 39 10

CORROSION BARRIER SYSTEM

PART 1 – GENERAL

1.1 WORK INCLUDED

A. Furnish all labor, surface preparation and coating material, tools, rigging, harness, lighting, ventilation, gas monitor and other related items of equipment and materials necessary to clean, prepare, cure, coat and cleanup a complete corrosion barrier system on all structures and/or equipment as specified or shown on the Drawings.

B. The work includes the application of the approved corrosion barrier system on the interior surface of existing and/or new wet wells, manholes and valve pits. These areas are located within confined space areas. All workers must be confined space certified prior to starting all work. All workers shall abide by OSHA 1910.146 and County PPM RSO-300.

C. Clean, prepare, and coat all surfaces in strict accordance with the manufacturer's published recommendations and specifications. This includes removing any existing coatings prior to installation of the new corrosion barrier system.

D. Perform all work by the use of skilled work persons in a safe and productive manner using equipment and procedures consistent with good coating practices.

1.2 RELATED SECTIONS

A. **Section 01 33 00: Submittals.**

1.3 COATING SYSTEMS

A. For existing terminal manholes (last manhole before the lift station wet well), existing wet wells, and new valve vaults, use one of the following approved corrosion barrier systems:

1. Mortar/Epoxy Corrosion Barrier System (Mainstay System)

2. Calcium Aluminate Cementitious Corrosion Barrier System (SewperCoat, Strong Seal, and REFRATTA)

B. For new precast wet wells and new manholes, use the following approved corrosion barrier system:

1. Thermo-Plastic Protective Cast-In Liner System (Agru SURE-GRIP)

1.4 GENERAL REQUIREMENTS

A. For installation of systems listed on the applicable approved material list indicate by circling the appropriate name of the manufacturer on the material list.

B. Prior to preconstruction meeting submit a certification stating the applicator is:

1. Currently approved by the Manufacturer of the specified products.

2. Licensed and qualified in the application of the specified products.

1.5 QUALITY ASSURANCE

A. Preconstruction meeting: A preconstruction meeting shall be held prior to start of any application of restoration and corrosion barrier system. During the meeting, the process of preparation, application, curing, field inspection and coordination with other work shall be reviewed.

B. The approved specified products shall be applied in accordance with the Manufacturer's recommendations unless noted otherwise in this specification.

C. Material delivered to the site shall be in manufacturer's original, unopened containers and packaging, with label clearly identifying product name and Manufacturer, batch and lot number, and expiration date as applicable. The material shall be protected during storage, handling and application to prevent damage.

D. The liner manufacturer shall warrant the corrosion barrier system for five (5) years from the time of:

1. First permanent service activation discharging wastewater into the new structure, or;

2. Final payment to the CONTRACTOR by the OWNER.

The liner manufacturer shall warrant the corrosion barrier system for all labor and materials cost necessary to repair or replace the failed application, including related work (permits, bypass piping, pumps, flow monitoring, restoration, and record information) for a period of five (5) years.

1.6 ENVIRONMENTAL CONDITIONS

A. Do not apply materials under the following conditions:

1. Temperature exceeding the manufacturer's recommended maximum or minimum allowable.

2. Overflowing water condition.

PART 2 – PRODUCTS

2.1 MANUFACTURER REQUIREMENTS

A. Manufacturer must be listed on the OWNER's approved materials list.

B. Material must be from a single manufacturer.

2.2 MORTAR/EPOXY CORROSION BARRIER SYSTEM

A. Hydraulic Cement Mortar: Fast setting mortar used to stop leaks through cracks and holes.

1. Composition: Blend of hydraulic cements and fillers

2. Compressive strength: ASTM C109

a. 1 day 2,400 psi

b. 28 days 5,500 psi

3. Tensile Strength, ASTM C190

a. 7 days 290 psi

b. 28 days 575 psi

4. Working Time: 45 - 90 seconds at 77 degrees° F

5. Color: Dark Grey

B. Restoration Mortar: Low shrinkage, high strength, polymer modified, sprayable microsilica mortar.

1. Composition: Blend of cements, microsilica, thermo-plastic fibers, densifiers, polymer admixtures, and modifiers not to contain calcium aluminate cements or aggregates.

2. Compressive strength: ASTM C109

   a. 2 days 3,875 psi

   b. 7 days 4,550 psi

   c. 14 days 5,640 psi

   d. 28 days 6,190 psi

3. Flexural strength: ASTM C78

   a. 7 days 825 psi

   b. 28 days 985 psi

4. Tensile strength: ASTM C190

   a. 7 days 290 psi

   b. 28 days 575 psi

5. Shrinkage: ASTM C157 modified

   a. 28 days - 0.04 percent

6. Uniaxial tensile bond strength: ACI 503R, Appendix A:

   b. 28 days - greater than 500 psi

7. Color: Dark Gray

C. Corrosion Barrier Topcoat

1. Composition: 100 percent solids, modified epoxy sprayable coating

2. Thickness: min. of 100 mils in one (1) or two (2) coats (dry film thickness)

3. Number of components: wo (2)

4. Finish: Gloss

5. Color: White or Gray

D. Water: Water shall be potable and clean.

E. Manufacturer:

Madewell Products Corporation
7561 Industrial Court
Alpharetta, GA 30004
(770)-475-8199
(770)-475-8167 Fax

Or approved equal.

2.3 CALCIUM ALUMINATE CEMENTITIOUS CORROSION BARRIER SYSTEM

A. Material furnished under this specification shall be a prepackaged mortar mix, including all cement, aggregates, and any required additives. It is the intent of this specification that the CONTRACTOR only be required to add the proper amount of potable water so as to produce texture/density suitable for spray application. Do not add Portland cement, other aggregates, or any admixtures whatsoever to material furnished under these Technical Specifications. Typical package weights shall not be less than 50 lbs and shall be identical for all material furnished on this project.

B. The chemical composition of the cement portion as well as the aggregates of the mortar mix shall be as follows:

Al_2O_3	CaO	FeO + Fe_2O_3	SiO_2
39-44%	35-39%	9-14%	5-7%

C. The design properties of the mortar mix shall be as follows:

Compressive Strength (ASTM C109)	> 5,500 psi	24
	> 7,000 psi	28
Flexural Strength (ASTM C348)	> 900 psi	24
	> 1,300 psi	28
Splitting Tensile Strength (ASTM 496)	> 550 psi	24
Bond Strength/Slant Shear (ASTM C886)	> 2,500 psi	28
Shrinkage at 28 days (ASTM 157)	< 0.07% humidity	
Freeze/Thaw after 300 Cycles (ASTM 666)		

D. The mortar mix shall be on the OWNER's Approved Material List.

E. Mortar mix must have at least five (5) years of successful performance in similar applications and be supplied by an ISO 9002 certified manufacturer. Manufacturer's ISO 9002 certificate shall be submitted to ENGINEER and OWNER.

F. In addition, the mortar mix shall be designed to withstand long-term exposure to a bacterially corrosive hydrogen sulfide environment that may be expected to produce a pH of one (1) on normal Portland cement concrete or typical brick and mortar surfaces.

G. Water used in mixing shall be fresh, clean, potable water, free from injurious amounts of oil, acid, alkali, vegetable, sewage and/or organic matter. Water shall be considered as weighing 8.33 pounds per gallon.

H. Mortar mix shall be stored with adequate provisions for the prevention of absorption of moisture. It shall be stored in a manner that will permit easy access for inspection and identification of each shipment.

I. Manufacturers:

1. Kerneos, Inc.

2. Madewell Corp.

3. Strong Seal

4. Global Materials Company

2.4 THERMO-PLASTIC PROTECTIVE CAST-IN LINER SYSTEM

A. Thermoplastic liner to be polypropylene, random copolymer (PP-R) concrete protective liner in the pre-cast wet wells.

B. Physical Properties

1. The concrete protective liner shall be free of pores, pinholes, voids and foreign bodies. All anchoring studs and/or vertical and horizontal flanges shall be manufactured during the injection/extrusion process in one piece with the sheet. No welding to attach the studs to the sheet or mechanical finishing work is permitted. All welding rod, profile strips, cap strips and polyester backed transition wrapping shall be manufactured from the same resins by the same manufacturer.

C. Liner Design.

1. The lining system shall be designed to be repaired or modified at anytime during the design life of the system.

2. Studded PP-R liner sheets shall have a minimum design thickness of two (2) mm (.079 Inches) and have a minimum of 39 wedge shaped anchoring studs per square foot of liner. Minimum stud height shall be no less than nine (9) mm (.39 inches) with a minimum length of 14 mm (.55 inches). Anchoring studs must be capable of resisting continuous hydraulic backpressure, to a minimum of 40 feet of hydraulic backpressure, exerted between the interior wall of the concrete structure and the anchoring stud side of the protective liner. Non-studded PP-R cap strips, used to bridge construction joints, shall have a minimum design thickness of two (2) mm (.079 inches). Polyester backed non-studded PP-R transition sheets, used for the purpose of bonding PP-R to dissimilar materials, shall be attached to the PP-R sheets during the extrusion process.

3. Ribbed PP-R liner sections shall have a minimum thickness of eight (8) mm (0.3") and consist of three (3) or more segments of equal height and radial length that when welded together will form a section which corresponds to the inside diameter of the concrete structure. The outside surface of the ribbed PP-R liner segment(s) shall incorporate outward facing horizontal returns/flanges to insure adequate anchoring with the precast concrete structure and meeting a pressure test of one (1) bar (14.7 psi) or the prescribed ASTM criteria for vacuum testing of concrete sewer manholes. Minimum spacing between each horizontal return/flange to be one (1) inches and maximum spacing between each horizontal return/flange to be six (6) inches. Additionally, the outside surface shall incorporate five (5) ribs molded on the vertical axis spaced evenly in direct relation to the radial length of the PP liner segment.

4. If the application or conditions warrant, the Thermoplastic Liner System may be substituted upon approval of the ENGINEER and the OWNER.

PART 3 - EXECUTION

3.1 INSTALLATION OF MORTAR/EPOXY LINER CORROSION BARRIER SYSTEM

A. Examination

1. Inspect surfaces to receive restoration and corrosion barrier system for leaks, deteriorated concrete, cracks and voids. Repair all leaks, cracks, voids, etc. Do not begin surface preparation or application until

unacceptable conditions have been corrected. New structures to be inspected and visibly marked by the PBCWUD Construction Coordinator prior to system application.

2. Give the PBCWUD Construction Coordinator a minimum of two (2) days advance notice of completion of surface preparation and start of application. If the application required a wastewater service shut-down, a minimum 10-day notice is required in order to notify Customers.

3. Before application of each material, surfaces to be sprayed or coated will be inspected by the ENGINEER and by the PBCWUD Construction Coordinator. Correct defects or deficiencies before application of subsequent material.

4. Inspection or the waiver of inspection by the PBCWUD Construction Coordinator and /or the ENGINEER of any portion of the work shall not relieve the CONTRACTOR of responsibility to perform the work as specified.

B. Surface Preparation

1. Coordinate with the PBCWUD's Construction Coordinator any wastewater service shut-downs, invert plugging, temporary wastewater pumping arrangements and by-passing of existing facilities.

2. Place covers over inverts to isolate the structure receiving the surface restoration.

3. Place masking tape to protect equipment not intended for spraying/coating.

4. Prepare surfaces in accordance with manufacturer's instructions.

5. Cleaning: Clean surfaces by water (minimum 3500 psi) or abrasive blasting, or hand or power tools as required to remove all previously applied coatings, unsound concrete, contaminants, dirt, debris, and deteriorated reinforcing steel, laitance, efflorescence, form oils and spoiled concrete.

6. Rehabilitation of existing structures only:

   a. Inspect cleaned surfaces to identify and mark corroded reinforcing steel, and to locate cracks, leaks, and joints.

   b. Replace or treat corroded reinforcing steel, repair cracks and leaks, and treat joints in accordance with manufacturer's instructions and as approved by the ENGINEER.

c. Refer to ICRI Technical Guideline No. 03730 - Surface Preparation Guidelines for the Repair of Deteriorated Concrete Resulting from Reinforcing Steel Corrosion.

d. Apply approved epoxy putty promptly after cleaning reinforcing steel to protect the steel from contamination and re-rusting.

e. Hydrostatic Leak Correction

1) Stop visible hydrostatic leaks by application of hydraulic cement mortar, after completion of surface preparation.
   i. Mix only 1 to 2 pounds of mortar at a time.
   ii. Add water to form a viscous mass with consistency of modeling clay.
   iii. Apply by hand or trowel.
   iv. Press mixed material firmly into place, starting at top of leak and working downward.

2) Inject flowing leaks using a suitable polymer gel or foam. Be sure to remove any excess or spilled material and clean/saturate the concrete surface with water prior to application of the restoration mortar.

7. Prepare surfaces to have a minimum profile of 1/16-inch, with aggregate exposed, then remove the water and any loose material.

8. Inspect surfaces for soundness.

9. Saturate all surfaces thoroughly with clean water.

10. Apply mortar as soon as water sheen is no longer visible (saturated surface dry).

C. Application of Restoration Mortar

1. Apply restoration mortar in accordance with manufacturer's instructions, no more than 24 hours after surface preparation.

2. Apply by one (1) of the following methods:

a. Low pressure, low volume spray equipment.

b. Wet mix shotcrete equipment.

3. Apply uniformly to substrate.

4. Do not trap air in corners, behind exposed reinforcing steel, or between lifts.

5. Mortar Thickness: Apply in layers of a minimum thickness of ½ inches and no more than four (4) inches above peaks of existing profile after surface preparation. If material sags or slumps, remove it and replace with new material.

6. Finishing: Finish surface with wood float, sponge float, broom, or brush to produce a textured surface to apply corrosion barrier topcoat.

7. Remove excess material and overspray promptly.

8. Hot Weather Application:

   a. Follow manufacturer's instructions to reduce evaporation rate of surface moisture until topcoat can be applied.

   b. If applying mortar under conditions such as high temperatures of mortar, substrate, or air; high winds; and low humidity; alone or in combination; rapid evaporation of surface moisture can occur and cause plastic shrinkage cracking. Apply approved primer/sealer as specified by the coating Manufacturer.

   c. If conditions prevent application of epoxy topcoat or primer, refer to ACI 305R-91, Figure 2.1.5 to estimate the evaporation rate of surface moisture from the mortar, based on temperatures, relative humidity, and wind velocity. Cover with plastic film or wet burlap to limit evaporation rate to a maximum of 0.1 pounds per square foot per hour.

9. Cold Weather Application:

   a. Follow manufacturer's instructions for minimum application temperature and minimum number of days to protect from freezing.

D. Application of Corrosion Barrier Topcoat

1. Provide mixing and application equipment designed for mixing and spraying epoxy coating.

2. Apply corrosion barrier topcoat epoxy to all prepared surfaces in accordance with manufacturer's instructions.

3. Apply topcoat as soon as possible after finishing of restoration mortar.

4. Do not allow surface contamination to the finished restoration mortar before application of topcoat.

5. Topcoat Thickness: Spray apply a minimum thickness of 100 mils DFT.

E. Curing of Corrosion Barrier Topcoat

1. Foot Traffic: Allow a minimum cure time of 24 hours at 70 degrees F.

2. Chemical Service: Allow a minimum cure time of 6 hours at 70 degrees F.

3. Curing Conditions:

a. Continue to protect system from freezing throughout protection periods specified for cold weather application after application of corrosion barrier topcoat.

b. Shelter system from direct impingement of water until 1 to 3 hours after application of topcoat, depending on substrate temperatures, after which cure sufficiently to be undamaged by water impingement or immersion at ordinary velocities.

c. Sanitary Sewer Systems: It may be necessary to plug services or main lines temporarily in order to achieve these environmental conditions.

4. Immersion Service: Reach a tack-free condition before being immersed.

5. Remove any loose debris, plugs, covers and masking prior to inspection.

F. Field Quality Control:

1. The CONTRACTOR shall hire an independent testing laboratory to perform and certify check the application for minimum thickness of coatings (minimum ½-inches of restoration mortar, minimum 100 mils MDFT of epoxy topcoat). The test for the topcoat shall consist of five (5) separate spot measurements (average of three [3] readings each), spaced evenly over each 100 square feet of the area to be tested. The average of five (5) spot measurements for each such 100 square foot area shall not be less than 100 mils MDFT. No single spot measurement in any 100 square foot area shall be less than 80 mils MDFT. Any one (1) of three (3) readings which are averaged to produce each spot measurement may underrun be a greater amount. The five (5) spot measurement shall be made for each 100 square feet of area as follows:

a. Perform minimum one (1) set of tests for every manhole, and minimum of three (3) 100 square foot areas shall be randomly selected and measured for every wet well.

2. If the dry film thickness for any 100 square foot area is not in compliance with the average of 100 mils MDFT, then each 100 square foot area shall be tested. Check the application for holidays using recognized testing procedures and equipment, such as "high voltage holiday detector test."

3. Coated Surfaces will be rejected by the OWNER if they fail:

   a. To meet the MDFT requirements, or;

   b. To stop inflow, infiltration, exfiltration, or;

   c. To restore the structural integrity of the reconstructed structure (if applicable), or;

   d. To pass the OWNER's inspections and testing.

4. Rejected Coated Surfaces: Coated and rejected areas must be identified and marked. To repair and recoat: sand or grind down to substrate, clean, spray with approved primer/ sealer, and recoat with specified corrosion barrier topcoat. Re-inspection will be required.

5. The certified laboratory performing the testing shall issue a written statement to the OWNER confirming the compliance of each structure.

6. The OWNER may require that additional testing of the liner be performed at the manufacturer's expense any time during the five year warranty period. Any deficiencies in performance shall be corrected without delay by the manufacturer's CONTRACTOR at no cost to the OWNER.

3.2 INSTALLATION OF CALCIUM ALUMINATE CEMENTITIOUS CORROSION BARRIER SYSTEM

A. Surface Preparation

1. To ensure sufficient bond, all sub-surfaces shall be cleaned and prepared to a degree of roughness designated as CSP 3 by the International Concrete Repair Institute (ICRI) Guideline No. 03732 – Selecting and Specifying Concrete Surface Preparation for Sealers, Coating, and Polymer Overlays. Sub-surfaces shall also be thoroughly saturated with water prior to the application of the lining materials. In no instance shall shotcrete be applied in an area where running water exists. It is the intent of this

specification that the existing surface be saturated and free of any running water just prior to installation.

2. Ensure all sub-surfaces are clean and free of laitance or loose material. Clean surfaces by water (minimum 3500 psi) or abrasive blasting, or hand or power tools as required to remove all previously applied coatings, unsound concrete, contaminants, dirt, debris, and deteriorated reinforcing steel, laitance, efflorescence, form oils and spoiled concrete.

3. All surfaces to be lined shall be saturated with water just prior to lining materials application. If saturation does not occur naturally, it can be accomplished by presoaking all sub-surfaces for a minimum of 24 hours immediately prior to the application of the lining materials.

B. Application of Materials

1. Mortar mix shall not be applied to a frozen surface or to a surface that may freeze within 24 hours of application. Frozen conditions shall be defined as ambient temperatures of 32 degrees Fahrenheit or below.

2. Sequence of application may be from bottom to top or vice versa if rebound is properly removed.

3. Application shall be from an angle as nearly perpendicular to the surface as practicable, with the nozzle held at least one (1) foot from the working sub-surface (except in confined control). If the flow of material at the nozzle is not uniform and slugs, sand spots, or wet sloughs result, the nozzleman shall direct the nozzle away from the work until the faulty conditions are corrected. Such defects shall be replaced as the work progresses.

4. Application shall be suspended if:

   a. Air velocity separates the cement from the aggregate at the nozzle.

   b. Ambient temperature approaches freezing and the newly placed mortar mix cannot be protected and insulate.

5. The time interval between successive layers of material application must be sufficient to allow “tackiness” to develop but not final set. If final set does occur, this surface shall be prepared in accordance with Section 3.2.A of this document in order to provide a sufficient bond with succeeding applications.

6. Construction joints within a manhole shall be avoided. In the event a construction joint is necessary and approved by the ENGINEER, it shall be

sloped off to a thin, clean, regular edge, at a 45-degree angle. Prior to placement of the adjoining materials, the sloped portion and adjacent applied material shall be thoroughly cleaned as necessary, then moistened and scoured with an air jet.

7. Nozzleman shall bring the material to an even plane and to well formed corners.

8. Manhole chimneys constructed with bricks or precast concrete rings shall be completely lined with the mortar mix but not overlap the bottom inside edge of the manhole frame. After the body coat has been placed, the surface shall be trued with a thin-edge screed to remove high areas and expose low areas. Low areas shall be properly filled with additional material to insure a true, flat surface in accordance with of this document.

9. For manhole applications, the minimum thickness of the mortar mix shall be a ½-inch cover over all surfaces. For other larger structures (lift stations, wet wells, treatment plant structures, etc.), the minimum thickness of the mortar mix shall be a one (1) inch cover over all surfaces.

C. Curing

1. If the material has been applied and furnished in accordance to the Technical Specifications, and it has been determined that the environment is not moist enough for natural curing, the CONTRACTOR will be required to apply a curing compound to all coated surfaces. Curing compound shall meet the requirements of ASTM C309 and have the approval of the lining material manufacturer and the ENGINEER prior to use.

2. Moist curing may also be used in lieu of curing compound. If moist curing is selected, it should be implemented just after the notice of uniform heat generation of the installed lining. Moist curing can consist of the use of soaker hoses, water sprinklers, or vapor/misting machines. Regardless of delivery method, moist curing should continue for a minimum of 18 hours.

D. Quality Control:

1. The installation of the Calcium Aluminate Rehabilitation System into existing structures shall be performed in accordance with the manufacture's recommendation unless noted otherwise in this specification. Only personnel certified by the manufacturer of the cementitious material shall perform the work.

2. All work shall be supervised and performed by confined space trained and certified personnel. All work shall conform to OSHA safety requirements.

3. The cementitious liner shall be tested for cracks, voids, pinholes and delamination, the presence of each shall create a reason to reject the structure. At no cost to the OWNER, the CONTRACTOR shall hire an independent material-testing firm to perform appropriate testing and certify that the thickness of the Cementitious liner is in accordance with these Technical Specifications. Minimum 1 (one) test shall be performed per each two (2) vertical feet of each structure. Each passing thickness test shall have a minimum of 90 percent thickness required. The average of all tests performed for each structure shall be the minimum thickness specified. A written report from the firm is required for each tested structure.

3.3 INSTALLATION OF THERMO-PLASTIC PROTECTIVE CAST-IN LINER SYSTEM

A. Installation/Quality Control.

1. The installation of the Thermo-plastic concrete protective liner into precast wet wells and manholes shall be accomplished only by a precast concrete manufacturer certified by the liner manufacturer with a minimum of five (5) years of manufacturing experience and a minimum of five (5) years of experience in the installation of corrosion resistant thermo-plastic sheet liners in concrete structures. Upon request, the liner installer shall provide written certification that the installation is in accordance with the liner manufacturer‘s installation specifications.

2. Placement of the liner on forms shall conform to the liner manufacturer‘s written instructions and shall conform to the approved shop drawings and standard details. All shop and field welding shall be performed only by thermo-plastic extrusion welders certified by the liner manufacturer. All field thermo-welding shall additionally be performed only by confined space trained, and certified personnel. A copy of the thermo-welder‘s certification shall accompany the submittal. All welded joints shall be spark tested prior to casting.

3. Approved sealing gasket, cast-in flexible connection sleeves, cast-in conduit connectors, waterstops, manhole adjusting rings, and access covers shall be installed in accordance with the manufactures specifications, approved shop drawings and standard details.

4. The precaster shall insure proper quality control procedures in handling of completed structures during loading, transport, and unloading. All structures shall be inspected by the OWNER’s Construction Coordinator prior to installation. Any cracks, voids, gaps, or other damage to the liner and the structure shall be each a reason for rejection. Only structures

approved by the OWNER shall be installed for use in the OWNER's service area

5. The on-site CONTRACTOR shall exercise utmost care while handling and installing the approved structures. Structures with any visible damage will not be accepted. The structures shall be installed in accordance with the precaster's specifications, approved shop drawings and standard detail drawings. Any deviation from the installation specifications must be approved prior to installation by the structure manufacturer, the ENGINEER and the OWNER. It is the responsibility of the ENGINEER to monitor and inspect the installation for conformance with the approved specifications. Only approved miscellaneous materials (rings, sealants, gaskets, sleeves, etc.) shall be used.

6. At no cost to the OWNER, the CONTRACTOR shall hire an independent material testing firm to perform appropriate testing and certify that the liner is free of holidays using recognized testing procedures and equipment, such as high voltage holiday detector test. A steel brush shall be used for high voltage testing. A written report from the laboratory is required for each tested structure. If a structure is rejected by the OWNER, the ENGINEER shall consult the structure manufacturer to obtain guidance to rectify the problem. The OWNER must approve the proposed solution prior to implementation. Any repair must be performed by a manufacturers approved CONTRACTOR.

7. The liner manufacturer and the structure manufacturer shall warrant the lined structure for minimum five (5) years from the time of: Acceptance of bill of sale by the OWNER or final payment to the CONTRACTOR by the OWNER. The warranty shall cover all labor and materials cost necessary to repair or replace the "failed" application, including related work (permits, bypass piping, pumps, flow monitoring, restoration, record information). The structure/liner system shall be considered "failed" if: there is liner delamination, any cracks, voids, or pinholes are detected, there is water infiltration into the structure, the structure failed to pass the OWNER's inspection and testing. The OWNER may require that additional testing of the liner shall be performed at the manufacturers expense any time during the five (5) year warranty period. Any deficiencies in performance shall be corrected without delay by the manufactures CONTRACTOR at no cost to the OWNER. Re-inspection and retesting shall be required.

8. The structure manufacturer's warranty shall be accountable for protection against water infiltration.

9. The liner manufacturer's warranty shall be accountable for protection of the concrete structure against chemical attack and microbial corrosion typically found in the wastewater environment.

3.4 SAFETY

A. Make all necessary provisions regarding materials, confined space entry, equipment, personnel, procedures, and practices, to assure that the work is done safely and that the working area is maintained free of all health and safety hazards.

B. Observe manufacturer's health and safety precautions when storing, handling, and applying coating materials.

C. Direct personnel's attention to all product warnings and information given on the labels of all products.

D. Post warning signs outside of the work to apprise personnel of the hazards in the work area.

E. Remove waste coating materials and contaminated disposable items from the job site and dispose of them at the completion of work each a day in accordance with all applicable rules and regulations.

END OF SECTION

SECTION 33 40 00

STORM DRAINAGE

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Pipe and fittings.

2. Stormwater structures.

5. Abandonment of storm sewer.

1.02 SUBMITTALS

A. Product Date: For each type of product indicated.

B. Shop Drawings:

1. Manholes: Include plans, elevations, sections, details, frames, and covers.

2. Stormwater inlets: Include plans, elevations, sections, details, frames, covers, and grates.

C. Field quality-control reports.

D. Appendices.

PART 2 - PRODUCTS

2.01 PIPE AND FITTINGS

A. Reinforced Concrete Pipe (RCP)

1. Circular: All reinforced concrete culvert and drain pipe shall be manufactured in accordance with ASTM C76, Wall Type B or C, and shall be of the class that equals or exceeds the pipe class as specified herein or as shown on the Contract Drawings. Minimum pipe laying lengths shall be four (4) feet. Portland cement shall conform to ASTM C150, Type II. Joints for the reinforced concrete culvert and drain pipe shall have bell and

spigot ends with flexible plastic gaskets meeting the requirements of AASHTO M198, Type B.

2. Elliptical: FDOT Section 449, ASTM C507, class III: Unless otherwise indicated; reinforced concrete fittings; same strength as adjoining pipe, tongue & groove gasketed joints.

3. All pipe shall be aged at the manufacturing plant for at least fourteen (14) days before delivery to the job site.

B. High Density Polyethylene Pipe (HDPE)

1. FDOT Section 948, AASHTO M294(V), & ASTM D3350

2. Class I or II is acceptable unless otherwise noted.

2.02 STORMWATER STRUCTURES

A. Concrete curb inlets, catch basins, & junction boxes

1. The CONTRACTOR shall install, as shown on the plans; inlets, catch basins & junction boxes; meeting the requirements of FDOT Section 425.

PART 3 EXECUTION

3.01 EARTHWORK

A. Excavation, trenching, and backfilling are specified in Division 31 Section for "Earthwork."

3.02 PIPING INSTALLATION

A. General Locations and Arrangements: Drawings plans and details indicate general location and arrangement of underground storm drainage piping. Location and arrangement of piping layout take into account design considerations. Install piping as indicated, to extent practical. Where specific installation is not indicated, follow piping manufacturer's written instructions.

B. Install piping beginning at low point, true to grades and alignment indicated with unbroken continuity of invert. Place bell ends of piping facing upstream. Install gaskets, seals, sleeves, and couplings according to manufacturer's written instructions for use of lubricants, cements, and other installation requirements.

C. Install manholes for changes in direction unless fittings are indicated. Use fittings for branch connections unless direct tap into existing sewer is indicated.

D. Install proper size increasers, reducers, and couplings where different sizes or materials of pipes and fittings are connected. Reducing size of piping in direction of flow is prohibited.

E. Install gravity-flow, non-pressure drainage piping according to the following, unless noted on the plans:

1. Install piping pitched down in direction of flow.

2. Install piping with 24-inch minimum cover.

3. Install piping in accordance with Sections 425 and 430 of the most current version of FDOT Standard Specifications for Road and Bridge Construction for pipe culverts and storm sewer.

3.03 PIPE JOINT CONSTRUCTION

A. Join gravity-flow, nonpressure drainage piping according to the following:

1. Join reinforced-concrete sewer piping according to ACPA's "Concrete Pipe Installation Manual" for rubber-gasketed joints.

3. HDPE Pipe shall be joined using a bell & spigot joint meeting ASTM F2648. The joint shall be soil-tight and gaskets, when applicable, shall meet the requirements of ASTM F477. Gaskets shall be installed by the pipe manufacturer and covered with a removable wrap to ensure the gasket is free from debris. A joint lubricant supplied by the manufacturer shall be used on the gasket and bell during assembly.

B. Furnish and install a filter fabric jacket around all pipe joints and the joint between the structure & pipe in accordance with FDOT Section 430.

3.04 DRAINAGE STRUCTURE INSTALLATION

A. General; Install curb inlets, complete with appurtenances and accessories indicated in accordance with FDOT Standard Specification Section 425.

B. All penetrations into drainage structures shall be grouted completely using non-shrink grout.

3.05 FLUSHING

A. Flushing - After backfilling, all storm sewers shall be flushed with water. Flushing shall be a minimum velocity of 2.5 feet per second for a duration acceptable to the Engineer. Flushing shall remove all dirt, stones, pieces of wood

and other debris which accumulated in the sewer during construction. The Contractor shall provide a means acceptable to the Engineer for removal of debris flushed from each section of storm sewer. If after flushing, any obstructions remain, they shall be removed at the Contractor's expense. The Contractor shall provide all water, plugs, hoses, pumps, equipment, etc. necessary for the proper flushing and testing of the storm sewers

3.06 INSPECTION

A. Test new piping systems, and parts of existing systems that have been altered, extended, or repaired, for leaks and defects.

1. Do not enclose, cover, or put into service before inspection and approval.

2. Test completed piping systems according to requirements of authorities having jurisdiction.

3. Schedule tests and inspections by authorities having jurisdiction with at least 24 hours' advance notice.

4. Submit separate report for each test.

B. All new storm drain pipeline shall be inspected via robotic camera. The recorded DVD shall be delivered to the Town no later than 2 (two) Working Days after completion of the inspection. The DVD shall become the property of the Owner. The Owner will review the CCTV inspection records within ten (10) Working Days and will notify the Contractor if:

1. The review revealed a satisfactory installation, or

2. The review revealed deficiencies.

C. The following deficiencies in storm drain installation that are identified by the Inspector or by television inspection shall be corrected by the Contractor at no cost to the Owner:

1. Joint separation greater than one-half inch (1/2”).

2. Offset joints greater than one-half the pipe wall thickness.

3. Joint deflection of more than seventy-five percent (75%) of manufacturer’s recommended maximum.

4. Cracked or damaged pipe, including liner pipe.

5. Debris in the line.

6. Identifiable sags or high points in the line greater than ¾ inches in pipes 6” and larger.

D. The Contractor will be notified in writing of any deficiencies revealed by the television inspection that will require repair. The Contractor may request a review of the video with the Owner. Upon completion of the required corrective actions, the storm drain will be re- televised at no additional cost to the Owner. This process shall be repeated until the review of the recorded television inspection reveals a satisfactory installation.

3.07 ABANDONMENT OF STORM SEWER

A. Sewers and laterals to be abandoned shall be securely blocked at any points of intake or discharge with a bulkhead or pre-formed plug and when directed by the Project Plans and Specifications, they shall be completely filled with an approved material. The proposed method of filling and blocking the sewer shall be submitted to the OWNER for approval.

B. The CONTRACTOR will be allowed to remove that portion of the sewer to be abandoned in lieu of filling and blocking. If the CONTRACTOR elects the removal method, all costs for backfilling the excavation and all costs for surface restoration, in addition to removing and properly disposing of the pipe, shall be included in the price for abandonment.

END OF SECTION

SECTION 40 90 00

PROCESS INSTRUMENTATION AND CONTROLS - GENERAL PROVISIONS

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. Provide lift station control panels with remote telemetry units, motor terminal junction boxes, control transformers, and associated components including floats, level transmitters, alarm lights, flood lights, horns, GFI outlets, solar panels, antennas and coaxial cables for three (3) lift stations as shown on the Drawings.

B. Provide pressure transmitters for force main and potable water service for three (3) lift stations as shown on the Drawings.

C. A single pre-approved system supplier (supplier) who shall furnish all services and equipment defined herein and in other Specification sections as listed below under related work, unless otherwise defined on the drawings.

D. The supplier shall provide all materials, equipment, labor and services required to achieve a fully integrated and operational system. The supplier shall design and coordinate the instrument and control system for proper operation with related equipment and materials furnished by other suppliers under other sections of these Specifications and with related existing equipment.

E. Auxiliary and accessory devices necessary for system operation or performance, such as transducers or relays to interface with existing equipment or equipment provided by other suppliers under other Sections of these Specifications, shall be included whether they are shown on the instrument drawings or not.

F. Substitutions on functions or type of equipment specified will not be acceptable. 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. In order to insure compatibility between all equipment, it shall be the responsibility of the system supplier to coordinate all interface requirements with mechanical and electrical system suppliers and furnish any signal isolation devices that might be required.

G. Equipment shall be fabricated, assembled, installed and placed in proper operating condition in full conformity with detail Drawings, specifications, engineering data,

instructions and recommendations of the equipment manufacturer as approved by the Engineer.

H. To facilitate the Owner's future operation and maintenance, products shall be of the same major instrumentation manufacturer, with panel-mounted devices of the same type and model as far as possible.

I. All equipment and installations shall satisfy applicable Federal, State and local codes.

J. Supplementing this Section, the Drawings and the related Specification sections provide additional details showing panel elevations, instrument device schedules, functional requirements of the system and interaction with other equipment.

1.2 RELATED WORK

A. The supplier shall furnish all materials, labor and services specified in the drawings as required to ensure a single, coordinated system is supplied.

B. The Supplier shall in particular coordinate his work with the work under the following:

1. Division 1 - General Requirements
2. Division 26 - Electrical

C. Instrument and control systems supplied by the Supplier shall be designed and coordinated for proper operation with related equipment and materials furnished by other suppliers under other sections of these specifications and to related existing equipment.

1. Verify following work not by I&C Supplier is provided:

    a. Correct type, size, and number of signal wires with their raceways.
    b. Correct electrical power circuits and raceways.
    c. Correct size, type, and number of I&C related pipes, valves, fittings, and tubes.
    d. Correct size, type, materials, and connection of process mechanical piping for in-line primary elements.

2. For equipment not provided under I&C Supplier, but directly connected to equipment required by I&C Supplier:

    a. Obtain from Contractor, manufacturer’s information on installation, interface, function, and adjustment.
    b. Coordinate with Contractor to allow required interface and operation with I&C System.

c. For operation and control, verify that installations, interfacing signal terminations, and adjustments have been completed with manufacturer's recommendations.
d. Test to demonstrate required interface and operation with I&C System.

1.3 SUBMITTALS

A. Submit shop drawings in accordance with Section 01 33 00. These shop Drawings shall fully demonstrate that the equipment and services to be furnished will comply with the provisions of these specifications and shall provide a true and complete record of the equipment as manufactured and delivered. Submittals shall be bound in separate three-ring binders, with an index and sectional dividers, with all Drawings reduced to a maximum size of 11-in by 17-in for inclusion within the binder. Separate submittals shall be made as follows:

1. Project plan
2. Testing related subjects
3. Owner training plan
4. Spares, expendable and test equipment
5. Process instrumentation and controls
6. Digital system hardware (programmable controllers, computers, peripherals, etc.)
7. Digital system software
8. Digital specific system software applications

The project plan shall be submitted and approved before any further submittals will be accepted.

B. Project Plan

It shall provide an overview of the proposed system including system architecture diagrams, the approach to work, the proposed work schedule indicating milestones and potential meetings, project personnel and organization, details of factory testing and field testing, details of training programs and a paragraph-by-paragraph review of the specifications indicating any proposed deviations. The schedule shall illustrate all major project milestones including the following:

1. Schedule for all subsequent project submittals.
2. Tentative dates for all project design review meetings.
3. Schedule of manufacture and staging of all instrumentation and control system equipment.
4. Schedule for factory acceptance test.
5. Schedule for shipment of all instrument and control system equipment all peripheral devices.
6. Schedule for equipment start up.
7. Schedule for field acceptance test.
8. Schedule for all training.

9. The project plan must be submitted and approved before any future submittals are made.

C. Testing Related Submittals

1. Test Procedures: Submit the procedures proposed to be followed during the test. Procedures shall include test descriptions, forms, and checklists to be used to control and document the required tests.
   a. Preliminary test procedure submittals: Prior to the preparation of the detailed test procedures, submit outlines of the specific proposed tests. Submittals shall include examples of the proposed forms and checklists.
   b. Test Procedure Submittals: After the preliminary test procedure submittals have been reviewed by the Engineer and returned stamped either "approved" or "approved as noted, confirm" submit the proposed detailed test procedures. Following this, the tests may be started.
2. Test Documentation: Upon completion of each required test, document the test by submitting a copy of the signed off test procedures.

D. Owner Training Plan – Submittals

1. Not used.

E. Spares, Expendables, and Test Equipment Lists Submittal

1. This submittal shall include for each Subsystem:
   a. A list of, and descriptive literature for, spares, expendables and test equipment as specified for each Instrumentation Section and drawings.
   b. A separate list of, and descriptive literature for, additional spares, expendables and test equipment recommended by the System Supplier.
   c. Unit and total costs for the additional spare items recommended for each subsystem.
   d. Provide storage instructions for all spare parts.

F. Process Instrumentation and Controls

1. This submittal shall provide complete documentation of all field instruments, control panels and other instrument and control equipment not specified to be submitted elsewhere.
   a. Provide data sheets for each component listing all model numbers, optional and ancillary devices that are being provided.
      The data sheets shall be provided with an index and proper identification and cross referencing. They shall include but not be limited to the following information.
      1) Plant Equipment Number and ISA tag number per the Loop Diagrams.
      2) Product (item) name used herein and on the Contract Drawings.
      3) Manufacturer's complete model number.

4) Location of the device.
5) Input - output characteristics.
6) Range, size and graduations.
7) Physical size with dimensions, enclosure NEMA classification and mounting details.
8) Materials of construction of all components.
9) Instrument or control device sizing calculations where applicable.
10) Certified calibration data on all flow metering devices.

b. Provide equipment specification sheets which shall fully describe the device, the intended function, how it operates and its physical environmental and performance characteristics. Each data sheet shall have appropriate cross references to loop or equipment identification tags. As a minimum the specification sheets shall include the following:
1) Dimension, rigid-clearances.
2) Mounting or installation details.
3) Connection.
4) Electrical power or air requirements.
5) Materials of construction.
6) Environmental characteristics.
7) Performance characteristics.

c. Provide detailed loop diagrams on a single 11-in by 17-in or 8.5-in by 11-in sheet for each monitoring or control loop. The loop diagram shall show all components of the loop both analog, digital and discrete including all relays, switches, dropping resistors, etc which are being provided for proper operation. Loop numbers used shall correspond to the loop numbers indicated in the contract documents. The format shall be the Instrument Society of America, Standard for Instrument Loop Diagrams, ISA-S5.4 plus the following requirements:
1) Instrument loop diagrams shall be approved by a licensed engineer proficient in instrumentation design.
2) On each diagram present a tabular summary of 1) the output capability of the transmitting instrument, 2) the input impedance of each receiving instrument, 3) an estimate of the loop wiring impedance based on wire sizes and approximate length used, 4) the total loop impedance, 5) reserve output capacity.
3) Show all interconnecting wiring between equipment, panels, terminal junction boxes and field mounted components. The diagrams shall show all components and panel terminal board identification numbers and all wire numbers. This diagram shall include all intermediate terminations between field elements and panels (e.g. terminal junction boxes). The diagrams shall be coordinated with the electrical supplier and shall bear his/her mark showing this has been done.
4) Show location of all devices.
5) Show instrument description showing type, manufacturer, model number, range, setpoints and operation (e.g. fail open, open on energization, normally closed, etc) as applicable.

6) Show all instrument loop power or instrument air requirements back to termination on terminal block or bulkhead, fuse block (including fuse size), etc, as applicable.
7) Show all grounding points within cabinets and panels and identify the connection point of individual components.

d. Provide detailed Drawings covering control panels consoles and/or enclosures which shall include:
1) Cabinet assembly and layout Drawings to scale. These shall include both front and interior layouts.
2) Material, fabrication and painting specifications.
3) Color selection samples for selection by the Engineer.
4) Where graphic display panels are required, submit detailed layout to scale, including symbols and line widths, as well as color selection samples and details of fabrication. Half-scale layout will be acceptable.
5) Panel wiring diagrams showing all power connections to equipment within and on the panel, combined panel power draw requirements (volts, amps), breaker sizes, fuse sizes and grounding. This wiring diagram shall be in ladder logic format and shall reference the appropriate loop drawing for continuations or details where required. Show all wire numbers, and terminal block designations.

e. The submittal shall also contain all planning information, site preparation instructions, grounding and bonding procedures, cabling diagrams, plug identifications, safety precautions or guards and equipment layouts in order to enable the Contractor to proceed with the detailed site preparation for all equipment.

G. Digital System Hardware (Programmable Controllers, Computers, Peripherals, etc.)

1. This submittal shall provide complete documentation of the proposed hardware including:
a. A complete system block diagram(s) showing in schematic form, the interconnections between major hardware components such as; control centers, panels, power supplies, consoles, computer and peripheral devices, telemetry equipment, local digital processors and like equipment. The block diagram shall reflect the total integration of all digital devices in the system and shall reflect any man/machine interface locations. All components shall be clearly identified with appropriate cross references to the location of each. The diagram shall reference all interconnecting cabling requirements for digital components of the system including any data communication links.

b. Data sheet for each hardware component listing all model numbers, optional, auxiliary and ancillary devices that are being provided.

The data sheets shall be provided with an index and proper identification and cross referencing. They shall include but not be limited to the following information.

1) Plant Equipment Number and ISA tag number per the Loop Diagrams (as applicable).
2) Product (item) name used herein and on the Contract Drawings.
3) Manufacturer's complete model number.
4) Location of the device.
5) Input - output characteristics.
6) Range, size and graduations.
7) Physical size with dimensions, enclosure NEMA classification and mounting details.
8) Materials of construction of all components.
9) Power supply device sizing calculations where applicable.

c. Equipment specification sheets which shall fully describe the device, the intended function, how it operates and its physical environmental and performance characteristics. Each data sheet shall have appropriate cross references to loop or equipment identification tags. As a minimum the specification sheets shall include the following:
1) Dimensions and working clearances.
2) Mounting or installation details.
3) Connection diagrams.
4) Electrical power requirements (volts, amps).
5) Materials of construction.
6) Environmental characteristics.
7) Performance characteristics.

d. Detailed drawings covering control consoles and/or enclosures which shall include:
1) Cabinet assembly and layout Drawings to scale. These shall include both front and rear layouts.
2) Fabrication and painting specifications.
3) Color selection samples for selection by the Engineer.
4) Panel wiring diagrams showing all power connections to equipment within and on the enclosure, combined panel power draw requirements (volts, amps), breaker sizes, fuse sizes and grounding.

e. The System Hardware submittal shall also contain all planning information, site preparation instructions, grounding and bonding procedures, cabling diagrams, plug identifications, safety precautions or guards and equipment layouts in order to enable the Contractor to proceed with the detailed site preparation for all equipment.

1.4 REFERENCE STANDARDS

A. American Society for Testing and Materials (ASTM).

1. ASTM A269 - Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.

B. Instrument Society of America (ISA)

1. ISA S5.2 - Binary Logic Diagrams for Process Operations
2. ISA S5.3 - Graphic Symbols for Distributed Control/Shared Display Instrumentation Logic and Computer Systems.
3. ISA S5.4 - Standard Instrument Loop Diagrams

C. American National Standards Institute (ANSI)

1. ANSI X3.5 - Flowchart Symbols and Their Usage in Information Processing

D. National Electrical Manufacturers Association (NEMA)

E. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

1.5 QUALITY ASSURANCE

A. The supplier shall be one of the following instrument and control system suppliers. Only approved suppliers will be accepted. The Contractor must name his/her proposed system supplier on the bid document.
   - CC Controls
   - Curry Controls
   - Engineering Services Corp
   - AES
   - Unitron
   - Champion Controls

1.6 SYSTEM DESCRIPTION

A. The system shall provide:
Monitoring and control for three (3) lift stations – LS 980, 981, 1051.

B. The system shall contain all equipment necessary to monitor and control lift station with all inputs and control parameters from the control center.

1.7 DELIVERY, STORAGE AND HANDLING

A. Shipping Precautions

1. After completion of shop assembly, and approval all equipment, cabinets, panels and consoles shall be packed in protective crates and enclosed in heavy duty polyethylene envelopes or secured sheeting to provide complete protection from damage, dust and moisture. Dehumidifiers shall be placed inside the polyethylene coverings. The equipment shall then be skid-mounted for final transport. Lifting rings shall be provided for moving without removing protective covering. Boxed

weights shall be shown on shipping tags together with instructions for unloading, transporting, storing and handling at job site.

2. Special instructions for proper field handling, storage and installation required by the manufacturer for proper protection, shall be securely attached to the packaging for each piece of equipment prior to shipment. The instructions shall be stored in resealable plastic bags or other acceptable means of protection.
3. None of the central control and monitoring equipment shall be shipped to the site until the room(s) are environmentally suitable.

B. Identification

1. Each component shall be tagged to identify its location, tag number and function in the system. Identification shall be prominently displayed on the outside of the package.
2. A permanent stainless steel or other non-corrosive material tag firmly attached and permanently and indelibly marked with the instrument tag number, as given in the tabulation, shall be provided on each piece of equipment supplied under this Section.

C. Storage

1. Equipment shall not be stored out-of-doors. Equipment shall be stored in dry permanent shelters including in-line equipment and shall be adequately protected against mechanical injury. If any apparatus has been damaged, such damage shall be repaired by the Contractor at his/her 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 tests as directed by the Engineer. This shall be at the cost and expense of the Contractor, or the apparatus shall be replaced by the Contractor at his/her own expense.

1.8 MAINTENANCE

A. Spare Parts:

1. All spare parts shall be individually packaged and labeled.
2. The spares listed above shall be packed in a manner suitable for long-term storage and shall be adequately protected against corrosion, humidity and temperature.

1.9 FINAL SYSTEM DOCUMENTATION

A. Prior to final acceptance of the system and operating and maintenance manuals covering instruction and maintenance on each type of equipment shall be furnished in accordance with the specification.

B. The instructions shall be bound in three-ring binders with Drawings reduced or folded for inclusion and shall provide at least the following as a minimum.

1. A comprehensive index.
2. A complete "As Constructed" set of approved shop Drawings.
3. A complete list of the equipment supplied, including serial numbers, ranges and pertinent data.
4. Full specifications on each item.
5. System schematic drawings "As Constructed", illustrating all components, piping and electrical connections of the systems supplied under this Section.
6. Detailed service, maintenance and operation instructions for each item supplied.
7. Special maintenance requirements particular to this system shall be clearly defined, along with special calibration and test procedures.
8. The operating instructions shall also incorporate a functional description of the entire system, with references to the systems schematic drawings and instructions.
9. Complete parts lists with stock numbers and name, address and telephone number of the local supplier.

C. The supplier's final documentation shall be new documentation written specifically for this project, but may include standard and modified standard documentation. Modifications to existing hardware or software manuals shall be made on the respective pages or inserted adjacent to the modified pages. All standard documentation furnished shall have all portions that apply clearly indicated. All portions that do not apply shall be lined out.

D. The manuals shall contain all illustrations, detailed drawings, wiring diagrams and instructions necessary for installing, operating and maintaining the equipment. The illustrated parts shall be numbered for identification. All information contained therein shall apply specifically to the equipment furnished and shall only include instructions that are applicable. All such illustrations shall be incorporated within the printing of the page to form a durable and permanent reference book.

E. If the supplier transmits any documentation or other technical information which he/she considers proprietary, such information shall be designated. Documentation or technical information which is designated as being proprietary will be used only for the design, construction, operation, or maintenance of the system and, to the extent permitted by law, will not be published or otherwise disclosed.

F. The requirements for the supplier's final documentation are as follows:

1. The contractor shall prepare a separate record drawing in pdf each lift station site. Each drawing shall include as a minimum the configuration of electric schematics of the newly constructed and/or retrofitted existing control panel(s) (wiring diagram) and any other modifications or deviations which may vary from the details shown on the original contract drawings, including construction (structural/hardware) and utility (electrical) features which are revealed during the course of construction. Record drawings shall be supplemented by detailed

sketches as necessary or as directed to indicate, fully, the work as actually constructed.

2. As built documentation shall include all previous submittals, as described in this Specification, updated to reflect the as-built system. Any errors in or modifications to the system resulting from the Factory and/or Field Acceptance Tests shall be incorporated in this documentation.

3. The Hardware Maintenance Documentation shall describe the detailed preventive and corrective procedures required to keep the system in good operating condition. Within the complete Hardware Maintenance Documentation, all hardware maintenance manuals shall make reference to appropriate diagnostics, where applicable, and all necessary timing diagrams shall be included. A maintenance manual or a set of manuals shall be furnished for all delivered hardware, including peripherals. The Hardware Maintenance Documentation shall include, as a minimum, the following information:

    a. Operation Information - This information shall include a detailed description of how the equipment operates and a block diagram illustrating each major assembly in the equipment.
    b. Preventative-Maintenance Instructions - These instructions shall include all applicable visual examinations, hardware testing and diagnostic routines and the adjustments necessary for periodic preventive maintenance of the System.
    c. Corrective-Maintenance Instructions - These instructions shall include guides for locating malfunctions down to the card-replacement level. These guides shall include adequate details for quickly and efficiently locating the cause of an equipment malfunction and shall state the probable source(s) of trouble, the symptoms, probable cause and instructions for remedying the malfunction.
    d. Parts Information - This information shall include the identification of each replaceable or field-repairable module. All parts shall be identified on a list in a drawing; the identification shall be of a level of detail sufficient for procuring any repairable or replaceable part. Cross-references between system supplier's part number and manufacturer's part numbers shall be provided.
    f. Retrofit Documentation - The Owner recognizes the fact that not all possible problems related to real-time events, software interlocks, flags, active tasks and hardware utilizations can be discovered during the Acceptance Tests. Therefore, the supplier shall investigate, diagnose, repair, update and distribute all pertaining documentation of the deficiencies which become evident during the warranty period. All such documentation shall be submitted to the Owner within 30 days of solving the problem.

4. Provide Operator's Manuals for the system operators. These manuals shall be separately bound and shall contain all information necessary for the operator to operate the system. The manuals shall be written in nontechnical terms and shall be organized for quick access to each detailed description of the operator's

procedure. Manuals shall contain, but not be limited to, the following information:

a. A simple overview of the entire system indicating the function and purpose of each piece of equipment.
b. A detailed description of the operation of the Process Operator Console including all appropriate CRT displays if any.
c. A detailed description of the operation and interface of all hardwired panels.
d. Complete step-by-step procedures for starting up and shutting down the entire system.
e. Complete step-by-step procedures for starting up or shutting down an individual component.
f. A complete description for operating all computer system equipment (i.e., CPU, tape unit, disk drive, etc).
g. Procedures for changing paper, tape, etc.
h. A complete description of the operation of each plant control function. All operator input to these functions shall be described.
i. A listing of all data base point names with their respective point descriptions.
j. A complete glossary of terms.

PART 2 - PRODUCTS

2.1 INSTRUMENTATION GENERAL

Instruments' model numbers, manufacturers and types are shown in Bill of materials on drawings.

A. Type

1. All instrumentation supplied shall be of the manufacturer's latest design and shall produce or be activated by signals which are established standards for the water and wastewater industries.
2. All electronic instrumentation shall be of the solid-state type and shall utilize linear transmission signals of 4 to 20 mA dc (milliampere direct current), however, signals between instruments within the same panel or cabinet may be 1-5V dc (volts direct current), or the like.
3. Outputs of equipment that are not of the standard signals as outlined, shall have the output immediately raised and/or converted to compatible standard signals for remote transmission. No zero based signals will be allowed.
4. All instruments shall be provided with mounting hardware and floor stands, wall brackets, or instrument racks as shown on the Drawings or as required.
5. Equipment installed in a hazardous area shall meet Class, Group, and Division as shown on the Electrical Drawings, to comply with the National Electrical Code.
6. All indicators and recorder readouts shall be linear in process units, unless otherwise noted.

7. All transmitters shall be provided with either integral indicators or conduit mounted indicators in process units, accurate to two percent.
8. Electronic equipment shall be of the manufacturer's latest design, utilizing printed circuitry and 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.
9. 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, in-so-far 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.
10. The field mounted digital system equipment and system components shall be designed for installation in dusty, humid and slightly corrosive service conditions.
11. All electronic/digital equipment shall be provided with radio frequency interference protection and shall be FCC approved.
12. All cables provided under this section shall be rated for environment. Wet locations shall include conduits systems below grade rated.

B. Electrical:

1. All equipment shall be designed to operate on a 60 Hertz alternating current power source at a nominal 117 volts, plus or minus 10 percent, except where specifically noted. All regulators and power supplied 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.
2. Materials and equipment used shall be U.L. approved wherever such approved equipment and materials are available.
3. 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.

2.2 SURGE PROTECTION DEVICE (SPD)

A. GENERAL:

Surge protection shall be provided to protect the electronic instrumentation system from induced surges propagating along the signal and power supply lines. The protection systems shall be such that the protective level shall not interfere with normal operation, but shall be lower than the instrument surge withstand level, and be maintenance free and self-restoring.

Instruments shall be housed in a suitable case, properly grounded. Ground wires for all SPD shall be connected to a good earth ground and where practical, each ground wire run individually and insulated from each other. These protectors shall be mounted within the instrument enclosure or a separate NEMA 4X junction box coupled to the enclosure.

B. POWER SUPPLY:

Protection of all 120 VAC instrument power supply lines shall be provided. Control panels shall be protected by isolation transformers and SPD. Field instruments shall be protected by SPD.

C. ANALOG SIGNALS:

Protection of analog signal lines originating and terminating not in the same building shall be provided by SPD. For analog signal lines the SPD shall be Edco PC-642. For field mounted two-wire instruments the SPD shall be encapsulated in stainless steel pipe nipples, and shall be Edco SS64 series.

For field mounted four-wire 120VAC instruments, the SPD shall be in a NEMA 4X polycarbonate enclosure, Edco SLAC series.

2.3 TUBING AND FITTINGS

A. All instrument air header takeoffs and branch connections less than 2-in shall be 316 stainless steel.

B. All instrument shut-off valves and associated fittings shall be supplied in accordance with the piping specifications and all instrument installation details. Fittings shall be Swagelok 316 stainless steel or equal and valves shall be Whitney 316 stainless steel or equal.

C. All tubetrack shall be supported by stainless steel and installed as per manufacturer's installation instructions.

PART 3 - EXECUTION

3.1 GENERAL INSTALLATION

A. Instrumentation and accessory equipment shall be installed in accordance with the manufacturer's instructions. The locations of equipment, transmitters, alarms 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 process control 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. All

instruments shall be mounted as to allow access for service without the use of portable ladders.

B. The instrumentation loop diagrams indicate the intent of the interconnection between the individual instruments. Any exceptions should be noted. Two complete sets of approved shop drawings shall be kept at the job site during all on-site construction. Both sets shall be identically marked up to reflect any modifications made during field installation or start-up. All markings shall be verified and initialed by the Engineer or his/her designated representative.

    1. Following completion of installation and the operational readiness test, one set of the marked up drawings shall be provided to the Engineer, the other retained by the supplier for incorporation of the mark-ups into final as-built documentation.

C. The instrumentation installation details on the Drawings indicate the designed installation for the instruments specified. Where specific installation details are not specified or shown on the Drawings, the American Petroleum Institute (API) Recommended Practice 550 shall be followed as applicable.

D. All work shall be executed in full accordance with codes and local rulings. Should any work be performed contrary to said rulings, ordinances and regulations, the Contractor shall bear full responsibility for such violations and assume all costs arising therefrom.

E. All equipment used in areas designated as hazardous shall be designed for the Class, Group and Division as required on the Electrical Drawings for the locations. All work shall be in strict accordance with codes and local rulings, should any work be performed contrary to said rulings, ordinances and regulations, the supplier shall bear full responsibility for such violations and assume all costs arising there from.

F. Unless specifically shown in the Drawings, direct reading or electrical transmitting instrumentation shall not be mounted on process piping. Instrumentation shall be mounted on instrument racks or stands as detailed on the installation detail drawings. All instrumentation connections shall be provided with shutoff and drain valves. For differential pressure transmitters, valve manifolds for calibration, testing and blowdown service shall also be provided. For slurries, chemical or corrosive fluids, diaphragm seals with flushing connections shall be provided.

G. All piping to and from field instrumentation shall be provided with necessary unions, test tees, couplings, adaptors and shut-off valves.

H. Field instruments requiring power supplies shall be provided with local electrical shutoffs and fuses as required.

I. Brackets and hangers required for mounting of equipment shall be provided. They shall be installed in a workmanlike manner and not interfere with any other equipment.

J. The system supplier shall investigate each space in the building through which equipment must pass to reach its final location. If necessary, the system supplier shall be required to ship his/her material in sections sized to permit passing through restricted areas in the building. The system supplier shall also investigate, and make any field modifications to the allocated space for each cabinet, enclosure and panel to assure proper space and access (front, rear, side).

K. The shield on each process instrumentation cable shall be continuous from source to destination and be grounded as directed by the manufacturer of the instrumentation equipment but in no case shall more than one ground point be employed for each shield.

L. Lifting rings from cabinets/assemblies shall be removed. Hole plugs shall be provided for the holes of the same color as the cabinet.

M. The system supplier, acting through the Contractor, shall coordinate the installation, the placing and location of system components, their connections to the process equipment panels, cabinets and devices, subject to the Engineer's approval. He/She shall be responsible to insure that all field wiring for power and signal circuits are correctly done in accordance with best industry practice and provide for all necessary system grounding to insure a satisfactory functioning installation. The Contractor hereunder shall schedule and coordinate his/her work under this section with that of the electrical work specified under applicable Sections of Division 16.

3.2 TESTS (GENERAL)

A. The supplier shall test all equipment at the factory prior to shipment. Unless otherwise specified in the individual specification sections, all equipment provided by the supplier shall be tested at the factory as a single fully integrated system.

B. 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 simulations techniques in the test procedures.

C. The Contractor shall require the supplier to coordinate all of his/her testing with him, all affected Subcontractors and the Owner.

D. The supplier shall furnish the services of servicemen, all special calibration and test equipment and labor to perform the field tests.

3.3 FUNCTIONAL ACCEPTANCE TEST

A. Prior to startup and the Functional Acceptance Test, the entire installed instrument and control system shall be certified that it is ready for operation. All preliminary testing, inspection, and calibration shall be completed.

B. Loop-specific and non-loop-specific tests shall be the same as specified under Factory Demonstration Tests except that the entire installed system shall be tested and all functions demonstrated.

C. The system shall operate for a continuous 100 hours without failure before this test will be considered successful.

3.4 TRAINING

A. Not used.

3.5 WARRANTY

A. The supplier shall have full responsibility for the system hardware warranty for a one year after lift station start up.

3.6 CONTROL SYSTEM DIAGRAMS AND DETAILS

A. To assist the system supplier in determining the scope of work, a series of loop diagrams and details are provided. Unless specifically stated otherwise, the system supplier shall be responsible for providing all instrumentation, control equipment and auxiliary devices necessary to perform the functions specified herein and as shown and described on these diagrams. Any auxiliary devices such as lightning/surge protectors, relays, timers, signal isolators, signal boosters, etc, which are necessary for complete operation of the system, or to perform the functions specified shall be included, whether or not they are specifically shown or tabulated on the loop diagrams.

B. The intent of the loop diagrams is to describe in as much detail as possible, the hardware, software and functional requirements of a process measurement or control system. They are not intended to convey requirements for conduit and wiring between panels or system components. This information is included in appropriate electrical specifications and Drawings.

C. To assist the system supplier in determining the scope of work and intent of the contract documents, written control descriptions have been included at the end of this section. The control descriptions are general in nature and do not detail all auxiliary devices and interlocks required.

END OF SECTION

SECTION 32 21 39

SUBMERSIBLE PUMPS

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. Finish all labor, materials, equipment and incidentals required and install, complete and ready for operation a duplex (or quadraplex) pumping station, including pumps, base elbows, guide rails and lifting cables, control panels and appurtenances as shown on the Drawings and as specified herein. See also the Palm Beach County Water Utilities Department's "Minimum Design and Construction Standards," Latest Edition.

1.2 DESCRIPTION OF SYSTEMS

A. All equipment for the pump station specified herein and shown on the Drawings is intended to be standard equipment for pumping raw sewage.

1.3 QUALIFICATIONS

A. The submersible pumps shall be the standard product of a manufacturer having a successful record of manufacturing and servicing. The equipment shall be designed, constructed and installed in accordance with the best practices and methods.

B. The submersible pumps shall be as indicated on the Drawings.

1.4 SUBMITTALS

A. Copies of all materials required establishing compliance with the Technical Specifications shall be submitted in accordance with the provision of the General Conditions and **Section 01 33 00 - Submittals**. 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 each size pump. Data shall include guaranteed performance curves, based on actual shop tests and duplicate units, which show that they meet specified requirements for head, capacity, efficiency, allowable NPSH, allowable suction lift, and

horsepower. Factory certified curves shall be submitted on 8½ -inch x 11-inch sheets.

4. The total weight of the equipment including the weight of the single largest item.

5. A complete total bill of materials for all equipment.

6. 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.

1.5 OPERATING INSTRUCTIONS

A. Copies of an operating and maintenance manual for each size pump shall be furnished to the ENGINEER as provided for in **Section 01 78 23 – Operating and Maintenance Data.** The manuals shall be prepared specifically for this installation and shall include all required cuts, drawings, equipment lists, descriptions, etc. that are required to instruct operating and maintenance personnel unfamiliar with such equipment.

1.6 WARRANTY

A. All equipment under this section of the Technical Specifications shall be warranted for a period of five (5) years from start-up by the equipment manufacturers. The warranty shall be prorated and include parts and labor. Warranty period shall commence on the date outlined in **Section 01 75 00 – Starting of Systems.**

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 the warranty period, it shall be replaced and restored to service at no expense to the OWNER.

C. The manufacturer's warranty period shall run concurrently with the CONTRACTOR's warranty period. No exception to the provision shall be allowed.

PART 2 - PRODUCTS

2.1 MATERIALS AND EQUIPMENT

A. All parts shall be so designed and proportioned as to have liberal strength, and stiffness and to be especially adapted for the work to be done. Ample room and facilities shall be provided for inspection, repairs, and adjustment.

B. Stainless steel nameplates, giving the name of the manufacturer, the rated capacity, head, speed, serial number, model number, horsepower, voltage, amperes, and all other pertinent data shall be attached to each pump.

C. The nameplate ratings for the motors shall not be exceeded, nor shall the design service factor be reduced when its pump is operating at any point on its characteristic curve at maximum speed.

2.2 SUBMERSIBLE PUMP

A. The pumps shall be of the heavy-duty, non-clog impeller, submersible type as manufactured those included in the Approved Materials and Equipment List.

B. Performance Requirements: The pumps shall be designed and manufactured as specified for the conditions of service stated in the Drawings.

C. The casing for the pump station shall be cast iron and have flanged discharge.

D. Motors shall be ~~oil-filled~~ for continuous duty, 240 volts or 480 volts, 60 hertz, 3-phase, or as indicated on the Drawings. Motors shall have four (4) wires for temperature and moisture detection. Motors shall be rated for Class 1, Division I hazardous locations.

E. Shaft shall be heavy-duty stainless steel.

F. Controls shall be provided to control the starting/stopping of the pumps. The pumps shall operate per the controls shown on the instrumentation loop drawings. A NEMA 4X, 316 Stainless Steel control panel shall be provided to control the pumps locally as well as from the plant computer system. Motor starters are provided under **Division 26 - Electrical**, refer to the electrical drawings for requirements. The panel shall include for each pump Hand-Off-Auto selector switches, pump On/Off indicators and Low/High level indicators. In the HAND mode the pumps shall be started from the panel, in the OFF position pump shall not run, in the AUTO mode the pumps will be controlled via local control system. Control panel shall operate from a 120 Volt AC power. The control panels shall have a disconnect switch. Control panel shall be constructed in accordance with **Division 26 - Electrical** and the details in the Drawings.

G. Pump manufacturer shall supply base elbow, guide rails, lifting cables, cable rack and miscellaneous hardware as shown on the Drawings and required for submersible pump installation.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Installation shall be in strict accordance with the manufacturer's instructions and recommendations in the locations shown on the Drawings. Installation shall include furnishing the required oil and grease for initial operation. The grades of oil and grease shall be in accordance with the manufacture's recommendations. Anchor bolts shall be set by the CONTRACTOR in accordance with the Drawings and the Palm Beach County Water Utilities Department's "Minimum Design and Construction Standards,".

B. Supply all anchor bolts, temporary lift equipment, power, water, labor, and all other incidentals required for the propose installation of the pumps.

3.2 PAINTING

A. Surface preparation and shop prime painting shall be as specified in **Division 9 - Finishes**.

B. Field painting shall be as specified in **Division 9 - Finishes**.

3.3 INSPECTION AND TESTING

A. Furnish the services of a factory representative for one (1) day that has complete knowledge of proper operation and maintenance to inspect the final installation and supervise a test run of the equipment.

B. After all pumps have been completely installed, and working under the direction of the manufacturer, conduct in the presence of the ENGINEER, such tests as are necessary to indicate that pump efficiently and discharge conform to the Technical Specifications. Each pump shall be hydrostatically tested at 100 psig. Field test shall include all pumps included under this Section. Supply al electrical power, water or wastewater, labor, equipment, and incidentals required to complete the field test.

C. If the pump performance does not meet the Technical Specifications, corrective measures shall be taken by the CONTRACTOR, or pumps shall be removed and replaced with pumps which satisfy the conditions specified. A 24- hour operating period of the pumps will be required before acceptance. During this 24-hour operating period, the CONTRACTOR shall supply all power necessary.

D. The components of each lubricating system shall be completely tested by the CONTRACTOR in the presence of the ENGINEER. Any component parts which are damaged as a result of testing or which fail to meet the requirements of the

Technical Specifications shall be replaced, reinstalled and retested at the CONTRACTOR's expense.

END OF SECTION

Appendix A

Palm Beach County Water Utilities Approved Materials and Equipment List

PALM BEACH COUNTY WATER UTILITIES DEPARTMENT
ENGINEERING SERVICES DIVISION
8100 FOREST HILL BOULEVARD
WEST PALM BEACH, FL 33416

APPROVED MATERIALS AND EQUIPMENT LIST

_____

PROJECT NAME

_____

UNDERGROUND UTILITIES CONTRACTOR (Signature) (DATE)

_____

CONTRACTOR BUSINESS NAME AND SIGNATORY NAME (Printed)

_____

ENGINEER (Signature) (DATE)

_____

ENGINNERING FIRM NAME AND SIGNATORY NAME (Printed)

By signature above, the Utilities Contractor and Engineer for the referenced project agree to utilize the approved materials as indicated and follow Palm Beach County Water Utilities Department Minimum Engineering and Construction Standards.

1. OVERVIEW

Only the materials and equipment listed in Sections 4.3.3 through 4.3.8 are approved for use within the PBCWUD Potable Water, Reclaimed Water and Wastewater systems. The Department may also utilize other materials and equipment in categories not specifically identified, or as approved by Department Director.

(a) All materials and equipment shall be new and first quality. Damaged or faulty materials will not be accepted. Repair clamps may not be used on newly installed pipe. Sleeves may be used only with prior approval.

(b) All materials, fittings and appurtenances for pressure pipe systems 24" and smaller shall be designed and constructed for a minimum working pressure of 150 psi unless the specific application dictates a higher working pressure requirement. Potable Water and Reclaimed Water pipes, fittings and related appurtenances larger than 24" shall be designed, constructed and tested for a minimum test pressure of 200 psi or as specified on plans.

(c) All materials shall be permanently and visibly labeled with the name of the manufacturer, size, AWWA & NSF Standard and pressure rating. Glued on stickers are acceptable for ductile iron pipe only. The stickers shall name the manufacturer, pipe size, length, lining, pressure ratings and AWWA and NSF ratings (if applicable). The stickers shall be clearly visible and adhered well to the pipe.

Epoxy-lined pipe and fittings shall have legible markings on the interior with the date of application, application approved number, (if applicable), and have legible exterior markings identifying the lining and calling out "sewer use only". A certification shall be provided by the applicator and the manufacturer of the product being lined, that the pipe and fittings were bare and never lined with any type of material, before the epoxy was applied in accordance with manufacturer's specifications. Epoxy lined pipe and fittings shall be installed within a time period following the lining product application as specified by the lining manufacturer. All ductile iron fittings must comply with the following and must be certified by the manufacturer for compliance:

- All fittings must be tested in accordance with all applicable AWWA/NSF Standards.
- The foundry(s) shall be ISO-certified.
- Each fitting must have a cast-in "date code" which identifies the date and shift of manufacturer of that fitting.
- Each fitting must have cast-in clearly on the side of the fittings the name of the manufacturer, identify ofthe AWWA Standard, pressure rating, nominal diameter, the country where cast, the letters DI or word Ductile, and the number of degrees or fraction of the circle on all bends.

The material supplier and/or contractor shall furnish data certified by the pipe and/or fitting manufacturer that the fittings are of the material specified, and shall furnish physical and chemical certifications. Manufacturer shall furnish to the Department certifications that all fittings comply with the following requirements: All fittings shall be capable to withstand, without bursting, hydrostatic tests of minimum three times the rated water working pressure with results retained for at least two years for review.

(d) Raw water main shall be designed to Potable Water main standards.

(e) All valves shall be coated inside and out with factory applied epoxy. Valves shall operate "clockwise-close."

(f) Pipe and fitting linings/coatings shall be applied and/or warranted by thepipe/fitting manufacturer.

(g) Exposed pipe shall be painted as specified in the applicable material list.

(h) Buried pressure pipe fittings and appurtenances 3" and larger shall be ductile iron with restrained mechanical joints unless stated otherwise on the Department's standard details. Above ground fittings shall have flanged joints. Plain end fittings are not allowed. Fittings for force mains shall be ceramic epoxy lined. For sizes less than 3", fittings shall be suitable to the pipe material and application. Exposed buried non stainless steel hardware (bolts, nuts, and rods) shall be coated after assembly with a thick (low viscosity) tar product. Bell

restraint tie-rods and nuts shall be Type 304 stainless steel. Nuts shall be coated with fluoropolymer (or equal) to prevent galling. Pipe gaskets shall be as supplied by the pipe manufacturers. Profiled gaskets arerequired for flanged pipe. Split type restraining glands are preferred and should be used whenever available.

(i) Existing mains shall be tapped as long as the tapping line is smaller than the tapped line. No size-on-size taps are permitted unless approved for "line stop valves" or "insertion valves." Asbestos cement pipes may be tapped for water services only (up to 2"). A larger size connection into an AC pipe shall generally require a cut-in tee.

The Department may require the replacement of the asbestos cement pipe and clay pipe. Double strap saddles are required for 2" and smaller taps. Stainless steel sleeves are acceptable for service taps on pipes larger than 16". Equal size lines branch-offs shall require that a tee be cut in. A restrained joint, ceramic epoxy lined or cement lined ductile iron mechanical joint tapping sleeve is required for all taps unless the tapping line is less than half the diameter of the line to be tapped (a stainless steel tapping sleeve is permissible in those cases). Use of a stainless steel tapping sleeve is also permissible on taps on existing SDR-26 and SDR-21 PVC pipe only. For 4" and larger taps on pipes larger than 24", the Department may allow the use of epoxy coated carbon steel sleeves with stainless steel hardware. Restrained joint cut-in tee construction may be specified, depending on the circumstances and sizes involved. A concrete thrust block shall be installed behind a tapping tee or cut-in tee if the tapped pipe is not adequately restrained or supported means of existing pipe restraint will be considered, depending on circumstances. Insertion valves or temporary "line stops" may be required in order to limit service interruptions and/or excessive spillage.

(j) Transitions between DIP and PVC that are not specified or required by the plans or details are not permitted. PVC SDR-35 sewer pipe/ductile iron pipe adapters shall be used for DIP and PVC transition on all new constructions. Heavy-duty stainless steel flexible couplings are acceptable for transition joints with existing facilities only. Compression (pack joint) style adapters shall be used for transition from brass valves and fittings to PVCpipes.

(k) No joint deflection is allowed with PVC pipe unless approved by the pipe manufacturer (maximum 75% of the manufacturer allowed joint deflection).

(l) All dead ends (temporary and permanent) shall be mechanically restrained (plug or cap is required). Concrete thrust block restraint is not allowed. Permanent water main dead ends shall include an automatic flushing device (to be installed in grass area).

(m) Wet wells and manholes shall have precast, monolithic bases. Alternative methods for constructing wet well bases will be considered on a case-by-case basis. The depth of wet wells shall be limited to 22' unless approved in advance by the Department. All manholes shall have precast cones. Joint sealant shall be sized and placed as specified in detail by the precaster on shop drawings. Tongue joint surface shall be coated with a primer prior to joint sealant installation. External manhole joint seals must be applied between all manholes and wet well precast sections.

(n) Steel pipe installed on aerial crossings shall have ½' steel welded bearing pads at pile cap locations.

(o) No PVC Male/Female adapters shall be used. Approved "pack joint" style brass fittings or polyethylene adaptors are required.

(p) Concrete collars for valves and manholes shall be poured inplace.

(q) Any existing pipe which is not properly restrained at the designated point of connection shall have restraining installed by the Developer at no cost to the Department. The Engineer shall submit a drawing showing the proposed method of restraint. Pipe restraint and joint restraint shall be Factory Mutual approved unless specifically approved otherwise by the Department. Only wedge type restraint flange adapters are acceptable. When using flexible joint restraint pipe and fittings, the contractor shall follow the manufacturer's installation specification to eliminate "slack" by locking the restraining joints inplace.

(r) If the design and/or construction activities impact any existing Department owned Facilities, the Developer shall relocate, remove, adjust or replace these Facilities as directed, at no cost to the Department.

When using flexible joint restraint pipe and fittings, the contractor shall follow the manufacturer's installation specification

(s) "Premium Efficiency" rated motors shall be used whenever available.

(t) Motors used for plant operations, rated 500 hp or less, shall meet the requirements of NEMA MG 1-2003, Tables 12-12 and 12-13:

1. Efficiency
   a. Tested in accordance with MG-1 paragraph 12.54.1
   b. Guaranteed minimum at full load in accordance with Table 1 or as indicated in motor-driven equipment specifications.
2. Power Factor: Guaranteed minimum at full load in accordance with Table 1 or as indicated in motor-driven equipment specifications.

(u) For Palm Beach County Water Utilities Department initiated projects, the materials stated in the written specification for the project shall have precedent over the "Approved Material List".

(v) Wedge Anchors (316 SS) for Pump Base Elbows shall be permanently marked, providing a cross reference to verify the anchor's length after installation.

(w) All electrical components and systems shall be UL listed, and shall be assembled in a UL listed/approved facility.

(x) Underground.utility markers may be required for transmission mains.

(y) Buried ductile iron pipe 30" and larger shall be polybagged unless a soil survey confirms it to be unnecessary.

(z) Exposed ductile iron pipe and fittings to be shop painted with red oxide primer.

(aa) "Lead Free" brass water works products shall meet the requirement of ASNI/AWWA C800 and the maximum lead content of S.3874 and NSF 61 Annex G. The manufacturer's designation as a Lead Free product shall be permanently stamped or cast into the product's body. Effective January 1, 2013, only "Lead Free" brass water works products shall be installed in contact with potable water.

(bb) Sanitary sewer manhole castings shall be 7" tall. Alternative 4" models may be used with preapproval only.

(cc) PVC/DI pipe transitioning from HDPE pipe shall be restrained as a minimum to "in-line valve" condition.

(dd) Shop drawings for sewer concrete structures shall indicate the size and placement of joint sealant.

(ee) Stainless steel insert stiffeners shall be used at connections of brass pack joint fittings to polyethylene service pipes.

(ff) Selected service pipe material shall be used consistently in the whole project, as applicable.

(gg) Tensile strength test on the first daily butt fusion weld may be required.

(hh) Fusion weld data recording may be required for pipes larger than 12".

(ii) Removed materials shall be disposed in approved manner. WUD inspector shall advise the contractor which removed materials are to be returned to WUD (hydrants, valves, fittings, meters, vaults, manhole rings, pumps, motors, electrical and other mechanical equipment, etc.).

1.2 POTABLE WATER SYSTEM

All components that come in contact with potable water shall conform to NSF standards. Effective January 1, 2013 only Lead Free brass water products shall be installed in contact with potable water.

PW 1. Ductile Iron Pipe (Pipes shall be color coded with blue paint)
Approved Manufacturers/Products:

A. Push-on and mechanical joint pipe
(1) American Cast Iron Pipe Company
(2) U.S. Pipe
(3) McWane Ductile (Atlantic States, McWane, Pacific States, Clow Water Systems)

B. Flexible joint restraint pipe:
(1) American – Flex Ring, Lok Ring; push-on joint pipe with Armadillo Fast Grip Gasket (sizes 4"-24")
(2) U.S. Pipe - TR Flex; push-on joint pipe with Field Lok 350 Gasket (sizes 4"-24") - Bolt Lok
(3) McWane Corporation – TR Flex

Approved Fabrications for "Flanged" pipe:

- ASAP Fabrication Inc. (1-813-752-1999)
- US Pipe Fabrication Inc. (1-866-347-7473)

Note: The Fabricators must use pipe supplied by approved manufacturers.

Interior pipe surfaces must be cement mortar lined and sealed per AWWA C-104/A21.50. Minimum Special Thickness Class 53 is required for flanged pipe. "Toruseal" or "Flange-Tyte" gaskets are required for flanged pipes.

Non-Flanged Pipe Size	Minimum Pressure Class	Minimum Special Thickness Class
3",4"	350	51
6"-16"	350	50
20"	300	50
24"	250	50
30"	250	50

PW 2. Polyvinyl Chloride (PVC) Pipe (Mains 4" and larger shall be color-coded blue)
Approved Manufacturers/Products:

A. Push-on Joint Pipe, AWWA C900, SDR-18 min., 235 psi min., and AWWA C905, SDR-25 min., 165 psi min., NSF 61:
(1) JM Eagle*
(2) Diamond Plastic Corporation*
(3) North American Pipe Corp. (A.K.A. NAPCO)*
(4) IPEX, Inc. (4" – 12" only)***
(5) National Pipe and Plastics, Inc.**
(6) Sanderson Pipe Corporation (4" – 12" only)**

* No Pipe deflection at the joint allowed.
** Up to one (1) degrees deflection at pipe joint allowed.
*** Up to three (3) degrees deflection at pipe joint allowed.

B. Restrained Joint PVC Pipe, C900/C905, SDR 18/25 min., NSF61.

B1. Non-Metallic Modular Joint Restraint Design
(1) NAPCO (F.K.A. CertainTeed) Certa-lok

B2. Bell Integrated Metallic Ring Restraint Design
(1) JM Eagle Eagle Loc900

B3. Joint Free Restraint Piping System
(1) Underground Solutions Fusible PVC Pipe

C. Service Pipe Up to 6" – PVC Schedule 40 (Color: White or Blue), Schedule 80, (Color: White or Dark Grey), NSF61

(1) Heritage Plastics
(2) JM Eagle
(3) Charlotte Pipe and Foundry Company

PW 3. Exposed Steel Pipe (A53 Grade B, ERW, minimum 0.500" wall thickness, AWWA C200; flange shall be Class D or E per AWWA C204. Interior shall be lined with 7-11 mils DFT of Tnemec N-140 Pota-Pox Plus (White 00WH); Exterior shall be: Primer 3 mils Tnemec Zinc 90-97, intermediate 4-6 mils Tnemec 66 top coat 2 mils Tnemec 1074 (Black with Blue striping)
Approved Manufacturers/Products:

(1) US Pipe Fabrication

PW 4. High Density Polyethylene Pipes and Tubing.
Approved Products/Manufactures:

A. High Density Polyethylene (HDPE) pipe (Fusible HDPE, PE 4710, AWWA C906); Pipesshall be color-coded blue, minimum 40 feet standard lengths, DR 11 minimum, DIPS Size, 3" and larger

(1) Performance Pipe (DIV of CP CHEM) - DriscoPlex 4000, 4100
(2) JM Eagle

B. High Density Polyethylene (HDPE) Tubing (PE 3408/3608), CTS, DR9, AWWAC901 up to 2" size (blue or blue striped)
Approved Manufacturers/Products:

(1) Charter Plastics, Inc.
(2) ENDOT Industries, Inc.
(3) JM Eagle
(4) IPEX, Inc. Blue904 PEX Service Tubing

PW 5. PVC Cement (Must be certified for both Schedule 40 and Schedule 80)
Approved Manufacturers/Products:

A. Plumbing Applications
(1) Harvey's Wet Set PVC Cement
(2) Christy's Red Hot Blue Glue
(3) WHITLAM Weatherproof Blue All Weather Low VOC Medium Body Cement

B. Electrical Conduit Applications (Medium Body Clear Cement)
(1) Oatey PVC Heavy Duty Clear Cement
(2) Harvey's P-12G Heavy Gray PVC Cement

PW 6. Thread Sealant
Approved Manufacturers/Products:

(1) E-Z Weld 209 by Fry Technology
(2) Pipe Fit, FPPI
(3) Teflon Tape (all manufacturers)

PW 7. Gate Valves (AWWA C509, C515, Ductile Iron Body)
Approved Manufacturers/Products:

(1) Mueller A-2361, A-2362
(2) American Series 2500 (MM, FF)
(3) Kennedy Ken Seal Series
(4) M & H Style 4067, 7561/7571
(5) Clow Models 2638, 2639/2640
(6) US Pipe Metroseal A-USP1, A-USP2

Minimum Pressure Class 200 is required for valves larger than 24"

PW 8. Butterfly Valves (AWWA C504)
Approved Manufacturers/Products:

(1) Mueller Lineseal III
(2) M & H Styles 4500, 1450
(3) Pratt "AWWA Groundhog"
(4) DeZURICK Class 150B
(5) Val-Matic

Note: Worm Gears are required for valves larger than 16" Minimum Pressure Class 200 is required for valves larger than 24"

PW 9. Combination Air Release Valves (Fusion bonded epoxy interior and exterior stainless steel cover bolts and plugs)

Minimum Sizes:

1" ARV for pipes 4" – 16"
2" ARV for pipes larger than 16"

Approved Manufacturers/Products:

(1) Val-Matic VMC-201C.1SV, VMC-202C.2DISV
(2) Crispin UL10, UL20
(3) VAG GA (F.K.A. GA Industries) Model 945-T
(4) APCO 143C, 145C

PW 10. Tapping Valves (AWWA C509, C515, Ductile Iron Body)
Approved Manufacturers/Products:

(1) American Series 2500
(2) Mueller T-2361, T-2362
(3) US Pipe Metroseal T-USP1, T-USP2
(4) M & H Style 4067-13, 7572
(5) Clow F-6114
Pressure Class 200 is required for valves larger than 24".

PW 11. Residential Dual Check Valves (Angled, Cartridge Style, ASSE Approved)-Lead Free
Approved Manufacturers/Products:

(1) Ford ¾" HHCA91-323-NL, 1" HHCA91-444-NL
(2) AY McDonald ¾" 712 -3YE 33, 1" 712-3YE 44
(3) Mueller ¾" H-14464-AN, 1" H-14464-AN

PW 12. Brass Pack Joint Branch Valves (PVC)-Lead Free
Approved Manufacturers/Products:

(1) AY McDonald 708U4M (1½ x ¾ x 7.5)
(2) Ford U78-63-NL
(3) Mueller V15361N

PW 13. Inflow Preventer for ARV's in Vaults and Manholes
Approved Manufacturers/Products:

(1) Val-Matic FloodSafe

PW 14. Screw Type 2 Piece Valve Box
Approved Manufacturers/Products:

(1) East Jordan Iron Works 8550
(2) Bingham/Taylor 4905
(3) SIGMA Corp. - Ductile Iron only - Top VB2611-D, Bottom VB2612-D

PW 15. Valve Box Lid (Min. weight 24 lbs., 4" skirt; Lid Marked "Water")
Approved Manufacturers/Products:

(1) East Jordan Iron Works Drop Lid# 0680045
(2) Bingham/Taylor # 4906
(3) SIGMA Corp. - Ductile Iron only - VB2600W-D

PW 16. Sliding Type 2 Piece Valve Box and Lid for Corporation Stops (arched bottom)
Approved Manufacturers/Products:

(1) Bingham/Taylor 4903
Box only: I4B143RSLL
Lid only: CUL4LHVTSKSVC

PW 17. Reduced Pressure Principle Backflow Prevention Assemblies (to be owned by PBCWUD, must be USC or ASSE [with field testing] approved)
Approved Manufacturers/Products:

(1) AMES 4000 SS/Watts 994 (Required for Plant Installations)
(2) WILKINS 975XL
(3) WILKINS 375 (3" and larger)
(4) AMES C400, C500/Watts 957, 957 RPDA

Note: All Reduced Pressure Principle Backflow Prevention Assemblies which are included on the latest "List of Approved Backflow Prevention Assemblies" as published by the University of Southern California or by the American Society of Sanitary Engineering (with field testing) may be used for private water services.

PW 18. Double Check Detector Assemblies (to be owned by PBCWUD, must be USC or ASSE [with field testing] approved)
Approved Manufacturers/Products:

(1) AMES C300, 3000 SS
(2) FEBCO LF856
(3) Wilkins 350
(4) Watts 757DCDA, 774DCDA

Note: Private fire lines with all no lead brass fittings may use any of the "Double Check Detector Assemblies" or "Reduced Pressure Principle Backflow Detector Assemblies" which are included on the latest "List of Approved Backflow Prevention Assemblies" as published by the University of Southern California **USC or ASSE [with field testing]**.

PW 19. Mechanical Joint Ductile Iron Tapping Sleeves (for Taps 4" and Larger)
Approved Manufacturers/Products:

(1) American Series 2800
(2) Mueller H-615
(3) US Pipe H-615

PW 20. Tapping Sleeves (For Outlets 4" and Larger)
Approved Manufacturers/Products:

A. Stainless Steel Body, Flange and Hardware
(1) Dresser 630
(2) Ford FTSS
(3) Cascade CST-EX
(4) JCM 432, 452
(5) Power Seal Model 3490-AS
(6) Smith Blair 663

B. Fabricated Epoxy-coated Steel Body and Flange with Stainless Steel Hardware (For Pipes Larger than 24")
(1) JCM 412
(2) Smith-Blair 622
(3) Power Seal Model 3460-CS
(4) Ford FTSC
(5) Dresser 610
(6) Cascade CFT-ESS, CFT-LP-ESS

PW 21. Mechanical Joint Restraining Devices
Approved Manufacturers/Products:

A. Solid Design for D.I. Pipe
(1) EBBA Iron – 1100 MEGALUG
(2) Sigma ONE-LOK SLDE
(3) Ford/Uni-Flange Series 1400
(4) Star Pipe StarGrip Series 3000 (up to 16")

B. Solid Ring Design for PVC Pipe
(1) EBBA Iron – 2000PV MEGALUG
(2) Sigma ONE-LOK SLCE
(3) Ford/Uni-Flange Series 1500
(4) Star Pipe StarGrip Series 4000 (up to 16")

C. Solid Ring Design for HDPE pipe up to 12" (requires stainless steel stiffening insert)
(1) EBBA Iron – 2000PV MEGALUG
(2) Ford/Uni-Flange Series 1500

D. Split Ring Design for D.I. Pipe
(1) EBBA Iron – 1100SD Split MEGALUG
(2) Sigma ONE-LOK SSLD
(3) Star Pipe StarGrip Series 3000S (up to 16")

E. Split Ring Design for PVC Pipe
(1) EBBA Iron – 2000SV MEGALUG

F. Split Ring Design for HDPE Pipe up to 8" (requires stainless steel stiffening insert)
(1) EBBA Iron – 2000SV MEGALUG

PW 22. Pressure Pipe Bell Restraints Bell side ring without serrations; rods, and nuts to be stainless steel 304 with nuts coated to prevent galling; split ring design shall be used if available.
Approved Manufacturers/Products:

A. Split Ring Design for DI Pipe
(1) EBBA Iron – Series 1600TD
(2) EBBA Iron – Series 1100HD
(3) Sigma ONE-LOK SSLDH

B. Split Ring Design for PVC Pipe
(1) EBBA Iron – Series 1600TD
(2) EBBA Iron – Series 1100HV
(3) Sigma PV-LOK PWH
(4) Ford/Uni-Flange Series 1355-C

C. Solid Ring Design for DI Pipe
(1) EBBA Iron – Series 1700
(2) Sigma ONE-LOK SLDEH
(3) Ford/Uni-Flange Series 1450

D. Solid Ring Design for PVC Pipe
(1) EBBA Iron – Series 3800
(2) Sigma ONE-LOK SLCEH
(3) Ford/Uni-Flange Series 1350

PW 23. Pressure Pipe Bell Joint Leak Clamps with stainless steel Type 304 hardware (bolts, nuts, etc.).
Approved Manufacturers/Products:

(1) Smith-Blair Model 274
(2) Ford FBC-XXX-E or FBCF-XXX-Y Style
(3) Romac Industries Style 516

Note: Split Ductile Iron Rings required. Buna-N gasket required. Longer bolts required for PVC pipe.

PW 24. Ductile Iron Restrained Flange Adapters with stainless steel Type 304 hardware (bolts, nuts, etc.). (Set Screw Design Not Acceptable)
Approved Manufacturers/Products:

(1) Smith-Blair Model 912-90 with anchor studs
(2) EBBA Iron – 2100 MEGAFLANGE
(3) PowerSeal Model 3521 with anchor studs

PW 25. Ductile Iron Fittings

Approved Manufacturers/Products:

A. Both ends mechanical joint and flanged joint fittings
(1) Tyler Union
(2) US Pipe/Metalfit
(3) American
(4) To be removed: ~~Union Foundry~~ (same as #1)
(5) Star
(6) Sigma
(7) Clow

B. Flexible restraint fittings
(1) American – FLEX-RING, LOK-RING
(2) US Pipe/Metalfit – TR FLEX, BOLT-LOK
(3) McWane Corporation – SuperLock

C. Welded on Outlet Tees for pipes larger than 24" non-flanged pipe. The welded on branch size shall not exceed ½ of the main pipe size. Welding shall be performed and tested by the pipe manufacturer.

(1) American Cast Iron Pipe Company
(2) US Pipe

Fittings must be ductile iron meeting the requirements of AWWA C-110, AWWA C-153 and must be cement mortar lined and sealed per AWWA C-104 or fusion bonded epoxy lined inside and outside per AWWA C116/ANSI A21.16. The epoxy shall be applied to both exterior and interior surfaces. The lining shall be warranted by the pipe manufacturer. TORUSEAL or Flange-Tyte gaskets are required for flanged fittings.

PW 26. PVC Fittings (Up to 6" Schedule 80 and Schedule 40)
Approved Manufacturers/Products:

(1) LASCO Fittings Inc.
(2) NIBCO, INC.
(3) Spears Manufacturing Company
(4) Charlotte Pipe and Foundry Company

PW 27. Brass Pack Joint Yoke Quarter Bend Couplings (PVC) – Lead Free
Approved Manufacturers/Products:

(1) Ford L91-23-NL, L91-44-NL
(2) Mueller H-14214N
(3) AY McDonald74779Y-44
(3/4" x 02; 1" x 04)

PW 28. Follower Glands
Approved Manufacturers/Products:

(1) Tyler Union
(2) US Pipe
(3) SIGMA

PW 29. Casing Pipe Spacers
Approved Manufacturers/Products:

(1) Cascade
(2) APS Spacing System
(3) RACI
(4) BWM

PW 30. Brass Curb Stops, Straight, FIP x FIP, Lead Free
Approved Manufacturers/Products:

(1) Ford B11(-333W-NL, -444W-NL, -666W-NL, -777W-NL)
(2) Mueller B-20200-3N
(3) AY McDonald 76101W

PW 31. Brass Curb Stops with Pack Joints (3/4"-2") (PVC) – Lead Free
Approved Manufacturers/Products:

(1) Ford B77 (-333W-NL, -444W-NL, -666W-NL, -777W-NL)
(2) AY McDonald 76100W-44
(3) Mueller V-25236-3N (1" only)

PW 32. Pack Joint Brass Male Adapters (PVC) – Lead Free
Approved Manufacturers/Products:

(1) Ford C87 (-44-NL, -46-NL, -66-NL, -77-NL)
(2) AY McDonald 74753-44 (1", 1 ½", 2")
(3) Mueller V-15440-3N (1", 1 ½", 2")

PW 33. Brass Yoke Angle Curb Stops (FIP x Yoke) -Lead Free
Approved Manufacturers/Products:

(1) Mueller B-24278-3N (5/8 x ¾), (5/8 x ¾ x ¾), (1)
(2) Ford BA91(-323W-NL, -344W-NL, -444W-NL)
(3) AY McDonald 74604 BY-44; -(3/4 x ¾ x 02), (1 x ¾ x 02), (1 x 1 x 04)

PW 34. Corporation Stops (PVC) with PVC pack joint outlet and tee head- Iron Pipe Thread – Lead Free
Approved Manufacturers/Products:
(1) Ford FB1102-6-TA-NL, FB1102-7-TA-NL

(2) AY McDonald 74104B-44 (1 ½", and 2")
(3) Mueller V-25058N (1 ½", and 2")

PW 35. Corporation Stops for ARV Installations (MIP & MIP) – Lead Free
Approved Manufacturers/Products:

(1) Ford FB500-NL
(2) AY McDonald 73131 B
(3) Mueller B-20013N -38, B-2969N -38

PW 36. Meter Yokes (must be epoxy coated, e-coated or powder coated)
Approved Manufacturers/Products:

(1) Ford Y502, Y504
(2) Mueller H-5020, H-5040
(3) AY McDonald 14-2, 14-4

PW 37. Yoke Expansion Connections- Lead Free
Approved Manufacturers/Products:

(1) Ford EC23-NL, EC4-NL
(2) Mueller H-14234N-26
(3) AY McDonald 714-2EHG, 714-4EHG

PW 38. Service Saddles/Sleeves (up to 2" Tap Size) Iron Pipe Thread
Approved Manufacturers/Products:

A. Ductile Iron Body, Double Steel Bales (up to 16")
(1) JCM 408
(2) Smith Blair 313
(3) Ford FC202 (Epoxy-coated)
(4) Romac 202, NU
(5) AY McDonald 4826A

B. Ductile Iron Body Double Stainless Steel Straps
(1) JCM 406
(2) Smith Blair 317
(3) Ford FCD 202
(4) Romac 202 NS (up to 16", pre-approval required)
(5) Power Seal 3417 DI
(6) Ay McDonald 4855A

C. Epoxy-coated Steel Body Threaded Outlet Tapping Sleeves, Stainless Steel Hardware Required (Larger than 16", Pre-approval Required)

(1) JCM 418
(2) Romac FTS420T

D. Stainless Steel Body Threaded Outlet Tapping Sleeves (Larger than 16")

(1) JCM 438
(2) Smith Blair 372

PW 39. Fire Hydrants
Approved Manufacturers/Products:

(1) Kennedy Guardian K81-D (5 ¼")
(2) Mueller Super Centurion 250 (5 ¼")
(3) American 5 ¼" American-Darling B-84-B-5
(4) Clow Medallion (5 ¼")

Buried hydrant bolts, washers and nuts shall be stainless steel. Bolts shall be 316 SS, washers shall be 316 SS, and nuts shall be 304 SS. Fire hydrants shall be ordered red in color with the finish epoxy coat applied by the manufacturer. New fire hydrants which need re-painting shall be field coated safety red. Approved security caps with chains are required.

PW 40. Fire Hydrant Paint
Approved Manufacturers/Products:

(1) Sherwin Williams (DTM acrylic coating) B66 SERIES
(2) PPG PITT-TECH PLUS GLOSS

All paint shall be gloss, safety red in color and two coats shall be applied.

PW 41. Meter Boxes (Tier-8 Load Category Minimum per ANSI/SCTE 77 – Fiber Reinforced Polymer Concrete [FRP] unless otherwise noted)
Approved Manufacturers/Products:

A. Single Service: (5/8" x 3/4" meters)
(1) CDR (AKA QUAZITE) B03111812L
(2) GlasMasters J111812SS0N08-1
(3) Armorcast A6001429 (polymer concrete box)

B. Double Service: (5/8 x 3/4" meters)
(1) CDR (AKA QUAZITE) B03151712L
(2) GlasMasters J151712S0N08-1
(3) Armorcast A6000510X12-PBC

C. Single Service: (1" meters)
(1) CDR (AKA QUAZITE) B03132412A
(2) GlasMasters S132412S0N08-1
(3) Armorcast A6001868X12-PBC

D. Single Service: (1½", 2", meters)
(1) CDR (AKA QUAZITE) B03173012A
(2) GlasMasters S173012S0N08-1
(3) Armorcast A6001534X12-PBC

E. Single Meter Service: (3" meters)
(1) CDR (AKA QUAZITE) B03173018A
(2) GlasMasters S173018S0N08-1
(3) Armorcast A6001534X18-PBC

F. Single Meter Service: 4" and larger meters shall be installed above ground

All meter boxes shall have vertical straight walls with no "mouse holes" and shall display the manufacturer name and date of manufacture.

Note: Traffic-bearing (Tier 15 minimum) boxes are required for all meters in hardscaped areas – see PW 79.

PW 42. Meter Box Lids (Grass Areas) (Tier-8 Load Category Minimum)
Approved Manufacturers/Products:

A. Single service (5/8" x ¾" meters)
A1. Without Antenna Opening - only to be used with prior Department approval
(1) CDR (AKA QUAZITE) C001118561365X
(2) Armorcast A6000484RCI-PBC
(3) GlasMasters S1118RN08-4-PBCWU

A2. AMR Antenna Ready
(1) GlasMasters S1118BN08-4-PBCWU
(2) CDR (AKA QUAZITE) C001118559365X

B. Double Service: (5/8" x ¾" meters)
B1. Without Antenna Opening - only to be used with prior Department approval
(1) CDR (AKA QUAZITE) C00151702F365XX
(3) Armorcast A6000469RCI-PBC
(4) GlasMasters S1517RN08-4-PBCWU

B2. AMR Antenna Ready
(1) GlasMasters S1517BN08-1-PBCWU

C. Single Service: (1" meters)
C1. Without Antenna Opening - only to be used with prior Department approval
(1) CDR (AKA QUAZITE) C00132402D365XX
(2) GlasMasters S1324RN08-4-PBCWU
C2. AMR Antenna Ready
(1) GlasMasters S1324BN 08-4-PBCWU

D. Single Service: (1-1/2", 2" & 3" meters)
D1. Without Antenna Opening - only to be used with prior Department approval
(1) CDR (AKA QUAZITE) C00173002D365XX
(2) Armorcast A6001643RCI-PBC
(3) GlasMasters S1730RN08-4-PBCWU

D2. AMR antenna Ready
(1) GlasMaster S1730BN08-4-PBCWU

Note: Traffic-bearing (Tier 15 minimum) lids are required for all meters in hardscaped areas – see PW 64.

PW 43. Manhole Adjustment Rings
Approved Manufacturers/Products:

A. Steel Rings for Existing Manholes (maximum 4" height adjustment)
(1) Manhole Systems MS-101
(2) Roblyn Series 2300, 2400
(3) EJ (Andrews Metal Style) M2-A, M5-A

B. Masonry Rings for new Manholes (maximum 12" total ring height)
(1) Brick chimney, field installed (2-5 courses of bricks) (field-applied corrosion barrier systems required).
(2) Precast reinforced concrete rings (4,000psi), field-installed for cast- in liner and for field-applied corrosion barrier systems.
Approved Manufacturers/Products:

(1) U.S. Precast
(2) US Concrete Products
(3) American Concrete Products

PW 44. Paint for Exposed Ductile Iron Pipe and Fittings (Exposed D.I. pipe and fittings to be shop painted with red oxide primer), black with blue stripes
Approved Manufacturers/Products:

A. Moderate Exposure
(1) SunTec – Primer 801 Rustking, Top Coat – 860A Rustking Acrylic Gloss (Black with Blue Stripes), two (2) coats at 3 mils each.
(2) Sherwin Williams Targuard Low VOC Coal Tar Epoxy with Reducer R7K111; two coats at 8-16 mils per coat, 50% overlap with each pass (not to be used for direct contact with potable water).

B. Severe Exposure
(1) Tnemec Company, INC.;
Primer: Zinc Series 90- 97 (3 mils DFT)
Intermediate: Hi-Build Epoxoline II Series N 69 (two (2) coats, 6 mils DFT/coat)
Topcoat: Endura Shield II Series 1074 (two (2) coats, 3 mils DFT/coat) color black

PW 45. Detectable Marking Tape for Potable Water Mains
Approved Manufacturers/Products:

(1) Empire Level MFG. Corp.-MAGNATEC#31-024
(2) T. Christy Enterprises -#TA-DT-6-BPW or BW
(3) Pro-Line Safety Products-103141153/103141253

Detectable blue tape 6" wide imprinted with the following in 1 1/2" MIN. high lettering with minimum wording of; **"CAUTION WATER LINE BELOW"**. The wording shall occur every 3 feet.

PW 46. Permanent Sampling Stations
Aluminum Housing, hinged door opening, padlock, unthreaded sample point with protective cap, stainless steel piping
Approved Manufacturers/Products:

(1) Kupferle Foundry - Eclipse #88WC-SS-PBC

PW 47. Remote Telemetry Units (PLC Type)
Approved Manufacturers/Products:

(1) Curry Control PBCRTU2015
(2) ESC PBCRTU2015
(3) AES PBCRTU2015
(4) CC Control PBCRTU2015
(5) Unitron PBCRTU 2015
(6) Champion Controls, Inc. PBCRTU 2015

PW 48. Root Barrier Systems
Approved Manufacturers/Products:

(1) TYPAR BIOBARRIER 39", 58.5"
(2) DeepRoot UB36-2, UB48-2

PW 49. Lead Free Brass Nipples (MTP x MTP)
Approved Manufacturers/Products:

(1) Meritt Brass 2012-400
(2) Lee Brass
(3) Mid –American Brass

PW 50. Pack Joint Quarter Bend Coupling (3/4"-2") PVC Compression x MPT –Lead Free
Approved Manufacturers/Products:

(1) Ford – L87 – NL Series
(2) AY McDonald (74779M-44) Series

PW 51. Pack Joint Quarter Bend Coupling Lead Free (PVC x PVC) (3/4"- 2")
Approved Manufacturers/Products:

(1) AY McDonald (74761-44) Series
(2) Ford L77 Series – NL

PW 52. Line Stop Tapping Sleeve
Approved Manufacturers/Products:

(1) JCM 440

PW 53. Brass Compression by Male Adapter (PVC) – Lead Free
Approved Manufacturers/Products:

(1) AY McDonald (74753-44)
(2) Ford C-87 Series – NL

PW 54. Brass Compression by Female Adapter (PVC x FIP), Straight, ¾" – 2", Lead Free
Approved Manufacturers/Products:

(1) AY McDonald (74754-44) Series
(2) Ford C-17 Series – NL

PW 55. HDPE/DIP Electrofusion Couplings and Fittings
Approved Manufacturers/Products:

(1) GF Central Plastics Company
(2) IPEX USA - Friatec

PW 56. HDPE/DIP MJ Adapter
Approved Manufacturers/Products:

(1) Independent Pipe Products, Inc.
(2) Improved Piping Products, Inc.
(3) Central Plastics

PW 57. Paint for Buried DIP/PCCP Pipe
Approved Manufacturers/Products:

(1) Induron Protective Coatings; Aquanaut (Color: Alaskan Blue) Min. 8 mils WFT, min 3 mils DFT

PW 58. Above Ground Utility Markers
Approved Manufacturers/Products:

A. Canal Crossings:
(1) Rocal, Inc. #RI-UPLPBC 12-6

B. Miscellaneous Locations:
(1) Rhino Marking & Protection Systems, Inc. – Triview Marker Post, color coded with decals.
(2) Rhino Marking & Protection Systems, Inc. - Rhino 3-Rak (66") color coded with decals.

PW 59. Meter Setter Assembly for 1 ½ " and 2" Meters – Lead Free
Approved Manufacturers/Products:

(1) AY McDonald 722G700WW44 (777x15.62x404)
Note: 1 ½" Meter requires adapter 710J67DH

(2) Ford CS-C95632-01 – NL
Note: 1 ½" Meter requires adapter A-67 – NL

PW 60. Manhole Ring and Cover for ARV
Approved Manufacturers/Products:

(1) US Foundry 690-AH-M
(2) PAMREX (Ductile Iron, 32")

Note: Manhole shall be marked: "Water-ARV"

PW 61. Aluminum Vault Frame and Cover for ARV
Approved Manufacturers/Products:

(1) US Foundry AHS or AHD
(2) Bilco J or JD (H-20)

PW 62. Insertion Valve (AWWA C515)
Approved Manufacturers/Products:

A. Ductile Iron Body, Resilient Seat Gate, Wedge to Seal against valve body, MJ Type End Restraints
(1) TEAM Insert Valve

B. Stainless Steel Body, Resilient Seat Gate, Wedge to Seal against valve body
(1) Hydro-Stop Insertion Valve 250

PW 63. Hose Bibbs (brass) – Lead Free
Approved Manufacturers/Products:

(1) NIBCO
(2) Jones
(3) American Standard

PW 64. Heavy Duty Meter Box Lids (ANSI Tier 15 minimum load rated)
Approved Manufacturers/Products:

A. Single Service (5/8" x ¾")
(1) EBAA – Cover MC1118-2R
(2) GlasMasters S1118RN15-4-PBCWU

B. Double Service: (5/8" x ¾")
(1) EBAA – Cover MC1416-3R
(2) GlasMasters S1517RN15-4-PBCWU

C. Single Service: (1" Meters)
(1) EBAA – Cover MC1324-4R
(2) GlasMasters S1324RN15-4-PBCWU

D. Single Service: (1-1/2", 2" & 3" Meters)
(1) EBAA – Cover MC1730-5R
(2) GlasMasters S1730RN15-4-PBCWU

PW 65. Stainless Steel Stiffening Inserts for HDPE Pipe Restraint (4" – 12")
Approved Manufacturers/Products:

1) JCM 231
(2) Cascades

PW 66. Typical Stainless Steel Stiffening Inserts for HDPE CTS Tubing (up to 2")
Approved Manufacturers/Products:

(1) Ford 50 series (Insert-51, 52, 54, 55)
(2) Mueller 5287 series (04, 05, 06, 07)
(3) AY McDonald 6133T (3/4, 1, 1-1/2, 2)

PW 67. Fire Hydrant Security Devices (Locking Nozzle Caps with Chains)
Approved Manufacturers/Products:

(1) American Flow Control Captivater – Locking Nozzle Cap

Note: An AFC Captivater adjustable wrench may be required for each 10 hydrants (min. one wrench per project) only at the Department's request.

PW 68. Valve Stem Extensions (Carbon Steel Hot Dip Galvanized with Centering Ring and Stainless Steel Set Screws)
Approved Manufacturers/Products:

(1) Custom Fab
(2) Trumbull Industries

PW 69. Directional Drill Tracer Wire - #12 AWG (APWA Colored Coded Blue)
Approved Manufacturers/Products:

(1) Copperhead 1245B-EHS
Pro-Line Safety Products Pro-Trace HDD-CCS PE45

PW 70. Brass Pack Joint Branch Valves (CTS) – Lead Free (HDPE: CTS x MIP)
Approved Manufacturers/Products:

(1) Ford U48-63 – NL
(2) Mueller H-15363N (1-1/2 x ¾ x 7- 1/2)
(3) AY McDonald 708U2M (1-1/2 x ¾ x 7.5)

PW 71. Brass Pack Joint Male Adapter (HDPE) - Lead Free
Approved Manufacturers/Products:

(1) Ford C84-NL (-44, -46, -66, -77, -36-AWT)
(2) Mueller P-15428N (1-1/2 x 1), (1-1/2), (1), (3/4)
(3) AY McDonald 74753-22 (1-1/2 x 1), (1-1/2), (1), (3/4)

PW 72. DELETED

PW 73. Brass Corporation Stop Valve – (HDPE: CTS) Lead Free – Compression/Pack Joint Outlet, Tee Head, Iron Pipe Thread)
Approved Manufacturers/Products:

(1) Ford FB 1100-6-TA-NL
(2) Mueller P-25028N-38
(3) AY McDonald 74104B-22 (1-1/2), (2)

PW 74. Curb Stop with Pack Joints (HDPE: CTS x CTS) – Lead Free
Approved Manufacturers/Products:

(1) Ford B44-NL (-333, -444, -666, -777)
(2) Mueller P-25146N -38 (3/4), (1-1/2), (2)
(3) AY McDonald 76100W22 (3/4), (1), (1-1/2), (2)

PW 75. Pack Joint Coupling (HDPE: CTS x CTS), Lead Free
Approved Manufacturers/Products:

A. Straight Coupling
(1) Ford C44-NL (-33, -44, -46, -66, -77)
(2) Mueller P-15403N (3/4, 1, 1 x 1-1/2, 1-1/2, 2)
(3) AY McDonald 74758-22 (3/4), (1), (1 x 1-1/2"), (1-1/2), (2)

B. Ell Coupling
(1) Ford L44-NL (-33, -44, -66, -77)
(2) Mueller P-15526N
(3) AY McDonald 74761-22 (3/4), (1), (1-1/2),

PW 76. Pack Joint Couplings (HDPE: CTS x PVC) - Lead Free
Approved Manufacturers/Products:

(1) Ford C47-NL (-33, -44, -66, -77)
(2) Mueller V-15441N (3/4, 1, 1-1/2, 2)
(3) AY McDonald 74758-22-44 (3/4, 1, 1-1/2, 2)

PW 77. HDPE Service Fittings (Couplings, Repair Couplings, Brass Adaptor Couplings, Blind End Stubs and Caps, Shut-off Valves with Coupling Outlets) (HDPE: CTS – SDR9)
Approved Manufacturers/Products:

(1) Elster Perfection: Hydrosert

PW 78. Brass 90 Degree Elbow (FTP x FTP)
Approved Manufacturers/Products:

(1) AY McDonald 72290 (3/4), (1)
(2) Merit Brass NL101 (3/4), (1)
(3) Lee Brass 60235 LF

PW 79. Heavy Duty Water Meter Boxes (ANSI Tier 15 Load Rating Minimum)
Approved Manufacturers/Products:

A. Single Service (5/8" x ¾" meters)
(1) GlasMasters J111812S2N15-1
(2) CDR (AKA QUAZITE) B04111812A

B. Double Service (5/8" x ¾" meters)
(1) GlasMasters J151712S2N15-1
(2) CDR (AKA QUAZITE) B04151712A

C. Single Service (1" meter)
(1) GlasMasters S132412S2N15-1
(2) CDR (AKA QUAZITE) B04132412A

D. Single Service (1 ½", 2" meters)
(1) GlasMasters S173012S2N15-1
(2) CDR (AKA QUAZITE) B04173012A

E. Single Service (3" meter)
(1) GlasMasters S173018S2N15-1
(2) CDR (AKA QUAZITE) B04173018A

PW 80. Valve Box Lid for 4 ¼" Corporation Stop Boxes (Heavy Weight, 4" Skirt, Labeled "SERVICE")
Approved Manufacturers/Products:

(1) Bingham/Taylor CUL4LHV5SKSVC

PW 81. Automatic Flushing Assembly (Battery powered)
Approved Manufacturers/Products:

(1) Mueller Hydro-Guard 100 Series
(2) Mueller Hydro-Guard 600 Series (only with prior Department approval)

PW 82. Brass Yoke Angle Curb Stop (Compression PVC x Yoke)
Approved Manufacturers/Products:

(1) AY McDonald 74602 BY-44 (3/4", 1")
(2) Mueller V-25103-N -38

PW 83. Brass Quarter Bend Yoke x FIPT
Approved Manufacturers/Products:

(1) AY McDonald 74779FY (3/4" x 02, 1" x 04)

PW 84. Fire Hydrant Bollard Paint
Approved Manufacturers/Products:

(1) PPG PITT-TECH PLUS GLOSS

All paint shall be gloss, safety yellow in color and two coats shall be applied.

1.3 WASTEWATER SYSTEM

WW 1. Ductile Iron Pipe (Pipes shall be color coded with green paint)
Approved Manufacturers/Products for push-on and mechanical joint pipe:

(1) American Cast Iron Pipe Company
(2) U.S. Pipe
(3) McWane Ductile (Atlantic States, McWane, Pacific States, Clow Water Systems)

Approved Manufacturers/Products for flexible joint restraint pipe:

(1) American – Flex-Ring, Lok Ring; push-on joint pipe with Armadillo Fast Grip Gasket (sizes 4"-24")
(2) U.S. Pipe – TR Flex; push-on joint pipe with Field Lok 350 Gasket (sizes 4"- 24") - Bolt Lok
(3) McWane Corporation – TR FLEX

Non Flanged Pipe Size	Minimum Pressure Class	Minimum Special Thickness Class
3", 4"	350	51
6"-16"	350	50
20"	300	50
24"	250	50
30" and larger	200	50

Minimum Special Thickness Class 53 is required for flanged pipe. Pipe must be ceramic epoxy lined with 'PROTECTO 401", or 'PERMITE 9043 type 2" or Permox CTF. The lining must be factory applied and warranted by the pipe manufacturer. Toruseal or Flange-Tyte gaskets are required for flanged pipe.

Approved Fabricators for "Flanged" pipe:

- ASAP Fabrication, Inc. (1-813-752-1999)
- US Pipe Fabrication Inc. (1-866-347-7473)

Note: The Fabricators must use pipe supplied by approved manufacturers.

WW 2. Polyvinyl Chloride (PVC) Pressure Pipe (Pipe to be color-coded green)
Approved Manufacturers/Products:

A. Push-on Joint Pipe, AWWA C900, SDR-18, 235 psi min, and AWWA C-905, SDR-25 min., 165 psi, (14"- 24") NSF 61:

(1) JM Eagle*
(2) Diamond Plastic Corporation*
(3) North American Pipe Corp. (A.K.A. NAPCO)
(4) IPEX, Inc. (14" – 24" only)***
(5) National Pipe and Plastics, Inc. **
(6) Sanderson Pipe Corporation (4" – 12" only) **

* No Pipe deflection at the joint allowed
** Up to one (1) degree deflection at pipe joint allowed.
*** Up to three (3) degrees deflection at pipe joint allowed.

B. Restrained Joint PVC Pipe, C900/C905, SDR 18 min., NSF61.

B1. Non-Metallic Modular Joint Restraint Design
(1) NAPCO Certa-lok

B2. Bell Integrated Metallic Ring Restraint Design
(1) JM Eagle Eagle Loc900

B3. Joint Free Restraint Piping System
(1) Underground Solutions Fusible PVC Pipe

C. Service Pipe Up to 6" PVC SCH 40 (White or Green), SCH 80 (White or Grey), NSF61
(1) Heritage Plastics South Inc.
(2) JM Eagle
(3) Charlotte Pipe and Foundry Company

WW 3. Exposed Steel Pipe (A53 Grade B, ERW, minimum 0.500" wall thickness, AWWA C200; flange shall be Class D per AWWA C204. Interior shall be lined with Permite 9043 Type II. Exterior shall be: Primer 3 mils Tnemec Zinc 90-97, intermediate 4-6 mils Tnemec 66, top coat 2 mils Tnemec 1074 (black with green stripes).
Approved Products/Manufacturers:

(1) US Pipe Fabrication

WW 4. High Density Polyethylene (HDPE) pipe and tubing
Approved Manufacturers/Products:

A. Fusible HDPE, PE4710, AWWA C906; Pipes shall be color-coded black with green stripes, minimum 40 feet standard lengths, DR 11 minimum, DIPS Size, 3" and larger
Approved Manufacturers/Products:

(1) Performance Pipe (DIV of CP CHEM) – DriscoPlex 4000, 4100
(2) JM Eagle

B. High Density Polythylene (HDPE) Tubing (PE3408/3608), CTS, DR9, AWWA C901, up to 2"

Approved Manufacturers/Products:

(1) Charter Plastics, Inc.
(2) ENDOT Industries, Inc.
(3) JM Eagle
(4) IPEX, Inc. Blue904 PEX Service Tubing

WW 5. PVC Cement (Certified for both Schedules 40 and Schedule 80)
Approved Manufacturers/Products:

A. Plumbing Applications
(1) Harvey's Wet Set PVC Cement
(2) Christy's Red Hot Blue Glue
(3) WHITLAM Weatherproof Blue All Weather Low VOC Medium Body Cement

B. Electrical Conduit Applications (medium body clear cement)
(1) Oatey PVC Heavy Duty Clear Cement
(2) Harvey's P-12G Heavy Gray PVC Cement

WW 6. Thread Sealant
Approved Manufacturers/Products:

(1) E-Z Weld 777 by Fry Technology
(2) Pipe Fit, FPPI
(3) Teflon Tape (all manufacturers)

WW 7. Polyvinyl Chloride (PVC) Gravity Mains and Laterals Pipe (Color: Green), ASTM-3034, SDR-26 Pipe within Wellfield Protection Zones 1 & 2 must meet the requirements of C-900, SDR-18, and 150 psi.
Approved Manufacturers/Products:

(1) JM Eagle
(2) Diamond Plastics Corporation
(3) North American Pipe Corp. (A.K.A. NAPCO)
(4) National Pipe and Plastics, Inc.
(5) Charlotte Pipe & Foundry (Accord Industries
(6) /Universal 100 Products now part of Charlotte Pipe & Foundry)
(7) Sanderson Pipe Corporation

WW 8. Gate Valves (AWWA C509, C515, Ductile Iron Body)
Approved Manufacturers/Products:

(1) Mueller A-2361, A-2362
(2) American Series 2500 (MM, FF)
(3) Kennedy Ken Seal Series
(4) M & H Style 4067, 7561/7571
(5) Clow Models 2638, 2639/2640

WW 9. Eccentric Plug Valves, AWWA C517, (Requires approval by PBCWUD during design process), Quarter Turn, min. 79% Port Area, Worm Gear Required for 10" and larger, Fusion Bonded Epoxy Inside and Outside, Ductile Iron Body, Nickel Seat Weld, Ductile Iron Plug Encupsulated with Bura-N Rubber, Bi-Directional Shutoff.
Approved Manufacturers/Products:

(1) Clow
(2) Pratt/Milliken
(3) Dezurik
(4) GA Industries

WW 10. Combination Air Release Valves (All Stainless Steel – 2" Min. required)
Approved Manufacturers/Products:

(1) H-Tec 986-01
(2) ARI D-020 NPT
(3) Val-Matic VM-801AS
(4) Bermad ARV C50-N

WW 11. Tapping Valves (AWWA C509, C515, Ductile Iron Body)
Approved Manufacturers/Products:

(1) American Series 2500
(2) Mueller T-2361, T-2362
(3) US Pipe Metroseal T-USP1, T-USP2
(4) M & H Style 4067-13, 7572
(5) Clow F-6114

WW 12. Ductile Iron Body Check Valves; AWWA C508; (Lever and Weight, Lever and Air Cushion, Level and Spring), Full Port, Fusion Bonded Epoxy inside and Outside, Stainless Steel Body Seat.
Approved Manufacturers/Products:

(1) M & H 159-02
(2) Mueller 2600-6-01
(3) Kennedy 106LW
(4) Clow 5382
(5) American 52-SC (lever & weight)

Valves larger than 24" shall be rated min. 200 psi.

WW 13. Screw Type (2) Piece Valve Boxes
Approved Manufacturers/Products:

(1) East Jordan Iron Works 8550
(2) Bingham/Taylor 4905
(3) SIGMA Corp. - Ductile Iron only - Top VB2611-D, Bottom VB2612-D

WW 14. Valve Box Lids (marked "Sewer") Minimum weight 24 lbs, 4" skirt
Approved Manufacturers/Products:

(1) East Jordan Ironworks 0680045
(2) Bingham Taylor 4906
(3) SIGMA Corp. - Ductile Iron only - VB2600S-D

WW 15. Valve Stem Extension (Carbon Steel, Hot Dip Galvanized with Centering Ring and Stainless Steel Set Screws)
Approved Manufacturers/Products:

(1) Custom Fab
(2) Trumbull Industries

WW 16. Mechanical Joint Ductile Iron Tapping Sleeves (Ceramic epoxy lined)
Approved Manufacturers/Products:

(1) American 2800 Series
(2) Mueller H-615
(3) US Pipe MJ

WW 17. Tapping Sleeves (Taps 4" and Larger)
Approved Manufacturers/Products:

A. Stainless Steel Body, Flange and Hardware
(1) Dresser 630
(2) Ford FTSS
(3) Cascade CST-EX
(4) JCM 432, 452
(5) Power Seal Model 3490-AS
(6) Smith Blair 663

WW 18. Mechanical Joint Restraining Devices
Approved Manufacturers/Products:

A. Solid Design for D.I. Pipe
(1) EBBA Iron – 1100 MEGALUG
(2) Sigma ONE-LOK SLDE
(3) Ford/Uni-Flange Series 1400
(4) Star Pipe StarGrip Series 3000 (up to 16")

B. Solid Ring Design for PVC Pipe
(1) EBBA Iron – 2000PV MEGALUG
(2) Sigma ONE-LOK SLCE
(3) Ford/Uni-Flange Series 1500
(4) Star Pipe StarGrip Series 4000 (up to 16")

C. Solid Ring Design for HDPE pipe up to 12" (required stainless steel stiffening insert)
(1) EBAA Iron – 2000PV MEGALUG
(2) Ford/Uni-Flange Series 1500

D. Split Ring Design for D.I. Pipe
(1) EBAA Iron - 1100SD Split MEGALUG
(2) Sigma ONE-LOK SSLD
(3) Star Pipe StarGrip Series 3000 (up to 16")

E. Split Ring Design for PVC Pipe
(1) EBAA Iron - 2000SV MEGALUG

F. Split Ring Design for HDPE Pipe up to 8" (required stainless steel stiffening insert)
(1) EBAA Iron - 2000SV MEGALUG

WW 19. Pressure Pipe Bell Restraint (Bell side ring without serrations; rods, and nuts to be stainless steel 316; split ring design shall be used if available)
Approved Manufacturers/Products:

A. Split Ring Design for D.I. Pipe
(1) EBAA Iron - Series 1600TD
(2) EBAA Iron - Series 1100HD
(3) Sigma ONE-LOK SSLDH

B. Split Ring Design for PVC Pipe
(1) EBAA Iron - Series 1600TD
(2) To be removed; ~~EBAA IRON Series 1600~~
(3) EBAA Iron - Series 1100HV
(4) SIGMA PV-LOK PWH
(5) Ford/Uni-Flange UFR 1355-C

C. Solid Ring Design for D.I. Pipe
(1) EBAA Iron - Series 1700
(2) Sigma ONE-LOK SLDEH
(3) Ford/Uni-Flange 1450

D. Solid Ring Design for PVC Pipe
(1) EBAA Iron - Series 2800
(2) Sigma ONE-LOK SLCEH
(3) Ford/Uni-Flange 1350

WW 20. Pressure Pipe Bell Joint Leak Clamps with stainless steel Type 316 hardware (bolts, nuts, etc.).
Approved Manufacturers/Products:

(1) Smith-Blair Model 274
(2) Ford FBC-XXX-E or FBCF-XXX-Y Style
(3) Romac Industries Style 516

Note: Split Ductile Iron Rings required. Buna-N gasket required. Longer bolts required for PVC pipe.

WW 21. Ductile Iron Restrained Flange Adapters with stainless steel Type 316 hardware (bolts, nuts, etc.). (Set Screw Design Not Acceptable)
Approved Manufacturers/Products:

(1) Smith-Blair Model 912-90 with anchor studs
(2) EBBA Iron – 2100 MEGALUG
(3) Power Seal Model 3521 with anchor studs

WW 22. Ductile Iron Fittings
Approved Manufacturers/Products:

A. Both ends mechanical joints and flanged joints
(1) Tyler Union
(2) US Pipe/Metalfit
(3) American
(4) Star
(5) Sigma
(6) Clow

B. Flexible Restraint Fittings
(1) American – FLEX-RING, LOK-RING
(2) US Pipe/Metalfit – TR FLEX, BOLT-LOK
(3) McWane Corporation – Super Lock

C. Welded on Outlet Tees for pipes larger than 24" non-flanged pipe. The welded on branch size shall not exceed ½ of the main pipe size. Welding shall be performed and tested by the pipe manufacturer.

(1) American
(2) US Pipe

AWWA C-110, AWWA C-153 "bare" ductile iron fittings must be ceramic epoxy lined with "Protector 401" or "Permite 9043 Type 2" OR lined with "Polybond Plus or "PERMOX CTF." The lining must be factory applied and/or warranted by the fitting manufacturer. TORUSEAL or Flange-Tyte gaskets are required for flanged fittings.

WW 23. Follower Glands
Approved Manufacturers/Products:

(1) Tyler
(2) US Pipe

WW 24. Casing Pipe Spacers
Approved Manufacturers/Products:

(1) Cascade
(2) APS Spacing System
(3) RACI
(4) BWM

WW 25. Pipe Adapter Couplings (for use on existing facilities)
Approved Manufacturers/Products:

(1) Fernco
(2) Indiana Sea
(3) Atlas
(4) HARCO

WW 26. Pipe Transition Couplings - SDR-35/SDR 26 PVC to DIP or to PVC C900
Approved Manufacturers/Products:

(1) Harco
(2) Flow Control
(3) NYOPLS
(4) WAGER

WW 27. Corporations Stops with T-Head, MIP x MIP, (3/4, 1, 1-1/2, 2)
Approved Manufacturers/Products:

(1) Ford FB500-TA
(2) AY McDonald 4104BP
(3) Mueller B-20013-10-38, B-2960-10 -38

WW 28. Corporation Stops for ARV and Pressure Gauge Installations (MIP & MIP)
Approved Manufacturers/Products:

(1) Ford FB 500
(2) AY McDonald 3131 B
(3) Mueller B-2969 -38, B-20013 -38

WW 29. Service Saddles/Sleeves (up to 2" Tap Size) – Iron Pipe Thread
Approved Manufacturers/Products:

A. Ductile Iron Body, Double Steel Bales (up to 16")
(1) JCM 408
(2) Smith Blair 313
(3) Ford FC202 (Epoxy-coated)
(4) Romac 202 NU
(5) AY McDonald 4826A

B. Ductile Iron Body Double Stainless Steel Straps
(1) JCM 406
(2) Smith Blair 317
(3) Ford FCD 202
(4) Romac 202 NS (up to 16", pre- approval required)
(5) Power Seal 3417 DI
(6) AY McDonald 4855A

C. Epoxy-coated Steel Body Threaded Outlet Tapping Sleeves - Stainless Steel hardware required (larger than 16", pre-approval required)
(1) JCM 418
(2) Romac FTS420T

D. Stainless Steel Body Threaded Outlet Tapping Sleeves (larger than 16")
(1) JCM 438
(2) Smith Blair 372

WW 30. Manhole Adjustment Rings
Approved Manufacturers/Products:

A. Existing Manholes only,(max. 4" height adjustment)

(1) Manhole Systems MS-101
(2) Roblyn Series 2300, 2400
(3) EJ Corp. (Andrews Metal Style) M2-A, M5-A

B. New manholes, max 12" total ring height

(1) Brick chimney, field installed (2-5 courses of bricks) (for field-applied corrosion barrier systems).

(2) Precast reinforced concrete rings (4,000psi), field-installed forecast-in liner and for field-applied corrosion barrier systems
(1) Tri-County
(2) U.S. Precast
(3) US Concrete Products

WW 31. Manhole Frame and Cover (Gravity Sewer) – 7" Casting Standard, 4" Casting must be Preapproved (Lid with PBC Logo required for all PBCWUD Manholes)
Approved Manufacturers/Products:

A. Casting frame 4" High:
(1) U.S. Foundry 465-KD
(2) EJ Corp. V1144-2

B. Casting frame 7" High:
(1) US Foundry 420-KD
(2) EJ Corp. 1072 Series (Frame EJ 1072 Z, Lid EJ 1072 A1)

Note: Lids must be machined to accept inflow protectors.

WW 32. Rigid Manhole to PVC Pipe Connectors ("Sand Collar")
Approved Manufacturers/Products:

(1) Harrington Corp. (A.K.A. HARCO) SDR 26
(2) Department Approved Equal

WW 33. Manhole Flexible Pipe Connector Sleeves (cast-in and/or placed in structures without cast-in liner)
Approved Manufacturers/Products:

(1) Press-Seal Gasket Corp.; Cast-A-Seal 12-08 (for 8" PVC SDR 26 pipe only with two stainless steel bands)
(2) Press-Seal Gasket Corp.; PSX Direct Drive 12M Boot (8") or 14M Boot (10") (for PVC C900 pipe only with two stainless steel bands)

WW 34. Manhole Flexible Pipe Connector Sleeves (for use in structures with cast-in liners and cast-in "turn-back").
Approved Manufacturers/Products:

(1) Press-Seal Gasket Corp.; PSX Direct Drive 12M Boot (8" pipe only) or 14M Boot (10" pipe only) (Double ridge sleeve with two stainless steel bands)
(2) NPC Trelleborg Kor-N-Seal I 10B Series
(3) A-LOK Products Inc.; sealing gasket for lower invert in outside drop manholes

WW 35. Manhole Inflow Protectors
Approved Manufacturers/Products:

(1) Southwestern Packing & Seals, Inc. - "Rainstopper PBC-1"
(2) L.F. Manufacturing, Inc. -"RainGuard LFN-SV"
(3) Knutson Enterprises Manhole Insert
(4) USSI – "Inflow Defender SV-1"

Note: All Protectors must have Stiffening Ribs; Sealing Gasket and pre-approved valve design.

WW 36. Paint for Exposed Ductile Iron Pipe and Fittings (Exposed D.I. Pipe and Fittings to be shop painted with red oxide primer) – Black with Green Stripes
Approved Manufacturers/Products:

A. Moderate Exposure
(1) SunTec – Primer 801 Rustking, Top Coat – 860A Rustking Acrylic Gloss (Black with Green Stripes), (2) coats at 3 milseach.
(2) Sherwin Williams Targuard Low VOC Coal Epoxy with Reducer R7K111; two coats at 8-16 mils per coat, 50% overlap with each pass.

B. Severe Exposure
(1) Tnemec Company, INC.;
Primer: Zinc Series 90-97 (3 mils DFT)
Intermediate: Hi-Build Epoxoline II Series N 69 (two (2) coats, 6 mils DFT/coat)
Top Coat: EnduraShield II Series 1074 (two (2) coats, 3 mils DFT/coat) color black

WW 37. Detectable Marking Tape for Force Mains
Approved Manufacturers/Products:

(1) Empire Level MFG. Corp.; MT61-FORCE MAIN
(2) T. Christy Enterprises; #TA-DT-6-BRFM
(3) Pro-Line Safety Products; 103142083

Detectable brown tape 6" wide imprinted with the following in 1 1/2" MIN. high lettering with minimum wording of; **"CAUTION FORCE MAIN BELOW"**. The wording shall occur every 3 feet.

WW 38. Sewer Lift Station Submersible Pumps
Approved Manufacturers/Products:

(1) Flygt
(2) WILO-EMU
(3) HOMA (up to 60 HP)

Note: Must comply with NEC Class 1, Group D, Division 1; Five Year Warranty Begins at Lift Station Start Up

WW 39. Remote Telemetry Units (PLC Based) – (Panel shop UL Approved)
Approved Manufacturers/Products:

(1) Curry Controls PBCRTU2015
(2) ESCPBCRTU2015
(3) AES PBCRTU2015
(4) CC Control PBCRTU2015
(5) Unitron PBCRTU 2015
(6) Champion Control PBCRTU 2015

WW 40. Corrosion Barrier System for Concrete Structure
Approved Manufacturers/Products:

A. Field applied systems
(1) Madewell Corp. Mainstay System (ML-10 hydraulic cement mortar, ML-72 microsilica mortar, DS-5 epoxy)
(2) SewperCoat by Kerneos
(3) Strong Seal High Performance Mix
(4) REFRATTA HAC 100 by Global Materials Company

B. Cast-in Solid Liners.
1. Agru SURE-GRIP Polypropylene liner with 3M sealant tape 5354 and ADEKA P-201 Waterstop
2. Agru SURE-GRIP HDPE Liner with 3M sealant tape 5354 and Adeka P-201 Waterstop
3. GU Systems of Florida, LLC: GU Liner System (Polypropylene Sealplate Wall Liner, Cone Liner (PP or FRP construction) and optional manhole base liner (PP or FRP) with 3M sealant tape 5354 and Adeka P-201 Waterstop

C. Field installed Thermo-Plastic Linersystems
(1) Agru SURE-GRIP HDPE Liner with ADEKA P-201 Waterstop

WW41. Cleanout Castings (with reversible rings)
Approved Manufacturers/Products:

(1) U.S. Foundry No. 7621
(2) SIGMA VB 762

WW 42. Lift Station Control Panel and Electrical Components (UL Shop Listing Required) Refer to standard details.
Approved Manufacturers/Products:

(1) Engineer Service Corp
(2) CC Controls
(3) Atlantic Environmental Systems
(4) Unitron Controls
(5) Curry Controls
(6) Champion Controls

WW 43. Standard Aluminum Access Cover (Channel Frame Design, Spring Lift Assists)
Approved Manufacturers/Products:

A. Rated 300 lbs
(1) Halliday Products W1S, W2S
(2) USF Fabrication TPS 300, TPD 300
(3) BILCO Type J-AL, JD-AL

B. Rated H-20 for off-street locations
(1) Halliday Products H1WS, H2W
(2) USF Fabrication THS, THD
(3) BILCO Type JAL-H20, JDAL- H20

WW 44. Flexible Manhole/Pipe Connector
Approved Manufacturers/Products:

(1) PSI-Link Seal by GPT

WW 45. Root Barrier System
Approved Manufacturers/Products:

(1) TYPAR BIOBARRIER 39", 58.5"
(2) DeepRoot UB36-2, UB48-2

WW 46. Fall Protection Systems
Approved Manufacturers/Products:

(1) Halliday Products Protective Grating Panel
(2) USF Fabrication Hinged Hatch Safety Grate

WW 47. External Manhole Joint Seal
Approved Manufacturers/Products:

(1) Cretex Specialty Products - Cretex Wrap
(2) CCI Piping Systems, LLC - WrapidSeal

WW 48. Line Stop Tapping Sleeve
Approved Manufacturers/Products:

(1) JCM 440

WW 49. HDPE/DIP Electrofusion couplings and fittings
Approved Manufacturers/Products:

(1) GF Central Plastic Company
(2) IPEX USA – Friatec (verify?)

WW 50. HDPE/DIP MJ Adapter
Approved Manufacturers/Products:

(1) Independent Pipe Products, Inc.
(2) Improved Piping Products, Inc.
(3) Central Plastics

WW 51. PVC Fittings (Up to 2")
Approved Manufacturers/Products:

(1) LASCO Fittings, Inc.
(2) NIBCO, Inc.
(3) Spears Manufacturing
(4) Charlotte Pipe and Foundry Company

WW 52. PVC Fittings (Gravity Mains and Laterals), ASTM 3034 SDR 35.
Approved Manufacturers/Products:

(1) Harrington Corp. (A.K.A. HARCO)
(2) Tigre USA
(3) Multi Fittings Corp.
(4) Royal Building Products G-Series

WW 53. Portable Trailer Mounted Generator Set (56 KW – 400 KW) (see specifications for required features)
Approved Manufacturers/Products:
(1) Tradewinds Corp: TP/TJ (size 56-400) - PBC
(2A) Magnum Power Products: MMG (size 75-405) – PBC

(2B) Generac Branded Units from Magnum Power Products (must include a certificate of authenticity and conformity)

(3) Baldor Electric: TS (size 80T-350T) – PBC
Note: Electrical connectors for power outlets and trailer plug must be compatible with PBCWUD equipment. Battery shut-off switch is required.

WW 54. Removed - See WW77

WW 55. Above Ground Utility Markers
Approved Manufacturers/Products:

A. Canal Crossings:
(1) Rocal, Inc. #RI-4PLPC 12-6

B. Miscellaneous Locations:
(1) Rhino Marking & Protection Systems, Inc.: Triview Marker Post, color coded with decals.

(2) Rhino Marking & Protection Systems, Inc, Rhino 3-Rail (66"), color coded with decals.

WW 56. Fabricated Manhole Flow Channels
Approved Manufacturers/Products:

A. Concrete
(1) Tri County
(2) US Precast

B. Fiberglass/Polypropylene Cast-In Base Liner
(1) GU Liner Systems

WW 57. Hydrophilic Waterstop
Approved Manufacturers/Products:

(1) ADEKA Ultraseal P-201(Min. 3/8" Bead)

WW 58. Manhole Ring and Cover (ARV)
Approved Manufacturers/Products:

(1) US Foundry 690-AH-M
(2) US Foundry 751-MS (Ductile Iron, 32")
(3) PAMREX (Ductile Iron, 32")

Note: Manholes shall be marked: "Sewer ARV"

WW 59. Aluminum Vault Frame and Cover (for ARV)
Approved Manufacturers/Products:

(1) US Foundry AHS or AHD
(2) Bilco J or JD (H-20)

WW 60. Grease Trap (Point of Use Type)
Approved Manufacturers/Products:

(1) ZURN 1170 RE-HD Model 800
(2) Department Approved Equal

Note: Facilities with total flow rates larger than 25 GPM require the installation of a minimum 750 gallon oil/grease interceptor.

WW 61. Wedge Anchors for Pump Base Elbows
(316 Stainless Steel, Minimum ¾" x 10", Minimum 2" thread length, Top of bolt permanently coded)
Approved Manufacturers/Products:

(1) Hilti Kwik Bolt 3, 316 SS, ¾" x 10" (Marked "R", Torque 150 ft/lbs)
(2) Simpson Strong-Tie WA751003 SS (Marked "R", Torque 150 ft/lbs)

WW 62. Lift Station Base Elbow Insert
Approved Manufacturers/Products:

(1) WILO EMU: Elbow Saver #2710169, 2710080

WW 63. Meter Box and lid for Force Main Flushing Connection (Tier 8 Load Category Minimum per Ansi/SCTE77)
Approved Manufacturers/Products:

(1) CDR: Box B0317302A Lid: C00173002

Note: Box lid shall be without reader lid.

WW 64. Insertion Valve (AWWA C515)
Approved Manufacturers/Products:

A. Ductile Iron Body, Resilient Seat Gate, Wedge to Seal against valve body, MJ Type End Restraints
   (1) TEAM Insert Valve

B. Stainless Steel Body, Resilient Seat Gate, Wedge to Seal against valve body
   (1) Hydro-Stop Insertion Valve 250

WW 65. Stainless Steel Stiffeners for HDPE Pipe Joint Restraint
Approved Manufacturers/Products:

(1) Cascade
(2) JCM
(3) Romac

WW 66. Sewer Pump Station Back up Pumping/Power/Control Unit (Critical Silenced, Diesel Powered, 6" Pump Size, Trailer Mounted, 30 Feet Suction and 30 Feet Discharge 4" Diameter Hoses, (2) 6" x 4" Hose Adapters, Self-Priming (No Water Adding Required to Operate), 4" Discharge Female Camlok/Male Hose Adapter, Enclosure Doors with a Clasp for a Padlock, Integrated Battery Disconnect, Double wall tank, DOT Trailer, Vacuum Assisted, Steel Frame and Tank Coated with RHINO or Equal, Aluminum Enclosure, Overall Length less than 15 feet (unless preapproved otherwise)
Approved Manufacturers/Products:

(1) Godwin Pumps (CD 150 or larger, with Primeguard Control Panel)
(2) Thompson Pumps

Note: Trailer plug connector must be compatible with PBC WUD equipment. Unit size must be preapproved. See also written specifications.

WW 67. Directional Drill Tracer Wire - #12 AWG (APWA Colored Coded Green)
Approved Manufacturers/Products:

(1) Copperhead 1245G-EHS
(2) Pro-Line Safety Products Pro-Trace HDD-CCS PE45

WW 68. Identification Paint for Buried DIP Force Main (APWA Green Stripes)
Approved Manufacturers/Products:

(1) Induron Protective Coatings; Aquanaut (Color: Euclid Green) Min. 8 mils WFT, min 3 mils DFT

WW 69. Force Main Flow Through Isolation Valve for Pressure Monitoring (1/2" Stainless Steel Body) Approved Products/Manufacturers:

(1) Red Valve Series 742
(2) WIKA
(3) Endress and Hauser

WW 70. Stainless Steel Stiffening Insert for HDPE Tubing
Approved Manufacturers/Products:

(1) Ford
(2) Mueller
(3) AY McDonald

WW 71. Sealant Gasket for Concrete Structure Joints
Approved Manufacturers/Products:

A. Concrete Structures without Cast-In Liner
(1) Henry Company Ramnek RN103/RN101
(2) Concrete Sealants Inc. Con Seal CS102B

B. Concrete Structures with Cast-In Liner
B1. Liner Turn Back Seal and Vertical Seal Riser
(1) Henry Company Rubr Nek LTMRU106
(2) Concrete Sealants Inc. Con Seal CS102
(3) Press-Seal EZ Stik Premium Butyl Joint Sealant

B2. Vertical Seal Riser
(1) Henry Company Ramnek RN103/RN101
(2) Concrete Sealants Inc. Con Seal CS102B

WW 72. Primer for Concrete Structure Joints (to be applied by precaster)
Approved Manufacturers/Products:

(1) Henry Company Rubr Nek LTMRU106
(2) Concrete Sealants Inc. Con Seal CS102
(3) Press-Seal EZ Stik Premium Butyl Joint Sealant

WW 73. Soft starters (SSRVS) with Intergral Bypass and Fan (Required for pumps 20HP and larger)
Approved Manufacturers/Products:

(1) Square D ATS 22D88S6U

WW 74. Lift Station Service Entrance Fused Disconnect Switch
Approved Manufacturers/Products:

(1) Square D H363NS Endress and Hauser

WW 75. Service Fuse for Disconnect Switch (600V, Dual Element, Time Delay Fuses Class RK1)
Approved Manufacturers/Products:

Bussmann LPS-RK

C. Concrete Structures without Cast-In Liner
(3) Henry Company Ramnek RN103/RN101
(4) Concrete Sealants Inc. Con Seal CS102B

WW 76. Radar Level Transmitter
Approved Manufacturers/Products:

(1) Vega Vegapuls C-21
(2) Endress & Hauser FMR20

WW 77. ARV Enclosure – Above Ground (black base with green cover)
Approved Manufacturers/Products:

(1) Channell Company SPH14206C1B5L08A27

1.4 RECLAIMED WATER SYSTEM

RW 1. Ductile Iron Pipe (Pipes shall be color coded with purple paint)
Approved Manufacturers/Products:

A. Push-on and mechanical joint pipe
(1) American Cast Iron Pipe Company
(2) U.S. Pipe
(3) McWane Ductile (Atlantic States, McWane, Pacific States, Clow Water Systems)

B. Flexible joint restraint pipe:
(1) American – Flex Ring, Lok Ring; push-on joint pipe with Armadillo Fast Grip Gasket (sizes 4"-24")
(2) U.S. Pipe - TR Flex; push-on joint pipe with Field Lok 350 Gasket (sizes 4"-24") - Bolt Lok
(3) McWane Corporation – TR Flex

Approved Fabrications for "Flanged" pipe:
- ASAP Fabrication Inc. (1-813-752-1999)
- US Pipe Fabrication Inc. (1-866-347-7473)

Note: The Fabricators must use pipe supplied by approved manufacturers.

Non-Flanged Pipe Size	Minimum Pressure Class	Minimum Special Thickness Class
3", 4"	350	51
6"-16"	350	50
20"	300	50
24"	250	50
30" and larger	200	50

Pipe must be cement mortar lined per AWWA C-104/A21.50. Minimum Special Thickness Class 53 is required for flanged pipe. Toruseal or Flange-Tyte gaskets are required for flanged pipes.

RW 2. Polyvinyl Chloride (PVC) Pipe (Color: Purple)
Approved Manufacturers/Products:

A. Push-on Joint Pipe, AWWA C-900,SDR-18 min, 235 psi min., and AWWA C905, SDR-25 min., 165 psi min., NSF61:

(1) JM Eagle*
(2) Diamond Plastic Corp.*
(3) North American Pipe Corp. (A.K.A. NAPCO) *
(4) IPEX, Inc. (14" – 24" only)***
(5) National Pipe and Plastics, Inc.**
(6) Sanderson Pipe Corporation (4" to 12" only) **

* No Pipe deflection at the joint allowed.
** Up to one (1) degree deflection at pipe joint allowed.
*** Up to three (3) degrees deflection at pipe joint allowed.

B. Restrained Joint PVC Pipe, C900/C905, SDR 18 min., NSF61.

B1. Non-Metallic Modular Joint Restraint Design
(1) NAPCO (F.K.A. CertainTeed) Certa-lok

B2. Bell Integrated Metallic Ring Restraint Design
(1) JM Eagle Eagle Loc900

B3. Joint Free Restraint Piping System
(1) Underground Solutions Fusible PVC Pipe

C. Service Pipe Up to 6"– PVC Schedule 40 and 80, white or purple in color

(1) Heritage Plastics
(2) JM Eagle
(3) Charlotte Pipe and Foundry Company

RW 3. Exposed Steel Pipe (A53 Grade B, ERW, minimum 0.500" wall thickness, AWWA C200; flange shall be Class D per AWWA C204. Interior shall be lined with 7-11 mils DFT of Tnemec N-140 Pota-Pox Plus; Exterior coat: Tnemec 1074,2 mils, color Pentone 522C, 2 coats.
Approved Manufacturers/Products:

(1) US Pipe Fabrication

RW 4. High Density Polyethylene (HDPE) pipe and Tubing
Approved Manufacturers/Products:

A. Fusible HDPE, PE 4710, AWWA C906; Pipes shall be color-coded purple, minimum 40 feet standard lengths, DR 11 minimum, DIPS Size, 3" and larger

(1) Performance Pipe (DIV of CP CHEM) – DriscoPlex 4000, 4100
(2) JM Eagle

B. High Density Polyethylene (HDPE) Tubing (PE 3408/3608), CTS, DR9, AWWA C901 up to 2" size (purple or purple striped)

(1) Charter Plastics, Inc.
(2) ENDOT Industries, Inc.
(3) JM Eagle
(4) IPEX, Inc. Blue904 PEX Service Tubing

RW 5. PVC Cement (Certified for both Schedule 40 and Schedule 80)
Approved Manufacturers/Products:

A. Plumbing Applicators:
(1) Harvey's Wet Set PVC Cement
(2) Christy's Red Hot Blue Glue
(3) WHITLAM Weatherproof Blue All Weather Low VOC Medium Body Cement

B. Electrical Conduit Applicators (Medium Body Clear Cement)
(1) Oatey PVC Heavy Duty Clear Cement
(2) Harvey's P-12G Heavy Gray PVC Cement

RW 6. Thread Sealant
Approved Manufacturers/Products:

(1) E-Z Weld 777 by Fry Technology Pipe Fit, FPPI
(2) Teflon Tape (all manufacturers)

RW 7. Gate Valves (AWWA C509, C515, Ductile Iron Body)
Approved Manufacturers/Products:

(1) Mueller A-2361, A-2362
(5) American Series 2500 (MM, FF)
(6) Kennedy Ken Seal Series
(7) M & H Style 4067, 7561/7571
(7) Clow Models 2638, 2639/2640
(5) US Pipe Metroseal A-USP1, A-USP2

Minimum Pressure Class 200 is required for valves larger than 24"

RW 8. Butterfly Valves (AWWA C504)
Approved Manufacturers/Products:

(1) Mueller Lineseal III
(2) M & H Styles 4500, 1450
(3) Pratt "AWWA Groundhog"
(4) DeZURICK Class 150B
(5) Val-Matic

Note: Worm Gears are required for valves larger than 16".

Minimum Pressure Class 200 is required for valves larger than 24"

RW 9. Combination Air Release Valves
Min. 1" ARV for pipes 4" – 16" Min. 2" ARV for pipes larger than 16" (Fusion Bonded Epoxy Interior and Exterior, Stainless Steel Bolts and Plugs)
Approved Manufacturers/Products:

(1) Val-Matic VMC-201C.1SV, VMC-202C.2D1SV
(2) Crispin UL10, UL20
(3) VAG GA (F.K.A. GA Industries) Model 945-T
(4) APCO 143C, 145C

RW 10. Tapping Valves (AWWA C509, C515, D.I. Body)
Approved Manufacturers/Products:

(1) American Series 2500
(2) Mueller T-2361, T-2362
(3) US Pipe Metroseal T-USP1, T-USP2
(4) M & H Style 4067-13, 7572
(5) Clow F-6114

Minimum Pressure Class 200 is required for valves larger than 24"

RW 11. Pack Joint Angle Single Check Valves – up to 1" (ASSE Approved)
Approved Manufacturers/Products:

(1) Ford HA91-323, HA91-444
(2) McDonald
(3) Mueller

RW 12. Pack Joint Single Check Valves – for 1-1/2" and 2" meters (ASSE Approved)
Approved Manufacturers/Products:

(1) Ford HS 11-777 HS 11-666
(2) Mueller

RW 13. Check Valve for Reuse Water Services - 3" and larger (AWWA C508)
Approved Manufacturers/Products:

(1) Val-Matic Swing Flex Check Valve
(2) APCO Rubber Flapper Swing Check

RW 14. Pack Joint Branch Valves
Approved Manufacturers/Products:

(1) AY McDonald 08U4M (1½ x ¾ x 7.5);

RW 15. Mechanical Joint Ductile Iron Tapping Sleeve (Taps 4" and Larger)
Approved Manufacturers/Products:

(1) American 2800 Series
(2) Mueller H-615
(3) US Pipe MJ

RW 16. Tapping Sleeves (Taps 4" and Larger)
Approved Manufacturers/Products:

A. Stainless Steel Body, Flange and Hardware
(1) Dresser 630
(2) Ford FTSS
(3) Cascade CST-EX
(4) JCM 432, 452
(5) Power Seal Model 3490-AS
(6) Smith Blair 663

B. Fabricated Epoxy-coated Steel Body and Flange with Stainless Steel Hardware (For Pipes Larger than 24")
(1) JCM 412
(2) Smith-Blair 622
(3) PowerSeal Model 3460-CS
(4) Ford FTSC
(5) Dresser 610
(6) Cascade CFT-ESS, CFT-LP-ESS

RW 17. Mechanical Joint Restraining Devices
Approved Manufacturers/Products:

A. Solid Design for D.I.Pipe
(1) EBBA Iron – 1100 MEGALUG
(2) Sigma ONE-LOK SLDE
(3) Ford/Uni-Flange Series 1400
(4) Star Pipe StarGrip Series 3000 (up to 16")

B. Solid Ring Design for PVC Pipe
(1) EBBA Iron – 2000PV MEGALUG
(2) Sigma ONE-LOK SLCE
(3) Ford/Uni-Flange Series 1500
(4) Star Pipe StarGrip Series 4000 (up to 16")

C. Solid Ring Design for HDPE pipe up to 12" (requires stainless steel stiffening insert)
(1) EBBA Iron – 2000PV MEGALUG
(2) Ford/Uni-Flange Series 1500

D. Split Ring Design for D.I. Pipe
(1) EBBA Iron – 1100SD Split MEGALUG
(2) Sigma ONE-LOK SSLD
(3) Star Pipe StarGrip Series 3000S (up to 16")

E. Split Ring Design for PVC Pipe
(1) EBBA Iron – 2000SV MEGALUG

F. Split Ring Design for HDP Pipe up to 8" (requires stainless steel stiffening insert)
(1) EBBA Iron – 2000SV MEGALUG

RW 18. Pressure Pipe Bell Restraint (Bell side ring without serrations; rods, and nuts to be stainless steel 316; split ring design shall be used if available)
Approved Manufacturers/Products:

A. Split Ring Design for DI Pipe
(1) EBAA Iron - Series 1600TD
(2) EBAA Iron - Series 1100HD
(3) Sigma ONE-LOK SSLDH

B. Split Ring Design for PVC Pipe
(1) EBAA Iron - Series 1600TD
(2) EBAA Iron - Series 1100HV
(3) Sigma PV-LOK PWH
(4) Ford/Uni-Flange Series 1355-C

C. Solid Ring Design for D.I. Pipe
(1) EBAA Iron - Series 1700
(2) Sigma ONE-LOK SLDEH
(3) Ford/Uni-Flange Series 1450

D. Solid Ring Design for PVC Pipe
(1) EBAA Iron - Series 3800
(2) Sigma ONE-LOK SLCEH
(3) Ford/Uni-Flange Series 1350

RW 19. Pressure Pipe Bell Joint Leak Clamps with stainless steel Type 316 hardware (bolts, nuts, etc.).
Approved Manufacturers/Products:

(1) Smith-Blair Model 274
(2) Ford FBC-XXX-E or FBCF-XXX-Y Style
(3) Romac Industries Style 516

Note: Split Ductile Iron Rings required. Buna-N gasket required. Longer bolts required for PVC pipe.

RW 20. Ductile Iron Restrained Flange Adapters with stainless steel Type 316 hardware (bolts, nuts, etc.). (Set Screw Design Not Acceptable)
Approved Manufacturers/Products:

(1) EBBA Iron – 2100 MEGAFLANGE
(2) Smith-Blair Model 912-90 with anchor studs
(3) PowerSeal Model 3521 with anchor studs

RW 21. Flange Adapters - for 1 ½ and 2" meters
Approved Manufacturers/Products:

(1) Ford CF31-77 (with slotted bolt holes)
(2) McDonald 610 F
(3) Mueller

RW 22. Ductile Iron Fittings
Approved Manufacturers/Products:

A. Both Ends Mechanical Joints and Flanged Joint fittings
   (1) Tyler Union
   (2) US Pipe/Metalfit
   (3) American
   (4) Star
   (5) Sigma
   (6) Clow

B. Flexible Restraint Fittings
   (1) American – FLEX-RING, LOK-RING
   (2) US Pipe/Metalfit – TR FLEX, BOLT-LOK
   (3) McWane Corporation – Super Lock

C. Welded on Outlet Tees for pipes larger than 24" non-flanged pipe. The welded on branch size shall not exceed ½ of the main pipe size. Welding shall be performed and tested by the pipe manufacturer.

(1) American Cast Iron Pipe Company
(2) US Pipe

Fittings must be ductile iron meeting the requirements of AWWA C-110, AWWA C-153 and must be cement mortar lined and sealed per AWWA C-104 or fusion bonded epoxy lined inside and outside per AWWA C116/ANSI A21.16. The epoxy shall be applied to both exterior and interior surfaces. The lining shall be warranted by the pipe manufacturer. TORUSEAL or Flange-Tyte gaskets are required for flanged fittings.

RW 23. Follower Glands
Approved Manufacturers/Products:

(1) Tyler International
(2) US Pipe
(3) Union Foundry
(4) Sigma/NAPPCO

RW 24. Casing Pipe Spacers
Approved Manufacturers/Products:

(1) Cascade
(2) APS Spacing System
(3) RACI
(4) BWM

RW 25. Pack Joint Curb Stops
Approved Manufacturers/Products:

(1) Ford BRW 77-777W
(2) AY McDonald 6100W RWT- 44
    (Reclaimed Water size 2")

Must be permanently marked **"Reclaimed Water"**

RW 26. Pack Joint Yoke Angle Curb Stops (Compression PVC x Yoke)
Approved Manufacturers/Products:

(1) Ford BARW91-323W,
    BARW91-444W
(2) AY McDonald
    4602BY-44 RTW –44 (Reclaimed Water)

RW 27. Corporation Stops (PVC Pipe) with PVC Compression Outlet and Tee Head – Iron Pipe Thread
Approved Manufacturers/Products:

(1) AY McDonald 4704B-44 (reclaimed water)
(2) Ford FBRW 1102

RW 28. Corporation Stops for ARV Installations (MIP & MIP)
Approved Manufacturers/Products:

(1) AY McDonald 3131B (reclaimed water)
(2) Ford FBRW 500

RW 29. Meter Yokes (must be epoxy coated or powder coated)
Approved Manufacturers/Products:

(1) Ford Y502, Y504
(2) Mueller H5020, H5040
(3) AY McDonald 14-2, 14-4

RW 30. Yoke Expansion Connections
Approved Manufacturers/Products:

(1) Ford EC23, EC4
(2) Mueller H-14234
(3) AY McDonald 14-2EHG, 14-4EHG

RW 31. Double Strap Service Saddles/Sleeves (up to 2" Taps) – Iron Pipe Thread
Approved Manufacturers/Products:

A. Ductile Iron Body, Double Steel Bales (up to 16")
   (1) JCM 408
   (2) Smith Blair 313
   (3) Ford FC202 (Epoxy-coated)
   (4) Romac 202 NU
   (5) AY McDonald 4826A

B. Ductile Iron Body Double Stainless Steel Straps
   (1) JCM 406
   (2) Smith Blair 317
   (3) Ford FCD 202
   (4) Romac 202 NS (up to 16", pre-approval required)
   (5) Power Seal 3417 DI
   (6) Ay McDonald 4855A

C. Epoxy-coated Steel Body Threaded Outlet Tapping Sleeves, Stainless Steel Hardwar Required (Larger than 16", Pre-approval Required)
   (1) JCM 418
   (2) Romac FTS420T

D. Stainless Steel Body Threaded Outlet Tapping Sleeves (Larger than 16")
   (1) JCM 438
   (2) Smith Blair 372

RW 32. Post Type Flushing Hydrant
Approved Manufacturers/Products:

(1) Mueller 2-1/8"
(2) M & H 33

RW 33. Meter Boxes (Tier 8 ANSI/SCTE77 Load Rating Minimum)
Approved Manufacturers/Products:

A. Single Service: 5/8" x 3/4" meters
   (1) Box: CDR WB03-1015-12

B. Double Service: 5/8" x 3/4" meters
   (1) Box: CDR WB03-1517-12

C. Single Service: (1" meters)
   (1) Box: CDR WB03-1118-12

D. Single Service: (1½" and 2" meters)
   (1) Box: CDR WB03- 2436-18

E. Single Service: (3" meters)
(Direct Connect removed – Lake Discharge above ground installation only)

F. Single Service: (4" meters)
(Direct Connect removed – Lake Discharge above ground installation only)

G. Single Service: (6" meters)
(Direct Connect removed – Lake Discharge above ground installation only)

H. Single Service: (8" meters and larger)
(Direct Connect removed – Lake Discharge above ground installation only)

RW 34. Meter Box Lids (Permanently infusedwith purple color and marked "Reclaimed Water—Do Not Drink"), Tier 8 ANSI/SCTE77 Load Rating Minimum
Approved Manufacturers/Products:

A. Single service (5/8" x ¾" meter)
   (1) CDR C00101502P

B. Double service (5/8"x ¾"meter)
   (1) CDR C00151702P

C. Single service (1" meter)
   (1) CDR C00111802P

D. Single service (1-1/2" and 2" meter)
(1) CDR C00243602P (offset meter reader lid)

E. Single service (3" meter) Torsion Assist Lid Required (REMOVED)

F. Single service (4" meter) Torsion Assist Lid Required (REMOVED)

G. Single service (6" meter) Torsion Assist Lid Required (REMOVED)

H. Single service (8" meter and larger) Torsion Assist Lid Required (REMOVED)

RW 35. Manhole Cover Riser Rings (Max. 4" height, existing manholes only)
Approved Manufacturers/Products:

(1) Manhole Systems MS-101
(2) Rinker MR-1
(3) EJ Corp. Andrews Metal Style Inc. M2-A, M5-A

RW 36. Purple Identification Paint for Components with Asphaltic Coating
Approved Manufacturers/Products:

(1) Induron Protective Coatings; Aquanaut A1272-RT170 Color shall be Pantone 522c. (Minimum 8 mil WFT, minimum 3 mils DFT)

RW 37. Purple Identification Paint for Components with Non-Asphaltic Coating (minimum two coats required). Exposed ductile iron pipe and fittings shall be shop coated with red primer. (Color shall be Pantone522c.)
Approved Manufacturers/Products:

(1) TNEMEC Series 30 DTM acrylic
(2) Sherwin Williams DTM acrylic coating B66-100 Series

RW 38. Purple Identification Paint for PVC Components Color shall be Pantone 522c.
Approved Manufacturers/Products:

(1) Tnemec Series 66 Highbuild Polyamid Epoxy

RW 39. Screw Type (2) Piece Valve Boxes (Square Top)
Approved Manufacturers/Products:

(1) Bingham/Taylor 4905

RW 40. Valve Box Lid (Heavy Weight, Square top, 4" skirt, marked "REUSE")
Approved Manufacturers/Products:

(1) Bingham/Taylor

RW 41. Detectable Reclaimed Water Marking Tape
Approved Manufacturers/Products:

(1) Empire Level MFG. Corp.; MT61-RECLAIMED WATER
(2) T. Christy Enterprises; #TA-DT-6-PRW
(3) Pro-Line Safety Products; 103145173

Detectable purple tape 6" wide imprinted with the following in 1 1/2" MIN. high lettering with minimum wording of; **"CAUTION RECLAIMED WATER LINE BELOW"**. The wording shall occur every 3 feet.

RW 42. Root Barrier System
Approved Manufacturers/Products:

(1) TYPAR BIOBARRIER 39", 58.5"
(2) DeepRoot UB36-2, UB48-2

RW 43. Sliding Type 2 Piece 4 ¼" Valve Box and cover for corporation stop (lid marked "REUSE")
Approved Manufacturers/Products:

(1) Bingham Taylor 4903 Box (with Heavy Weight Tri-Skirt Lid) -I4B143SSR
Lid – CUL4LRSQLS
Top – CUL4TS
Bottom – CCO4B143S

RW 44. Brass Compression by Male Adapter
Approved Manufacturers/Products:

(1) AY McDonald 4753-44
(2) Ford C87 Series

RW 45. Brass Compressions by Female Adapter
Approved Manufacturers/Products:

(1) AY McDonald 4754-44
(2) Ford C17 Series

RW 46. Line Stop Tapping Sleeve
Approved Manufacturers/Products:

(1) JCM 440

RW 47. HDPE/DIP Electrofusion Couplings and Fittings:
Approved Manufacturers/Products:

(1) GF Central Plastics Company
(2) IPEX USA – Friatec (verify?)

RW 48. HDPE/DIP MJ Adapter (SS Stiffener Required)
Approved Manufacturers/Products:

(1) Independent Pipe Products Inc.
(2) Improved Piping Products, Inc.
(3) Central Plastics

RW 49. PVC Fittings (Up to 6" Schedule 40 and Schedule 80)
Approved Manufacturers/Products:

(1) LASCO Fittings, Inc.
(2) NIBCO, Inc.
(3) SpearsManufacturing Company
(4) Charlotte Pipe and Foundry Company

RW 50. Above Ground Utility Markers
Approved Manufacturers/Products:

A. Canal Crossings:
(1) Rocal, Inc. #RI-UPLPBC 12-6

B. Miscellaneous Locations:
(1) Rhino Marking & Protection Systems, Inc. – Triview Marker Post, color coded with decals.
(2) Rhino Marking & Protection Systems, Inc. - Rhino 3-Rak (66") color coded with decals.

RW 51. Manhole Ring and Cover (ARV)
Approved Manufacturers/Products:

(1) US Foundry 690-AH-MS
(2) US Foundry 751-MS (Ductile Iron, 32")
(3) PAMREX (Ductile Iron, 32")

Note: Manholes shall be marked: "Reuse ARV"

RW 52. Aluminum Vault Frame and Cover (ARV)
Approved Manufacturers/Products:

(1) US Foundry AHS or AHD
(2) Bilco J or JD (H-20)

RW 53. Stainless Steel Stiffener for HDPE Pipe Restraint
Approved Manufacturers/Products:

(1) Cascade
(2) JCM
(3) ROMAC

RW 54. Insertion Valve (AWWA C515)
Approved Manufacturers/Products:

A. Ductile Iron Body, Resilient Seat Gate, Wedge to Seal against valve body, MJ Type End Restraints
(1) TEAM Insert Valve

B. Stainless Steel Body, Resilient Seat Gate, Wedge to Seal against valve body
(1) Hydro-Stop Insertion Valve 250

RW 55. Lake Discharge Outfall Pipe Check Valve
Approved Manufacturers/Products:

(1) Cla-Valve - Duck-bill valve
(2) Tideflex

RW 56. Valve Stem Extension (Carbon Steel Hot Dip Galvanized with Centering Ring and Stainless Steel Set Screws)
Approved Manufacturers/Products:

(1) CustomFab
(2) Trumbull Industries

RW 57. Directional Drill Trace Wire (APWA Color Coded Purple, AWG #12 Min)
Approved Manufacturers/Products:

(1) Copperhead 1245G-EHS
(2) Pro-Line Safety Products Pro-Trace HDD-CCSPE45

RW 58. Stilling Well Cover (1/4" Thick Aluminum Hinged End Cap, Lockable Stainless Steel Hinge)
Approved Manufacturers/Products:

(1) US Custom Fabrication, Inc.
EC-USCFAL 3501S-HL

RW 59. Stilling Well Pipe Screen (#3 Stainless Steel Mesh End Cap with 2" x 1/8" Stainless Steel Flat Bar Frame)
Approved Manufacturers/Products:

(1) US Custom Fabricator, Inc.
EC-USCFSS3310M

RW 60. Stainless Steel Stiffening Inserts for HDPE Pipe (4" -12")
Approved Manufacturers/Products:

(1) JCM 231
(2) Cascades

RW 61. Stainless Steel Stiffening Inserts for HDPE Tubing (up to 2")
Approved Manufacturers/Products:

(1) Ford
(2) Mueller
(3) AY McDonald

RW 62. Electronic Pressure/Flow Control Valve with Anti-Cavitation Kit, Hydraulic Float Pilot Override (Lake Discharge), and Flow Rate Transmitter
Approved Manufacturers/Products:

A. Lake Discharge Connection
(1) CLA-VAL 131-20 BCMPSVY KCO DS SSB 150AG

B. Direct Service Connection
(1) CLA-VALal 93EG-01 BCM PSVY KC DS SSB 150Ansi

RW 63. Remote Telemetry – Unit RTU (PLC Based)
Approved Manufacturers/Products:

(1) Curry Controls PBCRTU2013
(2) Engineer Service Corp. PBCRTU2013
(3) AES PBCRTU2013
(4) CC Control PBCRTU2013
(5) Unitron PBCRTU 2013
(6) Champion Controls PBCRTU2013

RW 64. Directional Drill Tracer Wire - #12 AWG (APWA Colored Coded Purple)
Approved Products/Manufacturers:

(1) Copperhead 1245P-EHS
(2) Pro-Line Safety Products Pro-Trace HDD-CCSPE45

1.5 LINE MAINTENANCE REPAIR MATERIALS

All components that come in contact with potable water shall conform to the current NSF Standard. Effective January 1, 2013, only "Lead Free" Brass Water Works Products shall be installed with Potable Water.

MR 1. Brass Plumbing Gate Valves with Female Threaded Ends (1/2" – 4")
Approved Manufacturers/Products:

(1) American Valve

MR 2. Brass Straight Curb Stop Ball Valve (Full Port, Female x Yoke)
Approved Manufacturers/Products:

(1) Ford B91-W-NL
(2) AY McDonald 76101 WY

MR 3. Bronze Swing Check Valve (3/4" – 3")
Approved Manufacturers/Products:

(1) American Valve

MR 4. Brass Pack Joint Couplings (1/2" – 2") – PVC x PVC; Lead Free
Approved Manufacturers/Products:

A. Straight Coupling
(1) Ford C77- NL Series
(2) Mueller -N
(3) AY McDonald 7 -4758 Series

B. ELL Coupling
(1) Ford L77 – NL Series
(2) AY McDonald 7-4761 Series

MR 5. Brass, Male x Pack Joint Adapter (1/2" – 2"); Compression PVC x MIP; Lead Free
Approved Manufacturers/Products:

(1) Ford C 87 NL - Series
(2) Mueller – V- 15440N Series
(3) AY McDonald 7 – 4753 Series

MR 6. Brass Dual Check Valve with Tail Pipe and Male Threaded Ends – Lead Free
Approved Manufacturers/Products:

(1) Ford (3/4" – 2") - NL
(2) Mueller (3/4") – H14272N

MR 7. Brass Fittings, Unions, Bushings, Tees, Bends, Service Plugs, Caps and Nipples (1/4" – 2"); Lead Free
Approved Manufacturers/Products:

(1) Merit Brass
(2) Lee
(3) Mid-American Brass

MR 8. Rubber Reducers for Sewer Pipe (6" x 4", 8" x 6", 8" x 4")
Approved Manufacturers/Products:

(1) FERNCO

MR 9. Pressure Pipe Repair Clamps
Approved Manufacturers/Products:

(1) Ford Style FS1, FS2, FS3
(2) Smith Blair 261, 262, 263
(3) PowerSeal Models 3121AS, 3122AS, 3123AS
(4) TPS Quick-CAM (up to 16" pipe only)
(5) JCM Models 161, 162 (up to 16" pipe only)

Up to 10" – single band at minimum 10" in length, all stainless steel

12" to 16" – double band at minimum 16" in length, all stainless steel

Greater than 16" – triple band with minimum length equal to pipe diameter, all stainless steel

MR 10. Sewer Pipe Repair Couplings (4" – 10")
Approved Manufacturers/Products:

(1) FERNCO
(2) IPEX

MR 11. Ductile Iron Restrained Flange Adapters with stainless steel Type 304 or Type 316 (wastewater only) hardware (bolts, nuts, etc.). (Set Screw Design Not Acceptable)
Approved Manufacturers/Products:

(1) Smith-Blair Model 912-90 with anchor studs
(2) EBBA Iron – 2100 MEGAFLANGE
(3) PowerSeal Model 3521 with anchor studs

MR 12. Restraint Straight and Transition Couplings (EPDM or SBR Gaskets are required) Stainless Steel 304 Rods and Nuts (Flouropolymer coated) Approved Manufacturers/Products:

(1) Smith Blair Pipe-Lock 470 Series
(2) EBAA Iron Mega Coupling Series 3800
(3) TPS Hymax (Maxi-Lube Bolt Required)
(4) ROMAC ALPHA Restraint Coupling

MR 13. Cement (Bagged)
Approved Manufacturers/Products:

(1) Sakrete
(2) Fabriform

MR 14. Fast Drying Cement (Bagged)
Approved Manufacturers/Products:

(1) QUADEX Quad-Plug
(2) BASF MasterSeal 595 (FKA Emaco Plug)
(3) Strong Company, Inc. Strong-Plug
(4) Madewell Products Corp. ML-10 Mortar

MR 15. Meter Adapters (from 1" meter to 5/8" x ¾", from 2" meter to 1") Lead Free
Approved Manufacturers/Products:

(1) Ford A24 – NL, A47- NL
(2) McDonald 7 -
(3) Mueller – H 10879N

MR 16. Teehead Bolt, MJ with Nut for MJ Assemblies, AWWA C111
(3" - 6 ½" long 5/8", ¾", 1" and 1 ¼" thick)
Approved Manufacturers/Products:

(1) Russell MSG
(2) Birmingham Fastener, Inc.

MR 17. Water Meters
Approved Manufacturers/Products:

A. Displacement, Compound, Turbine, Multijet
   (1) Sensus
   (2) Precision (5/8" x ¾" Multijet Type Only)
   (3) Neptune (Displacement up to 1 ½" and Turbine 2" and Larger)

B. Revenue Magnetic Type
   (1) Sensus iPerl System (5/8' x 3/4"; 1") And Related Appurtenances

MR 18. Corporation Stops (3/4" – 2") – Lead Free
Approved Manufacturers/Products:

A. MIP x MIP Thread
(1) Ford FB500-NL
(2) AY McDonald 73131B
(3) Mueller B-20013N (3/4", 1") V-25058N (1-1/2", 2")

B. MIP x FIP
(1) Ford FB1700 –NL
(2) AY McDonald 73149B
(3) Mueller B-20046N

MR 19. Straight Ball Meter Valve for 1 ½" and 2" Meter) (Lead Free)
Approved Manufacturers/Products:

(1) Ford BF 13-777W - NL
(2) AY McDonald 76101 MW (2")
(3) Mueller B-24337N -38 (2")

MR 20. Lift Station Main Breakers
Approved Manufacturers/Products:

(1) Square D
(2) Siemens
(3) Westinghouse
(4) Eaton-Cutler Hammer

MR 21. Lift Station Generator Breakers
Approved Manufacturers/Products:

(1) Square D
(2) Siemens
(3) Westinghouse
(4) Eaton-Cutler Hammer

MR 22. Lift Station Generator Receptacles
Approved Manufacturers/Products:

(1) Russellstohl
(2) Molex
(3) Appleton with corresponding Appleton generator plug

MR 23. Lift Station Transient Voltage Surge Suppressor
Approved Manufacturers/Products:

(1) ASCO 430240HP10ACSJ1

MR 24. Lift Station Surge Capacitors
Approved Manufacturers/Products:

(1) Delta
(2) GE
(3) Comm-OmniInternational

MR 25. Lift Station Motor Circuit Breakers
Approved Manufacturers/Products:

(1) Square D
(2) Siemens
(3) Westinghouse
(4) Eaton-Cutler Hammer

MR 26. Lift Station 120 V Transformers
Approved Manufacturers/Products:

(1) Square D
(2) Acme
(3) Westinghouse
(4) Eaton-Cutler Hammer

MR 27. Lift Station Motor Starters
Approved Manufacturers/Products:

(1) Square D
(2) Siemens
(3) Westinghouse
(4) Eaton-Cutler Hammer
(5) GE
(6) Allen Bradley

MR 28. Lift Station Phase Monitors (Voltage: 230V, 480V) programmed for phase reversal and under voltageonly
Approved Manufacturers/Products:

(1) Diversified
(2) MPE 001-230-118 PBC
(3) MPE 001-480-118 PBC

MR 29. Lift Station Fuses
Approved Manufacturers/Products:

(1) ~~Buss~~ Bussmann
(2) Ferraz Shawmut (FKA Gould Shawmut)
(3) ~~Little Fuse~~ Littelfuse

MR 30. Lift Station Circuit Breakers (120 V)
Approved Manufacturers/Products:

(1) Square D
(2) Eaton-Cutler Hammer
(3) Westinghouse

MR 31. Lift Station Outside Flood Light (LED Daylight Type 100W Bulb with Wire Guard)
Approved Manufacturers/Products:

(1) RAB HB101W with HG1W guard
(2) Department Prior Approved Equal

MR 32. Lift Station Control Panel Outlets
Approved Manufacturers/Products:

(1) Hubbell
(2) Eagle
(3) GE

MR 33. Lift Station Control Relay
Approved Manufacturers/Products:

(1) Plotter Brumfield
(2) Allen Bradley
(3) Square D
(4) Omron
(5) AAElectric

MR 34. Lift Station Pump Selector
Approved Manufacturers/Products:

(1) Square D
(2) GE
(3) Eaton-Cutler Hammer
(4) Westinghouse

MR 35. Lift Station Panel Terminal
Approved Manufacturers/Products:

(1) Square D
(2) Westinghouse
(3) Eaton-Cutler Hammer

MR 36. Lift Station Running Time Recorders
Approved Manufacturers/Products:

(1) Redington

MR 37. Lift Station Alternator Switches
Approved Manufacturers/Products:

(1) Square D
(2) GE
(3) Eaton-Cutler Hammer
(4) Westinghouse

MR 38. Lift Station Alternators
Approved Manufacturers/Products:

(1) Diversified Electronics
(2) AA Electric
(3) Zoeller
(4) MPE 008-120-13S

MR 39. Lift Station Flasher
Approved Manufacturers/Products:

(1) SSAC
(2) Zoeller

MR 40. Lift Station Outside Alarm Light (Minimum 100 W)
Approved Manufacturers/Products:

(1) RAB Lighting VXBR100DG (100W)
With GL 100R Globe

MR 41. Lift Station Outside Alarm Horn
Approved Manufacturers/Products:

(1) Edwards
(2) Zoeller
(3) Federal

MR 42. Lift Station Transformer (24 V)
Approved Manufacturers/Products:

(1) Square D
(2) Westinghouse
(3) Micron Power (Impervatron is actually imperviTran which is form of a 24VDC XFMR)

MR 43. Lift Station Pilot Lights (24 V)
Approved Manufacturers/Products:

(1) Square D
(2) GE
(3) Dialco

MR 44. Lift Station Silence Push Buttons
Approved Manufacturers/Products:

(1) Square D
(2) Eaton-Cutler Hammer
(3) Westinghouse

MR 45. Lift Station Float Switches (40' and 60' Long Cables) – Mercury Free
Approved Manufacturers/Products:

(1) Anchor Scientific
(2) Zoeller
(3) Flygt ENM–10 Level Regulator

MR 46. Lift Station Control Panel Wire Terminal
Approved Manufacturers/Products:

(1) Phoenix
(2) Panduit
(3) Molex
(4) Square D

MR 47. Lift Station Junction Box Power Terminal
Approved Manufacturers/Products:

(1) Marathon (1323572 and 1320572) per pump

MR 48. Electrical Stainless Steel Enclosures
Approved Manufacturers/Products:

A. NEMA 4X
(1) Hoffman
(2) Schaefer's

B. NEMA 3R and Modified 3R
(1) Hoffman
(2) Schaefer's

MR 49. Lift Station Panel Gas Seal
Approved Manufacturers/Products:

(1) O-Z/Gedney
(2) Circle Seal Control, Inc.

MR 50. Lift Station Panel Raintight Hub
Approved Manufacturers/Products:

(1) O-Z/Gedney
(2) Bridgeport
(3) Arlington
(4) Circle Seal Controls

MR 51. Lift Station Panel Power Distribution Block
Approved Manufacturers/Products:

(1) Square D
(2) Eaton-Cutler Hammer
(3) Westinghouse

MR 52. Lift Station Panel Ground Terminals
Approved Manufacturers/Products:

(1) Square D
(2) Eaton-Cutler Hammer
(3) Westinghouse
(4) Marathon

MR 53. Lift Station Remote Telemetry Units (PLC Based)
Approved Manufacturers/Products:

(1) CurryControls PBCRTU2013
(2) Engineer Service Corp. PBCRTU2013
(3) AES PBCRTU2013
(4) CC Control PBCRTU2013
(5) Unitron PBCRTU 2013
(6) Champion Controls PBCRTU2013

MR 54. Water Meter Boxes and Lids (polymer concrete, straight walls, all sizes)
Approved Manufacturers/Products:

(1) CDR
(2) GlasMasters
(3) Armorcast

MR 55. Hydrant Adapter
Approved Manufacturers/Products:

(1) Powhattan
(2) Trumbull Industries

MR 56. Brass Hosebibbs (Threaded Outlet) and Sampling Point Spigots (plain outlet); Lead Free
Approved Manufacturers/Products:

(1) NIBCO
(2) Jones
(3) AmericanStandard

MR 57. Vacuum Breaker; Lead Free
Approved Products/Manufacturers:

(1) AY McDonald #4421-146
(2) Ford
(3) Mueller

MR 58. Meter Tail Pipe Coupling (Brass) ¾" –2"; Lead Free
Approved Manufacturers/Products:

(1) AY McDonald 74620 Series
(2) Ford C38 -NL
(3) Mueller H-10896N

MR 59. Eye Bolt (3/4", 5/8" x 4")
Approved Manufacturers/Products:

(1) Unique Industries
(2) Action Bolt
(3) Florida Bolts

MR 60. Valve Box Extension (Max. 2 1/2" Valve Box Riser)
Approved Manufacturers/Products:

(1) Bingham/Taylor
(2) East Jordan Iron Works
(3) Sigma VB 26025-D (Ductile Iron)

MR 61. Gaskets (Flanged Pipe, Meters, Transition)
Approved Manufacturers/Products:

(1) Toruseal by ACIPCO
(2) Southern Mechanical Seals (flanged pipe fiber neoprene gaskets)
(3) Specification Rubber Products
(4) Flange-Tyte by US Pipe
(5) Garlock
(6) John Crane

MR 62. Stainless Steel Type 304 All Thread Rods (1/8"-1")
Approved Manufacturers/Products:

(1) Fastening Specialists
(2) Infasco
(3) Unistrut
(4) Action Bolt
(5) Florida Bolts

MR 63. Stainless Steel Nuts Type 304 (1/8" -1", Coated to Prevent Galling)
Approved Manufacturers/Products:

(1) Fastening Specialists
(2) Infasco
(3) Unistrut
(4) Action Bolt
(5) Florida Bolts

MR 64. PVC Unions (1/2"– 2")
Approved Manufacturers/Products:

(1) Heritage Plastics South
(2) LASCO Fittings
(3) Spears
(4) Colonial

MR 65. PVC Ball Valves Schedule 80 (1/2" – 3") (Full Port, Viton or EPDM "O" Rings) Female Thread or Slip Ends
Approved Manufacturers/Products:

(1) Heritage Plastics South
(2) NIBCO
(3) Spears
(4) Hayward Industrial Products
(5) Colonial

MR 66. Bronze Ball Valve (1/4 turn, 1/2" – 2"); Lead Free
Approved Manufacturers/Products:

(1) NIBCO
(2) AmericanValve

MR 67. Pressure Sensor Transducer (4-20mA output, IP68 Rated, NEMA 6 cable, 24 VDC)
Approved Manufacturers/Products:

(1) Endress & Hauser Cerabar-T PMC 131-
(2) Yokogawa
(3) WIKA S-10

MR 68. Minimum 4" Skirt Heavy Duty Valve Box Lids
Approved Manufacturers/Products:

(1) Bingham/Taylor (4906)
(2) East Jordan Iron Works (06800045)
(3) Sigma Corp. (Ductile Iron only) VB 2604WX (Water), VB 2604SX (Sewer)

Note: Drop lid shall weigh minimum 24 lbs.

MR 69. CPVC Pipe SCH 80 ASTM D-1784, D-2846, NSF (1/2" and ¾")
Approved Manufacturers/Products:

(1) Bristol Pipe (Bristoltherm CPVC 4120)

MR 70. Resetter/Iron Yoke (5/8" x ¾", including locking angle, curb stop, and dual check valve; Lead Free
Approved Manufacturers/Products:

(1) AY McDonalds 7170208 WD-2

MR 71. In-Line Residential Dual Check Valve (Cartridge Style, Straight Design, ASSE Approved); Yoke x FIP; Lead Free
Approved Manufacturers/Products:

(1) Ford HHCH 91 – NL

MR 72. In-Line Residential Dual Check (Straight Cascading Design, ASSE Approved); Yoke x FIP; Lead Free
Approved Manufacturers/Products:

(1) Ford HHS91 – NL Series
(2) Mueller H-714247

MR 73. Pack Joint Coupling (Female Copper Thread by PVC); Lead Free
Approved Products/Manufacturers:

(1) Ford C-07 – NL Series

MR 74. Pack Joint Coupling (Female Iron Pipe Thread by CTS); Lead Free
Approved Manufacturers/Products:

(1) Ford C14 – NL Series

MR 75. Pack Joint Coupling (Copper by Copper); Lead Free
Approved Manufacturers/Products:

(1) Ford C44 – NL Series

MR 76. Pack Joint Coupling (Male Iron Pipe Thread by CTS); Lead Free
Approved Manufacturers/Products:

(1) Ford C84 - NL Series

MR 77. Pack Joint Coupling (Male Iron Thread by EP); Lead Free
Approved Manufacturers/Products:

(1) Ford C86 – NL Series

MR 78. Brass Straight Curb Stop Ball Valve (Full Port, PVC Compression x Yoke), Lead Free
Approved Manufacturers/Products:

(1) Ford B-91W – NL Series with C87 Adapter (M x PVC)
(2) AY McDonald 76102 WY-44

MR 79. "Cam Lock" Style Adapters, Coupler, Fittings (1 ½" – 6"); Lead Free
Approved Manufacturers/Products:

(1) P-T Coupling Company
(2) Dixon Valve and Coupling Company

MR 80. Programmable Logic Controller (PLC)for RTU
Approved Manufacturers/Products:

(1) Allen Bradley MicroLogix 1400 with 1766 MMI Memory Module and Analog Extension Module 1762 –IF4

MR 81. RTU Battery (Lead Acid Sealed, 12V, 18 Ah)
Approved Manufacturers/Products:

(1) Power Sonic PS-12180

MR 82. RTU Battery Charger/Power Supply
Approved Products/Manufacturers:

(1) Allen-Bradley 1606-XLP 50B

MR 83. (Left Blank Intentionally)

MR 84. RTU Solar Panel and Mounting Bracket; Note: Antenna Mast to be 2" Sch. 40 Galvanized Steel
Approved Manufacturers/Products:

(1) SolarTech SPM055P-WP-F with DPW Solar Panel Mounting Kit (SPM, High Wind Version, Anodized Aluminum Components with stainless steel mounting hardware)
(2) Department Prior Approved Equal

MR 85. RTU Solar Controller
Approved Manufacturers/Products:

(1) Sunsaver SS-10L-24V

MR 86. Fire Hydrant Security Wrench
Approved Manufacturers/Products:

A. Full Size Wrench
(1) Amercian Flow Control: Captivater Adjustable Wrench

B. Hand Wrench
(1) American Flow Control: Captivater Hand Wrench

MR 87. Time Delay Relay-Delay on Break (1 to 1023 Second, 11 Pin Base, 24 AC Volts)
Approved Manufacturers/Products:

(1) SSAC TDB-120ALD for 120VAC
(2) SSAC TRDU-24A3 for 24VDC

MR 88. RTU Radio (Lift Stations)
Approved Manufacturers/Products:

(1) Microwave Data Systems MDS SD04MD-CES-NNSN

MR 89. Complete PBC Lift Station Control Panel Package (Panel, Junction Box, Transformer, Antennae, RTU, Alarm Light, Flood Light, Receptacle, Generator Receptacle) as specified in PBCWUD Standards
Approved Products:

(1) Model PBCLSP75 (up to 7.5 hp)
(2) Model PBCLSP15 (>7.5 hp and <= 15 Hp)
(3) Model PBCLSP25 (>15 hp and<= 25hp)

Approved Manufacturers:

(1) Engineer Service Corp.
(2) CC Control
(3) Atlantic Environmental Systems
(4) Unitron Controls
(5) Curry Controls
(6) Champion Controls

MR 90. AC Drive (Conversion of Single Phase to Three Phase Current – up to 10 HP
Approved Manufacturers/Products:

(1) Altivar ATV 71 HU75 MR

MR 91. Grease Solvent
Approved Manufacturers/Products:

(1) Red Hot #616 by Goldstar Products

Note: Limited use, Issue and Monitor by I&I Superintendent.

MR 92. Automatic Flushing Assembly Battery powered
Approved Manufacturers/Products:

(1) Mueller Hydro-Guard 100 Series
(2) Mueller Hydro-Guard 600 Series (only with prior Department approval)

MR 93. Insertion Valve (AWWA C515)
Approved Manufacturers/Products:

A. Ductile Iron Body, Resilient Seat Gate, Wedge to Seal against valve body, MJ Type End Restraints
   (1) TEAM Insert Valve

B. Stainless Steel Body, Resilient Seat Gate, Wedge to Seal against valve body
   (1) Hydro-Stop Insertion Valve 250

MR 94. (Left Blank Intentionally)

MR 95. Corrosion Barrier System for Concrete Structures (WUD Capital Improvement Projects)
Approved Manufacturers/Products:

A. Field applied systems

(1) Madewell Corp. Mainstay System (ML-10 hydraulic cement mortar, L-72 microsilica mortar, DS-5 epoxy)
(2) SewperCoat by Kerneos
(3) Strong High Performance Mix
(4) Refratta HAC by Global Materials Company

B. Cast-in Solid Liners
(1) Agru SURE-GRIP Polypropylene liner with 3M sealant tape 5354 and ADEKA P-201 Waterstop
(2) Agru SURE-GRIP HDPE Liner with 3M sealant tape 5354 and Adeka P-201 Waterstop
(3) GU Systems of Florida, LLC: GU Liner System (Polypropylene Sealplate Wall Liner, Cone Liner (PP or FRP construction) and optional manhole base liner (PP or FRP)with 3M sealant tape 5354

C. Field installed Thermo-Plastic Liner Systems
(1) Agru SURE-GRIP HDPE Liner and ADEKA P 201 Waterstop

D. Concrete structures with antimicrobial admixture (each structure must be certified by manufacturer for Admixture compliance).
(1) ConShield by US Precast

Note: The use of the antimicrobial admixture must be approved in advance by utility for each application.

MR 96. Concrete Structure Microbial Corrosion Indicator
Approved Manufacturers/Products:

(1) ConShield ID

MR 97. Cementitious Patching Material with Antimicrobial Additive
Approved Manufacturers/Products:

(1) ConShield Joint Set

MR 98. Sewer Pump Station Back Up Pumping/Power/Control System (Diesel Powered Pump, Sound Attenuated Enclosure Required, Trailer Mounted)
Double wall tank, DOT Trailer, Vacuum Assisted, Steel Frame and Tank Coated with RHINO or Equal, Aluminum Enclosure, Overall Length less than 15 feet (unless preapproved otherwise)
Approved Manufacturers/Products:

(1) Godwin Pumps
(2) Thompson Pumps

Note: See also written specifications

MR 99. Pressure Pipe Bell Restraint for IPS O.D. PVC Pipe
Approved Manufacturers/Products:

(1) Sigma PV Lok Series PVP-S
(2) EBAA Iron Series 6500

MR 100. Polymer Meter Vault (with Torsion Assist Frame and Covers, 20K Rated
Approved Manufacturers/Products:

(1) Armorcast A 600 1506 TAX 36 MT
    (48" x 72" x 36")

MR 101. Sewer Lateral Cured in Place Pipe Rehabilitation
Approved Manufacturers/Products:

(1) T-Liner by LMK
(2) SCS+L by BLD Services

MR 102. Gravity Sewer Main Cured in Place Sectional Pipe Lining (ASTM F2599)
Approved Manufacturers/Products:

(1) Stephen's Technologies, Inc.: New Life System
(2) LMK Performance Liner Sectional Repair

MR 103. Gravity Sewer Main Cured in Place Pipe Lining (MH to MH) – ASTM 1216
Approved Manufacturers/Products:

(1) Miller Pipeline
(2) Reynolds
(3) SAK
(4) Lanzo
(5) INSITUFORMLLC

MR 104. Manhole Inside Drop Inlet Fitting
Approved Manufacturers/Products:

(1) GU Systems of Florida, LLC Type 370
(2) Reliner Inside DropSystem

MR 105. Polybag for Ductile Iron Pipe (APWA Color Coded)
Approved Manufacturers/Products:

(1) Trumbull Industries
(2) Northtown Companies

MR 106. Asbestos Cement Pipe Restrainers:
Approved Manufacturers/Products:

A. FittingRestrainers
(1) JCM 630

B. Pipe CouplingRestrainers
(1) JCM 631
(2) TPS Hymax 2000 Coupling

MR 107. Adjustable Pipe Supports
Approved Manufacturers/Products:

(1) BPDI – Guard Shack APS Series
(2) Grinnell

MR 108. Leak Detection Equipment for Pressure Pipes:
Approved Manufacturers/Products:

(1) Sewerin
(2) Approved Equal

MR 109. Crimping Tool for HDPE Services
Approved Manufacturers/Products:

(1) Timberline TR270 (Short Model)

MR 110. Portable Power Generators (up to 400 KW) diesel powered.
Approved Manufacturers/Products:

(1) Tradewinds
(2) Magnum

Note: Minimum Design Requirements Apply

MR 111. Force Main Flow Through Isolation Valve for pressure monitoring (1/2", stainless steel body)
Approved Manufacturers/Products:

(1) Red Valve Series 742
(2) WIKA
(3) Endress & Hauser

MR 112. Universal Low Profile Tapping Saddle with integrated shut off housing for air release valves
Approved Manufacturers/Products:

(1) H-Tec Model 371

Note: Minimum Design Requirements Apply

MR 113. Encapsulated strap for low profile pipe tapping saddles for air release valve (pipe sizes specific)
Approved Manufacturers/Products:

(1) H-Tec Model 310

MR 114. Shut off blade for low profile tapping saddle with integrated shut off housing
Approved Manufacturers/Products:

(1) H-Tec Model 840

MR 115. Prestressed Concrete Pipe and Fittings
Approved Manufacturers/Products:

(1) Thompson Pipe Group

MR 116. Brass Dual Check Valve (Straight, Cascading Style); Meter Swivel Nut & MIP; Lead Free
Approved Manufacturers/Products:

(1) Ford HHA 38-323 NL
(2) Mueller H-14272N

MR 117. Brass Angle Ball Valve (FIP x Meter Swivel Nut); Lead Free
Approved Manufacturers/Products:

(1) Ford BA13-332W-NL; BA13-444W-NL

(2) Mueller B-24265N -38 (5/8" x ¾" x ¾", 1)
(3) AYMcDonald 7-4604B (3/4", 1)

MR 118. Chemical Grouting Material
Approved Manufacturers/Products:

(1) Avanti International

MR 119. Wastewater Mag Meters, Revenue Purpose, WUD AMR Compatible, IP68 Rated, 3" and Larger
Approved Manufacturers/Products:

(1) ABB WaterMaster

MR 120. Circular Saw Blades for Ductile Iron Cutting
Approved Manufacturers/Products:

(1) Desert Diamond Industries

MR 121. Polycarbonate Electrical Enclosures
Approved Manufacturers/Products:

(1) Hoffman
(2) Integra Enclosures

MR. 122 Restraining Plates for Flanges
Approved Manufacturers/Products:

(1) Trumbull "Flange Lugs"
(2) Romac "Harvest Lugs"

MR 123. General Use Mechanical Piping Products and Associated Special Tools
Approved Manufacturers/Products:

(1) Grinnell

MR 124. Weather Station
Approved Manufacturers/Products:

(1) Columbia Weather Systems

MR 125. Gravity Sewer Main "Fold and Form" Type Lining (manhole to manhole)
Approved Manufacturers/Products:

(1) Miller Pipeline

MR 126. Hydrogen Sulfide Monitors/Loggers
Approved Manufacturers/Products:

(1) Arizona Instruments LLC –Jerome (H2S)
Apptech International Oda Log

MR 127. Combo Shower/Eye Wash Station (Stainless Steel with Cover)
Approved Manufacturers/Products:

(1) Speakman 625-SS-CV"

MR 128. Pressure Gauge (Stainless Steel, 0-100 PSI)
Approved Manufacturers/Products:

(1) Ashcroft Duralife 1009 (25-1009-SW-Z2L-XLL-100#) (or equal with prior Department approval)

MR 129. Pressure Recorder
Approved Manufacturers/Products:

A. Hydrant Model
(1) TELOG HPR-31

B. Line Pipe Model
(1) TELOG LPR-31

MR 130. Brass Angle Ball Service Valve with Pad Wing (FIT x FIT)
Approved Manufacturers/Products:

(1) Ford BA 11 – NL Series (333W, 444W, 666W, 777W)

MR 131. Industrial Grade Metal Repair and Erosion – Corrosion Protection Compounds
Approved Manufacturers/Products:

(1) BELZONA

MR 132. Automatic Power Transfer Switch
Approved Manufacturers/Products:

(1) ASCO/Emerson

MR 133. Sewer Service Cleanout Installation System per ASTM F3097-15
Approved Products/Manufacturers

(1) LMK Technologies

MR 134. Radar Level Transmitter
Approved Manufacturers/Products:

(1) Vega Vegapuls C-21
(2) Endress & Hauser FMR20

MR 135. Lift Station Potable Water Pressure Gauge/Transmitter (NSF/ANSI Standard 61)
Approved Manufacturers/Products:

(1) ABB – AB261GSDKTNS1EAL1M5
(2) ABB – PGS100KA1ABYSHD4HMMLTUM5
(3) VEGA – VEGABAR38 PP-224 4GM 223 with M12 Connection cable AC-222 23E (50 FT)

MR 136. Lift Station Force Main Pressure Gauge/Transmitter
Approved Manufacturers/Products:

(1) ABB – AB261GSDKTNS1EAL1M5
(2) ABB – PGS100KA1ABYSHD4HMMLTUM5
(3) VEGA – VEGABAR38 PP-223 3JT 224 with M12 Connection cable AC-222 23E (50 FT)

1.6 WATER TREATMENT PLANT EQUIPMENT

- All components, which come in contact with potable water or with drinking water treatment chemicals, shall comply with the current NSF Standards.
- "Premium Efficiency" motors shall be used if available
- All electrical components and assemblies shall be UL listed.

WT 1. Well Pumps (Submersible, Turbine)
Approved Manufacturers/Products:

(1) Peerless
(2) Flowserve Ingersoll – Dresser
(3) Weir-Floway
(4) Flowserve-Byron Jackson
(5) Layne/Verti-line
(6) Goulds Water Technology Texas Turbine Operations

WT 2. Well Motors (Submersible)
Approved Manufacturers/Products:

(1) ALSTRA-SME
(2) Flowserve-Pluegler
(3) Franklin Electric
(4) Hitachi
(5) ITT Centron Pro

WT 3. Stainless Steel Membrane Feed Pumps (Vertical Turbine)
Approved Manufacturers/Products:

(1) Peerless
(2) Flowserve-Ingersoll – Dresser
(3) Flowserve-Byron Jackson
(4) Sulzer Pumps
(5) Afton Pumps Inc.
(6) Layne/Verti-line

WT 4. Pre-Membrane Cartridge Filters NSF Certified, Each Filter Model must be Pre-tested and Pre-approved for Each Treatment Plant)
Approved Manufacturers/Products:

A. Five (5) micron filters Filter Ends Configuration:
(1) Dual O-Rings- Integrated Collapsible Proplylene Spring
(2) Dual O-Rings- Blank Flange
(a) Parker –Hannifin
(b) Cuno Poly Klean
(3) MGS PA 05FDP40 B 222SC (GUA LRWTP, WUD # 3,9)

B. One (1) micronfilter:
(1) Parker – Hannifin M 39 R40 SXC
(2) MGS A01FDU40XCU

WT 5. Stainless Steel Cartridge Filter Housing
Approved Manufacturers/Products:

(1) Cuno
(2) Parker-Hannifan

WT 6. Sand Strainers (Automatic Self Cleaning)
Approved Manufacturers/Products:

(1) Boll Filter
(2) RP Adams
(3) Hydrac Autofilt

WT 7. Membrane Elements (Nanofiltration) (NSF certified, each model must be pretested and preapproved for each treatment plant)
Approved Manufacturers/Products:

(1) Dow FilmTec #NF90-400
(2) GE Desalak 4040 FF
(3) Fluid Systems TFC-SR100 (8" Element)

WT 7. Membrane Elements (Nanofiltration) (NSF certified, each model must be pretested and preapproved for each treatment plant)
Approved Manufacturers/Products:

(1) Dow FilmTec #NF90-400
(2) GE Desalak 4040 FF
(3) Fluid Systems TFC-SR100 (8" Element)
(4) Hydranautics ESPA4-LD and ESNA1-LF2-LD

WT 8. Membrane Train Pressure Vessel
Approved Manufacturers/Products:

(1) Codeline
(2) Protec

WT 9. Concentrate Booster Pumps (Horizontal, Split Case, Centrifugal)
Approved Manufacturers/Products:

(1) Flowserve-Ingersoll – Dresser
(2) Peerless
(3) urora
(4) ITT Goulds

WT 10. Degasifiers
Approved Manufacturers/Products:

(1) Duall Division
(2) Delta Cooling Towers
(3) Indusco

WT 11. Blowers
Approved Manufacturers/Products:

(1) Gardner Denver, Inc.
(2) New York Blowers

WT 12. Transfer Pumps (Vertical Turbine)
Approved Manufacturers/Products:

(1) Peerless
(2) Flowserve-Ingersoll – Dresser
(3) Flowserve-Byron Jackson
(4) Sulzer Pumps
(5) Layne/Verti-line
(6) Goulds Water Technologies Texas Turbine Operation

WT 13. Transfer Pumps (Horizontal, Split-Case, Centrifugal)
Approved Manufacturers/Products:

(1) Flowserve-Ingersoll – Dresser
(2) Peerless
(3) Aurora
(4) ITT Goulds

WT 14. High Service Pumps (Horizontal, Split Case, Centrifugal)
Approved Manufacturers/Products:

(1) Flowserve-Ingersoll – Dresser
(2) Peerless
(3) Aurora
(4) ITT Goulds

WT 15. Sump Pumps
Approved Manufacturers/Products:

(1) Zoeller M98-B

WT 16. High Efficiency Pump Motors
Approved Manufacturers/Products:

(1) GE Water
(2) Teco-Westinghouse
(3) US Motors
(4) Reliance
(5) Marathon

WT 17. Variable Frequency Drives
Approved Manufacturers/Products:

(1) Square D
(2) Allen-Bradley
(3) ABB
(4) Yaskawa
(5) Eaton-Cutler Hammer
(6) ITT PumpSmart PS200

WT 18. Sodium Hydroxide Metering Pumps
Approved Manufacturers/Products:

(1) Milton Roy
(2) US Filter/Wallace & Tiernan
(3) Pulsafeeder
(4) Prominent

WT 19. Sulfuric Acid Metering Pumps
Approved Manufacturers/Products:

(1) Milton Roy
(2) US Filter/Wallace & Tiernan
(3) Pulsafeeder
(4) Prominent

WT 20. Ammonia Feed Systems
Approved Manufacturers/Products:

(1) US Filter/Wallace & Tiernan
(2) Capital Controls

WT 21. Sodium Hypochlorite Metering Pumps
Approved Manufacturers/Products:

(1) Milton Roy
(2) US Filter/Wallace & Tiernan
(3) Pulsafeeder
(4) Prominent

WT 22. Chlorine Gas Feed Systems (Including Pressure Reducing Valves)
Approved Manufacturers/Products:

(1) US Filter/Wallace & Tiernan
(2) Capital Controls

WT 23. Lime Softening Treatment Units
Approved Manufacturers/Products:

(1) InFilco Degremont (Accelator)

WT 24. In-Line Static Mixers
Approved Manufacturers/Products:

(1) Komax Systems, Inc.
(2) Chemineer Company

WT 25. Air Compressors
Approved Manufacturers/Products:

(1) Quincy
(2) Ingersoll-Rand
(3) Kellogg-American

WT 26. Diesel Storage Tanks
Approved Manufacturers/Products:

(1) Con Vault
(2) Tramont Corp.
(3) Simplex
(4) Modern Welding

WT 27. Stationary Emergency Diesel Powered Generators (Skid mounted, larger than 240 KW)
Approved Manufacturers/Products:

(1) Caterpillar
(2) Cummins

WT 28. Motor Control Centers
Approved Manufacturers/Products:

(1) Cutler Hammer/Westinghouse
(2) General Electric
(3) Square D

WT 29. Electrical Switchgear
Approved Manufacturers/Products:

(1) Cutler Hammer/Westinghouse
(2) General Electric
(3) Square D
(4) Russ Electric

WT 30. Data Acquisition and Control Systems (Remote Telemetry Units)
Approved Manufacturers/Products:

(1) Curry Controls
(2) Engineer Service Corporation (ESC)

WT 31. Programmable Logic Controllers
Approved Manufacturers/Products:

(1) Allen-Bradley

WT 32. Flow Meters (Magnetic Type) (Ground rod required for transmitter)
Approved Manufacturers/Products:

(1) ABB
(2) Rosemount
(3) Krohne

WT 33. Flow Meters (Orifice Plate Type)
Approved Manufacturers/Products:

(1) Flow-Lin Corp.
(2) Tri-Flo Tech

WT 34. Flow Meters Ultrasonic In-Line Style)
Approved Manufacturers/Products:

(1) ABB
(2) Allen Bradley
(3) GE Panametrics
(4) Thermo Fisher Scientific

WT 35. Flow Meters (Venturi Type)
Approved Manufacturers/Products:

(1) Primary Flow Signal
(2) BIF
(3) ABB

WT 36. Pressure Sensing Transmitters
Approved Manufacturers/Products:

(1) Yokogawa
(2) Rosemount

WT 37. Ozone System Air Compressors
Approved Manufacturers/Products:

(1) Nash
(2) Ingersoll-Rand

WT 38. Ozone System Refrigerators/Dryers
Approved Manufacturers/Products:

(1) General Air
(2) DIV/PSB Industries

WT 39. Ozone System Desiccant Dryers
Approved Manufacturers/Products:

(1) General Air
(2) DIV/PSB Industries

WT 40. Ozone System Generators
Approved Manufacturers/Products:

(1) WEDECO
(2) Praxair—Trailigaz Ozone Compass
(3) Fuji Electric
(4) Ozonia

WT 41. Ozone System Off-gas Demister
Approved Manufacturers/Products:

(1) KochGlitsch
(2) Trailigaz

WT 42. Ozone System Pressure/Vacuum Relief Valves
Approved Manufacturers/Products:

(1) L&JTechnologies
(2) EmersonProcessManagement.

WT 43. Ozone System Destructor Units
Approved Manufacturers/Products:

(1) WEDECO
(2) Ozocan Corporation

WT 44. Ozone System Gas Blowers
Approved Manufacturers/Products:

(1) New YorkBlower
(2) Spencer Turbine Co.

WT 45. Ball Valves, PVC (Chemical Treatment Process)
Approved Manufacturers/Products:

(1) Asahi/America
(2) Hayward
(3) Plast-O-Matic

WT 46. Check Valves (Lever and Weight Type) AWWA C508
Approved Manufacturers/Products:

(1) APCO
(2) Georgia-Alabama Valve & Controls
(3) Val-Matic 7800 Series

WT 47. Stainless Steel Pipe and Fittings (Type 316L, Schedule 10S)
Approved Manufacturers/Products:

(1) Aerex Industries
(2) Douglas Brothers
(3) Felker Fabricators

WT 48. Oxygen Reduction Potential (ORP) Meter
Approved Manufacturers/Products:

(1) Yokogawa
(2) Rosemount
(3) HACH/GLI DRD1P5

WT 49. Conductivity Meter
Approved Manufacturers/Products:

(1) Yokogawa, SC402G
(2) Rosemount
(3) HACH/GLI 3422 Series

WT 50. PH-Meter Analyzer
Approved Manufacturers/Products:

(1) ECD (Electric Chemical Devices) Model T21 - Probe shall be sodium chemical resistant Model: 2005130VIT
(2) Yokogawa, PH402G
(3) Rosemount
(4) HACH SC 200 Controller with HACH/GLI DPD 1P1 Sensor

WT 51. Chlorine Residual Analyzer
Approved Manufacturers/Products:

(1) Prominent Model DICA WIC10002G010E
(2) HACH CL17 (withDPD)
(3) Chem Scan
(4) HACH CLT 10 (Reagentless)

WT 52. Online Dissolved Oxygen Meter
Approved Manufacturers/Products:

(1) Yokogawa
(2) Rosemount
(3) HACH LDO(0.1-20 ppm)
(4) HACH Orbisphere (ppb)

WT 53. Online Turbidity Meter
Approved Manufacturers/Products:

(1) HACH 1720E (0.001-100 NTU)
(2) HACH Filter Trak 660 (0.0005-5 NTU)

WT 54. Fluoride Analyzer
Approved Manufacturers/Products:

(1) Wallace and Tiernan (for pH up to 10)
(2) Prominent (for pH up to8.5)
(3) HACH CA 610 (for pH up to 10)

WT 55. Odor Control System
Approved Manufacturers/Products:

(1) New YorkBlowers
(2) HeilProcess Equipment
(3) US Filter/Siemens
(4) Indusco
(5) Ceilcote
(6) DuallDivision

WT 56. Stainless Steel Air/Vacuum Valve
Approved Manufacturers/Products:

(1) Vent-O-Mat (International Valve Marketing)

WT 57. Polymer Pump
Approved Manufacturers/Products:

(1) Wallace and Tiernan

WT 58. Polymer Mixer
Approved Manufacturers/Products:

(1) Cleveland EasternMixers
(2) Lightnin

WT 59. Hexametaphosphate Pump
Approved Manufacturers/Products:

(1) Wallace and Tiernan / Penwalt

WT 60. Corrosion Inhibitor Pump
Approved Manufacturers/Products:

(1) Milton Roy

WT 61. Alkalinity System
Approved Manufacturers/Products:

(1) Cal-Flo

WT 62. Carbon Dioxide System
Approved Manufacturers/Products:

(1) TOMCO2

WT 63. Fluoride Metering Pump
Approved Manufacturers/Products:

(1) Grundfos
(2) Milton Roy

WT 64. Ferric Metering Pump
Approved Manufacturers/Products:

(1) Milton Roy

WT 65. Ammonia Analyzer
Approved Manufacturers/Products:

(1) Chem Scan
(2) HACH APA6000 Ammonia/Mono CL

WT 66. Ion Exchange System
Approved Manufacturers/Products:

(1) Tonka Equipment Co.
(2) MIEX

WT 67. Chemical Tanks (fiberglass, high density cross linked polyethylene)
Approved Manufacturers/Products:

(1) Plas-TankIndustries Inc.
(2) PolyProcessing
(3) Snyder Industries, Inc.

WT 68. Pressure Control Valves (Sustaining, Reducing, Flow Rate)
Approved Manufacturers/Products:

(1) Keystone
(2) Control ValveTechnology
(3) Toro
(4) Cla-Val
(5) OCV ControlValves

WT 69. Sodium Hypochlorite Pump (Hose Pumps)
Approved Manufacturers/Products:

(1) Verderflex
(2) Bredel

WT 70. Deep Injection Well Tubing (Fiberglass Reinforced Plastic – FRP)
Approved Manufacturers/Products:

(1) Red Box by Future Pipe Industries

WT 71. Deep Injection Well Packer
Approved Manufacturers/Products:

(1) THS Retrievable Mechanical Packer by Texas Iron Works
(2) TAM International
(3) YBI Packer

WT 72. Sodium Hypochlorite Pump (Magnet Drive Centrifugal Pump)
Approved Manufacturers/Products:

(1) March
(2) PeriFloChemXFR

WT 73 Fluoride Transfer Pump (Magnet Drive Centrifugal Pump)
Approved Manufacturers/Products:

(1) March
(2) PeriFlo ChemXFR

WT 74. Production Wells Acid (Minimum 28% Hydrochloric Acid)
Approved Manufacturers/Products:

(1) Various

WT 75. Production Wells Screen (Stainless Steel Well Screen, V-Wire Wrap, Slot Size Varies by Well Site, Rated for 1500 Feet and Deeper.)
Approved Manufacturers/Products:

(1) Johnson

WT 76. Monitoring Wells Screen (2 inch Schedule 80 PVC with 0.010 inch Slots)
Approved Manufacturers/Products:

(1) Various

WT 77. Monitoring Wells Sand Pack (20/40 Grade Silica Sand – 98% Pure Silica Sand per ASTM D 5092-90)
Approved Manufacturers/Products:

(1) Various

WT 78. Monitoring Well Secondary Filter Pack (30/65 Grade Sand Seal)
Approved Manufacturers/Products:

(1) Various

WT 79. Monitoring Well Cement Grout (ASTM C 150 Type 1 Portland Cement)
Approved Manufacturers/Products:

(1) Various

WT 80. Monitoring Well Protective Riser (Painted Green, Locking 4" X 4" Square Aluminum Riser)
Approved Manufacturers/Products:

(1) Various

WT 81. Production Well Fast Closing Check Valve
Approved Manufacturers/Products:

(1) Val-Matic "Surge Buster"

WT 82. Electric Valve Actuators
Approved Manufacturers/Products:

A. Standardon-off Operation
(1) Rotork
(2) AUMA
(3) Limitorque/Flowserve

B. Precision Modulating Operation
(1) Harold Beck and Sons

WT 83. Scale Inhibitor with Fluorescing Tracer
Approved Manufacturers/Products:

(1) NALCO PermaTreat PC-191T
(2) American Water Chemicals, Inc.; AWC A-102 Plus

WT 84. Odor Scrubber Packing
Approved Manufacturers/Products:

(1) Jaeger Tri-Pack

WT 85. Well Level Transducer/Monitoring Well Probes
Approved Manufacturers/Products:

(1) Level/Temperature Sensors (Range 5- 1000 psi)
(a) IN-SITU INC: Aqua Troll 100

(2) Level/Temperature/Conductivity Sensors (Range 5-1000 psi)
(a) IN-SITU Inc.: Aqua Troll 200

(3) Level/Temperature Sensor (Range 13- 108 psi)
(a) IN-SITU Inc.: Rugged Troll 200

WT 86. Well Level Tapes and Meters
Approved Manufacturers/Products:

(1) In-situ Inc.: Rugged Water Level Tape

WT 87. RTU Radio (Well Field Applications)
Approved Manufacturers/Products:

(1) Microwave Data Systems MDS iNET9000ENI

WT 88. Flow Meter (Magnetic Type; Full Pipe Insertion Style)
Approved Manufacturers/Products:

(1) McCrometer FPI

WT 89. Submersible Mixing System (with Residual Control System
Approved Manufacturers/Products:

(1) PAX Water Technologies

1.7 WASTEWATER TREATMENT PLANT EQUIPMENT

ST 1. Fine Mechanical Screen
Approved Manufacturers/Products:

(1) Parkson
(2) Infilco Degremont

ST 2. Flume Meter
Approved Manufacturers/Products:

(1) Drexel.
(2) Primary Flow Signal (PFS)

ST 3. Grit Tank Equipment
Approved Manufacturers/Products:

(1) EIMCO.

ST 4. Grit Cyclones
Approved Manufacturers/Products:

(1) Krebs Engineers

ST 5. Grit Classifiers
Approved Manufacturers/Products:

(1) EIMCO
(2) Parkson

ST 6. Grit Blowers
Approved Manufacturers/Products:

(1) Gardner Denver

ST 7. Screening Press
Approved Manufacturers/Products:

(1) Parkson Corp.

ST 8. Sluice Gates (Stop Gates & Slide Gates)
Approved Manufacturers/Products:

(1) Davis Process
(2) Waterman Industries
(3) Dezurik
(4) Hydro Gate Corp.
(5) Plastic – Fab

ST 9. Blowers
Approved Manufacturers/Products:

(1) Gardner/Denver (Multi-stage)
(2) Turblex (Single-stage)

Note: "Premium Efficiency" Motors shall be used if available; electrical components and assemblies shall be UL Listed.

ST 10. Diffusers
Approved Manufacturers/Products:

(1) Siemens
(2) Parkson Corporation
(3) Aerostrip Corp.

ST 11. Alkaline Monitoring
Approved Manufacturers/Products:

(1) HACH APA6000 ALK

ST 12. Odor Control System
Approved Manufacturers/Products:

(1) Heil Process Equipment
(2) Siemens
(3) Duall Division
(4) Ceilcote
(5) Indusco

ST 13. Clarifier Mechanism
Approved Manufacturers/Products:

(1) EIMCO Process Equipment

ST 14. Low Solids Content Centrifugal Sludge Pump
Approved Manufacturers/Products:

(1) Ingersoll-Dresser (Flowserve)
(2) Goulds
(3) Gorman Rupp

ST 15. Aeriation Basin Aluminum Covers
Approved Manufacturers/Products:

(1) TEMCOR

ST 16. Chlorination Systems (Chlorine Gas Feed System)
Approved Manufacturers/Products:

(1) US Filter/Wallace & Tiernan
(2) Capital Control

ST 17. Evaporators
Approved Manufacturers/Products:

(1) Wallace & Tiernan
(2) Capital Control

ST 18. Injectors
Approved Manufacturers/Products:

(1) US Filter/Wallace & Tiernan
(2) Capital Control

ST 19. Rota Meters
Approved Manufacturers/Products:

(1) US Filter/Wallace & Tiernan
(2) Blue-White Industries. Ltd.

ST 20. Chlorine Scrubber
Approved Manufacturers/Products:

(1) Siemens
(2) Northeast Control

ST 21. Polymer Feed System
Approved Manufacturers/Products:

(1) Siemens

ST 22. Gravity Belt Thickener
Approved Manufacturers/Products:

(1) Andritz Ruthner, Inc.

ST 23. Belt Filter Press
Approved Manufacturers/Products:

(1) Andritz Ruthner, Inc.

ST 24. Strainers
Approved Manufacturers/Products:

(1) Amiad
(2) SP Kinney

ST 25. Digester Covers (Fixed/Floating)
Approved Manufacturers/Products:

(1) EIMCO

ST 26. Waste Gas Burner
Approved Manufacturers/Products:

(1) Varec Biogas
(2) Coen

ST 27. Hot Water Pump
Approved Products/Manufacturers:

(1) Goulds
(2) Grundfos Group

ST 28. High Solids Content Positive Displacement Sludge Pump
Approved Manufacturers/Products:

A. Progressing Cavity Pump
(1) Moyno/Robbins & Myers

B. Lobe Rotary Pump
(1) Vogelsang
(2) Lobe Pro
(3) Boerger

ST 29. Mechanical Sludge Mixer
Approved Manufacturers/Products:

(1) EIMCO
(2) Aeration Industries

ST 30. Boilers
Approved Manufacturers/Products:

(1) Clever Brooks

ST 31. Heat Exchangers
Approved Manufacturers/Products:

(1) Alfa Laval

ST 32. Grinders
Approved Manufacturers/Products:

(1) JWC Environment (Muffin Monster)
(2) Moyno/Robbins & Myers
(3) Vogelsang

ST 33. Gas Monitoring
Approved Manufacturers/Products:

(1) Mine Safety Appliance

ST 34. Reclaimed Water Effluent Disk Filtration
Approved Manufacturers/Products:

(1) Aqua Aerobics: Aquadisk
(2) Nova Water Technologies, LLC
(3) Kruger

ST 35. Reclaimed Water Distribution Pumps (Vertical, Turbine Style)
Approved Manufacturers/Products:

(1) Layne/Verti-Line
(2) Flowserve-Ingersoll-Dresser
(3) Peerless
(4) Goulds
(5) Flowserve

ST 36. Reclaimed Water Transfer Pumps (Horizontal, Split-Case Centrifugal Style)
Approved Manufacturers/Products:

(1) Flowserve-Ingersoll-Dresser
(2) Aurora
(3) Peerless

ST 37. Pressure Control Valves (Sustaining, Reducing, Flow Rate)
Approved Manufacturers/Products:

(1) Keystone
(2) Control Valve Technology
(3) Toro
(4) Cla-Val
(5) OCV Control Valves

ST 38. Electric Valve Actuators:
Approved Manufacturers/Products:

A. On-off Application
  (1) Rotork
  (2) Auma
  (3) Limitorque/Flowserve

B. Precision Modulating Operation
  (1) Harold Beck and Sons

ST 39. Ductile Iron Body Check Valves (AWWA)
Approved Manufacturers/Products:

(1) APCO
(2) Georgia-Alabama Valve & Controls
(3) Val-Matic

ST 40. High Efficiency Electric Pump Motors
Approved Manufacturers/Products:

(1) US Motors
(2) Reliance
(3) Marathon
(4) GE Water
(5) Teco Westinghouse

ST 41. Chemical Feed Pumps
Approved Manufacturers/Products:

(1) Prominent
(2) Siemens-Stranco

ST 42. Metering Pumps (Diaphragm Type)
Approved Manufacturers/Products:

(1) Milton Roy
(2) Prominent
(3) LMI

ST 43. Blowers
Approved Manufacturers/Products:

(1) New York Blower
(2) Air Cure Dynamics

ST 44. Vacuum Pumps
Approved Manufacturers/Products:

(1) Beckers Pumps Corp

ST 45. Submersible Sump Pump
Approved Manufacturers/Products:

(1) Zoelller M98-B

ST 46. Submersible Wastewater Pumps (NEC Class 1, Group D, Division 1, Compliant)
Approved Manufacturers/Products:

(1) Flygt
(2) WILO-EMU
(3) HOMA (up to 60 HP)

ST 47. Fire Protection Systems
Approved Manufacturers/Products:

(1) Fire Master Safety
(2) SimplexGrinnell
(3) Amerex Corp.
(4) Notifier

ST 48. Variable Frequency Drives
Approved Manufacturers/Products:

(1) ABB
(2) Allen Bradley
(3) Square D
(4) Yaskawa
(5) Cutler Hammer (Eaton)

ST 49. Programmable Logic Controllers
Approved Manufacturers/Products:

(1) Allen Bradley

ST 50. Remote Telemetry Units (PLC Based)
Approved Manufacturers/Products:

(1) Curry Controls
(2) Engineer Service Corp. (ESC)
(3) Atlantic Environmental Systems, Inc.
(4) CC Control
(5) Unitron
(6) Champion Control

ST 51. Level Control Switches
Approved Manufacturers/Products:

(1) Delta Controls Corp.
(2) Whitman Controls Corp.

ST 52. Level Indicators
Approved Manufacturers/Products:

(1) AMETEK Drexelbrook
(2) Miltronics, 7ML10161AA110AB
(3) Siemens
(4) Endress + Hauser

ST 53. Pressure Transmitters
Approved Manufacturers/Products:

(1) Rosemount
(2) Yokogowa
(3) Endress + Hauser

ST 54. Temperature Transmitters
Approved Manufacturers/Products:

(1) Fluid Components
(2) Yokogawa, YTA110
(3) Rosemount, 3144PD1A1E5B5M5
(4) HACH SC200 w/pH or ORP

ST 55. Ball Valves, PVC (Chemical Treatment Process)
Approved Manufacturers/Products:

(1) Asahi/America
(2) Hayward
(3) Plast-O-Matic

ST 56. Online Turbidity Meter
Approved Manufacturers/Products:

HACH 1720E (Low NTU)
HACH Surface Scatter 7 (High NTU)

ST 57. Generator Controls
Approved Manufacturers/Products:

(1) Russelectric

ST 58. Hose Pumps
Approved Manufacturers/Products:

(1) Verderflex
(2) Bredel

ST 59. Online Dissolved Oxygen Meter
Approved Manufacturers/Products:

(1) Hach LDO
(2) Royce

ST 60. Online Total Suspended Solids Meter
Approved Manufacturers/Products:

(1) Royce
(2) HACH Solitax TSS
(3) Cerlic

ST 61. Online Chlorine Analyzer
Approved Manufacturers/Products:

(1) Prominent
(2) HACH CL17
(3) HACH CLT

ST 62. Electric Switch Gear
Approved Manufacturers/Products:

(1) Cutler Hammer
(2) GE
(3) Square D
(4) Russelectric

ST 63. Harmonic Filter
Approved Manufacturers/Products:

(1) Square D

ST 64. Pinch Valve
Approved Manufacturers/Products:

(1) Red Valve

ST 65. Expansion Flexible Pipe Joints
Approved Manufacturers/Products:

(1) Red Valve

ST 66. PH Meter
Approved Manufacturers/Products:

(1) HACH/GLI DPD 1P1
(2) Prominent

ST 67. Chemical Tanks (fiberglass, high density cross linked polyethylene)
Approved Manufacturers/Products:

(1) Plas-Tank Industries,Inc.
(2) PolyProcessing
(3) Snyder Industries, Inc.

ST 68. Air/Vacuum Valves – Stainless Steel
Approved Manufacturers/Products:

(1) Vent-O-Mat – Series RGZX stainless steel

ST 69. Gear Drive for Clarifier
Approved Manufacturers/Products:

(1) SEW-Eurodrive

ST 70. Deep Injection Well Tubing (Fiberglass Reinforced Plastic – FRP)
Approved Manufacturers/Products:

(1) Red Box by Future Pipe Industries

ST 71. Deep Injection Well Packer
Approved Manufacturers/Products:

(1) THS Retrievable Mechanical Packer by Texas Iron Works
(2) TAM International
(3) YBI Packer

ST 72. Deep Injection Well Corrosion Inhibitor
Approved Manufacturers/Products:

(1) BARACOR 100 by Exxon

ST 73. Deep Injection Well Cement Grout (ASTM C150 Type II Portland Cement)
Approved Manufacturers/Products:

(1) Various

ST 74. Monitoring Wells Screen (2 inch Schedule 80 PVC with 0.010 inch Slots)
Approved Manufacturers/Products:

(1) Various

ST 75. Monitoring Wells Sand Pack (20/40 Grade Silica Sand – 98% Pure Silica Sand per ASTM D 5092-90)
Approved Manufacturers/Products:

(1) Various

ST 76. Monitoring Well Secondary Filter Pack (30/65 Grade Sand Seal)
Approved Manufacturers/Products:

(1) Various

ST 77. Monitoring Well Cement Grout (ASTM C 150 Type 1 Portland Cement)
Approved Manufacturers/Products:

(1) Various

ST 78. Monitoring Well Protective Riser (Painted Green, Locking 4" X 4" Square Aluminum Riser)
Approved Manufacturers/Products:

(1) Various

ST 79. Gas Monitoring – Portable Style
Approved Manufacturers/Products:

(1) Environmental Monitoring Systems (EMS)

ST 80. Sodium Hypochlorite Pump (Magnet Drive Centrifugal Pump)
Approved Manufacturers/Products:

(1) March
(2) PeriFloChemXFR

ST 81. Flow Meters Magnetic Type (IP-68 Rated for Submersible Service)
Approved Manufacturers/Products:

(1) ABB
(2) Rosemount
(3) Krohne

(**Note:** Flow meters used for account billing purposes must be compatible with PBCWUD's used AMR technology)

ST 82. Odor Scrubber Packing
Approved Manufacturers/Products:

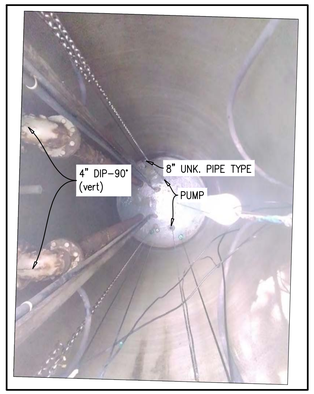
(1) Jaeger Tri-Pack

ST 83. Stationary Emergency Diesel Powered Generators (Skid mounted, larger than 240KW
Approved Manufacturers/Products:

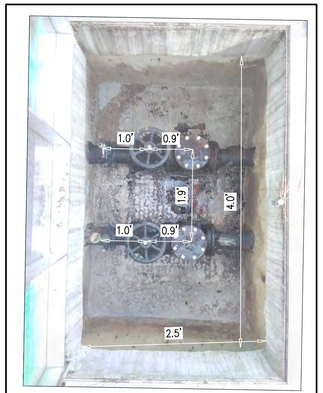
(1) Caterpillar
(2) Cummins

Appendix B

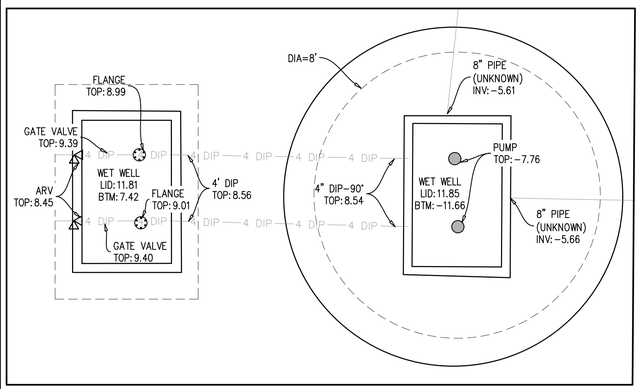
Survey (LS 637)



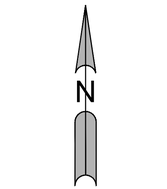
WET WELL
N.T.S.



VAULT
N.T.S.



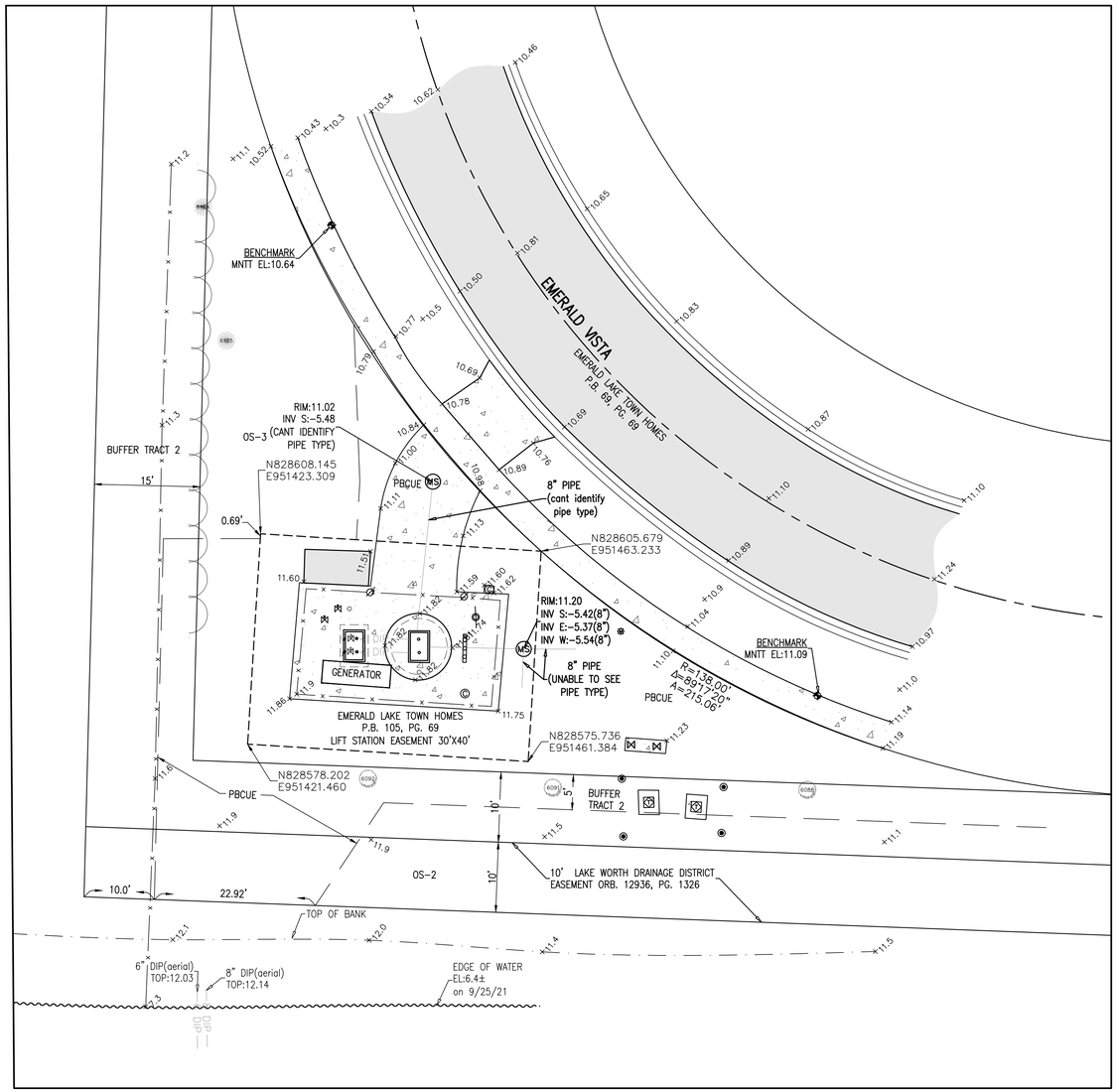
LIFT STATION
SCALE 1"=2'

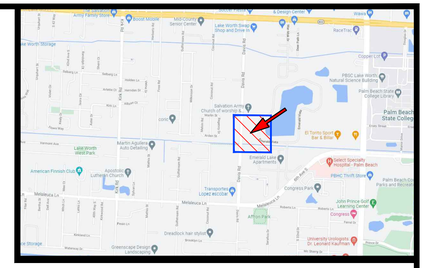


SCALE: 1" = 10'

TREE TABLE				
TREE #	D.B.H.	HEIGHT	CANOPY Ø	C.T.H.
6088	12"	14'	18'	–
6091	24"	20'	26'	–
6092	8"	14'	15'	–
6134	4"	25'	15'	–
6135	6"	30'	25'	–

LEGEND	
BENCHMARK	
BACKFLOW PREVENTER	
BOLLARD	
CLEANOUT	CO
CONTROL PANEL	
GAS VALVE	
GATE POST	Ø
MANHOLE SANITARY	MS
SEWER VALVE	
TRANSFORMER	
WATER VALVE	
PINE TREE(X"-DBH)	
UNKNOWN TREE(X"-DBH)	
HEDGES	
FENCE-CHAINLINK	— x —
ASPHALT	
CONCRETE	





VICINITY MAP
NOT TO SCALE

SURVEY REPORT:

1. THIS IS A TOPOGRAPHIC SURVEY, PREPARED IN ACCORDANCE WITH THE APPLICABLE PORTIONS OF THE STANDARDS OF PRACTICE SET FORTH IN RULE 5J-17.051 THROUGH 5J-17.053, FLORIDA ADMINISTRATIVE CODE.

   THE FIELD WORK WAS COMPLETED ON SEPTEMBER 25, 2021.

2. THE SURVEY WAS BASED ON EMERALD LAKE TOWNHOMES, PLAT BOOK 105, PAGE 69.

3. BEARINGS ARE BASED ON N01°26'32"E GRID ALONG THE NORTH LINE OF THE PLAT, EMERALD LAKE TOWNHOMES, PLAT BOOK 105, PAGE 69.

4. THE LIFT STATION PARCEL IS DEDICATED ON THE PLAT OF EMERALD LAKE TOWNHOMES, PLAT BOOK 105, PAGE 69.

5. AREA OF LIFT STATION PARCEL: 1,200 SQUARE FEET.

6. THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF A TITLE COMMITMENT.

   NO SEARCH OF THE PUBLIC RECORDS HAS BEEN PERFORMED BY BROWN & PHILLIPS, INC.

   THERE MAY BE ADDITIONAL EASEMENTS AND/OR RESTRICTIONS NOT SHOWN ON THIS SURVEY THAT MAY BE FOUND IN THE PUBLIC RECORDS OF PALM BEACH COUNTY.

7. SOME TOPOGRAPHIC FEATURES MAY BE EXAGGERATED IN SCALE FOR CLARITY. THE CENTER OF THE SYMBOL OF SUCH FEATURES IS THE CORRECT LOCATION.

8. NO UNDERGROUND UTILITIES OR FOUNDATIONS WERE LOCATED.

9. ELEVATIONS SHOWN HEREON ARE IN NORTH AMERICAN VERTICAL DATUM OF 1988, AND ARE REFERENCED TO PALM BEACH COUNTY BENCHMARK XXXXXXXX, ELEVATION=XX.XXX.

10. +10.0 DENOTES SPOT ELEVATION, REFERENCED TO NORTH AMERICAN VERTICAL DATUM OF 1988.

11. THE CONTRACTED PURPOSE OF THIS SURVEY IS LIFT STATION REHABILITATION.

    THIS SURVEY IS NOT VALID FOR ANY OTHER USE.

12. ADDITIONS OR DELETIONS TO SURVEY MAPS OR REPORTS BY OTHER THAN THE SIGNING PARTY OR PARTIES IS PROHIBITED WITHOUT WRITTEN CONSENT OF THE SIGNING PARTY OR PARTIES.

13. THIS SURVEY WAS PREPARED FOR THE PARTIES LISTED BELOW AND IS NOT ASSIGNABLE:
    -MOCK ROOS & ASSOCIATES INC.
    -PALM BEACH COUNTY WATER UTILITIES DEPARTMENT

    THE USE OF THE DATA SHOWN HEREON BY ANY OTHER PARTY (SHALL BE AT THE RISK OF THE USER)

14. THIS MAP IS INTENDED TO BE DISPLAYED AT A SCALE OF 1"=10', ON A 24"x 36" SHEET.

15. FLOOD ZONE INFORMATION OBTAINED FROM PALM BEACH COUNTY WEBSITE:
    "http://maps.co.palm-beach.fl.us/cwgis/?app=floodzones";
    CURRENT FLOOD ZONE: "X"

16. © COPYRIGHT 2021 BY BROWN & PHILLIPS, INC.
    REPRODUCTIONS OF THIS SURVEY ARE NOT VALID WITHOUT THE ORIGINAL SIGNATURE AND STAMP, OR A DIGITALLY VERIFIED ELECTRONIC SIGNATURE AND SEAL, OF A FLORIDA LICENSED SURVEYOR AND MAPPER EMPLOYED BY BROWN & PHILLIPS, INC.

ABBREVIATIONS:

P.B. – PLAT BOOK
ORB – OFFICIAL RECORD BOOK
D.B. – DEED BOOK
PG. – PAGE
R/W – RIGHT-OF-WAY
R – RADIUS
Δ – CENTRAL ANGLE
A – ARC LENGTH
U.E. – UTILITY EASEMENT
D.E. – DRAINAGE EASEMENT
(P) – PLAT DIMENSION
U/C – UNDER CONSTRUCTION
WM – WATER MAIN
GPS – GLOBAL POSITIONING SYSTEM
RTK – REAL TIME KINEMATIC
TOW – TOP OF WALL
INV – INVERT
(D) – DEED DIMENSION
(M) – MEASURED DIMENSION
℄ – CENTERLINE
IR – IRON ROD
IR/C – IRON ROD WITH CAP AS NOTED
N/D – NAIL & DISK
PK – PARKER KALON
NAD – NORTH AMERICAN DATUM
LB – LICENSED BUSINESS
DIP – DUCTILE IRON PIPE
EL. – ELEVATION
L.A.E.– LIMITED ACCESS EASEMENT

BROWN & PHILLIPS, INC.
PROFESSIONAL SURVEYING SERVICES
CERTIFICATE OF AUTHORIZATION # LB 6473
1860 OLD OKEECHOBEE ROAD, SUITE 509, WEST PALM BEACH, FLORIDA 33409 561-615-3988

DATE	REVISIONS	#
1/18/22	MRA COMMENTS	1

SKETCH OF TOPOGRAPHIC SURVEY

LIFT STATION 637
EMERALD VISTA
WEST PALM BEACH, FLORIDA

DRAWN: AB
CHECKED: JEP
F.B.PBCO WUD LS
PAGES: 32 & 33

PROJ. No. 21-082
SCALE: 1"=10'
DATE: NOV. 2021
SHEET 1 of 1

JOHN E. PHILLIPS III
PROFESSIONAL LAND SURVEYOR
STATE OF FLORIDA No. 4826
DATE: _____

Appendix C

Geotechnical Report (LS 637)

March 1, 2022

Attention: Mr. John Cairnes, P.E.
Mock, Roos & Associates, Inc.
5720 Corporate Way
West Palm Beach, Florida 33407

Re: Report of Geotechnical Engineering Services
Lift Station Rehabilitation
Palm Beach County, Florida
PBC WUD No.: 21-021
PACIFICA Project No.: 320-21060

Dear Mr. Cairnes:

Pacifica Engineering Services, LLC. (PACIFICA) has completed a geotechnical engineering study for the above-referenced project. The scope of geotechnical services was completed in general accordance with Work Order No. 1 for Professional Services between Mock, Roos & Associates, Inc. and PACIFICA, dated June 21, 2021. Authorization to proceed was given via email on February 10, 2022.

PACIFICA appreciates the opportunity to provide geotechnical engineering services on this project and look forward to an opportunity to participate in construction related aspects of the development. If you have any questions or should additional information be required, please do not hesitate to contact our office at (561) 419-8460.

Sincerely,

Pacifica Engineering Services
Florida Certification of Authorization License No. 32328



Riley O'Brien, P.E.
Director, Geotechnical Engineering
FL License No. 82457

TABLE OF CONTENTS

1.0 GENERAL PROJECT INFORMATION 1

2.0 GEOTECHNICAL EXPLORATION 2

2.1 GEOTECHNICAL BORINGS 2
2.2 SUBSURFACE & GROUNDWATER CONDITIONS 2

3.0 GEOTECHNICAL CLASSIFICATION 2

4.0 GENERAL SOIL INFORMATION 3

5.0 REPORT LIMITATIONS 3

APPENDIX:

Sheet 1: Site Vicinity Map
Sheets 2 thru 31: Boring Location Plans
Boring Logs

1.0 GENERAL PROJECT INFORMATION

The project includes thirty (30) various lift stations in Palm Beach County, Florida. PACIFICA was provided surveys for each lift station that showed the general location. A list of each lift Station and corresponding zones are shown in Table 1 below. A site vicinity map is shown on Sheet 1 of the Appendix and shows the approximate locations of the lift stations.

TABLE 1: ZONE AND LIFT STATION NUMBERS

Zone Number	Lift Station Number
2	210
	273
	275
	554
	363
	277
	289
	343
	354
	358
	541
	543
	556
	558
	568
	580
	589
	595
	597
	614
	615
	637
5	4109
	4125
	4129
	4141
	4142
	4143
	4145
	4146

PACIFICA was requested to provide general soil information for this lift station rehabilitation project. Therefore, no engineering was performed by our office. The information in this report corresponds to the soils encountered at the depths and locations indicated.

If any of the information in this report is incorrect or has changed, please notify PACIFICA so that the soils information presented in this report may be checked. PACIFICA will not be held responsible if not given the opportunity to check the soils information once final designs have been completed.

2.0 GEOTECHNICAL EXPLORATION

2.1 Geotechnical Borings

Thirty (30) Standard Penetration Test (SPT) geotechnical borings were performed to assess the subsurface conditions. The borings were advanced to a depths of 10 feet below existing site grades at the time of the geotechnical exploration. Boring location plans for each lift station can be found in the Appendix section of this report.

The SPT borings were performed using a CME-55 truck mounted geotechnical drilling rig equipped with an automatic hammer utilizing mud rotary drilling techniques. The SPT samples were collected continuously in the upper 10 feet and at 5-foot intervals thereafter until final boring depths were reached.

After the samples were collected in the split barrel sampler they were bagged, labeled and transported back to the laboratory for description and limited testing. After the geotechnical borings were completed, they were backfilled using access auger cuttings and the ground surface was generally leveled.

2.2 Subsurface & Groundwater Conditions

The individual logs included in the Appendix shows the various soil types and stratifications at each lift station. The transition between soil strata may be gradual and not as definitive as it appears on the logs. If the contractor cannot determine the soil stratum during construction the geotechnical engineer should be consulted.

Groundwater was encountered at depths of 1.3 to 8.8 feet below existing grade at the time of the geotechnical exploration. The groundwater table may vary due to the differences in elevation between the lift stations. The groundwater table may also vary due to rainfall, runoff, droughts or the infiltration rate of the soil and therefore the contractor should verify the groundwater table prior to construction.

3.0 GEOTECHNICAL CLASSIFICATION

The soil samples collected from the geotechnical borings were taken back to the laboratory and visually reviewed by a geotechnical engineer. The soil samples were classified using the Unified Soil Classification System (USCS) in general accordance with the American Society of Testing and Materials (ASTM) test designation D2487.

4.0 GENERAL SOIL INFORMATION

General soil information for each lift station is provided on the individual boring logs located in the Appendix section of this report. It should be noted that weight of hammer "WOH" sands were encountered in lift stations LS-273, LS-275, LS-277, LS-343, LS-358, LS-543, LS-554 and LS-558. Emphasis should be placed on LS-554 due to WOH sands being present from 4 to the termination depth of 10 feet.

SPT N Value or Blow Count, as described in ASTM D 1586, is a value that is correlated to the densification of the sands encountered. Weight of hammer means that the when the weight of the hammer was applied to the drilling rod, the split spoon sampler was pushed 6 inches into the sands at the respective depth. Therefore, not requiring any blows from the hammer to advance the split spoon sampler into the subsurface. These sands are very loose and can cause excessive settlements if loads are placed atop. These WOH sands may be in-situ or be uncompacted fill materials used for utility backfill. The designer should use caution when assessing these lift stations for settlements due to loads. If additional soil parameters are required, then PACIFICA should be contacted in order to revise the information in this report.

5.0 REPORT LIMITATIONS

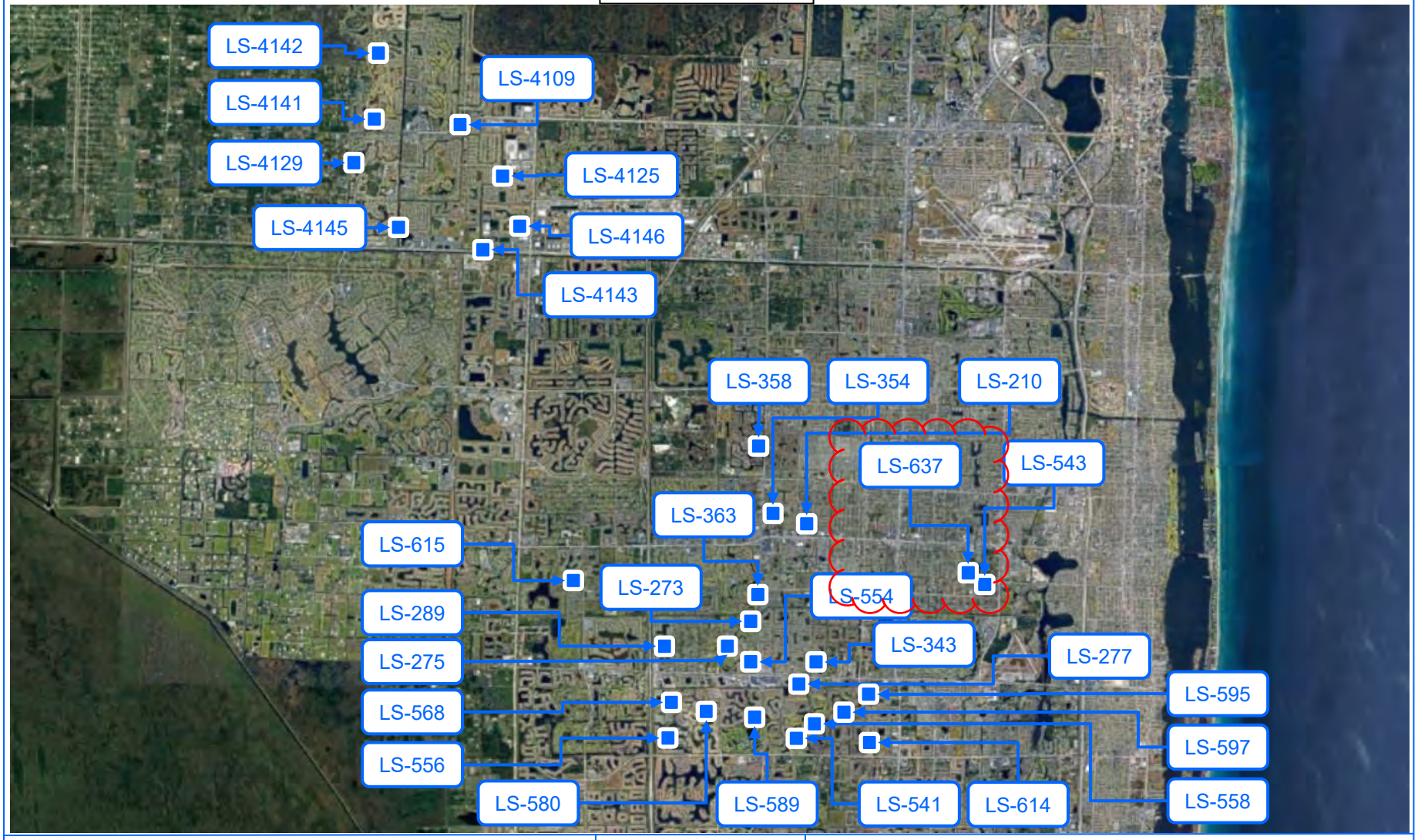
These geotechnical engineering services have been performed, findings obtained, and information prepared in accordance with generally accepted geotechnical engineering principles and practices at the time of this report. PACIFICA is not responsible for the conclusions, opinions or recommendations made by others based on this data. No other warranties are implied or expressed.

After the plans and specifications are complete, PACIFICA should be provided the opportunity to review the final design and specifications, in order to verify that the soils information is properly interpreted and implemented. At that time, it may be necessary to submit supplemental information. If PACIFICA is not afforded the opportunity to participate in construction related aspects, we can accept no responsibility for the interpretation of information provided in this report.

The scope of investigation was intended to evaluate soil conditions within the influence of the requested locations at the respective lift stations. The information submitted in this report are based upon the data obtained from the soil borings performed at the requested locations indicated. If any subsoil variations become evident during the course of this project, a re-evaluation of the information contained in this report will be necessary after we have had an opportunity to observe the characteristics of the conditions encountered. The applicability of the report should also be reviewed in the event significant changes occur in the design, nature or location of the proposed construction activities. The scope of our services did not include an environmental assessment for the presence or absence of hazardous or toxic materials in the soil and groundwater. Any statements in this report regarding odors, staining of soils, or other unusual conditions observed are strictly for the information of our client.

This report has been prepared for the exclusive use of Mock, Roos & Associates, Inc. and their design consultants for the respective lift stations located in Palm Beach County, Florida.

SITE VICINTY MAP



GEOTECHNICAL ENGINEERING SERVICES
Lift Station Rehabilitation
Palm Beach County, Florida

DATE: 03/01/2022

DRAWN: RO

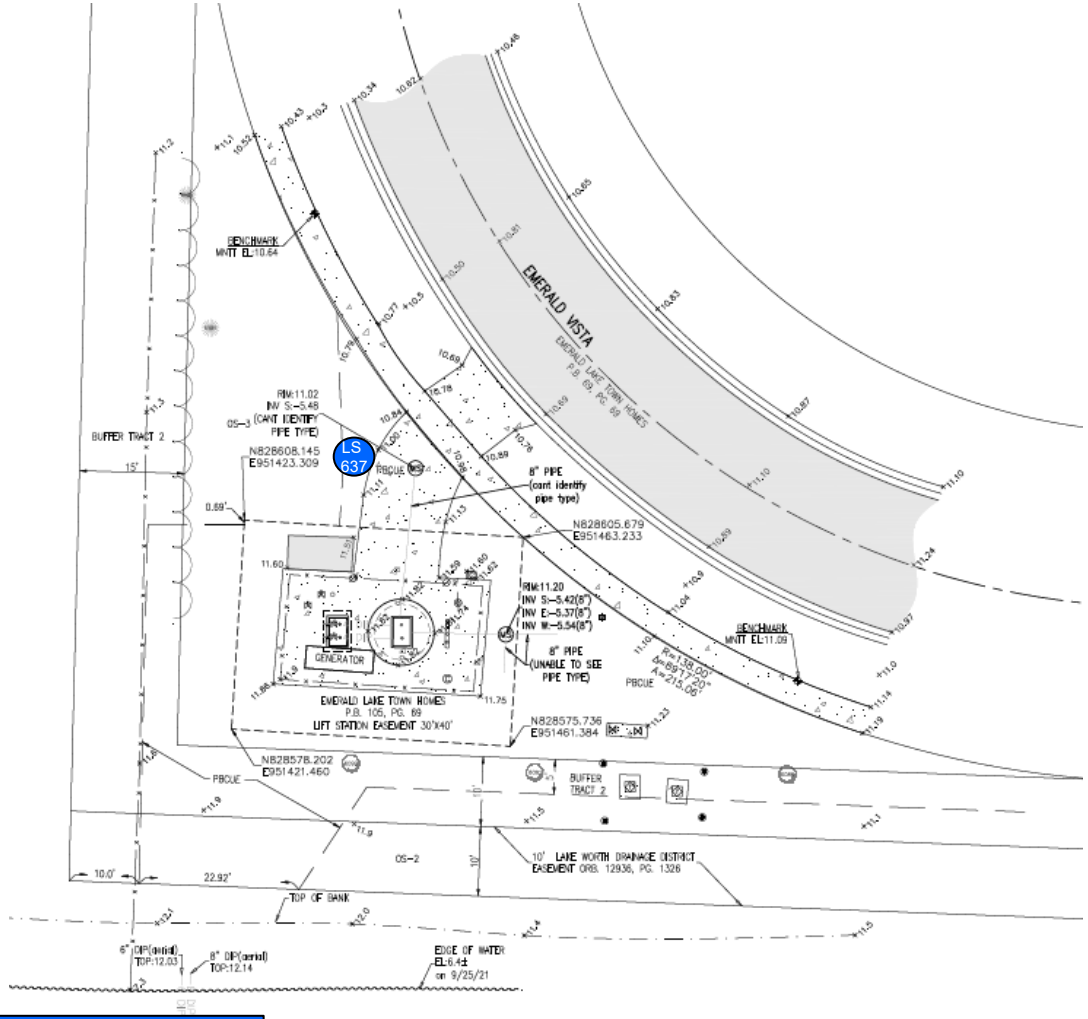
SHEET NO.: 1

PACIFICA Project No: 320-22075
WUD Project No.: 21-021

CHKD: WF

PACIFICA ENGINEERING SERVICES

BORING LOCATION PLAN – LIFT STATION 637



LS ### **Approximate SPT Boring Location**

GEOTECHNICAL ENGINEERING SERVICES Lift Station Rehabilitation Palm Beach County, Florida		DATE: 03/01/2022 DRAWN: RO
SHEET NO.: 23	PACIFICA Project No: 320-22075 WUD Project No.: 21-021	CHKD: WF

PACIFICA ENGINEERING SERVICES

Test Boring Log

Client	**Mock, Roos & Associates, Inc.**	Boring No.	**LS-637**
Project	Lift Station Rehabilitation WUD 21-021	Date Started	3/1/2022
Boring Location	See Boring Location Plan	Date Completed	3/1/2022
Elev. Ref.	N/A	Project No.	320-22075
Remarks	The stratification lines represent approximate boundaries.	Sheet No.	1 of 1
	The transition may be gradual.	Ground Water Depth	4.9 feet

ELEV. (ft)	Depth (ft)	Graphic Log	DESCRIPTION OF MATERIALS	SAMPLE No.	Type	USCS Classification	Blows	REC-OVERY	REC %	SPT N. Value
	0.0									
	2.0		Brown to Dark Brown Fine SAND with Trace Roots, Shells and Limerock	1		SP	4-4-3-4			7
	4.0			2			4-3-4-3			7
▼	6.0		Brown to Dark BrownFine SAND with Shells	3		SP	2-1-3-5			4
	8.0			4			5-5-4-4			9
	10.0			5			2-1-1-1			2
			Boring Terminated at 10.0 feet							

General Notes

Driller:	JC
Hammer Type:	Automatic
Rig Type	CME-55
Drilling Method	SPT

PACIFICA ENGINEERING SERVICES
601 North Congress Avenue - Suite 303 | Delray Beach, Florida 33445
(561) 419-8460

SPT Split Spoon Sampler
▼ Groundwater at Time of Drilling
WOH= Weight of Hammer

Appendix D

Utility Locates (LS 637)

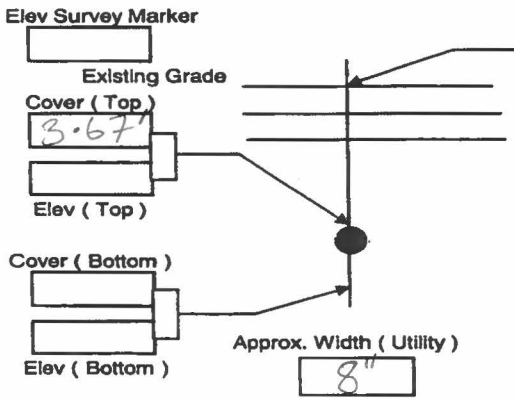
TEST HOLE DATA REPORT

BARNES, FERLAND AND ASSOCIATES, INC.

BFA JOB NO: **2021-05.1**	DATE DUG: **6/22/2022** TIME: AM/(PM)
PROJECT NAME: P.B.C. LS Rehab 1 L.S. # 637	FORM BY: **H.Wynter** TEST HOLE: # 88
PROJECT LOCATION: EMERALD VISTA	FIELD BOOK: PAGE:
CLIENT: **Mock Roos**	WEATHER:
CREW INTIALS: **H.W./C.B.**	OUTSIDE DIAMETER & TYPE OF UTILITY FOUND:
UTILITY REQUESTED: FORCE MAIN	(1) 8" DUCTILE IRON PIPE
SSOCF TICKET #:	UTILITY CONDITION: (GOOD) FAIR POOR OTHER_____
MARKED/(UNMARKED)	STATION/POINT ID: # 88
NAME OF UTILITY COMPANY:	NORTHING: 828578.737
	EASTING: 951416.968
GROUND COVER/SOIL CONDITION:	ELEVATION: 12.168
(GRASS) CONCRETE ASPHALT GRAVEL	VERTICAL DATUM:

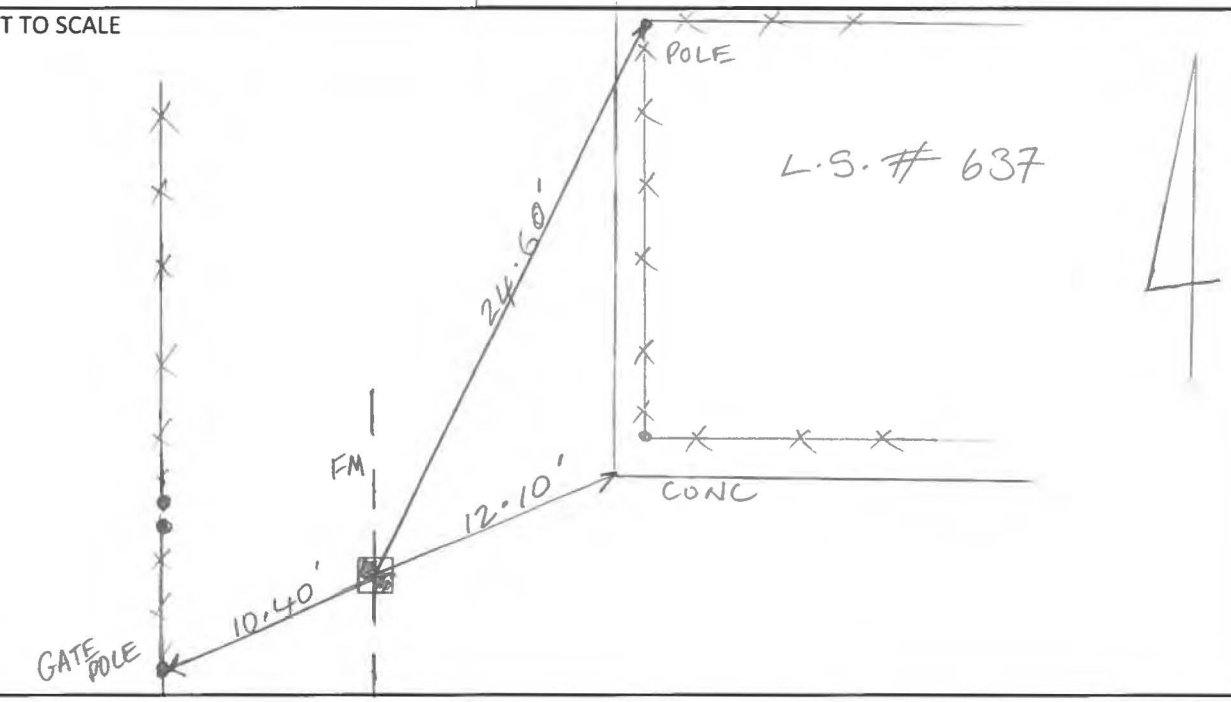
NOTE:
SET HUB DIRECTLY OVER AND INLINE WITH UTILITY. ALL MEASUREMENTS TAKEN TO THE HUNDRETH IN SURVEY FEET.

SWING TIE MEASUREMENTS:
1 CHAIN LINK FENCE POLE : 24.60'
2 " " " GATE POLE: 10.40'
3 EDGE OF CONC. P.I. : 12.10



NOTES: FOUND (1) 8" DUCTILE IRON PIPE FORCE MAIN
T.C. - 3.67'

SKETCH: NOT TO SCALE



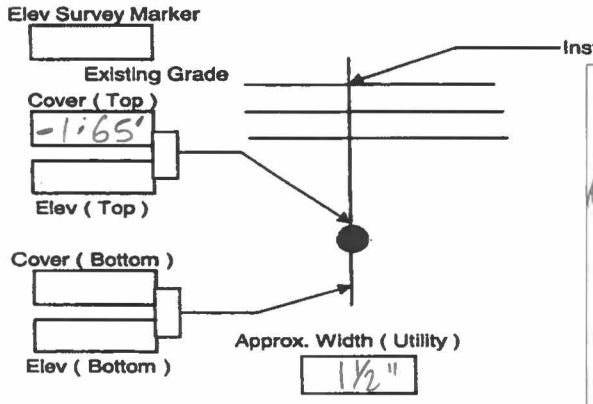
TEST HOLE DATA REPORT

BARNES, FERLAND AND ASSOCIATES, INC.

BFA JOB NO: **2021-05.1**	DATE DUG: **6/22/2022** TIME: AM/(PM)
PROJECT NAME: P.B.C. LS Rehab 1 L.S#637	FORM BY: **H.Wynter** TEST HOLE: #89
PROJECT LOCATION: EMERALD VISTA	FIELD BOOK: PAGE:
CLIENT: **Mock Roos**	WEATHER:
CREW INTIALS: **H.W./C.B.**	OUTSIDE DIAMETER & TYPE OF UTILITY FOUND:
UTILITY REQUESTED: WATER LINE	(1) 1½" WHITE P.V.C W.L.
SSOCF TICKET #:	UTILITY CONDITION: (GOOD) FAIR POOR OTHER_____
MARKED/(UNMARKED)	STATION/POINT ID: #89
NAME OF UTILITY COMPANY:	NORTHING: 828600.703
	EASTING: 951455.973
GROUND COVER/SOIL CONDITION:	ELEVATION: 11.777
GRASS CONCRETE ASPHALT GRAVEL	VERTICAL DATUM:

NOTE:
SET X-CUT DIRECTLY OVER AND INLINE WITH UTILITY. ALL MEASUREMENTS TAKEN TO THE HUNDRETH IN SURVEY FEET.

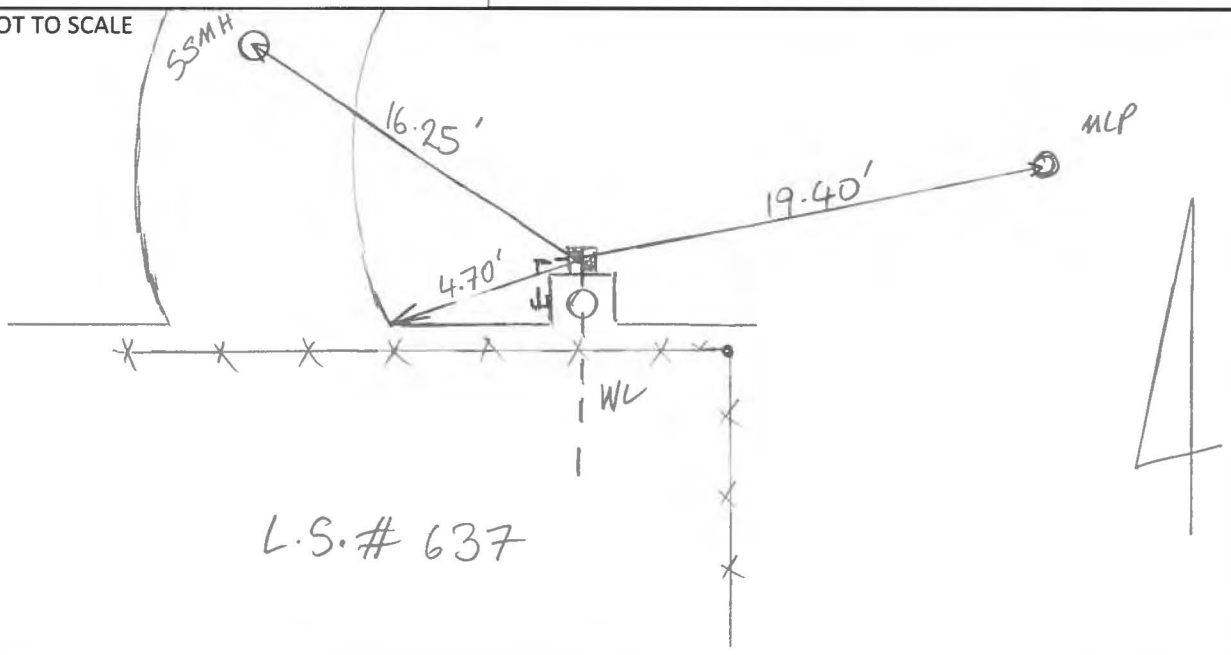
SWING TIE MEASUREMENTS:
1 METAL LIGHT POLE: 19.40'
2 SANITARY SEWER MANHOLE: 16.25'
3 EDGE OF CONC. (P.C.): 4.70'



Installed: Hub, PK or (X Cut) at existing grade of ground level

NOTES: FOUND (1) 1½" WHITE P.V.C WATER LINE T.C. - 1.65. WATER LINE MAKES TWO 90° THEN GO BACK TOWARD THE LIFT STATION THEN 90° IN THE GROUND

SKETCH: NOT TO SCALE



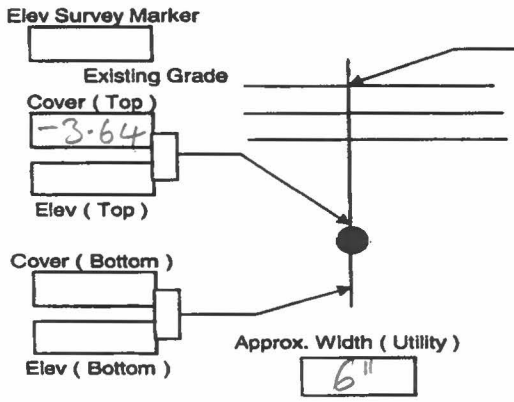
TEST HOLE DATA REPORT

BARNES, FERLAND AND ASSOCIATES, INC.

BFA JOB NO: **2021-05.1**	DATE DUG: **6/22/2022** TIME: AM/(PM)
PROJECT NAME: P.B.C. LS Rehab 1 L.S.# 637	FORM BY: **H.Wynter** TEST HOLE: # 90
PROJECT LOCATION: EMERALD VISTA	FIELD BOOK: PAGE:
CLIENT: **Mock Roos**	WEATHER:
CREW INTIALS: **H.W./C.B.**	OUTSIDE DIAMETER & TYPE OF UTILITY FOUND:
UTILITY REQUESTED: WATER LINE	(1) 6" DUCTILE IRON PIPE W.L.
SSOCF TICKET #:	UTILITY CONDITION: (GOOD) FAIR POOR OTHER_____
MARKED/(UNMARKED)	STATION/POINT ID: # 90
NAME OF UTILITY COMPANY:	NORTHING: 828579.110
	EASTING: 951466.057
GROUND COVER/SOIL CONDITION:	ELEVATION: 11.950
(GRASS) CONCRETE ASPHALT GRAVEL	VERTICAL DATUM:

NOTE:
SET HUB DIRECTLY OVER AND INLINE WITH UTILITY. ALL MEASUREMENTS TAKEN TO THE HUNDRETH IN SURVEY FEET.

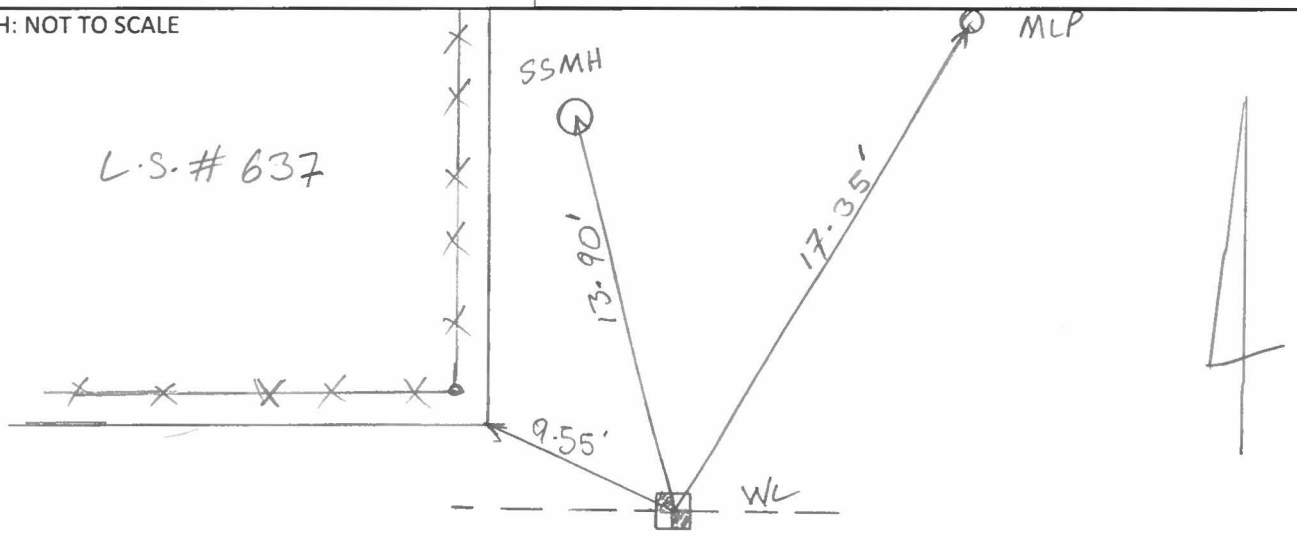
SWING TIE MEASUREMENTS:
1 METAL LIGHT POLE : 17.35
2 SANITARY SEWER MANHOLE: 13.90'
3 EDGE OF CONC. P.I. : 9.55'



Installed: (Hub,) PK or X Cut at existing grade of ground level

NOTES: FOUND (1) 6" DUCTILE IRON PIPE WATER LINE T.C. - 3.64'

SKETCH: NOT TO SCALE



Appendix E

Survey for LS 980, LS 981 and LS 1051

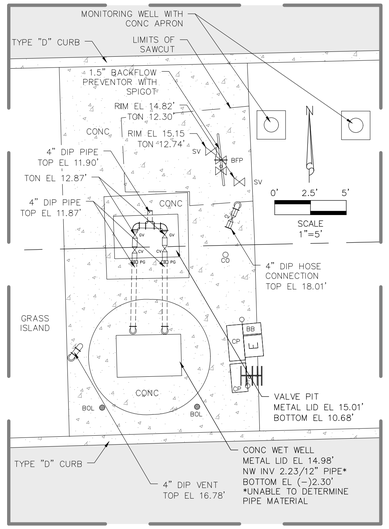
TOPOGRAPHIC SURVEY

FOR: HOLTZ CONSULTING ENGINEERS, INC.

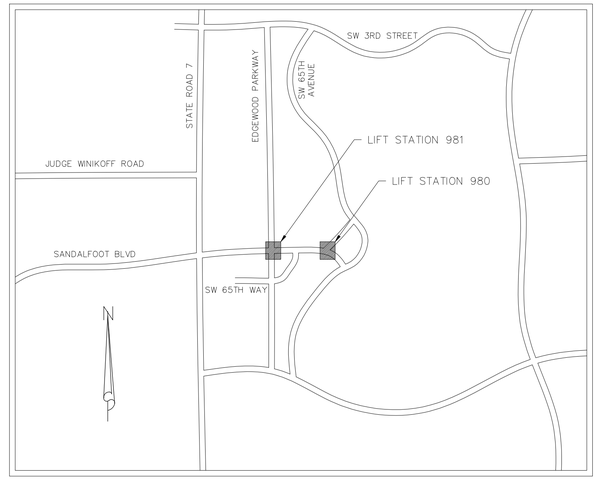
LOCATED IN: SECTION 30, TOWNSHIP 47 SOUTH, RANGE 42 EAST
PALM BEACH COUNTY, FLORIDA

REPORT OF SURVEY:

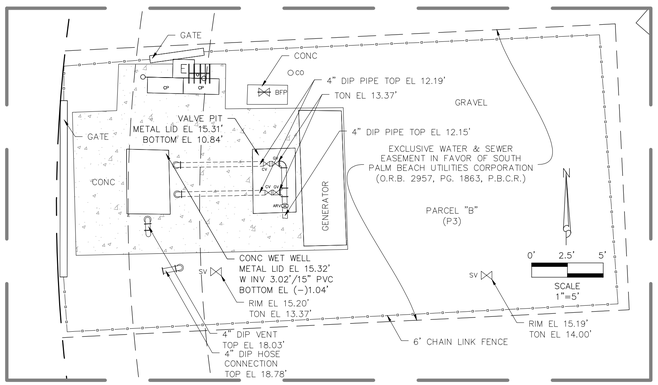
1. The survey depicted hereon has been classified as a Topographic Survey, as defined in Rule 5J-17.050 of the Florida Administrative Code, pursuant to Chapter 472.027, Florida Statutes as amended.
2. This survey has been prepared in the office of Dennis J. Leavy & Associates, Inc. located at: 460 Business Park Way, Suite B, Royal Palm Beach, Florida, whose certificate of authorization number is LB #6599, and the certifying surveyor's (David A. Bower) license number is LS #5888.
3. The survey sketch shown hereon does not necessarily contain all of the information obtained or developed by the undersigned surveyor in his field work, office work, or research.
4. THIS IS NOT A BOUNDARY SURVEY
5. This survey does not address environmental matters, jurisdictional boundaries or hazardous waste concerns should any of the foregoing exist.
6. The elevations shown hereon are for the purpose of indicating the ground elevation only at the position shown and in no way indicate elevations at any other point than shown hereon and do not determine sub surface conditions.
7. The undersigned makes no representations or guarantees as to the information reflected hereon pertaining to easements, rights of way, setback lines, agreements and other matters, and further, this instrument is not intended to reflect or set forth all such matters. Such information should be obtained and confirmed by others through appropriate title verification. Lands shown hereon were not abstracted for rights of way and/or easements of record.
8. This survey does not meet those standards established by the American Land Title Association.
9. Underground apparent use and/or improvements have not been shown unless otherwise noted.
10. This instrument may not be reproduced in part or whole without the written consent of Dennis J. Leavy & Associates Inc.
11. Date of field survey: November 11th, 2021, as recorded in Field Book 513, Pages 51 through 54 and 77 through 80.
12. This survey lies in Section 30, Township 47 South, Range 42 East, Palm Beach County, Florida.
13. By graphic plotting only the subject property lies within Zone X and Zone AO (Depth 1'), as shown on the U.S. Department of Homeland Security Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map, Map Number: 12099C1155F, Community: Palm Beach County, Number: 120192, Panel 1155, Suffix: F, Effective date: October 5, 2017.
14. In some instances, graphic representations have been exaggerated to more clearly illustrate relationships between physical improvements and/or lot lines. In all cases, dimensions shown shall control the location of the improvements over scaled positions.
15. Measurements shown hereon are expressed in feet and decimal parts thereof unless otherwise noted.
16. All dates shown within the revision block hereon are for interoffice filing use only, and in no way affect the date of the field survey stated herein.
17. Benchmarks of Origin: Palm Beach County Benchmarks "HUMPHREY" and "FARGO" whose published elevations are 15.936' and 21.971' respectfully, based on the North American Vertical Datum of 1988.
18. Elevations referenced hereon are based on the North American Vertical Datum of 1988 (NAVD 88).



EXISTING LIFT STATION NO. 981 DETAIL
DETAIL SCALE: 1"=5'



LOCATION MAP
NOT TO SCALE



EXISTING LIFT STATION NO. 980 DETAIL
DETAIL SCALE: 1"=5'

SYMBOL LEGEND:

	90° HORIZONTAL BEND
	90° VERTICAL BEND
ARV	AIR RELIEF VALVE
	ANTENNA
	BACKFLOW PREVENTOR
	BENCHMARK
BOL	BOLLARD
	BUSH WITH FOLIAGE DIAMETER
	CATCH BASIN
	CENTERLINE
CV	CHECK VALVE
CO	CLEAN OUT
COM	COMMUNICATION HANDHOLE
	CONCRETE POWER POLE
E	ELECTRIC METER
	FIRE HYDRANT
GAS	GAS VALVE
GV	GATE VALVE
M	MAILBOX
	METAL LIGHT POLE
x"	PALM WITH TRUNK DIAMETER
	POWER POLE ANCHOR
PG	PRESSURE GAUGE
SHH	SANITARY HANDHOLE
S	SANITARY MANHOLE
SV	SANITARY VALVE
SV	SANITARY VALVE WITH CONCRETE APRON
	SIGN
	SPIGOT
	TEE
x"	TREE WITH TRUNK DIAMETER
W	WATER METER
	WATER VALVE

LEGEND:

ASPH	ASPHALT
BPM	BLUE PAINT MARKS
CMP	CORRUGATED METAL PIPE
CONC	CONCRETE
DIP	DUCTILE IRON PIPE
E	EAST
EL	ELEVATION
FPL	FLORIDA POWER & LIGHT
GPM	GREEN PAINT MARKS
INV	INVERT
LAE	LIMITED ACCESS EASEMENT
LB	LICENSED BUSINESS
LS	LICENSED SURVEYOR
LSA	LANDSCAPED AREA
N	NORTH
NAVD	NORTH AMERICAN VERTICAL DATUM
NGVD	NATIONAL GEODETIC VERTICAL DATUM
O.R.B.	OFFICIAL RECORDS BOOK
OHW	OVERHEAD WIRE
OPM	ORANGE PAINT MARKS
P.B.C.R.	PUBLIC RECORDS OF PALM BEACH COUNTY
PCN:	PARCEL CONTROL NUMBER
PG.	PAGE
PPM	PURPLE PAINT MARKS
PVC	POLYVINYL CHLORIDE
R/W	RIGHT-OF-WAY
RPM	RED PAINT MARKS
S	SOUTH
TON	TOP OF NUT
TS	TEXTURED SURFACE
U.E.	UTILITY EASEMENT
W	WEST

PLAT LEGEND:

(P1)	PLAT OF SANDALFOOT COVE SECTION ONE (P.B. 28, PG. 225, P.B.C.R.)
(P2)	PLAT OF SANDALFOOT COVE SECTION TWO (P.B. 29, PG. 15, P.B.C.R.)
(P3)	PLAT OF COUNTRY CLUB COVE – P.U.D. (P.B. 40, PG. 126, P.B.C.R.)

TOPOGRAPHIC SURVEY CERTIFICATION:

This is to certify that this survey is classified as a Topographic Survey as defined in Rule 5J-17.050 of the Florida Administrative Code, pursuant to Chapter 472.027, Florida Statutes as amended. The fieldwork was completed on November 11th, 2021.

Dated: November 11th, 2021

DAVID A. BOWER
STATE OF FLORIDA
PROFESSIONAL SURVEYOR & MAPPER No. LS 5888

9749 SANDALFOOT BLVD

CALC FILE
21-049 CALC

REVISIONS	DATE	BY

11/11/21 DATE
21-049-001 SURV DWG. NO.
MT DRAWN/APPROVED BY
DAB CHECKED BY
SEE NOTE FIELD BOOK / PAGE
N/A SCALE

TOPOGRAPHIC SURVEY
HOLTZ CONSULTING ENGINEERS, INC.
LIFT STATIONS 980 & 981
PALM BEACH COUNTY, FLORIDA
SECTION 30, TOWNSHIP 47S, RANGE 42E

DENNIS J. LEAVY & ASSOCIATES, INC.
PROFESSIONAL SURVEYORS & MAPPERS
460 BUSINESS PARK WAY, SUITE B, ROYAL PALM BEACH, FL 33411
PHONE: (561) 753-0650 EMAIL: SURVEY@DJLASURVEY.NET

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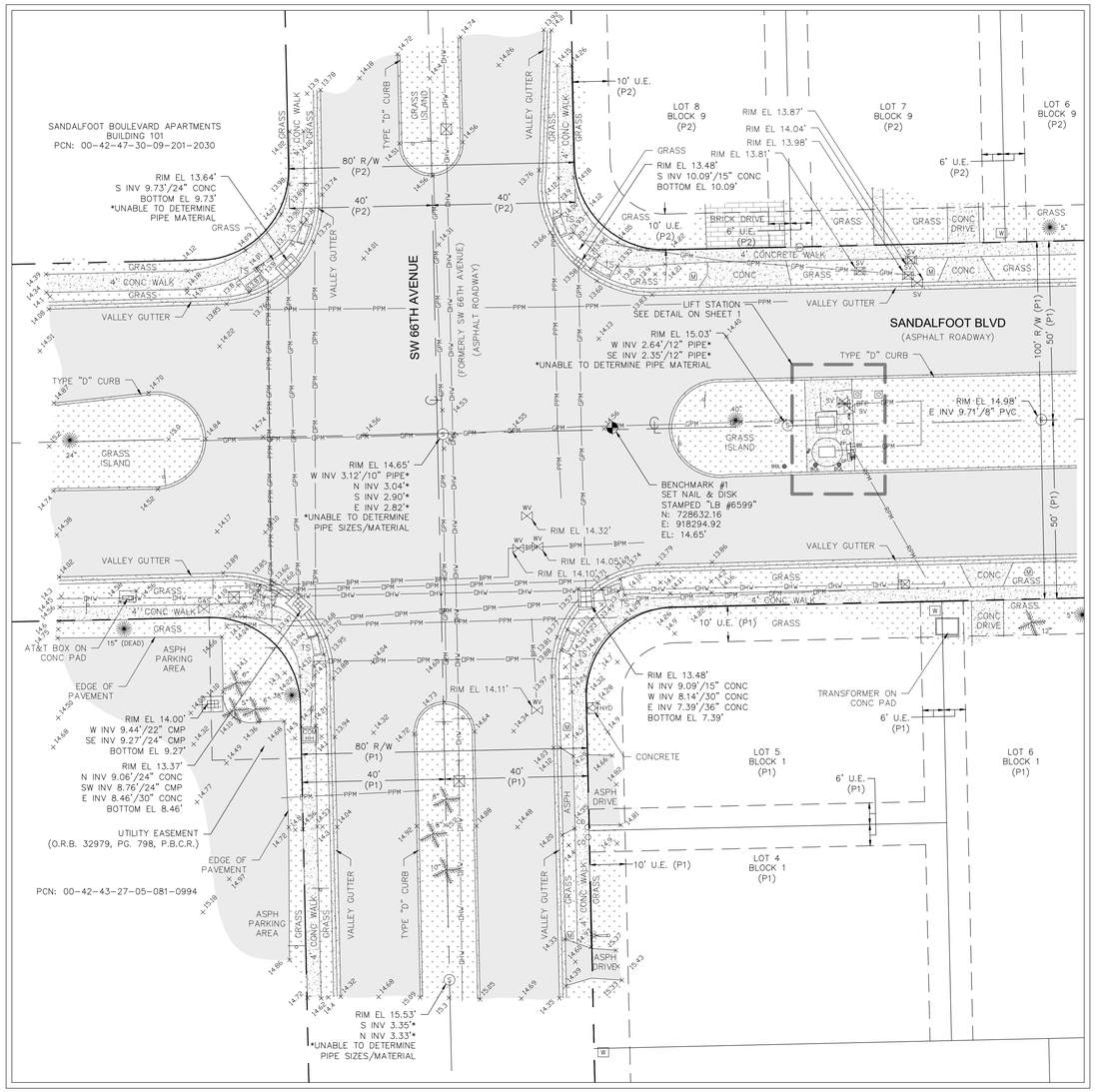
JOB NO.
21-049-001
SHEET 1 OF 2

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TOPOGRAPHIC SURVEY

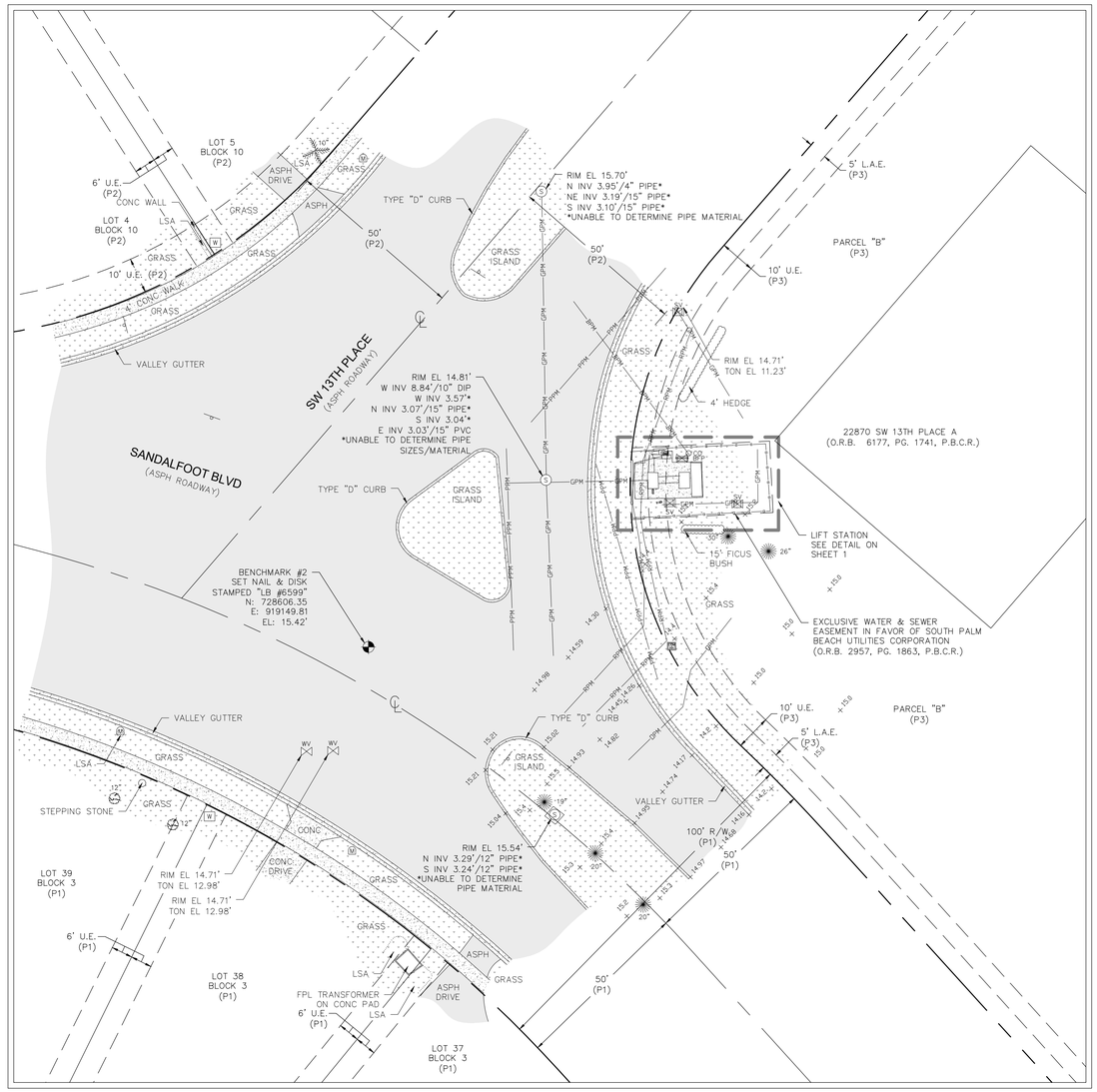
FOR: HOLTZ CONSULTING ENGINEERS, INC.

LOCATED IN: SECTION 30, TOWNSHIP 47 SOUTH, RANGE 42 EAST
PALM BEACH COUNTY, FLORIDA



EXISTING LIFT STATION NO. 981 AREA

DETAIL SCALE: 1"=5'



EXISTING LIFT STATION NO. 981 AREA

DETAIL SCALE: 1"=5'

CALC FILE
21-049 CALC

REVISIONS	DATE	BY

11/11/21	21-049-001 SURV
DATE	DWG. NO.
MT	DAB
DRAWN/APPROVED BY	CHECKED BY
SEE NOTE	N/A
FIELD BOOK / PAGE	SCALE

TOPOGRAPHIC SURVEY
HOLTZ CONSULTING ENGINEERS, INC.
LIFT STATIONS 980 & 981
PALM BEACH COUNTY, FLORIDA
SECTION 30, TOWNSHIP 47S, RANGE 42E

DENNIS J. LEAVY & ASSOCIATES, INC.
PROFESSIONAL SURVEYORS & MAPPERS
460 BUSINESS PARK WAY, SUITE B, ROYAL PALM BEACH, FL 33411
PHONE: (561) 753-6630 EMAIL: SURVEY@DJLASURVEY.NET

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JOB NO.
21-049-001
SHEET 2 OF 2

K:\2021 jobs\21-049-001\DWG\21-049-001 SURV.dwg

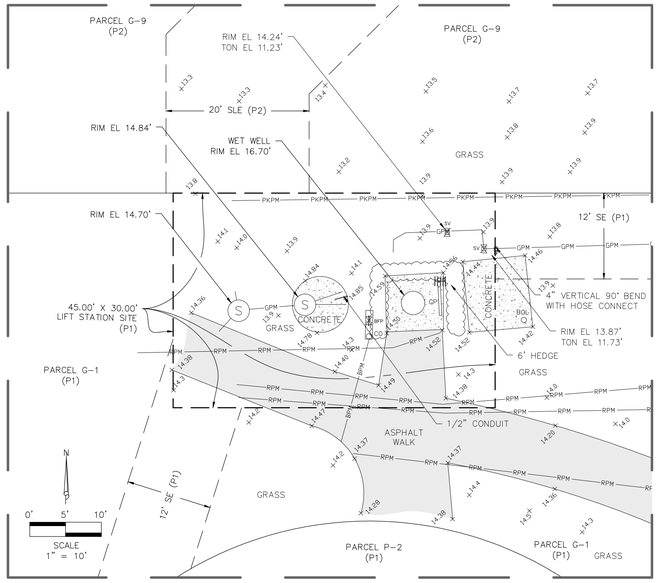
TOPOGRAPHIC SURVEY

HOLTZ CONSULTING ENGINEERS, INC.

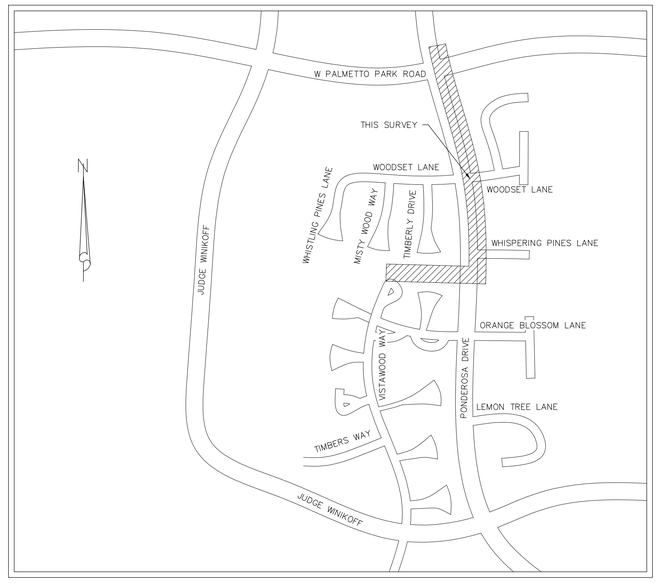
LOCATED IN: SECTION 26, TOWNSHIP 47 SOUTH, RANGE 41 EAST
PALM BEACH COUNTY, FLORIDA

REPORT OF SURVEY:

1. The survey depicted hereon has been classified as a Topographic Survey, as defined in Rule 5J–17.050 of the Florida Administrative Code, pursuant to Chapter 472.027, Florida Statutes as amended.
2. This survey has been prepared in the office of Dennis J. Leavy & Associates, Inc. located at: 460 Business Park Way, Suite B, Royal Palm Beach, Florida, whose certificate of authorization number is LB #6599, and the certifying surveyor's (David A. Bower) license number is LS #5888.
3. The survey sketch shown hereon does not necessarily contain all of the information obtained or developed by the undersigned surveyor in his field work, office work, or research.
4. THIS IS NOT A BOUNDARY SURVEY
5. This survey does not address environmental matters, jurisdictional boundaries or hazardous waste concerns should any of the foregoing exist.
6. The elevations shown hereon are for the purpose of indicating the ground elevation only at the position shown and in no way indicate elevations at any other point than shown hereon and do not determine sub surface conditions.
7. The undersigned makes no representations or guarantees as to the information reflected hereon pertaining to easements, rights of way, setback lines, agreements and other matters, and further, this instrument is not intended to reflect or set forth all such matters. Such information should be obtained and confirmed by others through appropriate title verification. Lands shown hereon were not abstracted for rights of way and/or easements of record.
8. This survey does not meet those standards established by the American Land Title Association.
9. Underground apparent use and/or improvements have not been shown unless otherwise noted.
10. This instrument may not be reproduced in part or whole without the written consent of Dennis J. Leavy & Associates Inc.
11. Date of field survey: August 22nd, 2022, as recorded in Field Book 525, Pages 06 through 22.
12. This survey lies in Section 26, Township 47 South, Range 41 East, Palm Beach County, Florida.
13. By graphic plotting only the subject property lies within Zone AE (EL 15.9), Zone AO (DEPTH 1) and Zone X, as shown on the U.S. Department of Homeland Security Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map, Map Number: 12099C1155F, Community: Palm Beach County, Number: 120192, Panel 1155, Suffix: F, Effective date: October 5, 2017.
14. In some instances, graphic representations have been exaggerated to more clearly illustrate relationships between physical improvements and/or lot lines. In all cases, dimensions shown shall control the location of the improvements over scaled positions.
15. Measurements shown hereon are expressed in feet and decimal parts thereof unless otherwise noted.
16. All dates shown within the revision block hereon are for interoffice filing use only, and in no way affect the date of the field survey stated herein.
17. Benchmarks of Origin: Palm Beach County Benchmarks "FARGO" and "KOMONDI" whose published elevations are 21.971' and 17.394' respectfully, based on the North American Vertical Datum of 1988.
18. Elevations referenced hereon are based on the North American Vertical Datum of 1988 (NAVD 88).



DETAIL "A"
SCALE 1" = 10'



LOCATION MAP
NOT TO SCALE

LEGEND:

ACE	ACCESS CONTROL EASEMENT
℄	CENTERLINE
DE	DRAINAGE EASEMENT
E	EAST
EE	ENTRANCE EASEMENT
EL	ELEVATION
LB	LICENSED BUSINESS
LS	LICENSED SURVEYOR
LSA	LANDSCAPED AREA
N	NORTH
NAVD	NORTH AMERICAN VERTICAL DATUM
NGVD	NATIONAL GEODETIC VERTICAL DATUM
NO.	NUMBER
OHW	OVERHEAD WIRES
P.B.	PLAT BOOK
P.B.C.R.	PALM BEACH COUNTY RECORDS
PG.	PAGE
RCP	CONCRETE PIPE
S	SOUTH
SE	SEWER EASEMENT
SLE	SEWER LINE EASEMENT
TON	TOP OF NUT
UE	UTILITY EASEMENT
W	WEST

SYMBOL LEGEND:

	ANTENNA
	AT&T HANDHOLE
	BENCHMARK
BFP	BACKFLOW PREVENTOR
BOL	BOLLARD
	CABLE TV HANDHOLE
CTV	CABLE TV RISER
	CATCH BASIN
CO	CLEAN OUT
	COMMUNICATIONS HANDHOLE
COM	COMMUNICATIONS RISER
	ELECTRIC HANDHOLE
	FIBER OPTIC HANDHOLE
	IRRIGATION HANDHOLE
S	SANITARY MANHOLE
	SIGN
SV	SANITARY VALVE WITH CONCRETE APRON
WV	WATER VALVE
WV	WATER VALVE WITH CONCRETE APRON
	WOOD POWER POLE WITH LIGHT

PAINT MARKS LEGEND:

–BPM–	BLUE PAINT MARKS
–GPM–	GREEN PAINT MARKS
–OPM–	ORANGE PAINT MARKS
–PKPM–	PINK PAINT MARKS
–PPM–	PURPLE PAINT MARKS
–RPM–	RED PAINT MARKS
–OHW–	OVERHEAD WIRE

TREE SYMBOL LEGEND:

X"	FIG TREE
X"	OAK TREE
X"	PALM TREE
X"	ROYAL POINSETTIA

X" DENOTES TRUNK DIAMETER AT CHEST HEIGHT

BENCHMARKS

BENCHMARK #1	SET NAIL & DISK STAMPED "LB #6599" N: 731252.12 E: 909137.82 EL: 14.39' (NAVD 88)	BENCHMARK #5	SET NAIL & DISK STAMPED "LB #6599" N: 732083.30 E: 909664.70 EL: 14.82' (NAVD 88)
BENCHMARK #2	SET NAIL & DISK STAMPED "LB #6599" N: 731328.04 E: 909313.32 EL: 13.98' (NAVD 88)	BENCHMARK #6	SET NAIL & DISK STAMPED "LB #6599" N: 732490.63 E: 909573.08 EL: 15.73' (NAVD 88)
BENCHMARK #3	SET NAIL & DISK STAMPED "LB #6599" N: 731464.65 E: 909689.57 EL: 14.60' (NAVD 88)	BENCHMARK #7	SET NAIL & DISK STAMPED "LB #6599" N: 733024.15 E: 909430.22 EL: 14.59' (NAVD 88)
BENCHMARK #4	SET NAIL & DISK STAMPED "LB #6599" N: 731863.87 E: 909680.75 EL: 15.36' (NAVD 88)	BENCHMARK #8	SET NAIL & DISK STAMPED "LB #6599" N: 733277.00 E: 909372.83 EL: 14.78' (NAVD 88)

PLAT LEGEND:

(P1)	TIMBERWALK SECTION ONE (P.B. 38, PG. 56, P.B.C.R.)
(P2)	TIMBERWALK II SECTION FOUR (P.B. 47, PG. 80, P.B.C.R.)
(P3)	BOUNDARY PLAT OF ORIOLE COUNTRY (P.B. 32, PG. 175, P.B.C.R.)
(P4)	TAMARRON (P.B. 34, PG. 9, P.B.C.R.)
(P5)	LOGGER' RUN COMMERICAL PLAT (P.B. 44, PG. 32, P.B.C.R.)
(P6)	WHISPERING PINES PARK (P.B. 38, PG. 192, P.B.C.R.)

TOPOGRAPHIC SURVEY CERTIFICATION:

This is to certify that this survey is classified as a Topographic Survey as defined in Rule 5J–17.050 of the Florida Administrative Code, pursuant to Chapter 472.027, Florida Statutes as amended. The fieldwork was completed on August 22nd, 2022.

Dated: August 22nd, 2022

DAVID A. BOWER
LICENSE NUMBER
5888
STATE OF FLORIDA
PROFESSIONAL SURVEYOR AND MAPPER

DAVID A. BOWER
STATE OF FLORIDA
PROFESSIONAL SURVEYOR & MAPPER No. LS 5888

CALC FILE
21–111–001 CALC

REVISIONS	DATE	BY
ADDRESSED CLIENT COMMENTS	10–19–22	MT

08/22/22
DATE
MT
DRAWN/APPROVED BY
SEE NOTE
FIELD BOOK / PAGE

21–111–001
DWG. NO.
DAB
CHECKED BY
N/A
SCALE

TOPOGRAPHIC SURVEY
FOR: HOLTZ CONSULTING ENGINEERS, INC.
LIFT STATION 1051 FORCE MAIN REPLACEMENT
PALM BEACH COUNTY, FLORIDA
SECTION 26, TOWNSHIP 47S, RANGE 41E

DENNIS J. LEAVY & ASSOCIATES, INC.
PROFESSIONAL SURVEYORS & MAPPERS
460 BUSINESS PARK WAY, SUITE B, ROYAL PALM BEACH, FL 33411
PHONE: (561) 753-0650 EMAIL: SURVEY@DJLASURVEY.NET

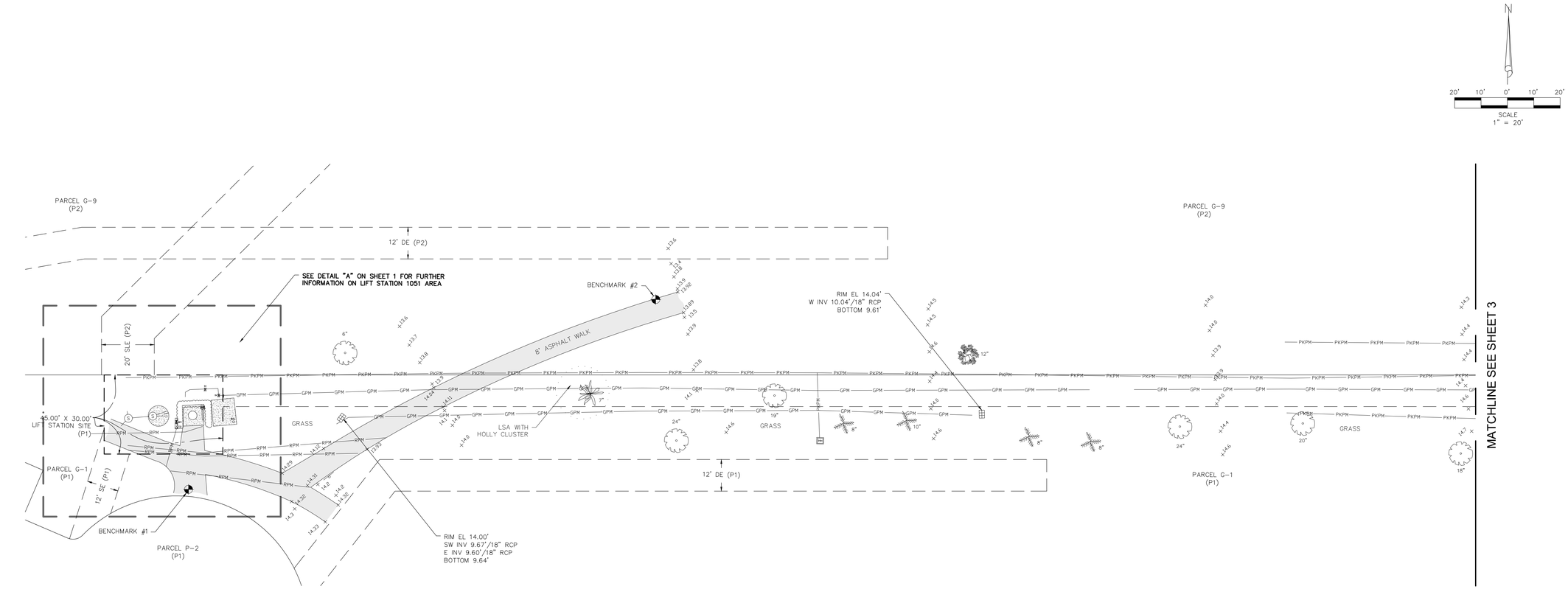
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JOB NO.
21–111–001
SHEET 1 OF 4

TOPOGRAPHIC SURVEY

HOLTZ CONSULTING ENGINEERS, INC.

LOCATED IN: SECTION 26, TOWNSHIP 47 SOUTH, RANGE 41 EAST
PALM BEACH COUNTY, FLORIDA



CALC FILE
21-111-001 CALC

REVISIONS	DATE	BY
ADDRESSED CLIENT COMMENTS	10-19-22	MT

08/22/22
DATE
MT
DRAWN/APPROVED BY
SEE NOTE
FIELD BOOK / PAGE

21-111-001
DWG. NO.
DAB
CHECKED BY
1"=20'
SCALE

TOPOGRAPHIC SURVEY
FOR: HOLTZ CONSULTING ENGINEERS, INC.
LIFT STATION 1051 FORCE MAIN REPLACEMENT
PALM BEACH COUNTY, FLORIDA
SECTION 26, TOWNSHIP 47S, RANGE 41E

DENNIS J. LEAVY & ASSOCIATES, INC.
PROFESSIONAL SURVEYORS & MAPPERS
460 BUSINESS PARK WAY, SUITE B, ROYAL PALM BEACH, FL 33411
PHONE: (561) 753-0650 EMAIL: SURVEY@DJLASURVEY.NET

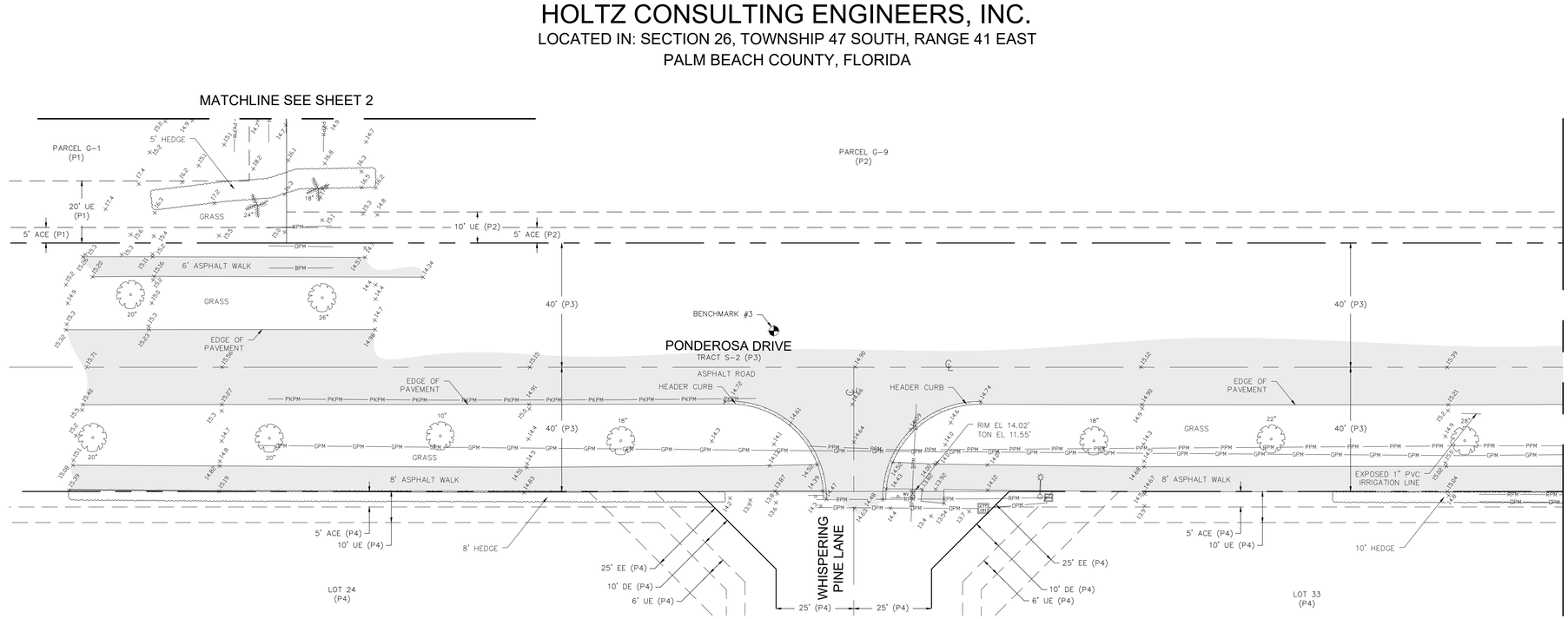
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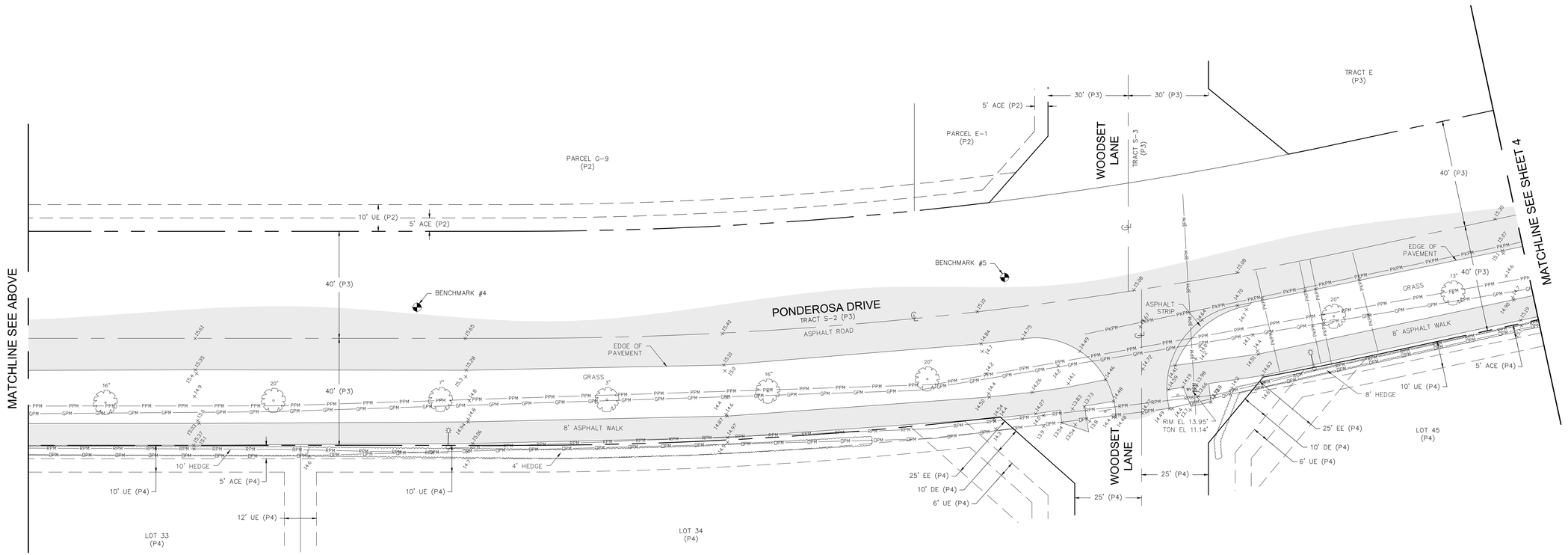
JOB NO.
21-111-001
SHEET 2 OF 4

TOPOGRAPHIC SURVEY

HOLTZ CONSULTING ENGINEERS, INC.

LOCATED IN: SECTION 26, TOWNSHIP 47 SOUTH, RANGE 41 EAST
PALM BEACH COUNTY, FLORIDA





20' 10' 0' 10' 20'
SCALE
1" = 20'

CALC FILE
21-111-001 CALC

REVISIONS	DATE	BY
ADDRESSED CLIENT COMMENTS	10-19-22	MT

08/22/22
DATE
MT
DRAWN/APPROVED BY
SEE NOTE
FIELD BOOK / PAGE

21-111-001
DWG. NO.
DAB
CHECKED BY
N/A
SCALE

TOPOGRAPHIC SURVEY
FOR: HOLTZ CONSULTING ENGINEERS, INC.
LIFT STATION 1051 FORCE MAIN REPLACEMENT
PALM BEACH COUNTY, FLORIDA
SECTION 26, TOWNSHIP 47S, RANGE 41E

DENNIS J. LEAVY & ASSOCIATES, INC.
PROFESSIONAL SURVEYORS & MAPPERS
460 BUSINESS PARK WAY, SUITE B, ROYAL PALM BEACH, FL 33411
PHONE: (561) 753-0650 EMAIL: SURVEY@DJLASURVEY.NET

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JOB NO.
21-111-001
SHEET 3 OF 4

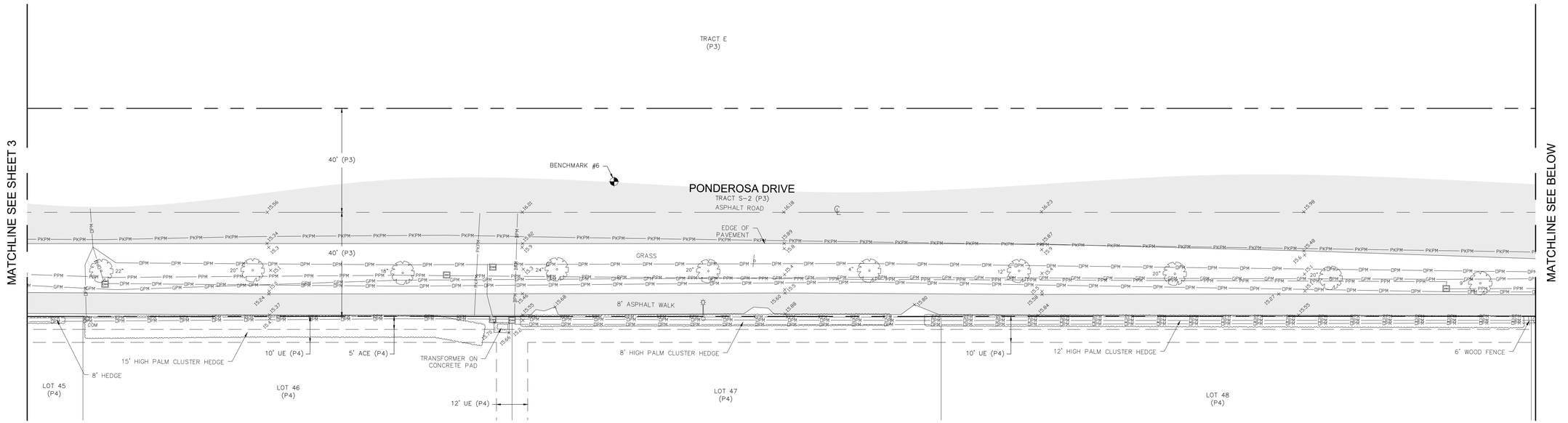
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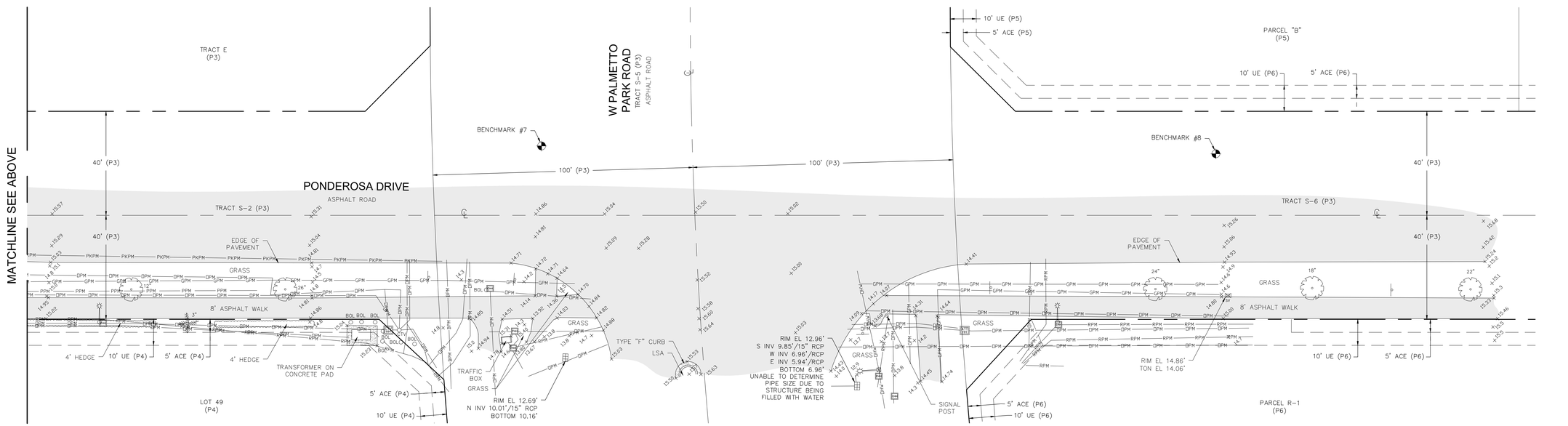
TOPOGRAPHIC SURVEY

HOLTZ CONSULTING ENGINEERS, INC.

LOCATED IN: SECTION 26, TOWNSHIP 47 SOUTH, RANGE 41 EAST
PALM BEACH COUNTY, FLORIDA

20' 10' 0' 10' 20'
SCALE
1" = 20'





CALC FILE
21-111-001 CALC

REVISIONS	DATE	BY
ADDRESSED CLIENT COMMENTS	10-19-22	MT

08/22/22
DATE
MT
DRAWN/APPROVED BY
SEE NOTE
FIELD BOOK / PAGE

21-111-001
DWG. NO.
DAB
CHECKED BY
N/A
SCALE

TOPOGRAPHIC SURVEY
FOR: HOLTZ CONSULTING ENGINEERS, INC.
LIFT STATION 1051 FORCE MAIN REPLACEMENT
PALM BEACH COUNTY, FLORIDA
SECTION 26, TOWNSHIP 47S, RANGE 41E

DENNIS J. LEAVY & ASSOCIATES, INC.
PROFESSIONAL SURVEYORS & MAPPERS
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JOB NO.
21-111-001
SHEET 4 OF 4

Appendix F

Geotechnical Report for LS 980 and LS 981

December 23, 2021

Holtz Consulting Engineers, Inc.
270 South Central Blvd., Suite 207
Jupiter, FL 33458
Attn: Mr. Stephen Fowler, P.E., CGC
email: Stephen.Fowler@HoltzConsulting.com

RE: Geotechnical Services
Improvements to Lift Station 980 and 981
Boca Raton, FL - Palm Beach County
TSF Project No. 7111-21-452

Dear Stephen:

TIERRA SOUTH FLORIDA, INC. (TSF) is pleased to present the results of Geotechnical Engineering Study Report for the referenced project. This report includes the results of field exploration and geotechnical recommendations for proposed project, as well as general site development.

EXECUTIVE SUMMARY

A geotechnical exploration and evaluation of the subsurface conditions have been completed for Lift Station 980 and 981, in Boca Raton, Florida. A visual classification of the soils was completed for both borings. The initial surface was asphalt for B-1, and Topsoil for B-2. For B-1, A layer of sand with limerock (fill) exists to a depth of approximately 2 feet, with an overall classification of SP. The fill layer is followed by a sandy silt layer with a SM classification, then intermittent layers of sand with trace silt with SP classification, and silty sand trace limestone classified as SM to a depth of 8 feet. A limestone layer was recorded from 8 to 10 feet below grade. A sand with trace shell exists to the termination depth of 35 feet. For B-2, the topsoil is followed by a sand or fill material with SP classification to a depth of 6 feet, followed by a silty sand with trace limestone with a SM classification to 8 feet. A limestone layer was recorded from 8 to 10 feet, followed by a sand with classification of SP to the boring termination depth. The groundwater was recorded between 6 and 7 feet below grade. Based on SPT N-Values, the uppermost 4 feet is in the medium-density-condition, followed by loose-density-condition to 10 feet, and medium-density-condition to 20 feet. Below 20 feet the soils are in either medium or dense-density-condition. All depths noted should be considered approximate.

A mat foundation can be designed to be supported on the sand substratum with an allowable bearing capacity of 3,000 pounds per square foot. **The Contractor shall anticipate difficult Lift Station installation due to the presence of limestone. The presence of difficult soil conditions may occur at varying depths below the ground, including boulder-like materials.**

The owner/designer should not rely solely on this Executive Summary and must read and evaluate the entire contents of this report before utilizing our engineering recommendations in preparation of design/construction documents.

PROJECT INFORMATION

Project Authorization

TSF has completed a geotechnical exploration for the new Lift Stations 980 and 981 in Boca Raton, in Palm Beach County, Florida. Our services were authorized by Holtz Consulting Engineers, Inc.

Project Description

Review of the "Soil Survey of Palm Beach County, Florida", prepared by the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS), indicates the site is mapped as noted below. A copy of the USDA Soil Survey Map is attached to this report as **Soil Map - Palm Beach County, Florida.**

> Map Unit 10 - Cypress Lake fine sand, 0 to 2 percent slopes
> The Cypress Lake component makes up 85 percent of the map unit. Slopes are 0 to 2 percent. This component is on flats on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits over limestone. Depth to a root restrictive layer, bedrock, lithic, is 33 to 40 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during July, August, September, October. Organic matter content in the surface horizon is about 2 percent.

Our understanding of the project is based on information provided by the Holtz Consulting Engineers, Inc. The project will consist of constructing a Lift Station. The lift stations are generally located at 9834 Sandalfoot Blvd, and 22870 SW 13th Pl, in Boca Raton, in Palm Beach, Florida. It is our understanding that grades will not be raised relative to existing grades.

The geotechnical recommendations presented in this report are based on the available project information, building location, and the subsurface materials described in this report. If any of the noted information is incorrect, please inform TSF in writing so that we may amend the recommendations presented in this report if appropriate and if desired by the client. TSF will not be responsible for the implementation of its recommendations when it is not notified of changes in the project.

Purpose and Scope of Services

The purpose of this study was to explore the subsurface conditions at the site to enable an evaluation of acceptable construction and site development considerations.

Our scope of services included the drilling of one (1) Standard Penetration Test (SPT) boring to a depth of 35 feet below existing grade for each of the two (2) Lift Stations, and the preparation of this geotechnical report. This report briefly outlines the testing procedures, presents available project information, describes the site and subsurface conditions, and presents recommended soil parameters.

The scope of services did not include an environmental assessment for determining the presence or absence of wetlands or hazardous or toxic materials in the soil, surface water, groundwater, or air on or below, or around this site. Any statements in this report regarding odors, colors, and unusual or suspicious items or conditions are strictly for informational purposes. Before further development of this site, an environmental assessment is advisable.

SUBSURFACE CONDITIONS

Subsurface Conditions

Our subsurface investigation for this project consisted of drilling of two (2) Standard Penetration Test (SPT) borings to a depth of 35 feet below the existing grade. Boring location was selected by Holtz Consulting Engineers, Inc. and was located in the field by TSF personnel by tape measurements using site features as reference. The attached **Boring Location Plan and Soil Profiles, Sheet 1**, includes the approximate location of the boring.

The SPT boring was drilled using a truck-mounted CME-45 drill rig, and mud rotary and casing procedures. Samples of the in-place materials were recovered at frequent intervals using a standard split spoon driven with a 140-pound hammer freely falling 30 inches (the SPT sampling after ASTM D 1586). The samples of the in-place soils were returned to our laboratory for classification by a geotechnical engineer. The samples were visually classified in general accordance with the Unified Soil Classification System (ASTM D 2488). A limited amount of laboratory testing was completed to substantiate the visual classification. **A Summary of Laboratory Test Results** is attached.

In general, beneath the topsoil, the subsurface conditions consisted of a near-surface layer of dark brown organic silty sand with trace limerock, with a USCS Classification of SM; OL, with an organic content of approximately 10 percent. The organic layer exists in the uppermost 2 feet of depth. A light brown sandy limestone layer exists beneath the upper organic layer to the termination depth of the borings. Based on the SPT N-Values, the surficial 2 feet is in loose-density conditions, followed by a 2 foot layer in the very-dense-density condition, with the remainder of the boring depth in the medium-density condition.

The above subsurface description is of a generalized nature intended to highlight the major subsurface stratification features and material characteristics. The boring log should be reviewed for specific information at the boring location. These records include soil descriptions, stratifications, and penetration resistances. The stratifications shown on the boring log represent the conditions only at the actual boring location. Variations may occur and should be expected. The stratifications represent the approximate boundary between subsurface materials, and the actual transition may be gradual. Water level information obtained during field operations is also shown on the boring logs. The samples that were not altered by laboratory testing will be retained for 30 days from the date of this report and then will be discarded.

Groundwater Information

The groundwater was not encountered in the upper 4 feet of exploration. Drilling fluid was required to drill below the uppermost 4 feet, preventing an accurate estimate of the groundwater level. Based on our experience in this area, we expect the groundwater to be encountered between approximately 4 feet and 7 feet below the existing ground surface. For design purposes, the groundwater should be assumed to be at the ground surface. The soil profiles are presented on the attached **Boring Location Plan and Soil Profiles**. Groundwater levels are expected to fluctuate with seasonal fluctuations. We expect the groundwater to, typically, fluctuate within approximately 2 ft from where it is estimated to exist. At this time, information is not available to assess if groundwater will impact the proposed foundation construction.

In general, the seasonal high groundwater level is not intended to define a limit or ensure that future seasonal fluctuations in groundwater levels will not exceed the estimated levels. Post-development groundwater levels could exceed the normal seasonal high groundwater level estimate as a result of a series of rainfall events, changing conditions at the site that alter surface water drainage characteristics, or variations in the duration, intensity, or total volume of rainfall. We recommend that the Contractor determine the actual groundwater levels at the time of the construction to determine groundwater impact on his or her construction procedures.

EVALUATION AND RECOMMENDATIONS

Geotechnical Discussion

The geotechnical study completed for the proposed lift station confirms that the site is suitable for the planned construction when viewed from a soil mechanics and foundation engineering perspective. Subsurface conditions at the site are not expected to impose any major geotechnical constraints or limitations on the proposed construction.

The Lift Station can be supported on a mat foundation system bearing on the natural sandy limestone. Proper shoring and dewatering may be required depending on the type of construction methodology

selected. Densification of the surficial soils of the site will be needed to increase the shear strength and reduce foundation and slab settlements to tolerable values.

Recommendations for site preparation, foundation design, and the related construction are presented in the following sections of this report.

Foundation Recommendations

Based on the data currently available, the planned Lift Stations can be supported on a mat foundation bearing on the natural sandy soils. The mat foundation bearing on sand substratum should be designed and proportioned for a maximum bearing pressure of 3,000 pounds per square foot (psf). **The structure should be designed and installed to prevent buoyancy.**

Excavating equipment may disturb the granular bearing soil in foundation areas. The upper 12 inches of foundation bottom soils should be compacted to achieve not less than 95 percent of the maximum dry density, as determined by ASTM D 1557, immediately before reinforcing and concrete placement. The footings will likely require shoring or temporary retaining systems to maintain the stability of nearby soils.

The foundation excavations should be observed by a representative of TSF before steel or concrete placement to assess that the foundation materials are capable of supporting the design loads and are consistent with the materials discussed in this report. Loose soil zones encountered at the bottom of the footing excavations should be adequately compacted to the aforementioned 95% criteria.

Excavations

The Contractor shall anticipate difficult Lift Station installation due to the presence of limestone. The presence of difficult soil conditions may occur at varying depths below the ground, including boulder-like materials. The Contractor shall anticipate potential cave-in of the sandy soils and limestone. The Contractor shall take steps to mitigate the difficult Lift Station installation through the use of specialized equipment and procedures. All costs for labor, materials, equipment and incidentals necessary to mitigate the difficult Lift Station foundation installation shall be incidental to the pay item of the structure for which the Lift Station foundation is required.

Subsoils found at the site consist primarily of sand soils or limestone. Specialty equipment will be required to excavate the limestone. Unsuitable material or organic soils encountered should be removed and replaced with structural fill.

We expect that unbraced cut slopes made in the granular soils at an inclination of 1.7 horizontal to 1 vertical will remain stable for short periods of time provided they are not subjected to seepage, surcharge loads (e.g., from stockpiled soil or equipment) and excessive vibration. Furthermore, open-cut excavations exceeding 10 feet in depth should be properly dewatered and sloped 2H:1V or flatter

or be benched using a bracing plan approved by a professional engineer licensed in the State of Florida. Excavated materials should not be stockpiled at the top of the slope within a horizontal distance equal to the excavation depth.

Dewatering will be required for in-the-dry construction over those sections of the site where the elevations of the structure fall below the water table. If the draw down requirements is greater than 1 foot, well point dewatering may be required.

In Federal Register, Volume 54, No. 209 (October 1989), the United States Department of Labor, Occupational Safety and Health Administration (OSHA) amended its "Construction Standards for Excavations, 29 CFR, part 1926, Subpart P." This document was issued to better ensure the safety of workers entering trenches or excavations. It is mandated by this federal regulation that excavations, whether they be utility trenches, basement excavations or footing excavations, be constructed in accordance with the new OSHA guidelines. It is our understanding that these regulations are being strictly enforced and if they are not closely adhered, the owner and the contractor could be liable for substantial penalties.

The contractor is solely responsible for designing and constructing stable, temporary excavations and should shore, slope, or bench the sides of the excavations as required to maintain the stability of both the excavation sides and bottom. The contractor's responsible person, as defined in 29 CFR Part 1926, should evaluate the soil exposed in the excavations as part of the contractor's safety procedures. In no case should slope height, slope inclination, or excavation depth, including utility trench excavation depth, exceed those specified in local, state, and federal safety regulations.

We are providing this information solely as a service to our client. TSF is not assuming responsibility for the construction site safety or the contractor's activities; such responsibility is not being implied and should not be inferred.

Lateral Earth Pressures

Below-grade structures should be designed to resist earth pressure from granular backfill, surcharge loads, and unbalanced hydrostatic forces. For walls that are not restrained during backfilling but are free to rotate at the top, active earth pressure should be used in the design. Walls that are restrained should be designed assuming at-rest earth pressure. In cases where the wall moves into the backfill, passive earth pressure criteria should be used. Recommended equivalent fluid densities for each pressure condition **with no allowance for surcharge loads** are presented below in Table 1.

Table 1 - Lateral Earth Pressure Coefficients Based on 115 pcf Saturated Unit Weight			
Mode	**Symbol**	**Coefficient**	**Below Water Pressure (pcf)***
Active	Ka	0.33	80
At Rest	K_0	0.5	89
Passive	Kp	3.00	222
* Includes the water pressure weight. All components should be designed for submerged conditions.			

Where possible, we recommend that a drainage system be provided behind the structure to relieve hydrostatic pressure. A coefficient of sliding friction of 0.35 is recommended.

OTHER CONSIDERATIONS

Preconstruction Conditions Survey

A preconstruction conditions survey should be performed before any construction at the site. The preconstruction conditions survey will involve visually inspecting and videotape documenting the adjacent structures; photographing observable existing cracks, deterioration, or other signs of distress. The preconstruction conditions survey will provide valuable information of the existing conditions of the structures adjacent to the proposed development. It would serve as a qualitative record document of the existing conditions of the adjacent structures before the start of the construction.

REPORT LIMITATIONS

The recommendations submitted are based on the available subsurface information obtained by TSF and project information furnished by the Holtz Consulting Engineers, Inc. If there are any revisions to the plans for this project or if deviations from the subsurface conditions noted in this report are encountered during construction, TSF should be notified immediately to determine if changes in the recommendations are required. If TSF is not retained to perform these functions, TSF will not be responsible for the impact of those conditions of the project.

The geotechnical engineer warrants that the findings, recommendations, specifications, or professional advice contained herein have been made in accordance with generally accepted professional geotechnical engineering practices in the local area. No other warranties are implied or expressed.

This report has been prepared for the exclusive use of the Holtz Consulting Engineers, Inc. for the specific application to the proposed Lift Station 980 and 981, in Boca Raton, in Palm Beach County, Florida.

If you have any questions about this report, or as we may be of further service, please contact our office.

Respectfully submitted,

TIERRA SOUTH FLORIDA, INC.

Harmon C. Bennett, P.E.
Principal Engineer
FL Reg. No. 53130

Ramakumar Vedula, P.E.
Principal Engineer
FL Reg No. 54873

Attachments: SOIL MAP - PALM BEACH COUNTY AREA, FLORIDA
BORING LOCATION PLAN AND SOIL PROFILES – SHEETS 1



THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY

ON THE DATE ADJACENT TO THE SEAL

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

TIERRA SOUTH FLORIDA, INC
2765 VISTA PARKWAY S-10
WEST PALM BEACH, FL 33411
HARMON COY BENNETT, P.E. No. 53130

Soil Map—Palm Beach County Area, Florida
(7111-21-452.Improvements to Lift Stations 980, 981 and 1051 (Holtz Consulting))



Map Scale: 1:1,990 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 25 50 100 150

Feet
0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Palm Beach County Area, Florida
Survey Area Data: Version 18, Aug 25, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jan 7, 2020—Mar 26, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

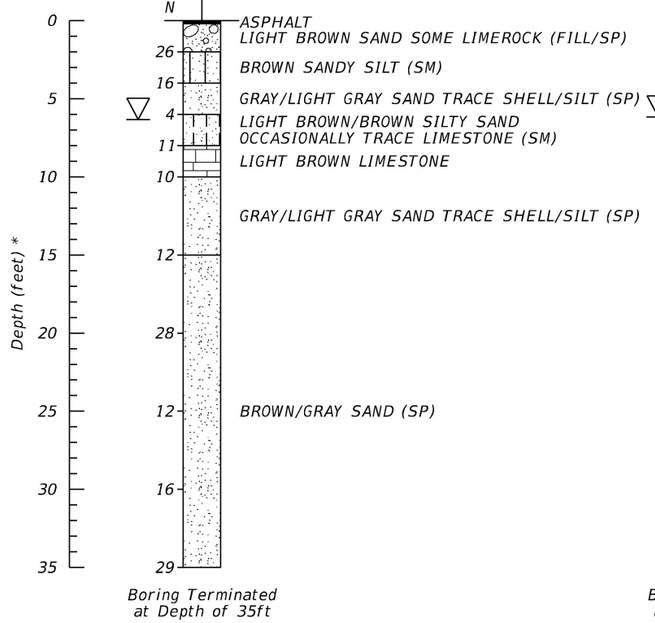
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
10	Cypress Lake fine sand, 0 to 2 percent slopes	7.8	100.0%
Totals for Area of Interest		**7.8**	**100.0%**



BORINGS LOCATION PLAN

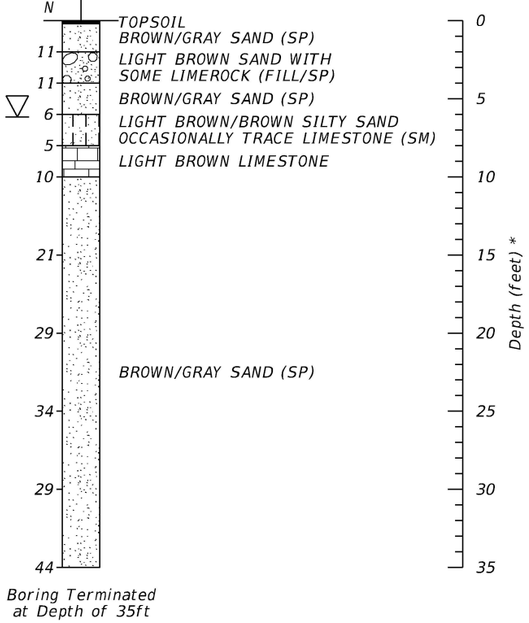
Approximate Location of SPT Boring

BOR # B-1
DATE 12/6/2021
HAMMER AUTO
RIG CME-45
LATITUDE 26.335798
LONGITUDE -80.199889



Boring Terminated at Depth of 35ft

BOR # B-2
DATE 12/3/2021
HAMMER AUTO
RIG CME-45
LATITUDE 26.335974
LONGITUDE -80.196831



Boring Terminated at Depth of 35ft

LEGEND

- ▽ Encountered Groundwater Table
- Asphalt
- Gravelly Sand
- Sandy Silt
- Sand
- Silty Sand
- Limestone Soft

NOTES

* DENOTES DEPTH IN FEET FROM EXISTING GROUND SURFACE

** SPT N-VALUES SHOWN ABOVE WERE OBTAINED USING AUTOMATIC HAMMERS. GENERALLY DESIGN CORRELATIONS AND PROGRAMS USE SAFETY HAMMER N-VALUES. HENCE, THE ABOVE N-VALUES NEED TO BE MULTIPLIED BY 1.24 TO OBTAIN EQUIVALENT SAFETY HAMMER N-VALUES FOR DESIGN PURPOSE.

*** LATITUDE AND LONGITUDE ARE APPROXIMATE, BASED ON HANDHELD GPSMap GARMIN 78s. ACTUAL BORING LOCATIONS COULD VARY

**** THE LIMESTONE STRATA ENCOUNTERED WITHIN THE PROJECT SITE CORRESPOND TO A ROCK FORMATION THAT TYPICALLY OFFER HIGH RESISTANCE TO EXCAVATION AND DRILLING. SPECIAL EQUIPMENT AND BREAKING TOOLS ARE TYPICALLY REQUIRED TO EXCAVATE AND DRILL WITHIN THESE LIMESTONE LAYERS. THESE LIMESTONE LAYERS ARE ALSO DIFFICULT TO DEWATER DUE TO THEIR HIGH POROSITY AND PERMEABILITY.

DRAWN BY: NG CHECKED BY: HB	APPROVED BY: HB DATE: 12/23/2021	ENGINEER OF RECORD: HARMON BENNETT, P.E. FLORIDA LICENSE NO.: 53130	TIERRA SOUTH FLORIDA 2765 VISTA PARKWAY, S-10 WEST PALM BEACH, FL 33411	SCALE: NTS	PROJECT NUMBER: 7111-21-452	BORING LOCATION PLAN AND SOIL PROFILE IMPROVEMENTS TO LIFT STATIONS 980 AND 981 BOCA RATON, FLORIDA	Sheet: 1

Appendix G

Utility Locates for LS 980, LS 981, and LS 1051

TEST HOLE REPORT

FORM BY/TECHS: JR/BK

DATE: 4/18/2023

SHEET/DRAWING #: 1

TH#1

PROJECT: LS 980, 981, and 1051 WUD 21-059

CLIENT: Holtz

UTILITY LOCATED: REC. WATER WATER ELECTRIC TELEPHONE COMMUNICATION **SANITARY** GAS STORM IRRIGATION UNKNOWN

CONDITION: POOR **FAIR** GOOD

MATERIAL FOUND: CI DI STEEL RCP **PVC** **POLY** AC PCCP ROUGH POUR SMOOTH POUR DB CBL VCPX TILE DUCT T.COTTA OTHER:

SOIL CONDITION: **MOIST** WET DRY SANDY **ROCKY** DEBRIS SUBMERGED

VISUALLY VERIFIED? **YES** NO

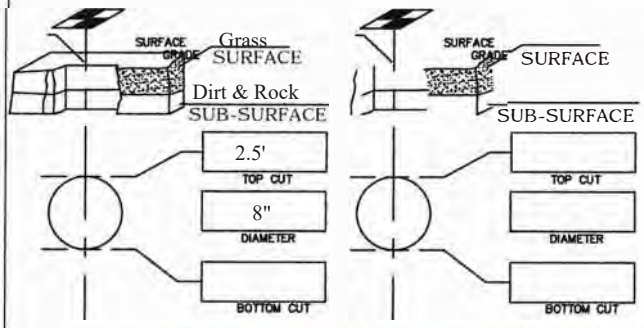
N

N.T.S.

TH#: 1
SURFACE: **SOFT** HARD
FACING: **N** **S** E W

TH#: –
SURFACE: SOFT HARD
FACING: N S E W

Notes: 8" Poly/ PVC @ 2.5'





UNDERDOG UTILITY DETECTION LLC. Utility Locating Services (561)-870-4943

All reports, drawings, sketches, narrative statements and summaries, location information and other information ("products"), in draft, review, final or other form, prepared by UNDERDOG for the use of a customer, are intended solely and exclusively for The use of that customer pursuant a license for such exclusive use granted to the customer by UNDERDOG, and further are limited to the conditions, circumstances and discoveries at the time such product is made available to the customer. All products remain the sole property of UNDERDOG, subject to the foregoing limited license to UNDERDOG'S customer and are intended for and made available to the customer for the specific, limited purposes stated in the contract between UNDERDOG and the customer. The use of any such proprietary products by anyone other than the customer or other licensee authorized in writing by UNDERDOG is strictly prohibited. UNDERDOG has not granted any customer any right to disclose the product to any other person or entity, and further declares that any such disclosure constitutes the theft of Inlellectual property. UNDERDOG does not accept or assume liability for the use of its products and disclaims all and any warrenties that would or might otherwise attache to the products or their use by any person or entity.

TEST HOLE REPORT

FORM BY/TECHS: JR/BK

DATE: 04/18/2023

SHEET/DRAWING #: 2

TH # 2

PROJECT: LS 980, 981, and 1051 WUD 21-059

CLIENT: Holtz

UTILITY LOCATED: REC. WATER WATER ELECTRIC TELEPHONE COMMUNICATION **SANITARY** GAS
STORM IRRIGATION UNKNOWN

CONDITION: POOR **FAIR** GOOD

MATERIAL FOUND: CI **DI** STEEL RCP PVC POLY AC PCCP ROUGH POUR
SMOOTH POUR DB CBL VCPX TILE DUCT T.COTTA OTHER:

SOIL CONDITION: **MOIST** WET DRY SANDY **ROCKY** DEBRIS SUBMERGED

VISUALLY VERIFIED? **YES** NO

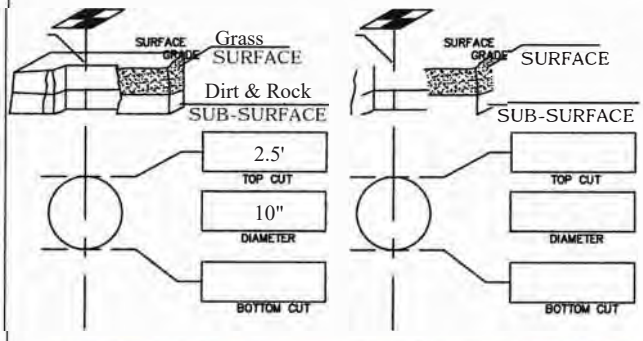
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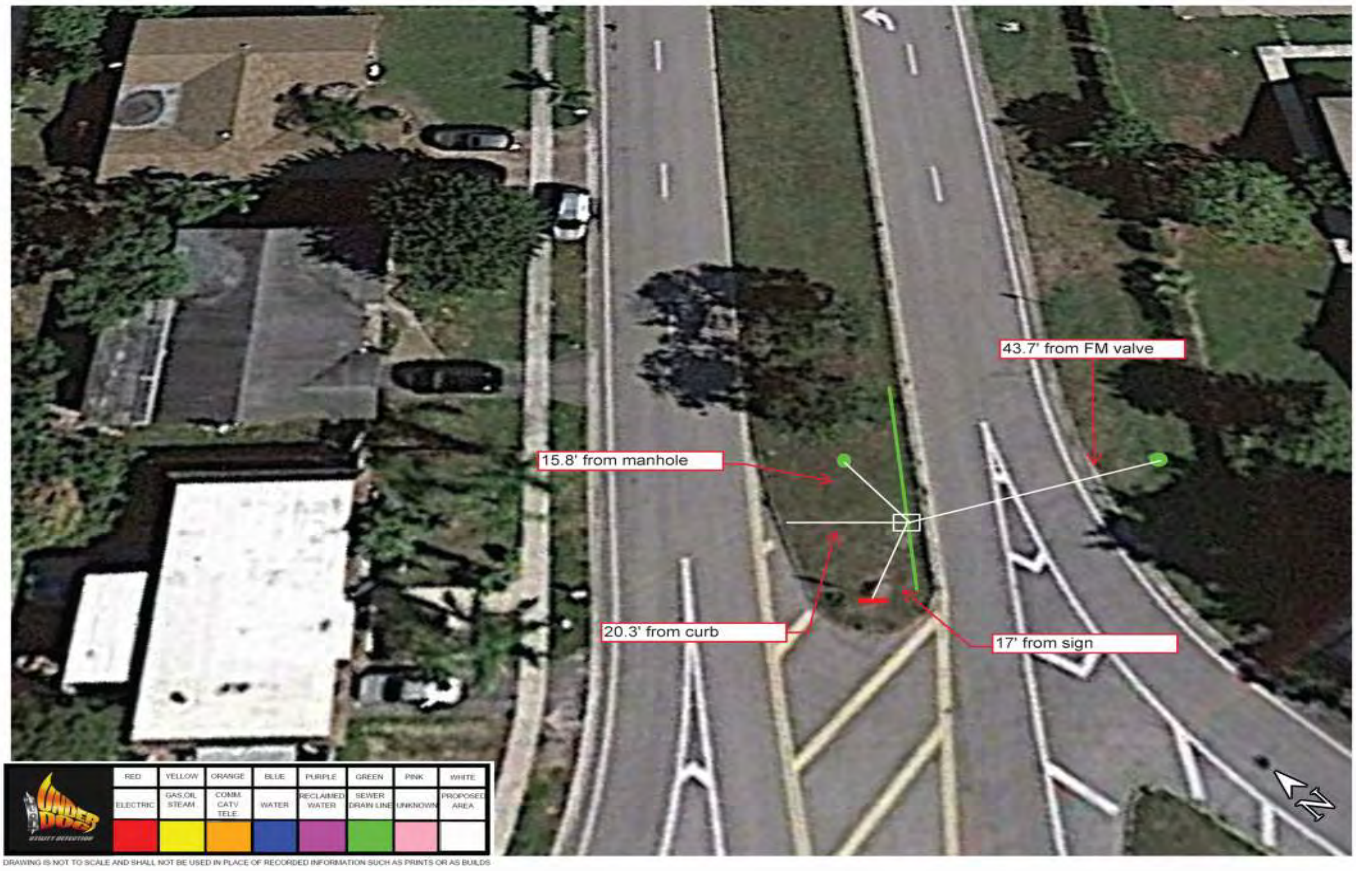
N.T.S.

TH#: 2
SURFACE: **SOFT** HARD
FACING: **N** S E W

TH#: –
SURFACE: SOFT HARD
FACING: N S E W

Notes: 10" Ductile Iron @ 2.5'





UNDERDOG UTILITY DETECTION LLC. Utility Locating Services (561)-870-4943

All reports, drawings, sketches, narrative statements and summaries, location information and other information ("products"), in draft, review, final or other form, prepared by UNDERDOG for the use of a customer, are intended solely and exclusively for The use of that customer pursuant a license for such exclusive use granted to the customer by UNDERDOG, and further are limited to the conditions, circumstances and discoveries at the time such product is made available to the customer. All products remain the sole property of UNDERDOG, subject to the foregoing limited license to UNDERDOG'S customer and are intended for and made available to the customer for the specific, limited purposes stated in the contract between UNDERDOG and the customer. The use of any such proprietary products by anyone other than the customer or other licensee authorized in writing by UNDERDOG is strictly prohibited. UNDERDOG has not granted any customer any right to disclose the product to any other person or entity, and further declares that any such disclosure constitutes the theft of Inlellectual property. UNDERDOG does not accept or assume liability for the use of its products and disclaims all and any warrenties that would or might otherwise attache to the products or their use by any person or entity.

TEST HOLE REPORT

FORM BY/TECHS: JR/BK

DATE: 04/18/2023

SHEET/DRAWING #: 3

TH# 3

PROJECT: LS 980, 981, and 1051 WUD 21-059

CLIENT: Holtz

UTILITY LOCATED: REC. WATER [WATER] ELECTRIC [TELEPHONE] COMMUNICATION SANITARY GAS STORM IRRIGATION UNKNOWN

CONDITION: POOR [FAIR] GOOD

MATERIAL FOUND: [CI] DI STEEL RCP [PVC] POLY AC PCCP ROUGH POUR SMOOTH POUR DB CBL VCPX TILE DUCT T.COTTA OTHER:

SOIL CONDITION: [MOIST] WET DRY SANDY [ROCKY] DEBRIS SUBMERGED

VISUALLY VERIFIED? [YES] NO

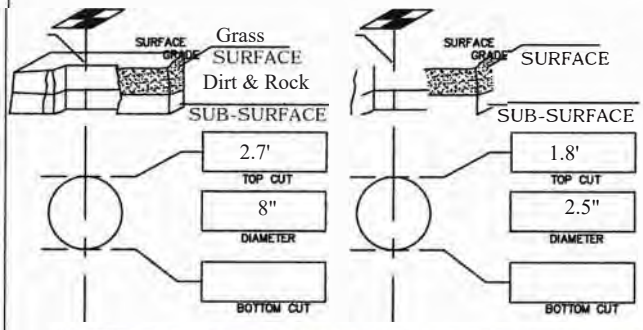
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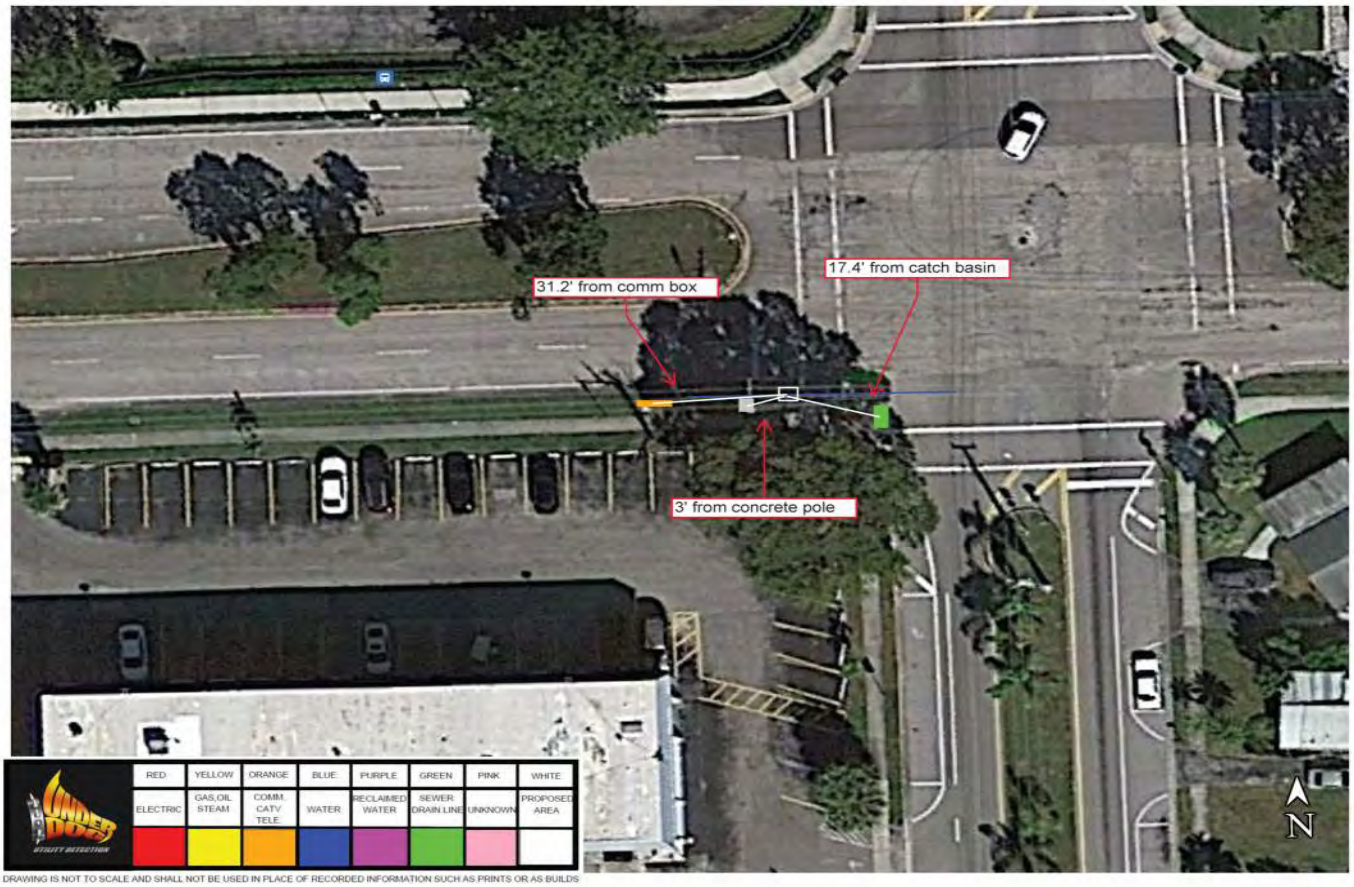
N.T.S.

TH#:- SURFACE: [SOFT] HARD FACING: N S E W

TH#:- SURFACE: [SOFT] HARD FACING: N S [E] W

Notes: 8" C.I. @ 2.7' Also a 2.5" Gray PVC @ 1.8'





DRAWING IS NOT TO SCALE AND SHALL NOT BE USED IN PLACE OF RECORDED INFORMATION SUCH AS PRINTS OR AS BUILDS

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TEST HOLE REPORT

FORM BY/TECHS: JR/BK

DATE: 04/18/2023

SHEET/DRAWING #: 4

TH# 4

PROJECT: LS 980, 981, and 1051 WUD 21-059

CLIENT: Holtz

UTILITY LOCATED: REC. WATER WATER **ELECTRIC** **TELEPHONE** **COMMUNICATION** SANITARY GAS STORM IRRIGATION UNKNOWN

CONDITION: POOR **FAIR** GOOD

MATERIAL FOUND: CI DI STEEL RCP PVC POLY AC PCCP ROUGH POUR SMOOTH POUR **DB CBL** VCPX TILE DUCT T.COTTA OTHER:

SOIL CONDITION: **MOIST** WET DRY SANDY **ROCKY** DEBRIS SUBMERGED

VISUALLY VERIFIED? **YES** NO

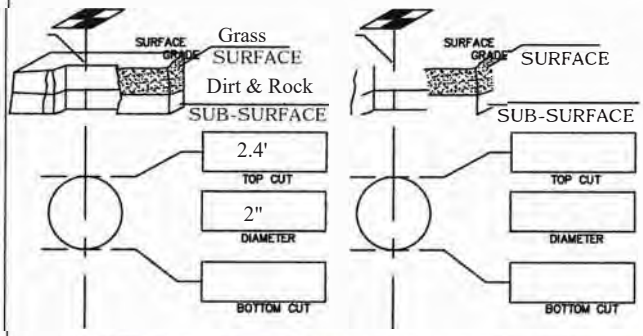
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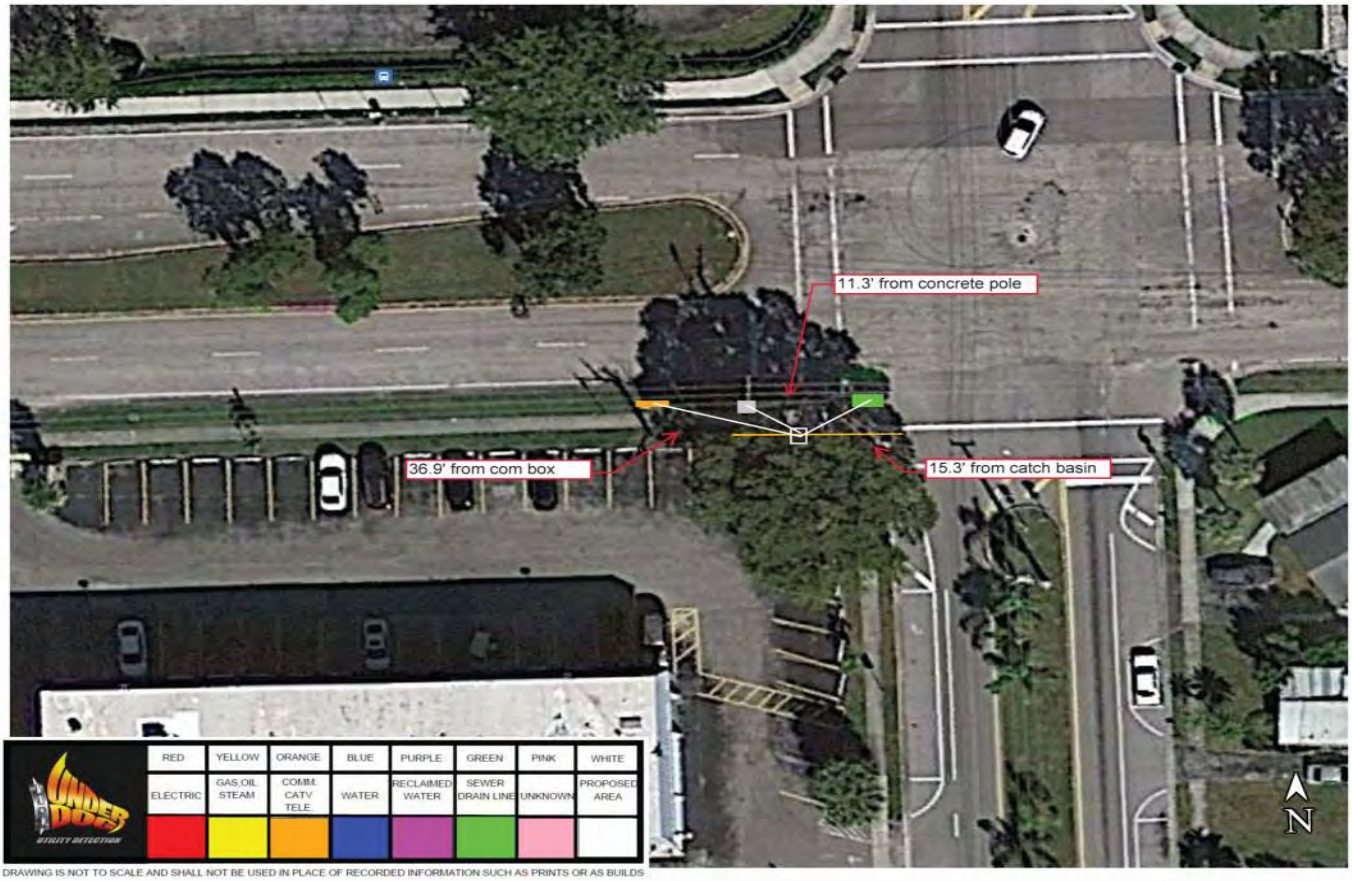
N.T.S.

TH#:- SURFACE: **SOFT** HARD FACING: N S **E** W

TH#:- SURFACE: SOFT HARD FACING: N S E W

Notes: 2- 1.5" D.B. Cables @ 2.4' measuring 2" wide





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TEST HOLE REPORT

FORM BY/TECHS: JR/BK

DATE: 04/18/2023

SHEET/DRAWING #: 5

TH# 5

PROJECT: LS 980, 981, and 1051 WUD 21-059

CLIENT: Holtz

UTILITY LOCATED: REC. WATER WATER ELECTRIC TELEPHONE **COMMUNICATION** SANITARY GAS STORM IRRIGATION UNKNOWN

CONDITION: POOR FAIR **GOOD**

MATERIAL FOUND: CI DI STEEL RCP **PVC** POLY AC PCCP ROUGH POUR SMOOTH POUR DB CBL VCPX TILE DUCT T.COTTA OTHER:

SOIL CONDITION: **MOIST** WET DRY SANDY ROCKY DEBRIS SUBMERGED

VISUALLY VERIFIED? **YES** NO

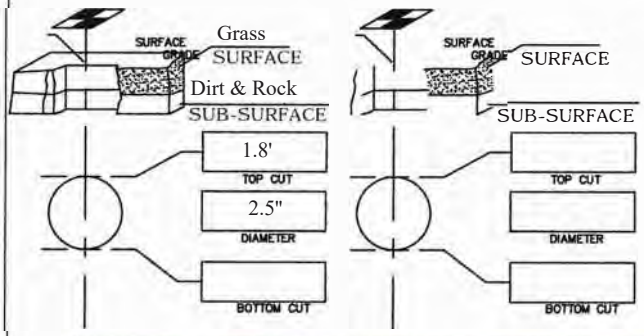
N

N.T.S.

TH#:- SURFACE: **SOFT** HARD FACING: N S **E** W

TH#:- SURFACE: SOFT HARD FACING: N S E W

Notes: 2.5" Gray PVC @ 1.8'





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TEST HOLE REPORT

FORM BY/TECHS: JR/BK

DATE: 04/18/2023

SHEET/DRAWING #: 6

TH # 6

PROJECT: LS 980, 981, and 1051 WUD 21-059

CLIENT: Holtz

UTILITY LOCATED: REC. WATER **WATER** ELECTRIC TELEPHONE COMMUNICATION SANITARY GAS STORM IRRIGATION UNKNOWN

CONDITION: POOR FAIR **GOOD**

MATERIAL FOUND: CI DI STEEL RCP **PVC** POLY AC PCCP ROUGH POUR SMOOTH POUR DB CBL VCPX TILE DUCT T.COTTA OTHER:

SOIL CONDITION: **MOIST** WET DRY SANDY ROCKY DEBRIS SUBMERGED

VISUALLY VERIFIED? **YES** NO

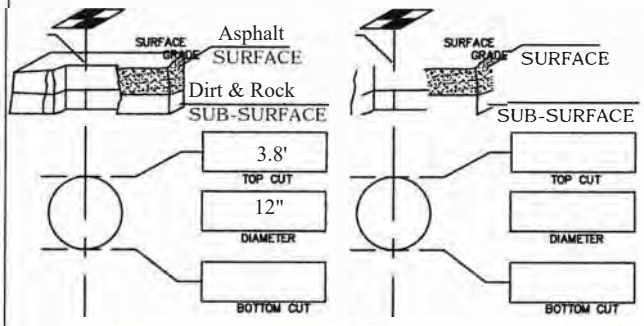
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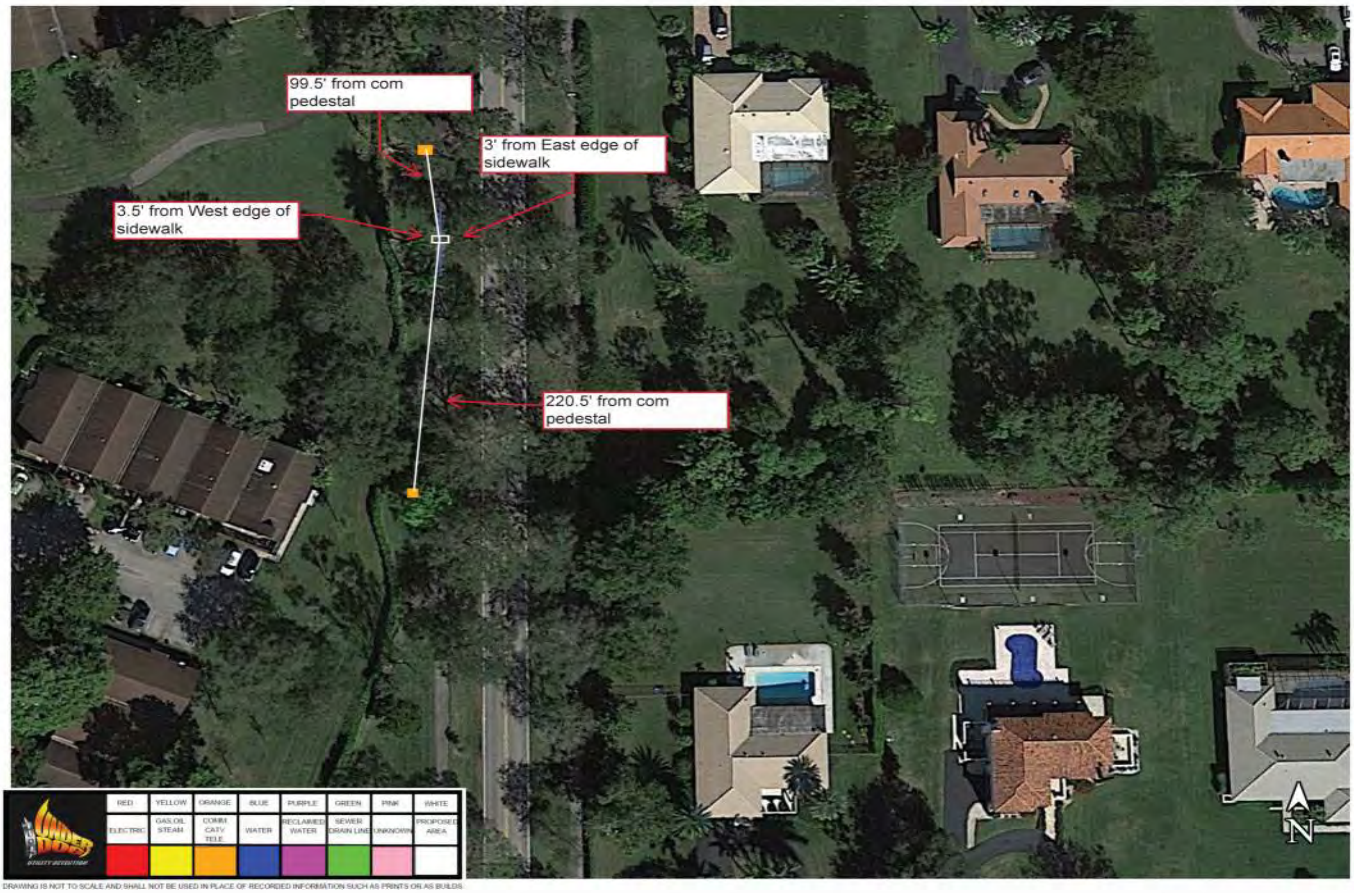
N.T.S.

TH#:- SURFACE: SOFT **HARD** FACING: **N** S E W

TH#:- SURFACE: SOFT HARD FACING: N S E W

Notes: 12" White PVC @ 3.8'





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TEST HOLE REPORT

FORM BY/TECHS: JR/BK

DATE: 04/18/2023

SHEET/DRAWING #: 7

TH# 7

PROJECT: LS 980, 981, and 1051 WUD 21-059

CLIENT: Holtz

UTILITY LOCATED: REC. WATER [WATER] ELECTRIC TELEPHONE COMMUNICATION SANITARY GAS STORM IRRIGATION UNKNOWN

CONDITION: POOR [FAIR] GOOD

MATERIAL FOUND: [CI] DI STEEL RCP PVC POLY AC PCCP ROUGH POUR SMOOTH POUR DB CBL VCPX TILE DUCT T.COTTA OTHER:

SOIL CONDITION: [MOIST] WET DRY SANDY ROCKY DEBRIS SUBMERGED

VISUALLY VERIFIED? [YES] NO

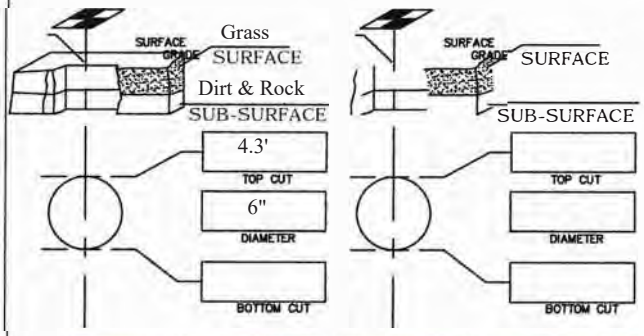
N

N.T.S.

TH#:- SURFACE: [SOFT] HARD FACING: N S [E] W

TH#:- SURFACE: SOFT HARD FACING: N S E W

Notes: 6" C.I. 4.3'





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TEST HOLE REPORT

FORM BY/TECHS: JR/BK

DATE: 04/18/2023

SHEET/DRAWING #: 8

TH# 8

PROJECT: LS 980, 981, and 1051 WUD 21-059

CLIENT: Holtz

UTILITY LOCATED: REC. WATER **WATER** ELECTRIC TELEPHONE COMMUNICATION SANITARY GAS STORM IRRIGATION UNKNOWN

CONDITION: POOR **FAIR** GOOD

MATERIAL FOUND: **CI** DI STEEL RCP PVC POLY AC PCCP ROUGH POUR SMOOTH POUR DB CBL VCPX TILE DUCT T.COTTA OTHER:

SOIL CONDITION: **MOIST** WET DRY SANDY **ROCKY** DEBRIS SUBMERGED

VISUALLY VERIFIED? **YES** NO

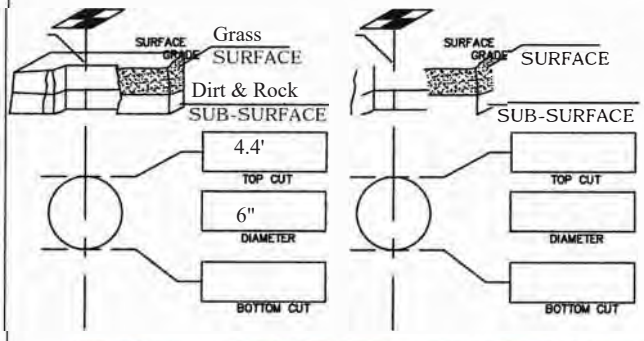
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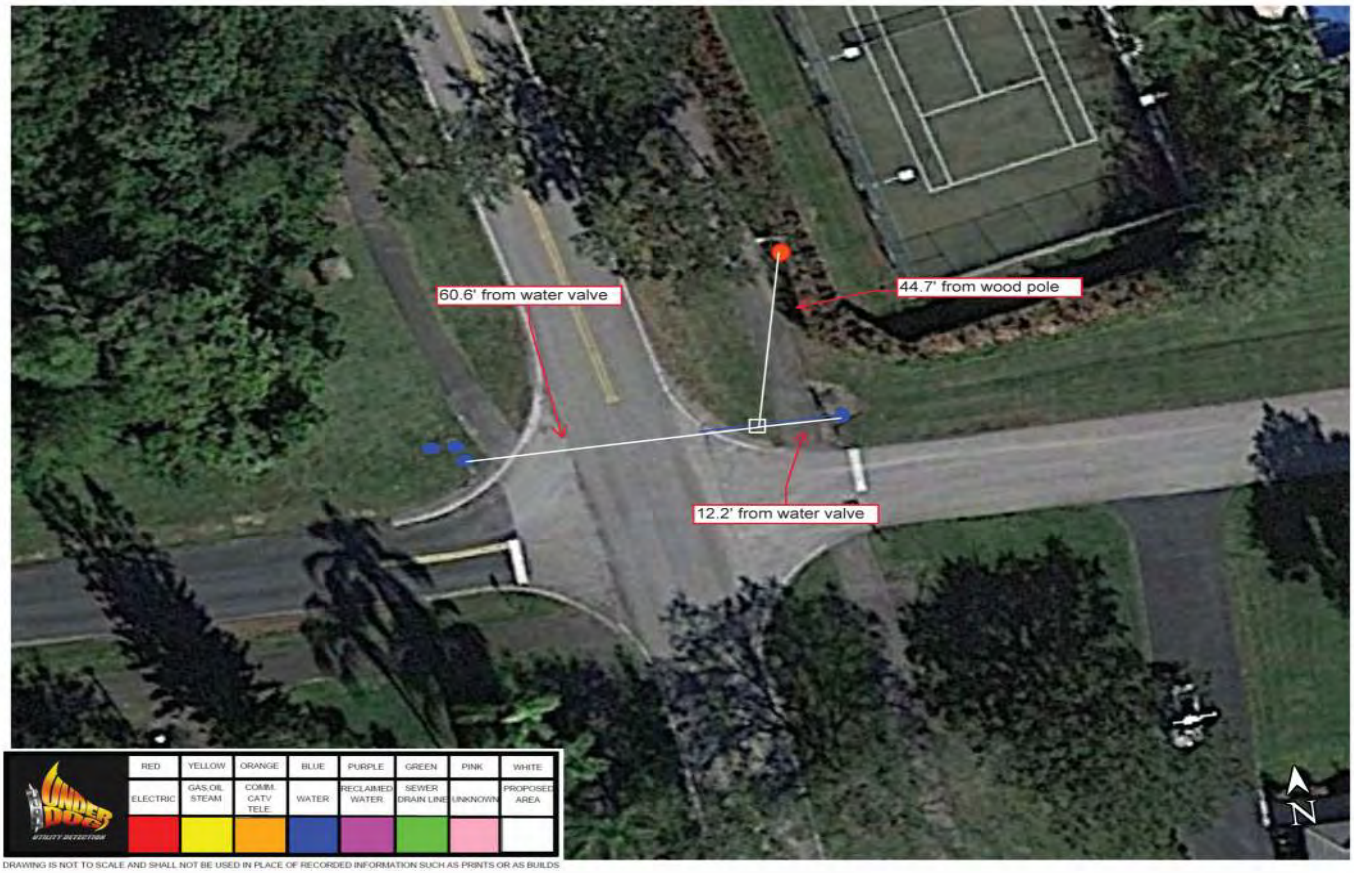
N.T.S.

TH#:- SURFACE: **SOFT** HARD FACING: N S **E** W

TH#:- SURFACE: SOFT HARD FACING: N S E W

Notes: 6" C.I. @ 4.4'





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TEST HOLE REPORT

FORM BY/TECHS: JR/BK

DATE: 04/18/2023

SHEET/DRAWING #: 9

TH# 9

PROJECT: LS 980, 981, and 1051 WUD 21-059

CLIENT: Holtz

UTILITY LOCATED: REC. WATER WATER ELECTRIC TELEPHONE **COMMUNICATION** SANITARY GAS STORM IRRIGATION UNKNOWN

CONDITION: POOR FAIR GOOD

MATERIAL FOUND: CI DI STEEL RCP **PVC** POLY AC PCCP ROUGH POUR SMOOTH POUR DB CBL VCPX TILE DUCT T.COTTA OTHER:

SOIL CONDITION: **MOIST** WET DRY SANDY **ROCKY** DEBRIS SUBMERGED

VISUALLY VERIFIED? **YES** NO

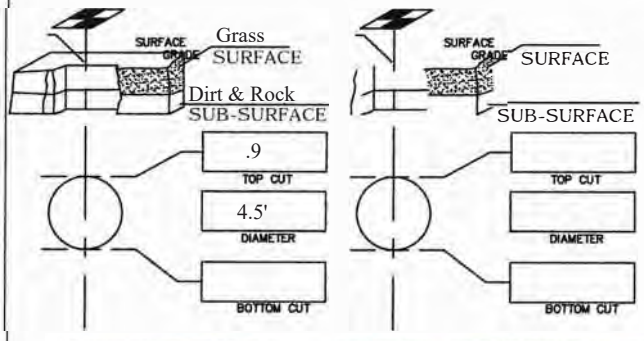
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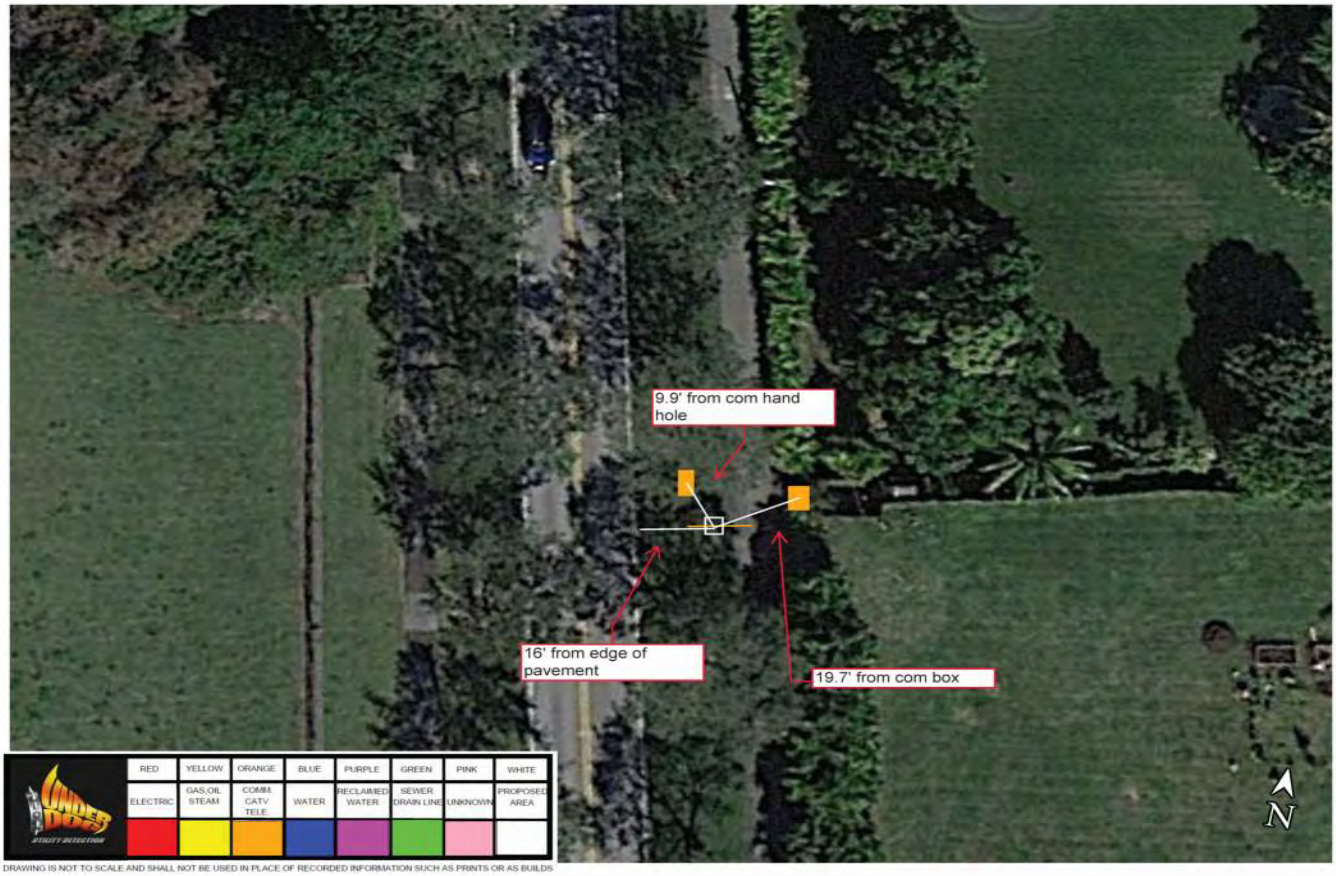
N.T.S.

TH#:- SURFACE: **SOFT** HARD FACING: N S **E** W

TH#:- SURFACE: SOFT HARD FACING: N S E W

Notes: 4.5" Gray PVC @ .9"





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TEST HOLE REPORT

FORM BY/TECHS: JR/BK

DATE: 04/18/2023

SHEET/DRAWING #: 10

TH# 10

PROJECT: LS 980, 981, and 1051 WUD 21-059

CLIENT: Holtz

UTILITY LOCATED: REC. WATER WATER ELECTRIC TELEPHONE **COMMUNICATION** SANITARY GAS
STORM **IRRIGATION** UNKNOWN

CONDITION: POOR **FAIR** GOOD

MATERIAL FOUND: CI DI STEEL RCP **PVC** POLY AC PCCP ROUGH POUR
SMOOTH POUR **DB CBL** VCPX TILE DUCT T.COTTA OTHER:

SOIL CONDITION: **MOIST** WET DRY SANDY **ROCKY** DEBRIS SUBMERGED

VISUALLY VERIFIED? **YES** NO

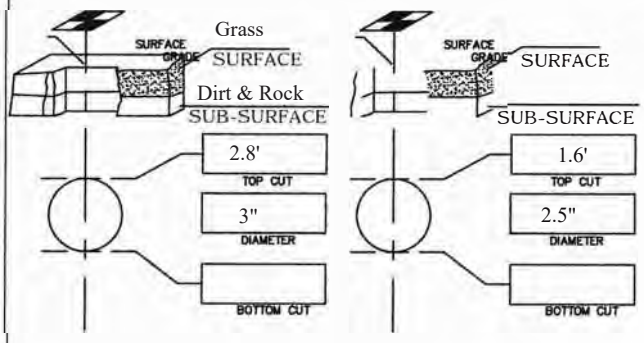
N

N.T.S.

TH#:- SURFACE: **SOFT** HARD
FACING: N S **E W**

TH#:- SURFACE: **SOFT** HARD
FACING: **N S** E W

Notes: 3" D.B. Cable @ 2.8' Running E to W
2.5" White PVC @ 1.6' Running N to S





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TEST HOLE REPORT

FORM BY/TECHS: JR/BK

DATE: 04/18/2023

SHEET/DRAWING #: 11

TH# 11

PROJECT: LS 980, 981, and 1051 WUD 21-059

CLIENT: Holtz

UTILITY LOCATED: REC. WATER **WATER** ELECTRIC TELEPHONE COMMUNICATION SANITARY GAS STORM IRRIGATION UNKNOWN

CONDITION: POOR **FAIR** GOOD

MATERIAL FOUND: **CI** DI STEEL RCP PVC POLY AC PCCP ROUGH POUR SMOOTH POUR DB CBL VCPX TILE DUCT T.COTTA OTHER:

SOIL CONDITION: **MOIST** WET DRY SANDY ROCKY DEBRIS SUBMERGED

VISUALLY VERIFIED? **YES** NO

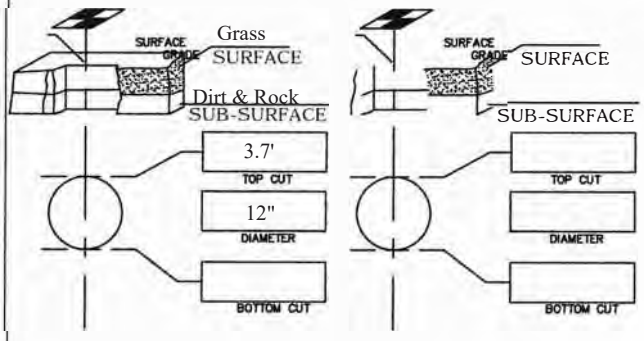
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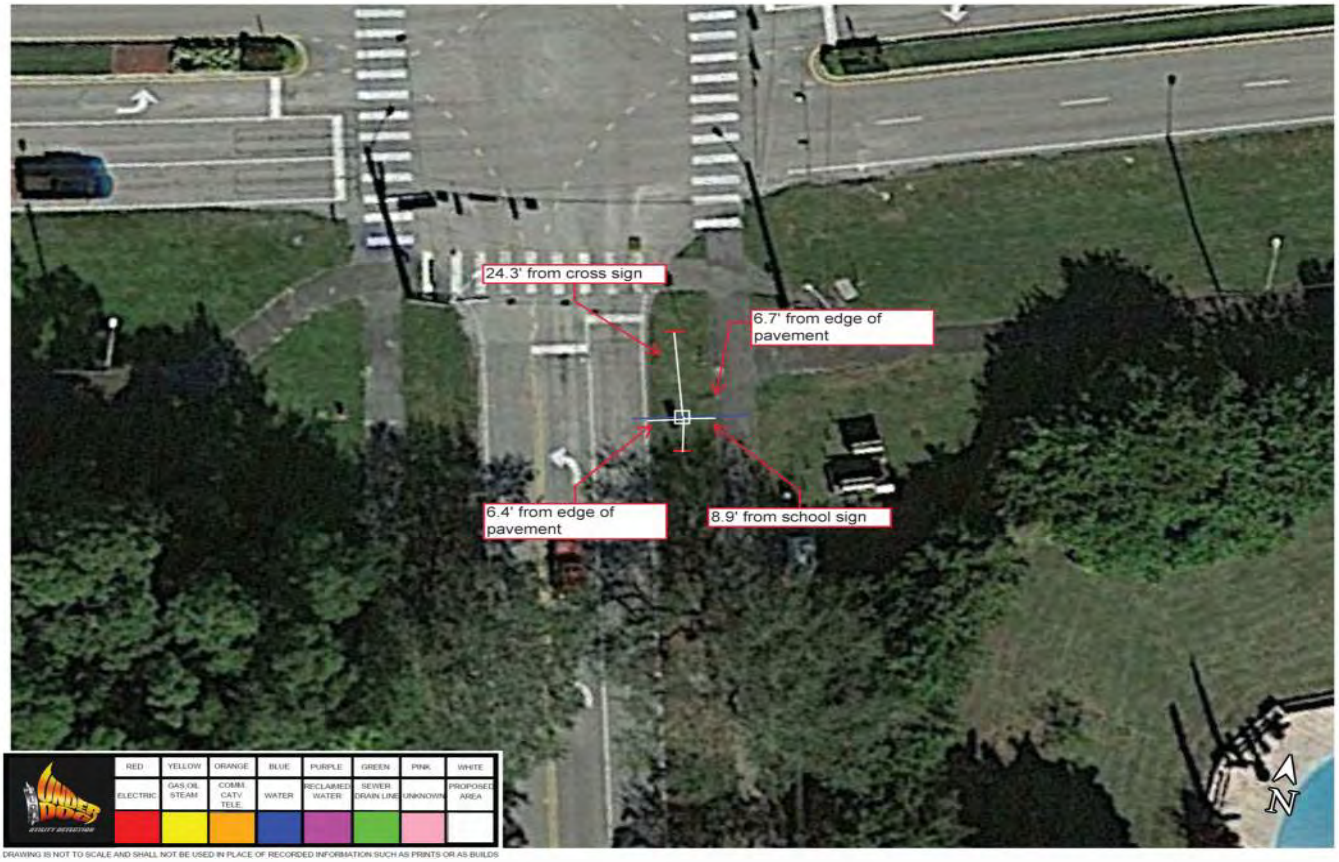
N.T.S.

TH#:- SURFACE: **SOFT** HARD FACING: N S **E** W

TH#:- SURFACE: SOFT HARD FACING: N S E W

Notes: 12" C.I. @ 3.7'





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TEST HOLE REPORT

FORM BY/TECHS: JR/BK

DATE: 04/18/2023

SHEET/DRAWING #: 12

TH# 12 & 13

PROJECT: LS 980, 981, and 1051 WUD 21-059

CLIENT: Holtz

UTILITY LOCATED: REC. WATER WATER ELECTRIC TELEPHONE COMMUNICATION **SANITARY** GAS STORM IRRIGATION UNKNOWN

CONDITION: POOR **FAIR** GOOD

MATERIAL FOUND: **CI** DI STEEL RCP PVC POLY AC PCCP ROUGH POUR SMOOTH POUR DB CBL VCPX TILE DUCT T.COTTA OTHER:

SOIL CONDITION: **MOIST** WET DRY SANDY **ROCKY** DEBRIS SUBMERGED

VISUALLY VERIFIED? **YES** NO

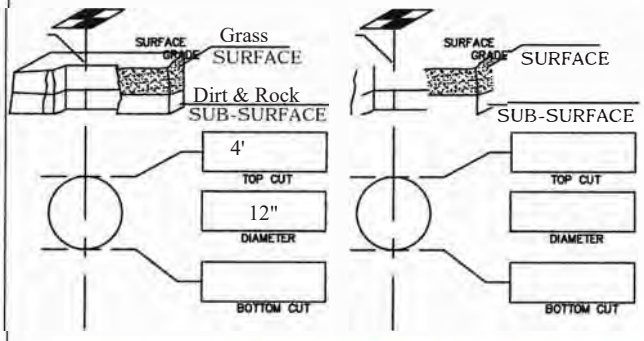
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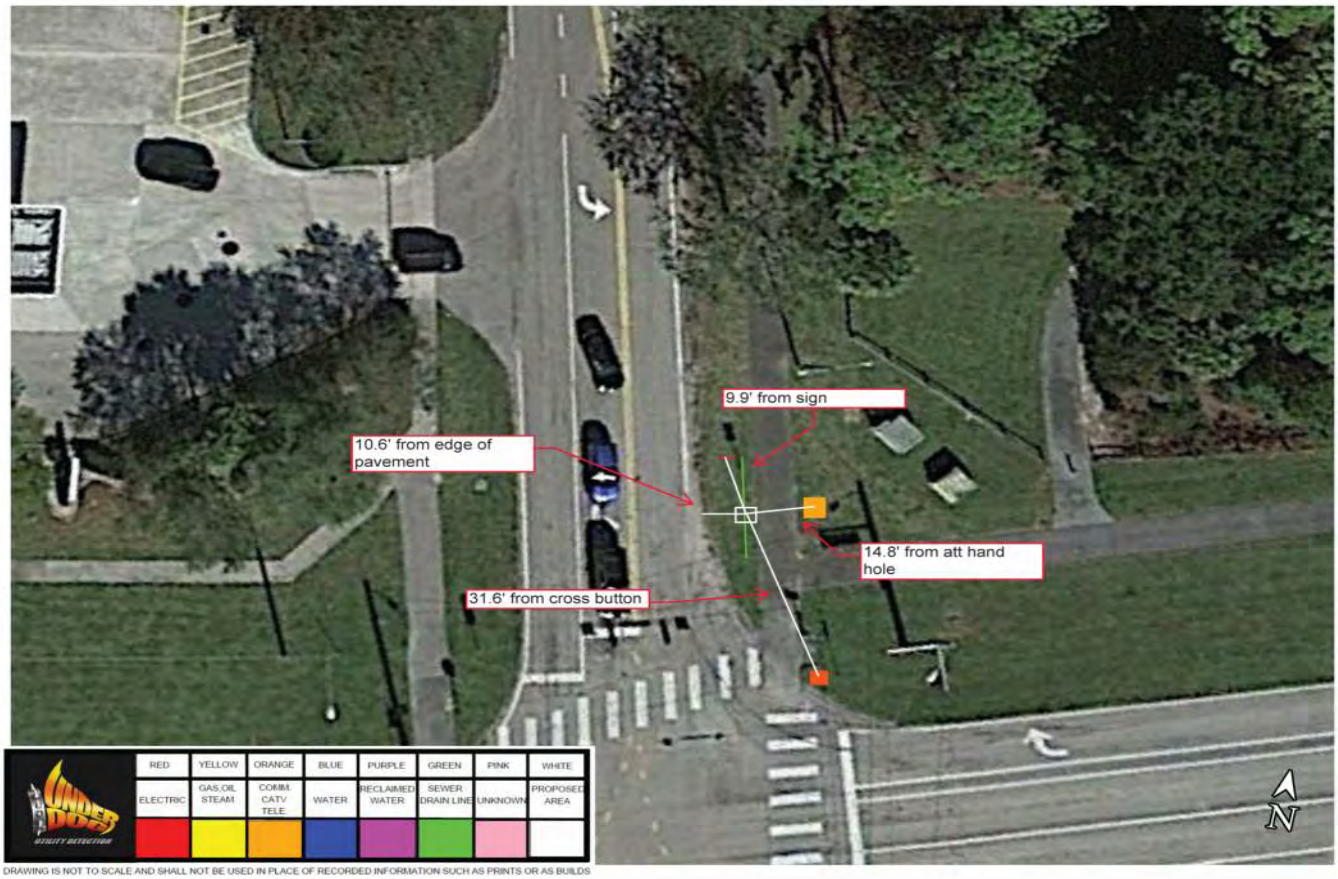
N.T.S.

TH#:12 SURFACE: **SOFT** HARD FACING: **N** S E W

TH#:– SURFACE: SOFT HARD FACING: N S E W

Notes: TH12 12" C.I. @ 4'





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TEST HOLE REPORT

FORM BY/TECHS: JR/BK DATE: 04/18/2023

SHEET/DRAWING #: TH# 13

PROJECT: LS 980, 981, and 1051 WUD 21-059

CLIENT: Holtz

UTILITY LOCATED: REC. WATER WATER ELECTRIC TELEPHONE COMMUNICATION [SANITARY] GAS
STORM IRRIGATION UNKNOWN

CONDITION: POOR [FAIR] GOOD

MATERIAL FOUND: [CI] DI STEEL RCP PVC POLY AC PCCP ROUGH POUR
SMOOTH POUR DB CBL VCPX TILE DUCT T.COTTA OTHER:

SOIL CONDITION: [MOIST] WET DRY SANDY [ROCKY] DEBRIS SUBMERGED

VISUALLY VERIFIED? [YES] NO

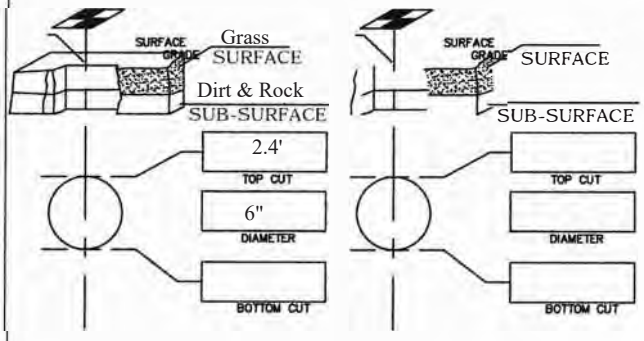
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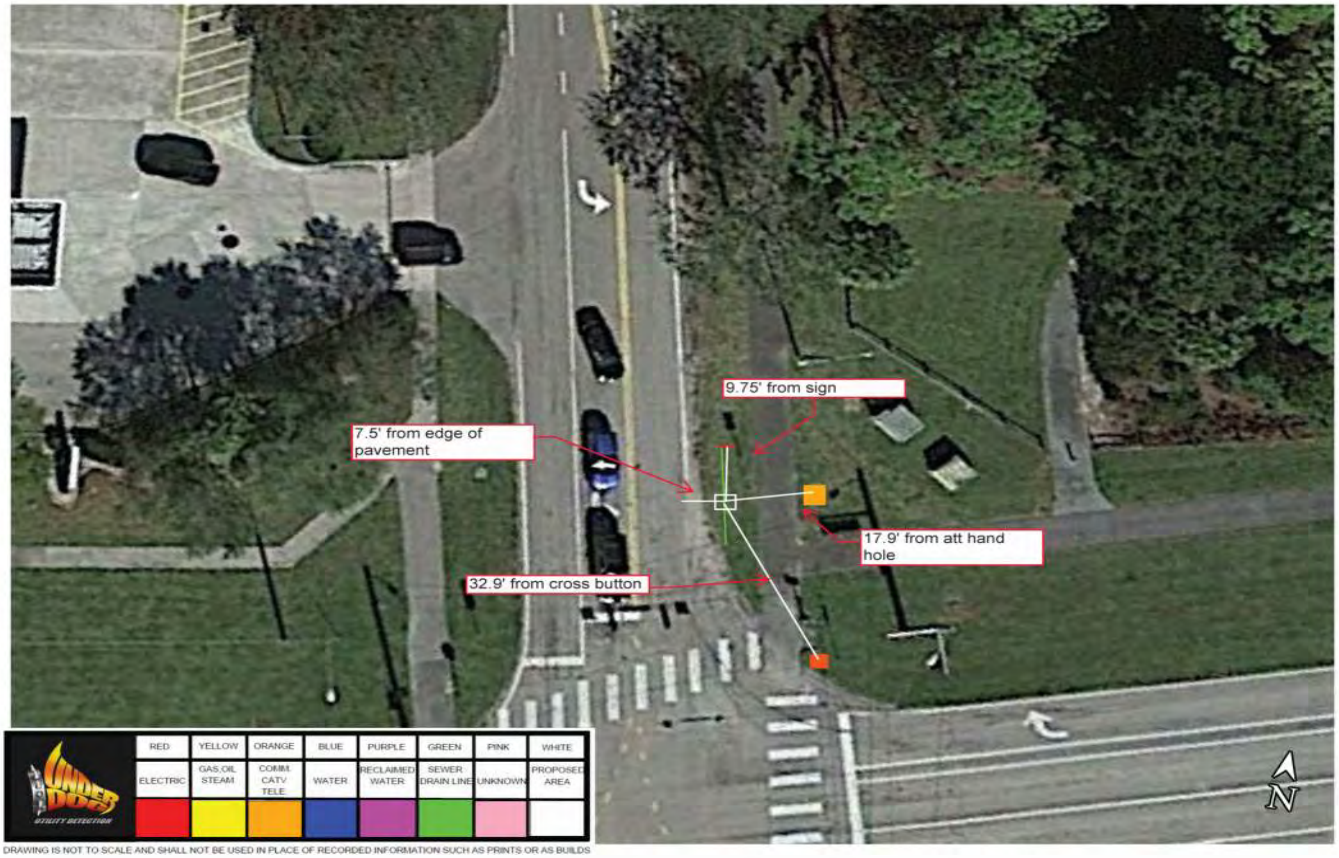
N.T.S.

TH#:- SURFACE: [SOFT] HARD FACING: [N S] E W

TH#:- SURFACE: SOFT HARD FACING: N S E W

Notes: 6" C.I. @ 2.4'





DRAWING IS NOT TO SCALE AND SHALL NOT BE USED IN PLACE OF RECORDED INFORMATION SUCH AS PRINTS OR AS BUILDS

UNDERDOG UTILITY DETECTION LLC. Utility Locating Services (561)-870-4943

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TEST HOLE REPORT

FORM BY/TECHS: JR/BK

DATE: 04/18/2023

SHEET/DRAWING #: 14

TH# 14

PROJECT: LS 980, 981, and 1051 WUD 21-059

CLIENT: Holtz

UTILITY LOCATED: REC. WATER [WATER] ELECTRIC TELEPHONE COMMUNICATION SANITARY GAS STORM IRRIGATION UNKNOWN

CONDITION: [POOR] FAIR GOOD

MATERIAL FOUND: [CI] DI STEEL RCP PVC POLY AC PCCP ROUGH POUR SMOOTH POUR DB CBL VCPX TILE DUCT T.COTTA OTHER:

SOIL CONDITION: [MOIST] WET DRY SANDY [ROCKY] DEBRIS SUBMERGED

VISUALLY VERIFIED? [YES] NO

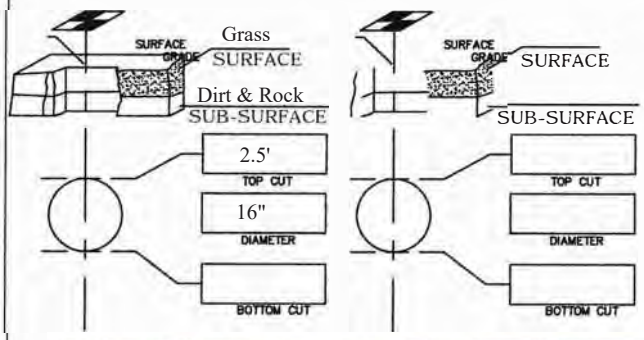
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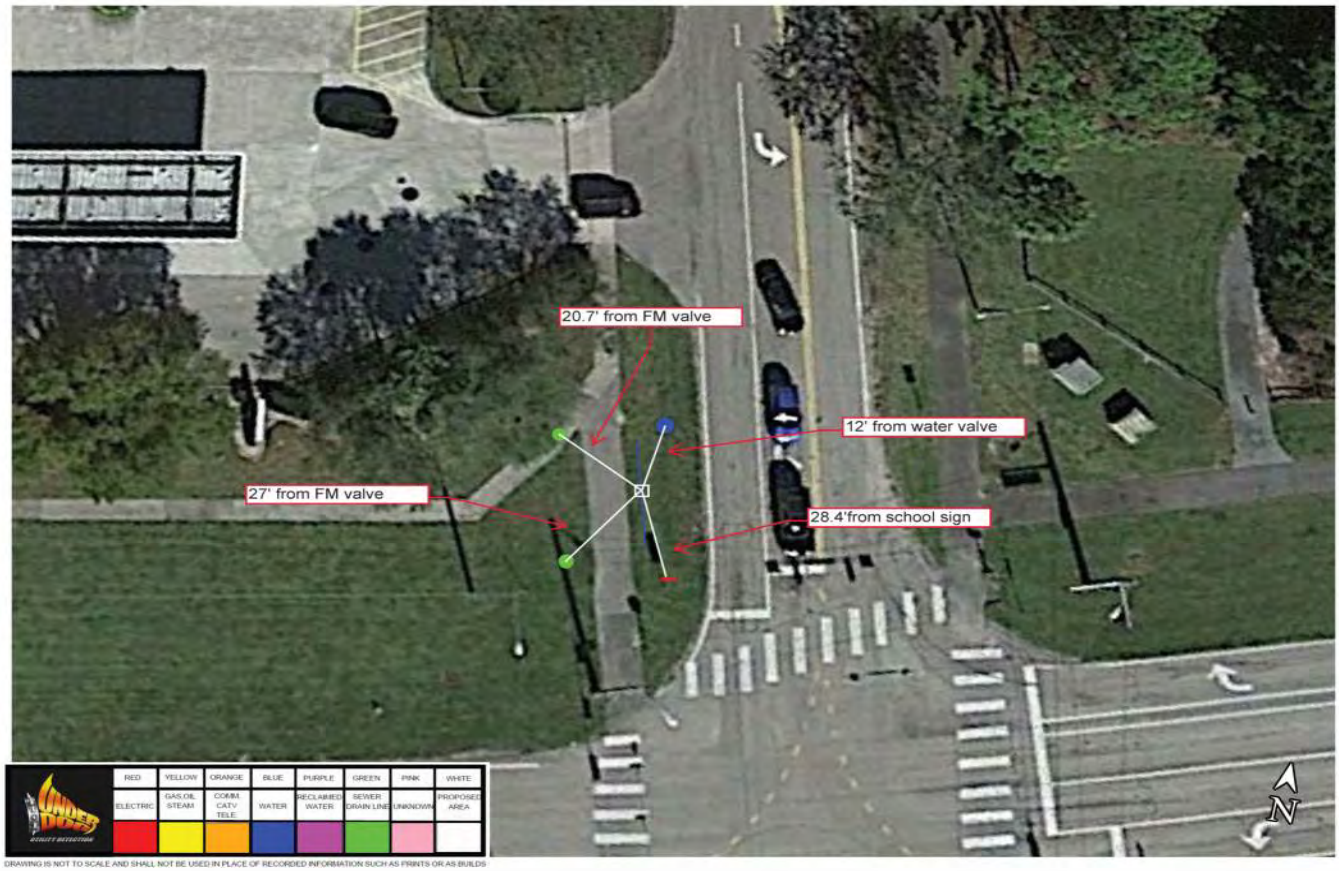
N.T.S.

TH#:- SURFACE: [SOFT] HARD FACING: [N] S E W

TH#:- SURFACE: SOFT HARD FACING: N S E W

Notes: 16" C.I. @ 2.5'





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TEST HOLE REPORT

FORM BY/TECHS: JR/BK

DATE: 04/18/2023

SHEET/DRAWING #: 15

TH# 15

PROJECT: LS 980, 981, and 1051 WUD 21-059

CLIENT: Holtz

UTILITY LOCATED: REC. WATER WATER ELECTRIC TELEPHONE COMMUNICATION [SANITARY] GAS
STORM [IRRIGATION] UNKNOWN

CONDITION: POOR [FAIR] GOOD

MATERIAL FOUND: [CI] DI STEEL RCP [PVC] POLY AC PCCP ROUGH POUR
SMOOTH POUR DB CBL VCPX TILE DUCT T.COTTA OTHER:

SOIL CONDITION: [MOIST] WET DRY SANDY [ROCKY] DEBRIS SUBMERGED

VISUALLY VERIFIED? [YES] NO

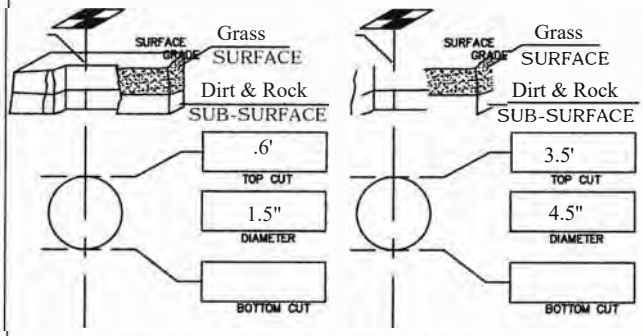
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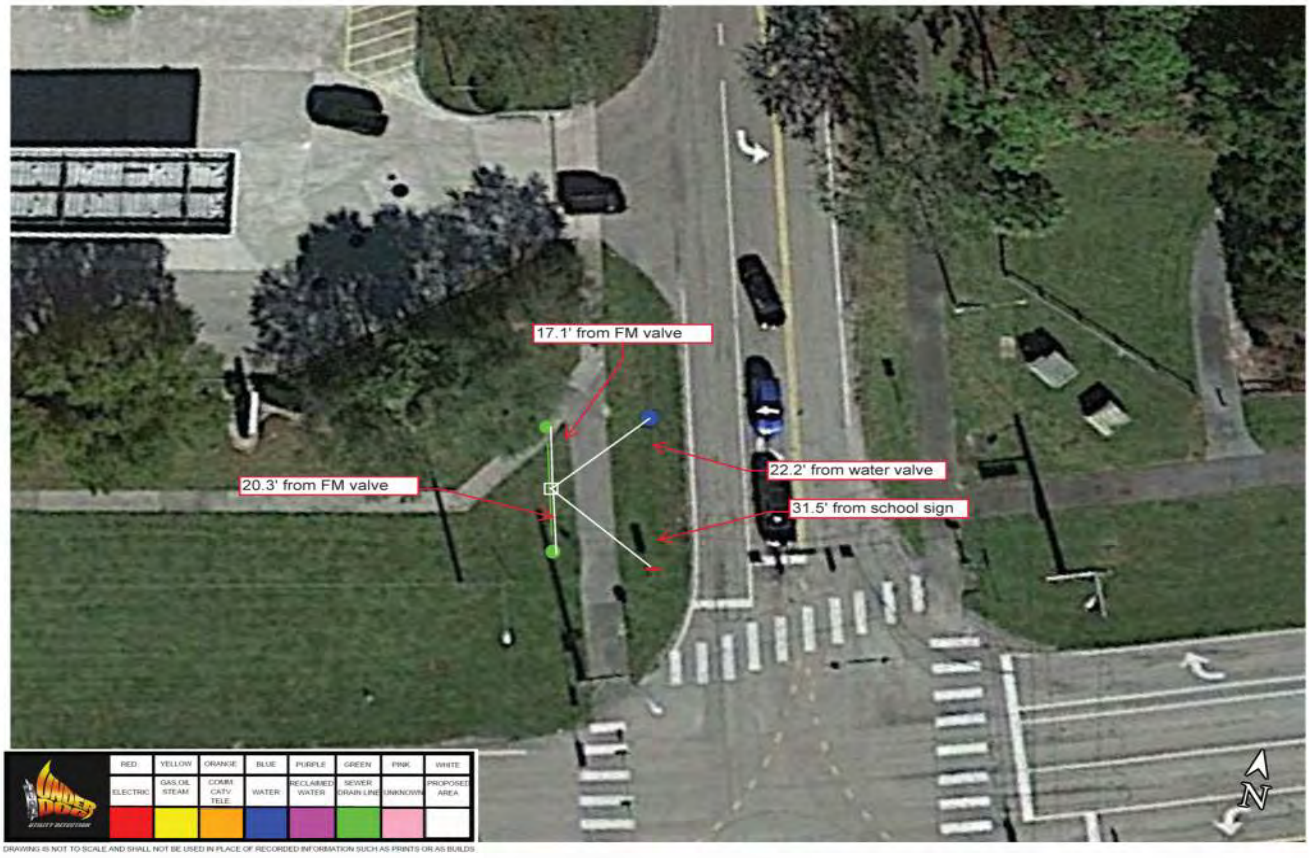
N.T.S.

TH#:- SURFACE: [SOFT] HARD FACING: [N] S E W

TH#:- SURFACE: [SOFT] HARD FACING: [N] S E W

Notes: 1.5" White PVC @ .6'
4.5" C.I. @ 3.5'





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PALM BEACH COUNTY WATER UTILITIES DEPARTMENT

WUD 21-059R: Improvements to Lift Stations 980, 981, and 1051; Lift Station (LS)Rehabilitation Bid Package 1, LS 0637

ATTACHMENT 2
LOCATION MAP

PALM BEACH COUNTY

ATTACHMENT 3

BID TABULATION SHEET

TITLE **Improvements to Lift Stations 980, 981, and 1051; Lift Station Rehabilitation Bid Package 1 – LS0637**

BID No. **21-059R** PAGE **1** OF **1**

	B & B Underground Construction, Inc.		Hinterland Group Inc.		Southern Underground Industries, Inc.					
BASE BID	$4,845,427.00		$6,167,070.00		$5,913,923.00		$		$	
Addendum (2)	(Y)	N	(Y)	N	(Y)	N	Y	N	Y	N
Attachment No. 1 BID BOND	(Y)	N	(Y)	N	(Y)	N	Y	N	Y	N
Attachment No. 2 List of Subcontractors	(Y)	N	(Y)	N	(Y)	N	Y	N	Y	N
Attachment No. 3 Trench Safety	(Y)	N	(Y)	N	(Y)	N	Y	N	Y	N

SIGNATURE Henry Molandez PBCWUD ENGINEER DATE 5/1/24

Print Date 8/13/2024 5:45:45 AM

ATTACHMENT 4

EBIX

Palm Beach County
Compliance Summary Report

Vendor Number	Vendor Name	AM Best Rating	Insurance Carrier	Policy #	Eff. Date	Exp. Date	Coverage	Contract Number	Contract Name
DX00002944	B&B Underground Construction Inc.	Modified	Compliant					21-059R	Improvements to Lift Stations 980, 981, and 1051 Lift Station Rehabilitation Bid Package 1, LS0637
		A++g , XV	The Phoenix Insurance Company	8106P81753A2426G	3/20/2024	3/20/2025	Auto Liability		
		A++g , XV	Travelers Property Casualty Company of America	CUP1S2296072426	3/20/2024	3/20/2025	Excess Liability		
		A++g , XV	The Travelers Indemnity Company of America	DTCO6P945262TIA24	3/20/2024	3/20/2025	General Liability		
		A++ , XV	Federal Insurance Company	000045471513	3/20/2024	3/20/2025	Installation Floater		
		A+r , X	Bridgefield Casualty Insurance Company	019650601000	3/20/2024	3/20/2025	Workers Comp		

Risk Profile : Standard - Construction Services

Required Additional Insured : Palm Beach County Board of County Commissioners

Ownership Entity :