



The City of Delray Beach
100 NW 1st Avenue
Delray Beach, FL 33444

PURCHASING DEPARTMENT

INVITATION TO BID CONSTRUCTION

ITBC NO.: 2018-049

TITLE: WATER TREATMENT PLANT UPGRADES AND IMPROVEMENTS

PROJECT NO. 17-038

DUE DATE AND TIME: SEPTEMBER 21, 2018 AT 2:00 PM

INSTRUCTIONS

Sealed Bids must be received on or before the due date and time (local time). All Bids will be publicly opened at City Hall, unless otherwise specified.

Submission of Bids electronically will be through a secure mailbox at BidSync (www.bidsync.com) until the Due Date and Time as indicated in this ITBC. BidSync does not accept electronic Bids after the Due Date and Time. It is the sole responsibility of the Bidder to ensure its electronic Bid submission is complete prior to the solicitation Due Date and Time. Electronic submission of bids will require the uploading of forms and/or attachments as designated in this ITBC. Electronic submission must include a signed original of the Solicitation Summary form. The submission of forms and attachments containing embedded documents or proprietary file extensions is prohibited. All documents should be attached as separate file.

Bids submitted in hard copy format must be delivered to the City Hall Front Lobby Reception Desk, 100 N.W. 1st Avenue, Delray Beach, Florida 33444. Normal City business hours are 8:00 AM to 5:00 PM, Monday through Friday, except holidays. Hard copy Bid packages shall have the following information clearly marked on the face of the sealed package: Bidder's name, return address, ITBC number, Due Date for submission of Bids, and the title of the Bid. Included in the package shall be one (1) hard copy original clearly identified as the "Original" that includes a signed original of the Solicitation Summary form, one (1) duplicate hard copy, and one (1) electronic version of the Bid on a Universal Serial Bus (USB) drive in a usable PDF format.

If the Solicitation Summary form is not included, the City may deem the Bid non-responsive. Bids must contain all information required to be included in the submittal, as described in this Solicitation.

BROADCAST

The City of Delray Beach utilizes electronic online services for notification and distribution of its Solicitation documents. The City's Solicitation information can be obtained from: (a) BidSync – www.bidsync.com; (b) Purchasing webpage on the City of Delray Beach [website](http://www.cityofdelraybeach.com/purchasing); (c) Request via email purchasing@mydelraybeach.com; or (d) City Hall via hard copies.

Bidders who obtain Solicitations from sources other than those named above are cautioned that the Invitation to Bid Construction package may be incomplete. The City may not evaluate incomplete Bid packages. BidSync is an independent entity and is not an agent or representative of the City. Communications to any independent entities does not constitute communications to the City. The City is not responsible for errors and omissions occurring in



the transmission or downloading of any documents, addenda, plans, or specifications from these websites. In the event of any discrepancy between information on these websites and the hard copy Solicitation documents, the terms and conditions of the hard copy documents will prevail.

CONTACT PERSON

Any questions regarding the specifications and Solicitation process must be submitted in writing to the Purchasing Department at purchasing@mydelraybeach.com or through the "Question" feature on www.bidsync.com. Requests for clarification and additional information must be received prior to the Deadline for Submission of Questions on September 14, 2018 at 5:00 P.M. local time.



**The City of Delray Beach
100 N.W. 1st Avenue
Delray Beach, FL 33444**

LEGAL ADVERTISEMENT

**INVITATION TO BID CONSTRUCTION NO. 2018-049
WATER TREATMENT PLANT UPGRADES AND IMPROVEMENTS**

The City of Delray Beach is seeking Bids from qualified Bidders to construct specific upgrades and improvements at the City's Water Treatment Plant, in accordance with the terms, conditions, and specifications contained in this Invitation to Bid Construction. Contractor is responsible for all permitting requirements, unless otherwise indicated.

Invitation to Bid Construction documents are available beginning August 20, 2018 on the Purchasing webpage on the City of Delray Beach [website](#); on the Bid Sync website – www.bidsync.com; via email request to purchasing@mydelraybeach.com; and via hard copy at City Hall.

Submission of Bids electronically will be through a secure mailbox at BidSync (www.bidsync.com) until the Deadline for Submission as indicated in this ITBC. Bids submitted in hard copy format must be clearly marked "INVITATION TO BID CONSTRUCTION NO. 2018-049, WATER TREATMENT PLANT UPGRADES AND IMPROVEMENTS and delivered to the City of Delray Beach City Hall front lobby reception desk, 100 NW 1st Ave., Delray Beach, Florida 33444. The Deadline for Submission of Bids is September 21, 2018 at 2:00 PM local time. At that time, the Bids will be publicly opened and read aloud at City Hall. Late Bids will not be accepted and will be returned to the sender unopened.

The City will hold a Pre-Bid Conference on September 5, 2018, at City Hall, City of Delray Beach, starting promptly at 2:00 P.M. local time.

It is the responsibility of the Bidder to ensure all pages are included in the submission. All Bidders are advised to closely examine the Solicitation package. Any questions regarding the completeness or substance of the Solicitation package or scope of work must be submitted in writing via email to purchasing@mydelraybeach.com or by using the "Question" feature on www.bidsync.com.

The City of Delray Beach is exempt from Federal and State Taxes for tangible personal property tax.

The City of Delray Beach reserves the right to accept or reject any or all Bids, in whole or in part, with or without cause, to waive any irregularities and/or technicalities, and to award the contract on such coverage and terms it deems will best serve the interests of the City.

CITY OF DELRAY BEACH

TABLE OF CONTENTS

SECTION	PAGE
1. General Terms and Conditions	5
2. Special Terms and Conditions	14
3. Scope Of Work And Technical Specifications	23
<u>BID SUBMITTAL</u>	
4. Pricing Schedule	28
5. Minimum Qualifications	29
6. Acknowledgement of Addenda	31
7. Signature Page	32
8. Affidavits, Performance and Payment Bonds Format, Letter of Credit Format	33
9. Sample Agreement Format	45
10. Exhibits	48
11. SOLICITATION SUMMARY (MUST BE INCLUDED AS A HARD-COPY IN THE BID PACKAGE)	49

SECTION 1 GENERAL TERMS AND CONDITIONS

1.1 DEFINITIONS

- a. Bid: any offer(s) submitted in response to an Invitation to Bid Construction.
- b. Bidder: person or firm submitting a Bid in response to an Invitation to Bid Construction.
- c. Bid Solicitation or Invitation to Bid Construction: this Solicitation documentation, including any and all addenda.
- d. Bid Submittal Form: describes the goods or services to be purchased, and must be completed and submitted with the Bid.
- e. City: shall refer to the City of Delray Beach, Florida.
- f. Contract or Agreement: Invitation to Bid Construction, all addenda issued thereto, all affidavits, the signed agreement, and all related documents which comprise the totality of the contract or agreement between the City and the Bidder.
- g. Contractor: awarded bidder or Bidder who is awarded a contract to provide goods or services to the City.
- h. Invitation to Bid Construction: formal request for Bids from qualified Bidders.
- i. Purchasing Department: Purchasing Department of the City of Delray Beach, Florida.
- j. Responsible Bidder: Bidder which has the capability in all respects to perform in full the contract requirements, as stated in the Invitation to Bid Construction, and the integrity and reliability that will assure good-faith performance.
- k. Responsive Bidder: Bidder whose Bid conforms in all material respects to the terms and conditions included in the Invitation to Bid Construction.

1.2 CONE OF SILENCE

Pursuant to Section 2-355 of Palm Beach County Ordinance No. 2011-039, and the purchasing policies of the City of Delray Beach, all Solicitations, once advertised and until the appropriate authority has approved an award recommendation, are under the "Cone of Silence". This limits and requires documentation of communications between potential Bidders and/or Bidders on City Solicitations, the City's professional staff, and the City Council members.

1.3 ADDENDUM

The Purchasing Department may issue an addendum in response to any inquiry received, prior to the close of the Solicitation period, which changes, adds, or clarifies the terms, provisions, or requirements of the Solicitation. The

Bidder should not rely on any representation, statement, or explanation, whether written or verbal, other than those made in the Solicitation document or in the addenda issued. Where there appears to be a conflict between the Solicitation and any addenda, the last addendum issued shall prevail. It is the vendor's responsibility to ensure receipt of all addenda, and any accompanying documentation. The vendor is required to submit with its Bid or Bid a signed "Acknowledgment of Addenda" form, when any addenda have been issued.

1.4 LEGAL REQUIREMENTS

This Solicitation is subject to all legal requirements contained in the applicable City Ordinances and Resolutions, as well as all applicable City, State, and Federal Statutes. Where conflict exists between this Bid Solicitation and these legal requirements, the authority shall prevail in the following order: Federal, State, and local.

1.5 CHANGE OF BID

Prior to the scheduled Bid opening a Bidder may change its Bid by submitting a new Bid (as indicated on the cover page) with a letter on the firm's letterhead, signed by an authorized agent stating that the new submittal replaces the original submittal. The new submittal shall contain the letter and all information as required for submitting the original Bid. No changes to a Bid will be accepted after the Bid has been opened.

1.6 WITHDRAWAL OF BID

A Bid shall be irrevocable unless the Bid is withdrawn as provided herein. Only a written letter received by the Purchasing Department prior to the Bid opening date may withdraw a Bid. A Bid may also be withdrawn ninety (90) days after the Bid has been opened and prior to award, by submitting a letter to the Purchasing and Contracts Director. The withdrawal letter must be on company letterhead and signed by an authorized agent of the Bidder.

1.7 CONFLICTS WITHIN THE BID SOLICITATION

Where there appears to be a conflict between the General Terms and Conditions, Special Conditions, the Technical Specifications, the Bid Submittal Form, or any addendum issued, the order of precedence shall be: the last addendum issued, the Bid Submittal Form, the Technical Specifications, the Special Conditions, and then the General Terms and Conditions.

1.8 PROMPT PAYMENT TERMS

It is the policy of the City of Delray Beach that payment for all purchases by City departments shall be made in a timely manner. The City will pay the awarded Bidder upon receipt and acceptance of the goods or services by a duly authorized representative of the City. In accordance with Section 218.74, Florida Statutes, the time at which payment shall be

due from the City shall be forty-five (45) days from receipt of a proper invoice. The time at which payment shall be due to small businesses shall be thirty (30) days from receipt of a proper invoice. Proceedings to resolve disputes for payment of obligations shall be concluded by final written decision of the City Manager or designee, not later than sixty (60) days after the date on which the proper invoice was received by the City.

1.9 DISCOUNTS (PROMPT PAYMENTS)

The Bidder may offer cash discounts for prompt payments; however, such discounts will not be considered in determining the lowest price during Bid evaluation. Bidders are requested to provide prompt payment terms in the space provided on the Bid submittal signature page of the Solicitation.

1.10 PREPARATION OF BIDS

- a. The Bid forms define requirements of items to be purchased, and must be completed and submitted with the Bid. Use of any other forms will result in the rejection of the Bidder's offer. The Bid submittal forms must be legible. Bidders shall use typewriter, computer, or ink. All changes must be crossed out and initialed in ink. Failure to comply with these requirements may cause the Bid to be rejected.
- b. An authorized agent of the Bidder's firm must sign the Bid submittal form. **Failure to sign the Signature Page of the Bid shall render the Bid non-responsive.**
- c. The Bidder may be considered non-responsive if Bids are conditioned upon modifications, changes, or revisions to the terms and conditions of this Solicitation.
- d. The Bidder may submit alternate Bid(s) for the same Solicitation provided that such offer is allowable under the terms and conditions. The alternate Bid must meet or exceed the minimum requirements and be submitted as a separate Bid submittal marked "Alternate Bid".
- e. When there is a discrepancy between the unit prices and any extended prices, the unit prices will prevail.
- f. Late Bids will not be accepted and will be returned to the sender unopened. It is the Bidder's responsibility to ensure timely delivery by the due date and time, and at the place stated in this Solicitation. No exceptions will be made due to weather, carrier, traffic, illness, or other issues.

1.11 CANCELLATION OF BID SOLICITATION

The City of Delray Beach reserves the right to cancel, in whole or in part, any Invitation to Bid Construction when it is in the best interest of the City.

1.12 AWARD OF CONTRACT

- a. The contract may be awarded to the responsive and responsible Bidder meeting all requirements as set forth in the Solicitation. The City reserves the right to reject any and all Bids, to waive irregularities or technicalities, and to re-advertise for all or any part of this Bid Solicitation as deemed in its best interest. The City shall be the sole judge of its best interest.
- b. The City reserves the right to reject any and all Bids if it is determined that prices are excessive, best offers are determined to be unreasonable, or it is otherwise determined to be in the City's best interest to do so.
- c. The City reserves the right to negotiate prices **with the responsive and responsible low Bidder**, provided that the scope of work of this Solicitation remains the same.
- d. The Bidder's performance as a prime contractor or subcontractor on previous City contracts shall be taken into account in evaluating the Bid received for this Bid Solicitation.
- e. The City will provide a copy of the Bid Tabulation to all Bidders responding to this Solicitation.
- f. The Bid Solicitation, any addenda and/or properly executed modifications, the signed Agreement, the purchase order, and any change order(s) shall constitute the contract.
- g. The Purchasing Director will decide all tie Bids.
- h. Award of this Bid may be predicated on compliance with and submittal of all required documents as stipulated in the Bid Solicitation.
- i. The City reserves the right to request and evaluate additional information from any Bidder after the submission deadline as the City deems necessary.

1.13 CONTRACT EXTENSION

The City reserves the right to automatically extend any agreement for a maximum period not to exceed ninety (90) calendar days in order to provide City departments with continual service and supplies while a new agreement is being solicited, evaluated, and/or awarded.

1.14 WARRANTY

All warranties express and implied shall be made available to the City for goods and services covered by this Bid Solicitation. All goods furnished shall be fully guaranteed by the awarded Bidder against factory defects and workmanship. At no expense to the City, the awarded Bidder shall correct any and all apparent and latent defects that may occur within the manufacturer's standard warranty.

- 1.15 **ESTIMATED QUANTITIES**
Estimated quantities or dollars are for Bidder's guidance only: (a) estimates are based on the City's anticipated needs and/or usage; and (b) the City may use these estimates to determine the low Bidder. No guarantee is expressed or implied as to quantities or dollars that will be used during the contract period. The City is not obligated to place any order for the given amount subsequent to the award of this Bid Solicitation.
- 1.16 **NON-EXCLUSIVITY**
It is the intent of the City to enter into an agreement with the awarded Bidder that will satisfy its needs as described herein. However, the City reserves the right as deemed in its best interest to perform, or cause to be performed, the work and services, or any portion thereof, herein described in any manner it sees fit, including but not limited to, award of other contracts, use of any contractor, or perform the work with its own employees.
- 1.17 **CONTINUATION OF WORK**
Any work that commences prior to and will extend beyond the expiration date of the current contract period shall, unless terminated by mutual written agreement between the City and the awarded bidder, continue until completion at the same prices, terms, and conditions.
- 1.18 **BID PROTEST**
A recommendation for contract award or rejection of award may be protested by a Bidder. The Bidder may file a written protest with the City Clerk's office. The Bidder shall file its written protest with the City Clerk, Monday through Friday, between the hours of 8:00 AM and 5:00 PM, excluding legal holidays. Protests shall contain the name, address, and phone number of the petitioner, name of the petitioner's representative (if any), and the title and Bid number of the Solicitation. The protest shall specifically describe the subject matter, facts giving rise to the protest, and the action requested from the City.
- The written protest must be received no later than seventy-two (72) consecutive hours (excluding Saturdays, Sundays, and legal holidays) after the time of initial posting of the intended award. Failure to file a timely formal written protest within the time period specified shall constitute a waiver by the Bidder of all rights of protest.
- In the event of a timely protest, the City will not proceed further with award of the contract and agreement until all administrative remedies are exhausted, or until the City Manager determines the award of the contract is immediately necessary to protect the public health, welfare, or safety.
- 1.19 **LAWS AND REGULATIONS**
The awarded Bidder shall comply with all laws and regulations applicable to provide the goods or services specified in this Bid Solicitation. The Bidder shall be familiar with all federal, state, and local laws that may affect the goods and/or services offered.
- 1.20 **LICENSES, PERMITS AND FEES**
The awarded Bidder(s) shall hold all licenses and/or certifications, obtain and pay for all permits and/or inspections, and comply with all laws, ordinances, regulations, and building code requirements applicable to the work required herein. Damages, penalties, and/or fines imposed on the City or an awarded Bidder for failure to obtain and maintain required licenses, certifications, permits, and/or inspections shall be borne by the awarded Bidder.
- 1.21 **SUBCONTRACTING**
Unless otherwise specified in this Bid Solicitation, the awarded bidder shall not subcontract any portion of the work without the prior written consent of the City. The ability to subcontract may be further limited by the Special Conditions. Subcontracting without the prior consent of the City may result in termination of the contract for default.
- 1.22 **ASSIGNMENT**
The awarded Bidder shall not assign, transfer, hypothecate, or otherwise dispose of this contract, including any rights, title, or interest therein, or its power to execute such contract to any person, company, or corporation without the prior written consent of the City. Assignment without the prior consent of the City may result in termination of the contract for default.
- 1.23 **SHIPPING TERMS**
Unless otherwise specified in the Bid Solicitation, prices quoted shall be F.O.B. Destination. Freight shall be included in the proposed price.
- 1.24 **RESPONSIBILITIES AS EMPLOYER**
The employee(s) of the awarded Bidder shall be considered to be at all times its employee(s), and not an employee(s) or agent(s) of the City or any of its departments. The awarded Bidder shall provide physically competent employee(s) capable of performing the work as required. The City may require the awarded Bidder to remove any employee it deems unacceptable. All employees of the awarded Bidder shall wear proper identification.
- It is the awarded Bidder's responsibility to ensure that all its employees and subcontractors comply with the employment regulations required by the US Department of Homeland Security. The City shall have no responsibility to check or verify the legal immigration status of any employee of the awarded Bidder.
- 1.25 **INDEMNIFICATION**
The awarded Bidder shall indemnify and hold harmless the City and its officers, employees, agents, and instrumentalities from any and all liability, losses or damages, including attorney's fees and costs of defense,

which the City or its officers, employees, agents, or instrumentalities may incur as a result of claims, demands, suits, causes of actions, or proceedings of any kind or nature arising out of, relating to, or resulting from the performance of the agreement by the awarded Bidder or its employees, agents, servants, partners, principals, or subcontractors. The awarded Bidder shall pay all claims and losses in connection therewith, and shall investigate and defend all claims, suits, or actions of any kind or nature in the name of the City, where applicable, including appellate proceedings, and shall pay all costs, judgments, and attorney's fees which may be incurred thereon. The awarded Bidder expressly understands and agrees that any insurance protection required by this contract agreement or otherwise provided by the awarded Bidder shall in no way limit the responsibility to indemnify, keep and save harmless, and defend the City or its officers, employees, agents, and instrumentalities as herein provided.

1.26 COLLUSION

A Bidder recommended for award as the result of a competitive Solicitation for any City purchases of supplies, materials, and services (including professional services, other than professional architectural, engineering, and other services subject to Sec. 287.055 Florida Stats.), purchase, lease, permit, concession, or management agreement shall, within five (5) business days of the filing of such recommendation, submit an affidavit under the penalty of perjury, on a form provided by the City, stating either that the contractor is not related to any of the other parties Bidding in the competitive Solicitation or identifying all related parties, as defined in this Section, which Bid in the Solicitation; and attesting that the contractor's Bid is genuine and not a sham or collusive or made in the interest or on behalf of any person not therein named, and that the contractor has not, directly or indirectly, induced or solicited any other Bidder to put in a sham Bid, or any other person, firm, or corporation to refrain from proposing, and that the Bidder has not in any manner sought by collusion to secure to the Bidder an advantage over any other Bidder. In the event a recommended Bidder identifies related parties in the competitive Solicitation its Bid shall be presumed to be collusive and the recommended Bidder shall be ineligible for award unless that presumption is rebutted to the satisfaction of the City. Any person or entity that fails to submit the required affidavit shall be ineligible for contract award.

1.27 MODIFICATION OF CONTRACT

The contract may be modified by mutual consent, in writing, through the issuance of a modification to the contract, a supplemental agreement, purchase order, or change order, as appropriate.

1.28 TERMINATION FOR CONVENIENCE

The City, at its sole discretion, reserves the right to terminate any contract entered into pursuant to this Invitation to Bid Construction (ITBC) with or without cause

immediately upon providing written notice to the awarded Bidder. Upon receipt of such notice, the awarded Bidder shall not incur any additional costs under the contract. The City shall be liable only for reasonable costs incurred by the awarded Bidder prior to the date of the notice of termination. The City shall be the sole judge of "reasonable costs."

1.29 TERMINATION FOR DEFAULT

The City reserves the right to terminate this contract, in part or in whole, or place the vendor on probation in the event the awarded Bidder fails to perform in accordance with the terms and conditions stated herein by providing written notice of such failure or default and by specifying a reasonable time period within which the awarded Bidder must cure any such failure to perform or default. If the awarded Bidder fails to cure the default within the time specified, the City may then terminate the subject contract by providing written notice to the awarded Bidder. The City further reserves the right to suspend or debar the awarded Bidder in accordance with the appropriate City ordinances, resolutions, and/or policies. The vendor will be notified by letter of the City's intent to terminate. In the event of termination for default, the City may procure the required goods and/or services from any source and use any method deemed in its best interest. All re-procurement costs shall be borne by the incumbent Bidder.

1.30 FRAUD AND MISREPRESENTATION

Any individual, corporation, or other entity that attempts to meet its contractual obligations with the City through fraud, misrepresentation, or material misstatement, may be debarred for up to five (5) years. The City, as a further sanction, may terminate or cancel any other contracts with such individual, corporation, or entity. Such individual or entity shall be responsible for all direct or indirect costs associated with termination or cancellation, including attorney's fees.

1.31 ACCESS AND AUDIT OF RECORDS

The City reserves the right to require the awarded Bidder to submit to an audit by an auditor of the City's choosing at the awarded Bidder's expense. The awarded Bidder shall provide access to all of its records, which relate directly or indirectly to this Agreement, at its place of business during regular business hours. The awarded Bidder shall retain all records pertaining to this Agreement, and upon request, make them available to the City for three (3) years following expiration of the Agreement. The awarded Bidder agrees to provide such assistance as may be necessary to facilitate the review or audit by the City to ensure compliance with applicable accounting and financial standards.

1.32 OFFICE OF THE INSPECTOR GENERAL

Palm Beach County has established the Office of the Inspector General, which is authorized and empowered to review past, present, and proposed County programs, contracts, transactions, accounts and records. The Inspector

General (IG) has the power to subpoena witnesses, administer oaths, require the production of records, and monitor existing projects and programs. The Inspector General may, on a random basis, perform audits on all City contracts.

1.33 PRE-AWARD INSPECTION

The City may conduct a pre-award inspection of the Bidder's site or hold a pre-award qualification hearing to determine if the Bidder is capable of performing the requirements of this Bid Solicitation.

1.34 PROPRIETARY AND/OR CONFIDENTIAL INFORMATION

Bidders are hereby notified that all information submitted as part of, or in support of Bid submittals will be available for public inspection after the opening of Bids in compliance with Chapter 119 of the Florida Statutes, popularly known as the "Public Record Law." The Bidder shall not submit any information in response to this Solicitation which the Bidder considers to be a trade secret, proprietary, or confidential. The submission of any information to the City in connection with this Solicitation shall be deemed conclusively to be a waiver of any trade secret or other protection which would otherwise be available to the Bidder. In the event that the Bidder submits information to the City in violation of this restriction, either inadvertently or intentionally, and clearly identifies that information in the Bid as protected or confidential, the City may, in its sole discretion, either (a) communicate with the Bidder in writing in an effort to obtain the Bidder's withdrawal of the confidentiality restriction, or (b) endeavor to redact and return that information to the Bidder as quickly as possible, and if appropriate, evaluate the balance of the Bid. The redaction or return of information pursuant to this clause may render a Bid non-responsive.

1.35 HEALTH INSURANCE PORTABILITY AND ACCOUNTABILITY ACT (HIPAA)

Any person or entity that performs or assists the City of Delray Beach with a function or activity involving the use or disclosure of "individually identifiable health information (IIHI) and/or Protected Health Information (PHI) shall comply with the Health Insurance Portability and Accountability Act (HIPAA) of 1996. HIPAA mandates for privacy, security, and electronic transfer standards include, but are not limited to:

- a. Use of information only for performing services required by the contract or as required by law;
- b. Use of appropriate safeguards to prevent non-permitted disclosures;
- c. Reporting to the City of Delray Beach any non-permitted use or disclosure;
- d. Assurances that any agents and subcontractors agree to the same restrictions and conditions that apply to the

Bidder and reasonable assurances that IIHI/PHI will be held confidential;

- e. Making Protected Health Information (PHI) available to the customer;
- f. Making PHI available to the customer for review and amendment, and incorporating any amendments requested by the customer;
- g. Making PHI available to the City of Delray Beach for an accounting of disclosures; and
- h. Making internal practices, books, and records related to PHI available to the City of Delray Beach for compliance audits.

PHI shall maintain its protected status regardless of the form and method of transmission (paper records and/or electronic transfer of data). The Bidder must give its customers written notice of its privacy information practices, including specifically, a description of the types of uses and disclosures that would be made with protected health information.

1.36 ADDITIONAL FEES AND SURCHARGES

Unless provided for in the contract/agreement, the City will not make any additional payments such as fuel surcharges, demurrage fees, or delay-in-delivery charges.

1.37 COMPLIANCE WITH FEDERAL STANDARDS

All items to be purchased under this contract shall be in accordance with all governmental standards, to include, but not be limited to, those issued by the Occupational Safety and Health Administration (OSHA), the National Institute of Occupational Safety Hazards (NIOSH), and the National Fire Protection Association (NFPA).

1.38 COMPLIANCE WITH FEDERAL REGULATIONS DUE TO USE OF FEDERAL FUNDING

If the goods or services to be acquired under this Solicitation are to be purchased, in part or in whole, with Federal funding, it is hereby agreed and understood that Section 60-250.4, Section 60-250.5, and Section 60-741.4 of Title 41 of the United States Code, which addresses Affirmative Action requirements for disabled workers, is incorporated into this Solicitation and resultant contract by reference.

1.39 BINDING EFFECT

All of the terms and provisions of this contract/agreement, whether so expressed or not, shall be binding upon, inure to the benefit of, and be enforceable by the parties and their respective legal representatives, successors, and permitted assigns.

1.40 SEVERABILITY

The City's obligation pursuant to any contract or agreement entered into in accordance with this Solicitation is

specifically contingent upon the lawful appropriation of funds. Failure to lawfully appropriate funds for any contract or agreement awarded shall result in automatic termination of the contract or agreement. A non-appropriation event shall not constitute a default or breach of said contract or agreement by the City.

1.41 GOVERNING LAW AND VENUE

This contract and all transactions contemplated by this agreement shall be governed by and construed and enforced in accordance with the laws of the State of Florida without regard to any contrary conflicts of law principle. Venue of all proceedings in connection herewith shall lie exclusively in Palm Beach County, Florida, and each party hereby waives whatever its respective rights may have been in the selection of venue.

1.42 ATTORNEY'S FEES

It is hereby understood and agreed that in the event any lawsuit in the judicial system, federal or state, is brought to enforce compliance with this contract or interpret same, or if any administrative proceeding is brought for the same purposes, each party shall pay their own attorney's fees and costs, including appellate fees and costs.

1.43 EQUAL OPPORTUNITY AND ANTI-DISCRIMINATION

The City of Delray Beach complies with all laws prohibiting discrimination on the basis of age, race, gender, religion, creed, political affiliation, sexual orientation, physical or mental disability, color or national origin, and therefore is committed to assuring equal opportunity in the award of contracts and encourages small, local, minority, and female-owned businesses to participate.

During the performance of this contract, the awarded Bidder agrees it will not discriminate or permit discrimination in its hiring practices or in its performance of the contract. The awarded Bidder shall strictly adhere to the equal employment opportunity requirements and any applicable requirements established by the State of Florida, Palm Beach County and the federal government.

The awarded Bidder further acknowledges and agrees to provide the City with all information and documentation that may be requested by the City from time to time regarding the Solicitation, selection, treatment and payment of subcontractors, suppliers, and vendors in connection with this Contract.

1.44 AVAILABILITY OF CONTRACT TO OTHER CITY DEPARTMENTS

It is agreed and understood that any City department or agency may access this contract and purchase the goods or services awarded herein. Each City department will issue a separate purchase order to the awarded Bidder for the department's specific purchases.

1.45 CRIMINAL HISTORY BACKGROUND CHECKS

Prior to hiring a contract employee or contracting with a Bidder, the City may conduct a comprehensive criminal

background check by accessing any Federal, State, or local law enforcement database available. The contract employee or Bidder will be required to sign an authorization for the City to access criminal background information. The costs for the background checks shall be borne by the City.

1.46 LABOR, MATERIALS, AND EQUIPMENT

Unless specified elsewhere in the Solicitation or resultant contract, all labor, materials, and equipment required for the performance of the requirements of the Contract shall be supplied by the awarded Bidder.

1.47 MINIMUM WAGE REQUIREMENTS

The awarded Bidder shall comply with all minimum wage and living wage requirements, such as Living Wage requirements, minimum wages based on Federal Law, minimum wages based on the Davis-Bacon Act, and the provisions of any other wages laws, as may be applicable to this Contract.

1.48 PACKING SLIP AND DELIVERY TICKET

A packing slip and/or delivery ticket shall accompany all items during delivery to the City. The documents shall include information on the contract number or purchase order, any back order items, and the number or quantity of items being delivered.

1.49 PURCHASE OF OTHER ITEMS

The City reserves the right to purchase other related goods or services, not listed in the Solicitation, during the contract term. When such requirements are identified, the City may request price quote(s) from the awarded Bidder(s) on the contract. The City, at its sole discretion, will determine if the prices offered are reasonable, and may choose to purchase the goods or services from the awarded Bidder, another contract vendor, or a non-contract vendor.

1.50 PUBLIC RECORDS

Florida law provides that municipal records shall at all times be available to the public for inspection. Chapter 119, Florida Statutes, the Public Records Law, requires that all material submitted in connection with a Bid response shall be deemed to be public record subject to public inspection upon award, recommendation for award, or thirty (30) days after Bid opening, whichever occurs first. Certain exemptions to public disclosure are statutorily provided for in Section 119.07, Florida Statutes. If the Bidder believes any of the information contained in his/her/its Bid is considered confidential and/or proprietary, inclusive of trade secrets as defined in Section 812.081, Florida Statutes, and is exempt from the Public Records Law, then the Bidder, must in its response, specifically identify the material which is deemed to be exempt and state the legal authority for the exemption. All materials that qualify for exemption from Chapter 119, Florida Statutes or other applicable law must be submitted in a separate envelope, clearly identified as "EXEMPT FROM PUBLIC DISCLOSURE" with the firm's name and the Bid number clearly marked on the outside. The City

will not accept Bids when the entire Bid is labeled as exempt from disclosure. The City's determination of whether an exemption applies shall be final, and the Bidder agrees to defend, indemnify, and hold harmless the City and the City's officers, employees, and agents, against any loss or damages incurred by any person or entity as a result of the City's treatment of records as public records.

The awarded Bidder(s) shall keep and maintain public records and fully comply with the requirements set forth at Section 119.0701, Florida Statutes, as applicable; failure to do so shall constitute a material breach of any and all agreements awarded pursuant to this Solicitation.

1.51 CONFLICTS OF INTEREST

All Bidders must disclose with their Bid the name of any officer, director, or agent who is also an employee of the City of Delray Beach. Further, all Bidders must disclose the name of any City employee who has any interest, financial or otherwise, direct or indirect, of five percent (5%) or more in the Bidders' firm or any of its branches. Failure to disclose any such affiliation will result in disqualification of the Bidder from this Invitation to Bid Construction and may be grounds for further disqualification from participating in any future Bids with the City.

1.52 PUBLIC ENTITY CRIMES

As provided in Section 287.133(2) (a), Florida Statutes, a person or affiliate who has been placed on the convicted vendors 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.

1.53 OTHER GOVERNMENTAL AGENCIES

If a Bidder is awarded a contract as a result of this ITBC, the Bidder shall allow other governmental agencies to access this contract and purchase the goods and services under the terms and conditions at the prices awarded, as applicable.

1.54 COMPLETION OF WORK AND DELIVERY

All work shall be performed and all deliveries made in accordance with good commercial practice. The work schedule and completion dates shall be adhered to by the awarded Bidder(s), except in such cases where the completion date will be delayed due to acts of nature, force majeure, strikes, or other causes beyond the control of the awarded Bidder. In these cases, the awarded Bidder shall notify the City of the delays in advance of the original completion so that a revised delivery schedule can be appropriately considered by the City.

1.55 FAILURE TO DELIVER OR COMPLETE WORK

Should the awarded Bidder(s) fail to deliver or complete the work within the time stated in the contract, it is hereby agreed and understood that the City reserves the authority to cancel the contract with the awarded Bidder and secure the services of another vendor to purchase the items or complete the work. If the City exercises this authority, the City shall be responsible for reimbursing the awarded Bidder for work that was completed, and items delivered and accepted by the City in accordance with the contract specifications. The City may, at its option, demand payment from the awarded Bidder, through an invoice or credit memo, for any additional costs over and beyond the original contract price which were incurred by the City as a result of having to secure the services of another vendor.

1.56 CORRECTING DEFECTS

The awarded Bidder shall be responsible for promptly correcting any deficiency, at no cost to the City, within three (3) calendar days after the City notifies the awarded Bidder of such deficiency in writing. If the awarded Bidder fails to correct the defect, the City may (a) place the awarded Bidder in default of its contract; and/or (b) procure the products or services from another source and charge the awarded Bidder for any additional costs that are incurred by the City for this work or items, either through a credit memorandum or through invoicing.

1.57 ACCIDENT PREVENTION AND BARRICADES

Precautions shall be exercised at all times for the protection of persons and property. All awarded Bidders performing services or delivering goods under this contract shall conform to all relevant OSHA, State, and County regulations during the course of such effort. Any fines levied by the above-mentioned authorities for failure to comply with these requirements shall be borne solely by the awarded Bidder. Barricades shall be provided by the awarded Bidder when work is performed in areas traversed by persons, or when deemed necessary by the City.

1.58 OMISSIONS IN SPECIFICATIONS

The specifications and/or statement of work contained within this Solicitation describe the various functions and classes of work required as necessary for the completion of the project. Any omissions of inherent technical functions or classes of work within the specifications and/or statement of work shall not relieve the Bidder from furnishing, installing, or performing such work where required to the satisfactory completion of the project.

1.59 MATERIALS SHALL BE NEW AND WARRANTED AGAINST DEFECTS

The awarded Bidder hereby acknowledges and agrees that all materials, except where recycled content is specifically requested, supplied by the awarded Bidder in conjunction with this Solicitation and resultant contract shall be new, warranted for their merchantability, and fit for a particular purpose. In the event any of the materials supplied to the

City by the awarded Bidder are found to be defective or do not conform to specifications, (1) the materials may be returned to the awarded Bidder at the Bidder's expense and the contract cancelled; or (2) the City may require the awarded Bidder to replace the materials at the Bidder's expense.

1.60 TOXIC SUBSTANCES/FEDERAL "RIGHT TO KNOW" REGULATIONS

The Federal "Right to Know" Regulation implemented by the Occupational Safety and Health Administration (OSHA) requires employers to inform their employees of any toxic substances to which they may be exposed in the workplace, and to provide training in safe handling practices and emergency procedures. It also requires notification to local fire departments of the location and characteristics of all toxic substances regularly present in the workplace.

Accordingly, the awarded Bidder(s) performing under this contract are required to provide two (2) complete sets of Material Safety Data Sheets to each City department utilizing the any awarded products that are subject to these regulations. This information should be provided at the time when the initial delivery is made, on a department-by-department basis.

1.61 TAXES

The City of Delray Beach is exempt from Federal and State taxes for tangible personal property.

1.62 BIDDER'S COSTS

The City shall not be liable for any costs incurred by Bidders in responding to this Invitation to Bid Construction.

1.63 SUBSTITUTION OF PERSONNEL

It is the intention of the City that the awarded Bidder's personnel proposed for the contract shall be available for the initial contract term. In the event the awarded Bidder wishes to substitute personnel, the awarded Bidder shall propose personnel of equal or higher qualifications, and all replacement personnel are subject to the City's approval. In the event the substitute personnel are not satisfactory to the City, and the matter cannot be resolved to the satisfaction of the City, the City reserves the right to cancel the contract for cause.

1.64 FORCE MAJEURE

The City and the awarded Bidder are excused from the performance of their respective obligations under the contract when and to the extent that their performance is delayed or prevented by any circumstances beyond their control, including fire, flood, explosion, strikes or other labor disputes, natural disasters, public emergency, war, riot, civil commotion, malicious damage, act or omission of any governmental authority, delay or failure or shortage of any type of transportation, equipment, or service from a public utility needed for their performance provided that:

- a. The non-performing party gives the other party prompt written notice describing the particulars of the force majeure, including, but not limited to, the nature of the occurrence and its expected duration, and continues to furnish timely reports with respect thereto during the period of the force majeure.
- b. The excuse of performance is of no greater scope and of no longer duration than is required by the force majeure.
- c. No obligations of either party that arose before the force majeure causing the excuse of performance are excused as a result of the force majeure.
- d. The non-performing party uses its best efforts to remedy its inability to perform.

Notwithstanding the above, performance shall not be excused under this section for a period in excess of two (2) months, provided that in extenuating circumstances, the City may excuse performance for a longer term. Economic hardship of the awarded Bidder shall not constitute a force majeure. The term of the contract shall be extended by a period equal to that during which either party's performance is suspended under this section.

1.65 NOTICES

Notices shall be effective when received at the addresses specified in the contract/agreement. Changes in respective addresses to which such notices are to be directed may be made from time to time by either party by written notice to the other party. Facsimile and email transmissions are acceptable notice effective when received; however, facsimile and email transmissions received after 5:00 PM or on weekends or holidays will be deemed received on the next business day. The original of the notice must also be mailed to the receiving party.

Nothing contained in this section shall be construed to restrict the transmission of routine communications between representatives of the awarded bidder and the City of Delray Beach.

1.66 POOL CONTRACTS

During the term of contracts and agreements that are executed as vendor pools, awarding vendors in prequalified pools of vendors, either as a general pool or by categories, sub-categories, or groups, the City reserves the right to add new vendors to these contracts for goods or services not awarded for the original Solicitation or as part of the general pool category, sub-category or group. To be eligible to be added to these pool contracts, a vendor must meet the same eligibility requirements established in the original Invitation to Bid Construction.

- 1.67 FISCAL FUNDING OUT
- The City's obligation pursuant to any contract or agreement entered into in accordance with this Solicitation is specifically contingent upon the lawful appropriation of funds. Failure to lawfully appropriate funds for any contract or agreement awarded shall result in automatic termination of the contract or agreement.

END OF SECTION 1

SECTION 2

SPECIAL TERMS AND CONDITIONS

2.1 PURPOSE

The purpose of this Solicitation is to establish a contract for the construction of specific upgrades and improvements at the City of Delray Beach Water Treatment Plant located at 200 S.W. 6th Street, Delray Beach, FL 33444, in accordance with the terms, conditions, and specifications contained in this Invitation to Bid Construction.

2.2 CONTRACT MEASURES AND PREFERENCES

Intentionally Omitted

2.3 PRE-BID CONFERENCE AND SITE VISIT

The City will hold a Pre-Bid Conference on September 5, 2018, starting promptly at 2:00 P.M at City Hall, 100 N.W. 1st Avenue, Delray Beach, FL 33444. Immediately after the Conference, there will be a follow-up Site Visit tour of the City of Delray Beach Water Treatment Plant located at 200 S.W. 6th Street, Delray Beach, FL 33444. Bidders are responsible for their own transportation to the tour location. No other opportunity for a site visit will be extended.

During any tour of the City of Delray Beach Water Treatment Plant, bidders must be mindful that this is a functioning facility. Therefore, every effort must be made to ensure that the Site Visit does not interfere or disrupt, in any manner, with the day to day operations. Latecomers to the Site Visit may not be permitted access to the building.

Potential Bidders should bring a copy of this Solicitation with them to the Pre-Bid Conference. Bidders will be allowed to ask questions and obtain information on important aspects of this Solicitation.

The purpose of the Pre-Bid Conference is to provide and obtain information relative to the scope, purpose, nature, and extent of the work, and any local conditions, which may affect the performance of work. Submission of a Bid shall constitute an acknowledgement by the Bidder that it has thoroughly examined and is familiar with the requirements of this Solicitation package. The failure or neglect of the Bidder to examine the Solicitation package shall in no way relieve the Bidder of any obligation with respect to its Bid or the requirements of the Contract. No claim for additional compensation will be allowed which is based on a lack of knowledge of the requirements of this Solicitation package or the resultant Contract.

If you need a sign language interpreter or materials in accessible format for this event, please contact the Purchasing Department at purchasing@mydelraybeach.com or by phone at 561.243.7129 at least five (5) days in advance of the conference.

2.4 AGREEMENT PERIOD

The Contract shall commence upon the date of the duly executed Agreement and shall remain in effect until such time as the construction services acquired in conjunction with this solicitation have been completed and accepted by the City's authorized representative and upon completion of the expressed and/or implied warranty periods.

2.5 OPTIONS TO RENEW
Intentionally Omitted

2.6 METHOD OF AWARD: LOWEST PRICE
The City will award this contract to the responsive and responsible Bidder who submits the lowest price to perform the work, based on the option (alternates) selected by the City.

2.7 PRICES SHALL BE FIXED AND FIRM
If the Bidder is awarded a contract under this Solicitation, the prices offered by the Bidder shall remain fixed and firm during the performance of the work, except for any change orders or variations, which must meet the prior approval and authorization of the City.

2.8 PRICE ADJUSTMENTS
Intentionally Omitted

2.9 EXAMINATION OF CITY FACILITIES OR EQUIPMENT
Prior to submitting its offer, it is recommended that the Bidder visit the site of the proposed work and become familiar with any conditions which may in any manner affect the work to be done or affect the equipment, materials and labor required. The Bidder is also advised to examine carefully any drawings, specifications, or equipment, and become thoroughly aware regarding any and all conditions and requirements that may in any manner affect the work to be performed under the Contract. No additional allowances will be made because of lack of knowledge of these conditions.

2.10 EQUAL PRODUCTS
Intentionally Omitted

2.11 LIQUIDATED DAMAGES
Time is of the essence regarding this Invitation to Bid Construction and the work contemplated hereunder and the City may suffer financial loss and inconvenience if the work is not completed to the satisfaction of the City by the time stipulated in the Contract. Therefore, failure to timely complete the work shall result in the awarded Bidder being subject to liquidated damages, but not as penalty, in the amount of amount of <this percentage amount should be equal to approximately \$500 of the budgeted amount (<http://www.percentagecal.com/answer/500-is-what-percent-of-4500>), 0.11%> of the Guaranteed Maximum Price for each and every calendar day the work remains incomplete or the items remain undelivered. As compensation due the City for loss of use and for additional costs incurred by the City due to such non-completion of the work, the City shall have the right to deduct the liquidated damages from any amount due, or that may become due to the awarded Bidder under the Contract, or to invoice the awarded Bidder for such damages if the costs incurred exceed the amount due to the awarded Bidder. The awarded Bidder and the City agree that the amount for liquidated damages is not punitive, and is intended to compensate the City for difficult to quantify losses.

2.12 INSURANCE
The awarded Bidder shall not commence any performance pursuant to the terms of this Solicitation until certification or proof of insurance has been received by the Purchasing Department and approved by the City's Risk Management Division.

The required insurance coverage is to be issued by an insurance company authorized and licensed to do business in the State of Florida, with the minimum rating of A- VIII or better, in accordance with the latest edition of A.M. Best's Insurance Guide. This insurance shall be documented in certificates of insurance which provides that the City of Delray Beach shall be notified at least thirty (30) days in advance of cancellation, non-renewal, or adverse change. The receipt of certificates or other documentation of insurance or policies or copies of policies by the City or by any of its representatives, which indicate less coverage than is required, does not constitute a waiver of the awarded Bidder's obligation to fulfill the insurance requirements herein. Deductibles must be acceptable to the City of Delray Beach.

The awarded Bidder must submit a current Certificate of Insurance, naming the City of Delray Beach as an additional insured and list as such on the insurance certificate. New certificates of insurance are to be provided to the City upon expiration.

The awarded Bidder shall provide insurance coverage as follows, and shall carry:

- a. Workers' Compensation Insurance – as required by law.
- b. Employer's Liability Insurance - \$1,000,000 per occurrence, \$1,000,000 for each disease, and \$1,000,000 for aggregate disease
- c. Comprehensive General Liability Insurance – with limits of not less than \$1,000,000 per occurrence and \$2,000,000 in the aggregate for Bodily Injury and Property Damage which must include:
 - i. Premises and/or Operations on an occurrence basis.
 - ii. Independent contractors.
 - iii. Products and/or Completed Operations Liability on an occurrence basis.
 - iv. Explosion, Collapse, and Underground Coverages.
 - v. Broad Form Property Damage.
 - vi. Broad Form Contractual Coverage applicable to this specific Agreement, including any hold harmless and/or indemnification agreement.
 - vii. Personal Injury Coverage with Employees and Contractual Exclusions removed with minimum limits of coverage equal to those required for Bodily Injury Liability and Property Damage Liability.
- d. Builders Risk / Installation Floater – The awarded Bidder shall take out and maintain, as applicable, during the life of this Contract, "all risk" type builders risk insurance satisfactory to the City for the completed value of the Project, which shall protect the awarded Bidder and the City as their interests may appear, for the following hazards to the work, encompassing structures in the course of construction, including foundations, additions, attachments and all permanent fixtures belonging to and constituting a part of said structures, as well as materials and equipment suitably stored at the site and awarded Bidder's construction equipment, materials, and temporary structures:
 - i. Fire and lightning, vandalism, and malicious mischief
 - ii. Extended coverage including windstorm, hail, flood, explosion, riot, civil commotion, aircraft, vehicle, and smoke damage

- e. Professional Liability – To include coverage for contractor pollution exposure, with minimum limits of \$1,000,000 per claim and in the aggregate.
- f. Business Automobile Liability – With minimum limits of \$1,000,000 per occurrence combined single limit for Bodily Injury Liability and Property Damage Liability. Coverage must be afforded on a form no more restrictive than the latest edition of the Business Automobile Liability Policy, without restrictive endorsements, as filed by the Insurance Services Office and must include:

City shall be named as an Additional Insured on both the General Liability and Business Automobile Liability policies, on a primary and non-contributory basis, to include additional insured status on the GL policy for both premises operations and products and completed operations.

If no deductible for insurance is referenced above, the City reserves the right to require such deductibles which shall be determined by the Risk Management Division, but not more than \$25,000 per claim.

The Comprehensive General Liability insurance policy must include coverage that is not more restrictive than the latest edition of the Comprehensive General Liability Policy, without restrictive endorsements, as filed by the Insurance Services Offices, and the policy must include coverage's for premises and/or operations, independent contractors, products and/or completed operations for contracts, contractual liability, broad form contractual coverage, broad form property damage, products, completed operations, and personal injury. Personal injury coverage shall include coverage that has the Employee and Contractual Exclusions removed.

2.13 PERFORMANCE BOND AND CONSTRUCTION BOND

The Bidder to whom a contingent award is made shall duly execute and deliver to the City a Performance Bond and a Construction Bond, both in an amount equal to 100% of the total contract price, payable to the City, as surety for faithful performance under the terms and conditions of the contract. The Performance Bond and Construction Bond shall be delivered to the City contemporaneously with contract execution. The bonds shall be substantially in the format of the examples that are a part of this Solicitation.

Both required Bonds must be executed by a surety company of recognized standing, authorized to do business in the State of Florida, and having a resident agent. Bonds may not be canceled, terminated, or revised unless the City has been provided with thirty (30) days' advanced written notice of such action by the surety. The surety must insert the registered agent to accept service of process in the State of Florida, directly on each bond document.

Acknowledgement and agreement is given by both parties that the performance and construction bonds do not limit the liability of the awarded Bidder to the City in the event of a material breach of the contract agreement by the awarded Bidder. The bonds may be used to recover liquidated damages on behalf of the City.

If the awarded Bidder fails to deliver the bonds at the same time as contract execution, the City may declare the awarded Bidder in default of the contractual terms and conditions, and the

awarded Bidder shall surrender any bid bond, and the City shall not accept any offers or bids from that Bidder for a twelve (12) month period following such default.

2.14 CERTIFICATIONS

Any Bidder that submits an offer in response to this Solicitation shall, at the time of such offer, hold all necessary certifications issued by the State or County Examining Board qualifying the Bidder to perform the work proposed for this project. If other professions or trades are required in conjunction with this Solicitation and such work/services will be performed or provided by a subcontractor(s), an applicable Certificate of Competency issued to the subcontractor(s) shall be submitted with the Bidder's offer; provided, however, that the City may at its option and in its best interest allow the Bidder to supply the subcontractor(s) certificate to the City during the evaluation period.

All architects or engineers on this project must possess current Florida professional registrations or licenses for the architectural and engineering services which they intend to provide.

2.15 BID BOND

Intentionally Omitted

2.16 METHOD OF PAYMENT: INVOICE FOR COMPLETED WORK (PROGRESS PAYMENTS)

The awarded Bidder shall submit an invoice to the City for progress payments for work that has been completed, and has been inspected and accepted by the City. The date of the invoices shall not exceed thirty (30) calendar days from the completion of that portion of the work. Under no circumstances shall the invoice be submitted to the City in advance of the completion and acceptance of the work. The invoice shall contain the following basic information: the awarded Bidder's name and address, invoice number, date of invoice, description of the goods or service, the contract number, purchase order number, and any discounts.

The City will allow progress payments for the work to be performed under this contract. Such progress payments shall be only for work that has been completed and verified by the City.

The City prides itself on paying its vendors promptly and efficiently, and as such requires that vendors accept payment via wire transfer, ACH (direct deposit), or an appropriate electronic payment method. The City is averse to issuing paper checks and seeks to discontinue this practice. All payments shall be made in accordance with the Florida Prompt Payment Act, Section 218.74, Florida Statutes, upon presentation of a proper invoice by the awarded Bidder.

2.17 COMPLETION OF WORK FROM DATE OF PURCHASE ORDER

The Bidder shall state in its offer the number of calendar days from the date of the Notice to Proceed in which it will guarantee to complete the Work.

2.18 WARRANTY REQUIREMENTS: ONE (1) YEAR

In addition to all other warranties that may be supplied by the Bidder, the awarded Bidder shall warrant its products and/or service against faulty labor and/or defective material, for a minimum period of one (1) year from the date of acceptance of the labor, materials and/or equipment by the City. This warranty requirement shall remain in force for the full period; regardless of whether the awarded Bidder is under contract with the City at the time of defect.

Any payment by the City on behalf of the services received from the awarded Bidder does not constitute a waiver of these warranty provisions.

2.19 ADDITIONAL FACILITIES OR PRODUCTS
Intentionally Omitted

2.20 CATALOGS AND PRICE LISTS
Intentionally Omitted

2.21 CLEAN UP
The awarded Bidder shall remove all unusable materials and debris from the work areas at the end of each workday, and dispose of the same in an appropriate manner. Upon final completion, the awarded Bidder shall thoroughly clean up all areas where work has been involved.

2.22 DEMONSTRATION OF EQUIPMENT
Intentionally Omitted

2.23 HOURLY RATE
Intentionally omitted

2.24 MOTOR VEHICLE LICENSE REQUIREMENT
Intentionally Omitted

2.25 PATENTS AND ROYALTIES
The awarded Bidder, without exception, shall indemnify and hold harmless the City and its employees from liability of any nature or kind, including cost and expenses for, or as a result of, any copyrighted, patented, or unpatented invention, process, or article manufactured by the awarded Bidder. The awarded Bidder has no liability when such claim is solely and exclusively due to the combination, operation, or use of any article supplied hereunder with equipment or data not supplied by awarded Bidder, or is based solely and exclusively upon the City's alteration of the article. The City will provide prompt written notification of a claim of copyright or patent infringement.

Further, if such a claim is made or is pending, the awarded Bidder may, at its option and expense, procure for the City the right to continue use of, replace or modify the article to render it noninfringing. (If none of the alternatives are reasonably available, the City agrees to return the article on request to the awarded Bidder and receive reimbursement, if any, as may be determined by a court of competent jurisdiction.) If the awarded Bidder uses any design, device, or materials covered by letters, patent or copyright, it is mutually agreed and understood without exception that the contract prices shall include all royalties or cost arising from the use of such design, device, or materials in any way involved in the work.

2.26 PRE-CONSTRUCTION CONFERENCE
Prior to the start of construction, the awarded bidder is required to attend a Pre-Construction Conference with City officials who are designated to represent the City for this project.

2.27 RELEASE OF CLAIM REQUIRED

Pursuant Section 255.05, *Florida Statutes* all payments to the subcontractors shall be made by the awarded Bidder within ten (10) days of receipt of the partial payment from the City. With the exception of the first partial payment, the awarded Bidder must pay all of its subcontractors and suppliers who have performed any work or supplied any materials for the project within ten (10) days after receipt of the partial payment by the awarded Bidder for monies due such subcontractors and suppliers as a result of a percentage of the work completed. The awarded Bidder must provide the City's project manager with duly executed affidavits (subcontractor's statement of satisfaction) or releases of claim from all subcontractors and suppliers who have performed any work or supplied any materials for on the project as of that date. The affidavit or releases shall certify that said subcontractors and suppliers have been paid their proportionate share of all previous partial payments to the awarded Bidder. In the event such affidavits cannot be furnished, the awarded Bidder may submit an executed consent of surety to requisition payment, identifying the subcontractors and suppliers with the amounts for which the statement of satisfaction cannot be furnished. If the awarded Bidder fails to provide consent of surety to requisition payment, the amount in dispute will be withheld until either the statement of satisfaction is furnished, or the consent of surety to requisition payment is furnished.

2.28 SUBCONTRACTORS OF WORK SHALL BE IDENTIFIED

As part of its Bid, the Bidder must identify any and all subcontractors that will be used in the performance of the proposed work, their capabilities and experience, and the portion of the work to be done by the subcontractor. The competency of the subcontractor(s) with respect to experience, skill, responsibility and business standing shall be considered by the City when making the award in the best interest of the City. If the Bidder fails to identify any and all subcontractors in the Bid, the Bidder may be allowed to submit this documentation during the Bid evaluation period, if such action is in the best interest of the City.

2.29 CHANGES

The City may at any time, as the need arises, order changes within the scope of the work without invalidating the contract. If such changes increase or decrease the amount due under the contract, or the time required for performance of the work, an equitable adjustment shall be authorized by Change Order.

The City may, at any time make changes in the details of the Work. The awarded bidder shall proceed with the performance of any changes in the work so ordered by the City, unless the awarded bidder believes that such changes entitles it to a change in the contract price or time, or both, in which event the awarded bidder shall give the City immediate written notice thereof after the receipt of the ordered change. Thereafter, the awarded bidder shall document the basis for the change in contract price or time within ten (10) calendar days. All changes resulting in a request for added time must be accompanied by a Time Impact Analysis.

Changes in the scope of work may be accomplished by change order, construction change directive, or field order. Any one of these documents shall be interpreted as further instruction from the City.

A change order shall be based upon agreement between the City and the awarded bidder; a construction change directive may or may not be agreed to by the awarded bidder; a field order for a minor change in the work may be issued by the City.

Changes in the work shall be performed under applicable provisions of the contract documents, and the awarded bidder shall proceed promptly, unless otherwise provided in the change order, construction change directive, or field order.

A change order will be prepared and signed by the City and awarded bidder, stating their agreement upon all of the following:

- a. a change in the scope of work;
- b. the amount of the adjustment in the contract price, if any; and
- c. the extent of the adjustment in the contract time, if any.

The issuance of a change order shall be full and final settlement for any issue or item addressed in the change order. No change order will be accepted or processed with any "reservation of rights" notations or clauses.

2.30 FAILURE TO DELIVER OR COMPLETE WORK

Should the awarded Bidder fail to deliver or complete the work within the time stated in the Contract, it is hereby agreed and understood that the City reserves the authority to cancel the Contract with the awarded Bidder and secure the services of another vendor to purchase the items or complete the work. If the City exercises this authority, the City shall be responsible for paying the awarded Bidder for work which was completed and items delivered and accepted by the City in accordance with the Contract specifications. The City may, at its option, demand payment from the awarded Bidder, through an invoice or credit memo, for any additional costs over and beyond the original Contract price, which were incurred by the City, as a result of having to secure the services of another vendor.

2.31 CORRECTING DEFECTS

The awarded Bidder shall be responsible for promptly correcting any deficiency, at no cost to the City, within three (3) calendar days after the City notifies the awarded Bidder of such deficiency in writing. If the awarded Bidder fails to correct the defect, the City may procure the products or services from another source and charge the awarded Bidder for any additional costs that are incurred by the City for this work or items; either through a credit memorandum or through invoicing.

2.32 ACCIDENT PREVENTION AND BARRICADES

Precautions shall be exercised at all times for the protection of persons and property. All contractors performing services or delivering goods under this contract shall conform to all relevant OSHA, State and City regulations during the course of such effort. Any fines levied by the above mentioned authorities for failure to comply with these requirements shall be borne solely by the awarded Bidder. Barricades shall be provided by the awarded Bidder when work is performed in areas traversed by persons, or when deemed necessary by the City.

2.33 OMISSIONS IN SPECIFICATIONS

The Statement of Work or description of items contained within this Solicitation describes the various work requirements deemed necessary for the completion of the project. Any omissions

of inherent technical functions or classes of work within the Specifications and/or Statement of Work shall not relieve the awarded Bidder from furnishing, installing or performing such work where required to the satisfactory completion of the project.

2.34 MATERIALS SHALL BE NEW AND WARRANTED AGAINST DEFECTS

The awarded Bidder hereby acknowledges and agrees that all materials, except where recycled content is specifically requested, supplied by the awarded Bidder in conjunction with this Solicitation and resultant Contract shall be new, warranted for their merchantability, and fit for a particular purpose. In the event any of the materials supplied to the City by the awarded Bidder are found to be defective or do not conform to specifications: (1) the materials may be returned to the awarded Bidder at the awarded Bidder's expense and the Contract cancelled or (2) the City may require the awarded Bidder to replace the materials at the awarded Bidder's expense.

2.35 TOXIC SUBSTANCES/FEDERAL "RIGHT TO KNOW" REGULATIONS

The Federal "Right to Know" Regulation implemented by the Occupational Safety and Health Administration (OSHA) requires employers to inform their employees of any toxic substances to which they may be exposed in the workplace, and to provide training in safe handling practices and emergency procedures. It also requires notification to local fire departments of the location and characteristics of all toxic substances regularly present in the workplace.

Accordingly, the awarded Bidder performing under this Contract is required to provide two (2) complete sets of Material Safety Data Sheets to the City for any products that are subject to these regulations. This information shall be provided at the time when the initial delivery is made, on a product by product basis.

END OF SECTION 2

SECTION 3

SCOPE OF WORK AND TECHNICAL SPECIFICATIONS

3.1 SCOPE

The awarded Bidder shall provide all labor, equipment, materials, and other operations to construct specific upgrades and improvements at the City of Delray Beach Water Treatment Plant located at 200 S.W. 6th Street, Delray Beach, FL 33444. The City estimates the total costs to construct this project will not exceed \$400,000.00.

3.2 REQUIREMENTS

A. Working hours for this project shall be:

(a) 7:30 a.m. ET to 4:30 p.m. ET Monday through Friday

(b) 7:30 a.m. ET to 4:30 p.m. ET Saturday, if requested and approved by City

B. Inspections shall be requested two business days in advance. The City will not charge for inspections during regular business hours. Inspections outside of regular business hours are subject to a fee determined by the City.

C. The awarded Bidder shall be responsible for performing all required site preparation tests, surveys, and studies to prepare the site for the construction of the building shell.

3.3 ADDITIONAL INFORMATION

N/A

3.4 GENERAL REQUIREMENTS

Services shall include all labor, materials and equipment required to construct specific upgrades and improvements at the City of Delray Beach Water Treatment Plant. The work includes, but is not limited to, mechanical, protective coatings, electrical and instrumentation and control system elements. Contractor shall provide qualified specialty subcontractors as required to perform the work in accordance with the Contract Documents.

3.5 TASKS

The Tasks required of Contractor include, but are not limited to the following:

a. Rehabilitation of Clarifier No. 1 including:

1. Pressure washing, clean-out and proper disposal, per local, State and/or Federal regulations, of all lime sludge deposits from the interior of the clarifier structure.

2. Replacement of the existing steel angle supports within the thirteen (13) radial launders. Each launder is equipped with a total of seven (7) angle iron supports.

3. Replacement of the existing steel plate "T" shape reinforcement members which span the inner launder at the connection point to each of the thirteen (13) radial launders.

4. Replacement of the supports for the thirteen (13) radial launders at the point of connection to the pre-stressed concrete clarifier wall.

5. Rehabilitation and replacement of the existing steel reinforcing angle along the top of the interior inner launder wall.
 6. Replacement of the four (4) existing jacking/leveling fixtures located between the walkway super structure and interior inner launder walls.
 7. Rehabilitation of the existing base supports for the existing southernmost catwalk at the point of connection to the top of the pre-stressed concrete clarifier wall.
 8. General spot repairs and rehabilitation of existing mild steel components which exhibit advanced corrosion and section loss.
 9. Surface preparation and application of the specified protective coating systems in Section 09900 entitled "Painting" to all immersed and non-immersed clarifier components, conduit, PVC piping, walkways, platforms, etc. All existing galvanized steel, aluminum and/or Type 316 stainless steel components which are not currently coated shall not be prepped and coated.
 10. Replacement of the existing clarifier mechanical drive components and electrical and control systems is specifically excluded from the scope of work.
- b. Filter No. 1 Upgrades including:
1. Replacement of the existing 20-inch butterfly valve and pneumatic operator on the existing ductile iron fill piping to Filter No. 1. The City has pre-purchased the valve and operator for installation by the Contractor. The Contractor shall schedule the valve and operator replacement work immediately upon receipt of the Notice-to-Proceed.
 2. Supply Owner, as a spare, one (1) 20-inch filter fill butterfly valve with extended bonnet equipped with a pneumatic operator for future installation at an additional filter unit.
 3. Replacement of the existing 30-inch butterfly valve and pneumatic operator on the existing ductile iron drain piping from Filter No. 1. The City has pre-purchased the valve and operator for installation by the Contractor. The Contractor shall schedule the valve and operator replacement work immediately upon receipt of the Notice-to-Proceed.
 4. Supply Owner, as a spare, one (1) 30-inch filter drain butterfly valve equipped with a pneumatic operator for future installation at an additional filter unit.
- c. Sodium Hypochlorite Bulk Storage Improvements including:
1. Supply and install of a new 8,500 gallon high density polyethylene (HDPE) bulk storage tank for use with a 12% solution of sodium hypochlorite. The proposed tank will be installed within an existing concrete secondary containment structure. The project includes the supply and install of interconnecting piping, fittings, valves, instrumentation, appurtenances and miscellaneous components.

d. Alternate Bid Items:

The following Alternate Bid Items shall be completed as additional work to the project scope, if desired by and at the written direction of the Owner. Payment under these items shall be made at the Contractor's unit price for each unit performed and shall include full compensation for all labor, material and equipment required to perform the tasks indicated. The work shall be completed per unit.

1. Alternate Bid Item No. 1: Replacement of one (1) additional, existing 30-inch butterfly valve and pneumatic operator on the existing ductile iron fill piping at a filter unit to be selected by the Owner - Valve and operator to be supplied by Owner.

2. Alternate Bid Item No. 2: Replacement of one (1) additional, existing 20-inch butterfly valve with extended bonnet and pneumatic operator on the existing ductile iron fill piping at a filter unit to be selected by the Owner - Valve and operator to be supplied by Owner.

3. Alternate Bid Item No. 3: Replacement of up to two (2) additional, existing 30-inch butterfly valves and pneumatic operators on the existing ductile iron fill piping at filter unit(s) to be selected by the Owner - Valves and operators shall be supplied by Contractor.

4. Alternate Bid Item No. 4: Replacement of up to two (2) additional, existing 20-inch butterfly valves with extended bonnets and pneumatic operators on the existing ductile iron fill piping at filter unit(s) to be selected by the Owner - Valves and operators shall be supplied by Contractor.

5. Alternate Bid Item No. 5: Surface preparation and application of the specified protective coating system, per Section 09900 entitled "Painting", to all new and existing valves, piping and fittings for up to three (3) filter units to be selected by Owner.

3.6 SPECIFICATIONS, PLANS AND DRAWINGS

Awarded Bidder shall construct specific upgrades and improvements at the City of Delray Beach Water Treatment Plant per the Specifications, plans, drawings and other documents contained in this ITBC including the following:

Exhibit A: Pricing Schedule

Exhibit B: Drawings

Exhibit C: Specifications

3.7 PERMIT FEES

The awarded Bidder shall be responsible for all permit fees associated with the construction of this project.

3.8 PROJECT TIMELINE

The awarded Bidder agrees to complete the work within the timeframe designated by the City. The City, at its discretion may allow for time extensions for unforeseen and unexpected delays. Work shall be substantially completed within 120 calendar days of the date when the Contract Time commences, and completed within 30 days of the date of substantial completion.

END OF SECTION 3

BID SUBMITTAL

This Page and all following pages comprise your original Bid Submittal package. Solicitation forms should be submitted via paper if submitting a hard copy bid, or via web forms available on www.bidsync.com if submitting an electronic bid. Web forms require Bidders to use their www.bidsync.com password to submit, which serves as a signature from Bidder.

Please also attach any additional information or documentation requested in this Invitation to Bid. There is no need to include the preceding Sections 1, 2, and 3 in your Bid Submittal package.

INSTRUCTIONS

Sealed Bids must be received on or before the due date and time (local time) via electronic submission at www.bidsync.com, or via hard copy at the City of Delray Beach City Hall Front Lobby Reception Desk, 100 N.W. 1st Avenue, Delray Beach, Florida 33444. Normal City business hours are 8:00 AM to 5:00 PM, Monday through Friday, except holidays. **All Bids will be publicly opened** at City Hall unless otherwise specified.

Each hard copy Bid submitted to the City shall have the following information clearly marked on the face of the envelope: Bidder's name, return address, ITBC number, due date for Bids, and the title of the Bid. Included in the package shall be one (1) hard copy original clearly identified as the "Original" that includes a signed original of the Solicitation Summary, one (1) duplicate hard copy, and one (1) electronic version of the Bid on a Universal Serial Bus (USB) drive in a usable PDF format. If the Solicitation Summary is not included in the package as a hard copy, the City may deem the Bid non-responsive. Bids must contain all information required to be included in the submittal, as described in this Solicitation.

Invitation to Bid No.: 2018-049

Title: Water Treatment Plant Upgrades and Improvements

Due Date and Time: September 21, 2018 @ 2:00 PM local time

Name of Bidder

SECTION 4
PRICING SCHEDULE

4.1 PRICES AND RATES

The Bidder shall indicate on Exhibit A, the firm and fixed prices and rates offered to the City for the work described in this Solicitation, including any Alternates.

4.2 COMPLETION

Bidder agrees that the work will be substantially completed within 120 days and finally complete within 150 days from the date of Notice to Proceed.

Signature

Date

Printed Name and Title

There is no web form available on www.bidsync.com for this form. Please submit pricing via www.bidsync.com or as otherwise indicated in this solicitation.

END OF SECTION 4

SECTION 5 MINIMUM QUALIFICATIONS

Each bidder shall submit the information and documentation requested below that confirms it meets the following qualification requirement(s).

- A. Must have been in the business of contracting for a minimum of five (5) years prior to the Due Date and Time, under the same corporate name. **Provide supporting documentation (e.g. state, county, city business license; occupational license) that confirms Bidder has been in business for a minimum of five (5) years prior to the Due Date and Time.**
- B. Bidder must have experience in constructing a minimum of 5 similar projects involving upgrades and improvements at municipal water treatment plants. The reference projects are required to have included similar work modifying water treatment plant process components. **Provide the following information for the 5 qualifying projects:**
 - i. **Name of project owner**
 - ii. **Contact name**
 - iii. **Contact email**
 - iv. **Location / address of project**
 - v. **Dates of project (start/end) including time extensions**
 - vi. **Brief description of project**
 - vii. **List of the components of the project as stated above**
- C. Bidder must hold a Florida State General Contractor's license and a current certificate of competency issued by Palm Beach County Examining Board having jurisdiction over licensing of Contractors in the type of work involved in this contract. **Provide proof, in the form of a copy of license(s), that the Bidder and/or subcontractor is: (ONLY LIST THOSE THAT APPLY TO THE WORK)**
 - a. **Certified under Section 489.119, Florida Statutes, to engage in contracting through a certified or registered general contractor or a certified or registered building contract as the qualifying agent; or**
 - b. **Certified under Section 471.023, Florida Statutes, to practice or to offer to practice engineering; or**
Certified under Section 481.219, Florida Statutes, to practice or to offer to practice architecture; or
 - c. **Certified under Section 481.319, Florida Statutes, to practice or to offer to practice landscape architecture.**
- D. Bidder has no reported conflict of interests in relation to this ITBC. **No additional documentation is required. The City will verify from Bidder's Conflict of Interest Disclosure Form.**
- E. Bidder is registered with the States of Florida, Division of corporations to do business in Florida. **No documentation is required. The City will verify.**
- F. Bidder has previously provided satisfactory services for the type of work identified in this ITBC.

The City will conduct a due diligence survey of internal resources and Bidder's client references to verify this information. Submit up to 5 client references for whom Bidder has provided goods and/or services similar to those specified in this ITBC in the past 5 years and who are agreeable to respond to a request from the City regarding bidder's experience. Each client reference should include the following:

- a. Organization name
 - b. Contact name(s)
 - c. Contact email address
 - d. Address
 - e. Telephone and fax numbers
 - f. Dates of service (start/end)
 - g. Type of work (brief description)
 - h. The original and ending contract amount
 - i. The number of change orders and scope increases or decreases including type
- G. Is NOT listed on the Florida Department of Management Services, Convicted Vendor List as defined in Florida Statute Section 287.133(3)(d). **No documentation from Respondent is required.** The City will verify the status.
- H. Attended the Pre-Solicitation Conference. Provide the name(s) of Bidder's representative who attended the Pre-Solicitation Conference. The City will verify attendance.
- I. Bidder has no reported conflict of interests in relation to this RFP. Disclose the name of any officer, director or agent who is also an employee of the City. Disclose the name of any City employee who owns, directly or indirectly, any interest in the Bidder's firm or any of its branches. If no conflicts of interests are present, Bidder must submit a statement to that affect.

END OF SECTION 5

SECTION 6
ACKNOWLEDGEMENT OF ADDENDA

INSTRUCTIONS: COMPLETE PART I OR PART II, WHICHEVER APPLIES

PART I:

List below the dates of issue for each addendum received in connection with this Solicitation:

Addendum #1, Dated _____

Addendum #2, Dated _____

Addendum #3, Dated _____

Addendum #4, Dated _____

Addendum #5, Dated _____

Addendum #6, Dated _____

Addendum #7, Dated _____

Addendum #8, Dated _____

PART II:

☐ NO ADDENDUM WAS RECEIVED IN CONNECTION WITH THIS SOLICITATION

Firm Name

Signature

Name and Title (Print or Type)

Date

SECTION 7
BID SUBMITTAL SIGNATURE PAGE

By signing this Bid the Bidder certifies that it satisfies all legal requirements as an entity to do business with the City, including all Conflict of Interest and Code of Ethics provisions.

Firm Name:

Street Address:

Mailing Address (if different than Street Address):

Telephone Number(s): _____

Fax Number(s): _____

Email Address: _____

Federal Employer Identification Number: _____

Prompt Payment Terms: _____% _____ days' net _____ days

Signature: _____

(Signature of authorized agent)

Print Name: _____

Title: _____

By signing this document, the Bidder agrees to all Terms and Conditions of this Solicitation and the resulting Contract/Agreement.

THE EXECUTION OF THIS FORM CONSTITUTES THE UNEQUIVOCAL OFFER OF BIDDER TO BE BOUND BY THE TERMS OF ITS OFFER, FOR NOT LESS THAN 90 DAYS, AND THE BIDDER'S UNEQUIVOCAL OFFER TO BE BOUND BY THE TERMS AND CONDITIONS SET FORTH IN THIS INVITATION TO BID CONSTRUCTION. FAILURE TO SIGN THIS SOLICITATION WHERE INDICATED ABOVE, BY AN AUTHORIZED REPRESENTATIVE, SHALL RENDER THE BID NON-RESPONSIVE. THE CITY MAY, HOWEVER, IN ITS SOLE DISCRETION, ACCEPT ANY BID THAT INCLUDES AN EXECUTED DOCUMENT WHICH UNEQUIVOCALLY BINDS THE BIDDER TO THE TERMS OF ITS OFFER.

SECTION 8
AFFIDAVITS, PERFORMANCE AND PAYMENT BONDS FORMAT, LETTER OF CREDIT FORMAT

7.1 AFFIDAVITS

The forms listed below must be completed by an official having legal authorization to contractually bind the company or firm. Each signature represents a binding commitment upon the Bidder to provide the goods and/or services offered to the City if the Bidder is determined to be the lowest responsive and responsible Bidder.

- a. Bid Submittal Signature Page
- b. Acknowledgement of Addenda
- c. Conflict of Interest Disclosure Form
- d. Notification of Public Entity Crimes Law
- e. Notification of Public Records Law
- f. Drug-Free Work Place
- g. Non-Collusion Affidavit
- h. Sample Performance Bond Format (if required, will be requested from bidder recommended for award)
- i. Sample Payment Bond Format (if required, will be requested from bidder recommended for award)
- j. Sample Letter of Credit Format (if required, will be requested from bidder recommended for award)
- k. Bid Bond

CONFLICT OF INTEREST DISCLOSURE FORM

The award of this contract is subject to the provisions of Chapter 112, *Florida Statutes*. All Bidders must disclose within their Bids: the name of any officer, director, or agent who is also an employee of the City of Delray Beach.

Furthermore, all Bidders must disclose the name of any City employee who owns, directly, or indirectly, an interest of more than five percent (5%) in the Bidder's firm or any of its branches.

The purpose of this disclosure form is to give the City the information needed to identify potential conflicts of interest for evaluation team members and other key personnel involved in the award of this contract.

The term "conflict of interest" refers to situations in which financial or other personal considerations may adversely affect, or have the appearance of adversely affecting, an employee's professional judgment in exercising any City duty or responsibility in administration, management, instruction, research, or other professional activities.

Please check one of the following statements and attach additional documentation if necessary:

_____ To the best of our knowledge, the undersigned firm has no potential conflict of interest due to any other Cities, Counties, contracts, or property interest for this Bid.

_____ The undersigned firm, by attachment to this form, submits information which may be a potential conflict of interest due to other Cities, Counties, contracts, or property interest for this Bid.

Acknowledged by:

Firm Name

Signature

Name and Title (Print or Type)

Date

NOTIFICATION OF PUBLIC ENTITY CRIMES LAW

Pursuant to Section 287.133, *Florida Statutes*, you are hereby notified that a person or affiliate who has been placed on the convicted contractors 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 or real property to a public entity, may not be awarded or perform work as a contractor, supplier, sub-vendor, 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 [\$35,000.00] for a period of thirty-six (36) months from the date of being placed on the convicted contractors list.

Acknowledged by:

Firm Name

Signature

Name and Title (Print or Type)

Date

**Notification of Public Records Law Pertaining to Public Contracts and Requests
for Contractor Records Pursuant to Chapter 119, *Florida Statutes***

Pursuant to Chapter 119, *Florida Statutes*, Contractor shall comply with the public records law by keeping and maintaining public records required by the City of Delray Beach in order to perform the service. Upon request from the City of Delray Beach' custodian of public records, contract shall provide the City of Delray Beach 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, *Florida Statutes* or as otherwise provided by law. Contractor shall 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 City of Delray Beach. Contractor upon completion of the contract, shall transfer, at no cost, to the City of Delray Beach all public records in possession of the Contractor or keep and maintain public records required by the City of Delray Beach in order to perform the service. If the Contractor transfers all public records to the City of Delray Beach 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 must be provided to the City of Delray Beach, upon request from the City of Delray Beach' custodian of public records, in a format that is compatible with the information technology systems of the City of Delray Beach.

IF THE AWARDED BIDDER HAS QUESTIONS REGARDING THE APPLICATION OF CHAPTER 119, FLORIDA STATUTES, TO THE AWARDED BIDDER'S DUTY TO PROVIDE PUBLIC RECORDS RELATING TO THIS AGREEMENT, CONTACT THE CUSTODIAN OF PUBLIC RECORDS AT CITY OF DELRAY BEACH, CITY CLERK, 100 N.W. 1ST AVE., DELRAY BEACH FLORIDA. THE CITY CLERK'S OFFICE MAY BE CONTACTED BY PHONE AT 561-243-7050 OR VIA EMAIL AT CITYCLERK@MYDELRAYBEACH.COM.

Acknowledged by:

Firm Name

Signature

Name and Title (Print or Type)

Date

DRUG-FREE WORKPLACE

_____ is a drug-free workplace and has
(Company Name)
a substance abuse policy in accordance with and pursuant to Section 440.102, *Florida Statutes*.

Acknowledged by:

Firm Name

Signature

Name and Title (Print or Type)

Date

NON-COLLUSION AFFIDAVIT

STATE OF _____
COUNTY OF _____

Before me, the undersigned authority, personally appeared _____, who, after being by me first duly sworn, deposes and says of his/her personal knowledge that:

- a. He / She is _____ of _____, the Bidder that has submitted a Bid to perform work for the following:

ITBC No.: _____ Title: _____

- b. He / She is fully informed respecting the preparation and contents of the attached Request for Bids, and of all pertinent circumstances respecting such Solicitation.

Such Bid is genuine and is not a collusive or sham Bid.

- c. Neither the said Bidder nor any of its officers, partners, owners, agents, representatives, employees, or parties in interest, including this affiant, has in any way colluded, conspired, connived, or agreed, directly or indirectly, with any other Bidder, firm, or person to submit a collusive or sham Bid in connection with the Solicitation and contract for which the attached Bid has been submitted or to refrain from proposing in connection with such Solicitation and contract, or has in any manner, directly or indirectly, sought by agreement or collusion or communication or conference with any other Bidder, firm, or person to fix the price or prices in the attached Bid or any other Bidder, or to fix any overhead, profit, or cost element of the Bid price or the Bid price of any other Bidder, or to secure through any collusion, conspiracy, connivance, or unlawful agreement any advantage against the City or any person interested in the proposed contract.
- d. The price or prices quoted in the attached Bid are fair and proper and are not tainted by any collusion, conspiracy, connivance, or unlawful agreement on the part of the Bidder or any of its agents, representatives, owners, employees, or parties in interest, including this affiant.

Signature

Subscribed and sworn to (or affirmed) before me this _____ day of _____ 20__, by _____, who is personally known to me or who has produced _____ as identification.

SEAL

Notary Signature _____
Notary Name: _____
Notary Public (State): _____
My Commission No: _____
Expires on: _____

SAMPLE PERFORMANCE BOND FORMAT

KNOW ALL MEN BY THESE PRESENTS: that - _____

(Insert full name and address or legal title of awarded bidder)

as Principal, hereinafter called Contractor, and _____,
(Name of Insurer)

as Surety, hereinafter called Surety, are held and firmly bound unto the City of Delray Beach, Palm Beach County, Florida.

As Obligee, hereinafter called the City, in the amount of _____,
(\$ _____), for the payment whereof, Contractor and Surety bind themselves, their heirs, executors, administrators, successors, and assigns, jointly and severably, firmly by the presents.

WHEREAS, Contractor has by written agreement dated _____, 20__, entered into Contract No. _____ with the City in accordance with the Solicitation specifications prepared by the City, which Contract is by reference made a part hereof and is hereinafter referred as the Contract, for the performance of the following Work:

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if Contractor shall promptly and faithfully perform said Contract, then this obligation shall be null and void; otherwise, it shall remain in full force and effect.

The Surety hereby waives notice of any alteration or extension of time made by the City.

Whenever Contractor shall be and declared by the City to be in default under the Contract, the City having performed City's obligations thereunder, the Surety may promptly remedy the default or shall promptly:

- a. Complete the Contract in accordance with its terms and conditions; or
- b. Obtain a Bid or Bids for completing the Contract in accordance with its terms and conditions, and upon determination by Surety of the most responsible Bidder, or if the City elects, upon determination by the City and the Surety jointly of the most responsible Bidder, arrange for a Contract between such Bidder and the City, and make available as 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 cost 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 the City to Contractor under the contract and any amendments thereto, less the amount properly paid by the City to the Contractor.

Any suit under this bond must be instituted before the expiration of twenty-five (25) months from the date on which final payment under the Contract falls due.

No right of action shall accrue on this bond to or for the use of any person or corporation other than the City named herein or the heirs, executors, administrators, or successors of the City.

Signed and sealed this _____ day of _____, 20__.

(Principal) (Seal)

(Witness) (Title)

(Seal) _____
(Name of Insurer) Surety

(Witness) By: _____
(Attorney-in-Fact)

SAMPLE PAYMENT BOND FORMAT

KNOW ALL MEN BY THESE PRESENTS: that - _____

(Insert full name and address or legal title of awarded bidder)

as Principal, hereinafter called Contractor, and _____,
(Name of Insurer)

as Surety, hereinafter called Surety, are held and firmly bound unto the City of Delray Beach, Palm Beach County, Florida.

As Obligee, hereinafter called the City, in the amount of _____,
(\$ _____), for the payment whereof, Contractor and Surety bind themselves, their heirs, executors, administrators, successors, and assigns, jointly and severably, firmly by the presents.

WHEREAS, Contractor has by written agreement dated _____, 20__, entered into Contract No. _____ with the City in accordance with the Solicitation specifications prepared by the City, which Contract is by reference made a part hereof and is hereinafter referred as the Contract, for the performance of the following Work:

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if said Contractor and all subcontractors to whom any portion of the work provided for in said Contract is sublet and all assignees of said Contract and of such subcontractors shall promptly make payments to all persons supplying him or them with labor, products, services, or supplies for or in the prosecution of the work provided for in such Contract, or in any amendment or extension of or addition to said Contract, and for the payment of reasonable attorney's fees, incurred by the claimants in suits on this bond, then the above obligation shall be void; otherwise, it shall remain in full force and effect.

HOWEVER, this bond is subject to the following conditions and limitations:

a) Any person, firm or corporation that has furnished labor, products, or supplies for or in the prosecution of the work provided for in said Contract shall have a direct right of action against the Contractor and Surety on this bond, which right of action shall be asserted in a proceeding, instituted in the county in which the work provided for in said Contract is to be performed or in any county in which Contractor or Surety does business. Such right of action shall be asserted in proceedings instituted in the name of the claimant or claimants for his or their use and benefit against said Contractor and Surety or either of them (but not later than one year after the final settlement of said Contract) in which action such claim or claims shall be adjudicated and judgment rendered thereon.

b) The Principal and Surety hereby designate and appoint _____
_____ as the agent of each of them to receive and accept service of process or other pleading issued or filed in any proceeding instituted on

this bond and hereby consent that such service shall be the same as personal service on the Contractor and/or Surety.

c) In no event shall the Surety be liable for a greater sum than the penalty of this bond, or subject to any suit, action or proceeding thereon that is instituted later than one year after the final settlement of said Contract.

d) This bond is given pursuant to and in accordance with the provisions of Florida Statutes, and all the provisions of the law referring to this character of bond as set forth in any sections or as may be hereinafter enacted, and these are hereby made a part hereof to the same extent as if set out herein in full.

Any suit under this bond must be instituted before the expiration of twenty-five (25) months from the date on which final payment under the Contract falls due.

No right of action shall accrue on this bond to or for the use of any person or corporation other than the City named herein or the heirs, executors, administrators, or successors of the City.

Signed and sealed this _____ day of _____, 20__.

(Principal) (Seal)

(Witness)

(Title)

(Seal)

(Name of Insurer) Surety

(Witness)

Fact)

By: _____
(Attorney-in-

SAMPLE LETTER OF CREDIT FORMAT

LETTER OF CREDIT NO.: _____
ISSUANCE DATE: _____

APPLICANT:

{Name of Corporation} _____
{Address} _____
{City, State, Zip} _____

BENEFICIARY:

CITY OF DELRAY BEACH
100 N.W. 1ST AVENUE
DELRAY BEACH, FLORIDA 33444

FOR U.S.D. \$ _____
DATE OF EXPIRATION: _____

WE HEREBY ESTABLISH OUR IRREVOCABLE LETTER OF CREDIT NO. _____ IN FAVOR OF THE BENEFICIARY, THE CITY OF DELRAY BEACH, FLORIDA (HEREINAFTER "CDB") FOR THE ACCOUNT OF THE ABOVE-REFERENCED APPLICANT, AVAILABLE BY YOUR DRAFTS DRAWN ON (Insert name of Bank) PAYABLE AT SIGHT FOR ANY SUM OF MONEY NOT TO EXCEED A TOTAL OF (Insert the amount of money), THE AMOUNT REFERENCED ABOVE.

DEMANDS OF THE LETTER OF CREDIT MUST BE ACCOMPANIED BY A STATEMENT FROM THE CITY MANAGER OF THE CITY OF DELRAY BEACH CERTIFYING EITHER: (1) THAT SAID LETTER OF CREDIT IS ABOUT TO EXPIRE AND HAS NOT BEEN RENEWED, OR (2) THAT WORK HAS NOT BEEN COMPLETED IN ACCORDANCE WITH THE PLANS, SPECIFICATIONS, AND AGREEMENTS (INCLUDING ANY AMENDMENTS THEREOF) FOR THE FOLLOWING PROJECT: WATER TREATMENT PLANT UPGRADES AND IMPROVEMENTS (THE 'PROJECT').

IT IS A CONDITION OF THIS LETTER OF CREDIT THAT IT WILL BE AUTOMATICALLY EXTENDED FOR PERIODS OF ONE YEAR FROM EXPIRY DATE HEREOF, OR ANY FUTURE EXPIRATION DATE, WITHOUT ANY AMENDMENT, UNLESS THIRTY (30) DAYS BUT NO MORE THAN SIXTY (60) DAYS PRIOR TO ANY EXPIRATION DATE WE SHALL NOTIFY CDB IN WRITING BY CERTIFIED MAIL RETURN RECEIPT REQUESTED, OR BY COURIER VIA HAND DELIVERY AT THE ABOVE-LISTED ADDRESS, THAT WE ELECT NOT TO CONSIDER THIS LETTER OF CREDIT RENEWED FOR ANY SUCH ADDITIONAL PERIOD.

WE HEREBY AGREE WITH THE DRAWERS, ENDORSERS, AND BONA FIDE HOLDERS OF ALL DRAFTS DRAWN UNDER AND IN COMPLIANCE WITH THE TERMS OF THE CREDIT THAT SUCH DRAFTS WILL BE DULY HONORED UPON PRESENTATION TO **{Name of Bank}** _____ (THE 'BANK'), WHICH IS DULY AUTHORIZED TO CONDUCT BUSINESS IN THE STATE OF FLORIDA IN ACCORDANCE WITH THE TERMS HEREOF. IF A DRAFT, AS DESCRIBED IN THIS LETTER OF CREDIT, IS PRESENTED PRIOR TO THE EXPIRATION DATE AND IN CONFORMITY WITH THE TERMS OF THIS LETTER OF

CREDIT AND UPON PRESENTATION IT IS WRONGFULLY DISHONORED BY THE BANK, THE BANK AGREES TO PAY REASONABLE ATTORNEYS FEES AND COSTS, INCLUDING FEES AND COSTS ON APPEAL, INCURRED BY THE CITY OF DELRAY BEACH TO ENFORCE THIS LETTER OF CREDIT SHOULD CDB PREVAIL.

DOCUMENTS MUST BE PRESENTED FOR PAYMENT TO:

{Name of Bank Branch} _____

{Address} _____

{City, State, Zip} _____

ATTN: **{Department}** _____

ALL DRAWINGS UNDER THIS LETTER OF CREDIT MUST BE ACCOMPANIED BY THE ORIGINAL LETTER OF CREDIT INSTRUMENT WHICH WILL BE RETURNED TO THE BENEFICIARY AFTER ENDORSING THE BACK OF SAME WITH THE AMOUNT OF EACH DRAWING BY US.

PARTIAL DRAWINGS ARE PERMITTED.

THE AMOUNT OF ANY DRAFT DRAWN UNDER THIS CREDIT MUST BE ENDORSED ON THE REVERSE OF THE ORIGINAL CREDIT. ALL DRAFTS MUST BE MARKED "DRAWN UNDER **{Name of Bank}** _____ LETTER OF CREDIT NUMBER _____ DATED _____, 20__."

THIS CREDIT IS SUBJECT TO THE "UNIFORM CUSTOMS AND PRACTICE FOR DOCUMENTARY CREDITS, (2007 REVISION), INTERNATIONAL CHAMBER OF COMMERCE PUBLICATION NO. 600", AND TO THE PROVISIONS OF FLORIDA LAW. IF A CONFLICT BETWEEN THE UNIFORM CUSTOMS AND PRACTICE FOR DOCUMENTARY CREDITS AND FLORIDA LAW SHOULD ARISE, FLORIDA LAW SHALL PREVAIL. IF A CONFLICT BETWEEN THE LAW OF ANOTHER STATE OR COUNTRY AND FLORIDA LAW SHOULD ARISE, FLORIDA LAW SHALL PREVAIL. VENUE FOR ANY DISPUTES RELATING TO THE ENFORCEMENT OF THIS LETTER OF CREDIT SHALL BE PALM BEACH COUNTY, FLORIDA.

{Name of Bank} _____

BY: _____

{Name} _____

{Title} _____

SECTION 9 SAMPLE AGREEMENT FORMAT

Below is the standard agreement format for this Invitation to Bid Construction. This is a sample agreement only and is subject to revisions. **DO NOT COMPLETE.**

AGREEMENT

THIS AGREEMENT is hereby made and entered into this ____ day of _____, 20__, (the “effective date”) by and between the City of Delray Beach, a Florida municipal corporation (“City”), whose address is 100 N.W. 1st Avenue, Delray Beach, Florida 33444, and _____, a corporation (hereafter referred to as “Contractor”), whose address is _____.

WHEREAS, the City desires to retain the services of the Contractor to provide the goods and services in accordance with the City’s Invitation to Bid Construction No. 2018-049, and the Contractor’s response thereto, all of which are incorporated herein by reference.

NOW, THEREFORE, in consideration of the mutual covenants and promises hereafter set forth, the Contractor and the City agree as follows:

ARTICLE 1. INCORPORATION OF INVITATION TO BID CONSTRUCTION

The terms and conditions of this Agreement shall include and incorporate the terms, conditions, and specifications set forth in the City’s Invitation to Bid Construction No. 2018-049, and the Contractor’s response to the Invitation to Bid Construction, including all documentation required thereunder.

ARTICLE 2. DESCRIPTION OF GOODS OR SCOPE OF SERVICES

The Contractor shall provide the goods and/or perform those services identified in the specifications accompanying the City’s Invitation to Bid Construction, which are incorporated herein by reference.

ARTICLE 3. COMPENSATION

The City shall pay to the Contractor, in compliance with the Pricing Schedule attached hereto and incorporated herein, according to the terms and specifications of the referenced Invitation to Bid Construction.

ARTICLE 4. MISCELLANEOUS PROVISIONS

a. Notice Format. All notices or other written communications required, contemplated, or permitted under this Agreement shall be in writing and shall be hand delivered, telecommunicated, or mailed by registered or certified mail (postage prepaid), return receipt requested, to the following addresses:

- Attn.: _____
Email: _____

c. Effective Date. The effective date of this Agreement shall be as of the date it has been executed by both the parties hereto.

This term of this Agreement shall be from the effective date through the completion of work and full acceptance by the City, unless terminated earlier in accordance with terms set forth in the ITBC.

Page | 46

IN WITNESS WHEREOF, the parties have executed this Agreement on the dates hereinafter written.

CITY OF DELRAY BEACH, FLORIDA

[SEAL]

By: _____
Shelly Petrolia, Mayor

ATTEST:

By: _____
Katerri Johnson, City Clerk

APPROVED AS TO FORM AND
LEGAL SUFFICIENCY

By: _____
R. Max Lohman, City Attorney

CONTRACTOR

[SEAL]

By: _____

Printed Name

Title

STATE OF _____

COUNTY OF _____

The foregoing instrument was acknowledged before me this ____ day of _____, 2018, by _____, as _____ (name of officer or agent, title of officer or agent), of _____ (name of corporation acknowledging), a _____ (state or place of incorporation) corporation, on behalf of the corporation. He/She is personally known to me or has produced _____ (type of identification) as identification.

Notary Public – State of Florida

SECTION 10
EXHIBITS

- 10.1 EXHIBIT A, Pricing Schedule
- 10.2 EXHIBIT B, Specifications
- 10.3 EXHIBIT C, Drawings

END OF SECTION 10

SECTION 11
SOLICITATION SUMMARY

The City of Delray Beach
100 N.W. 1st Avenue
Delray Beach, FL 33444

PURCHASING DEPARTMENT

SOLICITATION SUMMARY

IMPORTANT NOTICE

The information you provide on this page will be read aloud at the PUBLIC OPENING for this Solicitation. It is VERY IMPORTANT that the summary information you provide below is exactly the same information contained in your Bid. If subsequent to the opening of Bids, the City determines that the information contained in the electronic version of your Bid is different from the information on this Solicitation Summary, the City reserves the right to deem your Bid NON-RESPONSIVE, and remove your Bid from further evaluation and consideration for contract award.

BID INFORMATION

Bid Number: ITBC No. 2018-049

Title: Water Treatment Plant Upgrades and Improvements

Due Date and Time: September 21, 2018 @ 2:00PM EST

Name of Bidder: _____

Address: _____

Contact Person: _____

Bid Amount: \$ _____

Authorized Signature: _____

Date: _____

By signing and submitting this Solicitation Summary, the Bidder affirms that the information provided above is an exact and correct summary of the information contained in the electronic version of the Bidder's Bid to the City of Delray Beach.

THIS SOLICITATION SUMMARY MUST BE SIGNED AND INCLUDED AS AN ORIGINAL HARDCOPY IN THE SEALED PACKAGE CONTAINING YOUR BID OR SIGNED AND INCLUDED WITH YOUR SECURE ELECTRONIC BID SUBMITTAL THROUGH WWW.BIDSYNC.COM.

4. Bidder will complete the Work for the following prices:

SCHEDULE OF BID PRICES

ITEM NO.	DESCRIPTION	UNIT	EST. QTY.	UNIT PRICE (in words)	UNIT PRICE	EXTENDED TOTAL PRICE
BASE BID						
GENERAL CONDITIONS						
1	Mobilization, Insurance and Bonds	LS	1	_____ Dollars _____ Cents	\$ _____	\$ _____
2	As-Built Record Drawings	LS	1	_____ Dollars _____ Cents	\$ _____	\$ _____
3	Professional Audio/Video & Site Photographs	LS	1	_____ Dollars _____ Cents	\$ _____	\$ _____
4	NPDES Permit / Erosion Protection Measures	LS	1	_____ Dollars _____ Cents	\$ _____	\$ _____
5	Indemnification	LS	1	Ten _____ Dollars Zero _____ Cents	\$ 10.00	\$ 10.00
CLARIFIER NO. 1 REHABILITATION						
6	Pressure Washing, Clean-Out and Proper Disposal of Lime Sludge Deposits from Clarifier No. 1	LS	1	_____ Dollars _____ Cents	\$ _____	\$ _____
7	Dust Abatement and Control Measures per Section 01560 entitled "Temporary Environmental Controls"	LS	1	_____ Dollars _____ Cents	\$ _____	\$ _____
8	Replacement and Repairs of Clarifier Components as Shown and/or Stipulated in the Contract Drawings and Technical Specifications	LS	1	_____ Dollars _____ Cents	\$ _____	\$ _____
9	Surface Preparation and Application of the Specified Protective Coating System to all Existing, New and/or Repaired Clarifier Components	LS	1	_____ Dollars _____ Cents	\$ _____	\$ _____

ITEM NO.	DESCRIPTION	UNIT	EST. QTY.	UNIT PRICE (in words)	UNIT PRICE	EXTENDED TOTAL PRICE
FILTER NO. 1 UPGRADES						
10	Replacement of Existing 20-inch Filter Fill Valve with Pneumatic Operator and 30-inch Filter Drain Valve with Pneumatic Operator at Filter Unit No. 1 - Valves and Operators shall be Supplied by Contractor	LS	1	_____	\$ _____	\$ _____
				Dollars		

				Cents		
11	Surface Preparation and Application of the Specified Protective Coating System to all new and existing piping, fittings and valving at Filter No's. 1 and 2	EA	2	_____	\$ _____	\$ _____
				Dollars		

				Cents		
SODIUM HYPOCHLORITE BULK STORAGE IMPROVEMENTS						
12	Supply and Install 8,500-gallon HDPE Bulk Storage Tank including all Appurtenances	LS	1	_____	\$ _____	\$ _____
				Dollars		

				Cents		
13	Supply and Install of Schedule 80 PVC Piping, Fittings and Valving	LS	1	_____	\$ _____	\$ _____
				Dollars		

				Cents		
14	Surface Preparation and Application of the Specified Protective Coating System to all new and existing Schedule 80 PVC piping, fittings and valving within the Secondary Containment Area	LS	1	_____	\$ _____	\$ _____
				Dollars		

				Cents		
15	Electrical - Supply and Install all electrical system improvements	LS	1	_____	\$ _____	\$ _____
				Dollars		

				Cents		
16	Instrumentation and Controls - Supply and Install all instrumentation and controls (I&C) system improvements	LS	1	_____	\$ _____	\$ _____
				Dollars		

				Cents		
ALLOWANCES						
17	Miscellaneous Allowance - Including but not limited to permitting, unforeseen and/or concealed conditions.	LS	1	Seventy-five	\$ 75,000.00	\$ 75,000.00
				Dollars		
				Zero		
				Cents		
TOTAL EVALUATED						
BASE BID ITEMS 1 through 17 (in numbers)					\$ _____	
TOTAL EVALUATED						
BASE BID ITEMS 1 through 17 (in words)					_____	
					Dollars	

					Cents	

ITEM NO.	DESCRIPTION	UNIT	EST. QTY.	UNIT PRICE (in words)	UNIT PRICE	EXTENDED TOTAL PRICE
----------	-------------	------	-----------	-----------------------	------------	----------------------

(Amounts are to be shown in both words and figures. In case of discrepancies, the amount shown in words will govern for each bid item, unit price, and total bid. Extended unit price shall prevail over total price for bid items based upon unit price.)

ALTERNATE BID ITEMS

18	Replacement of Existing 20-inch Filter Fill Valve with Pneumatic Operator and 30-inch Filter Drain Valve with Pneumatic Operator at Filter Unit No. 4 - Valves and Operators shall be Supplied by Contractor	LS	1	<div></div> <div>Dollars</div> <div>Cents</div>	<div>\$</div> <div></div>	<div>\$</div> <div></div>
19	Replacement of Existing 20-inch Filter Fill Valve with Pneumatic Operator and 30-inch Filter Drain Valve with Pneumatic Operator at Filter Unit No. 6 - Valves and Operators shall be Supplied by Contractor	LS	1	<div></div> <div>Dollars</div> <div>Cents</div>	<div>\$</div> <div></div>	<div>\$</div> <div></div>
20	Replacement of Existing 20-inch Filter Fill Valve with Pneumatic Operator and 30-inch Filter Drain Valve with Pneumatic Operator at Filter Unit No. 7 - Valves and Operators shall be Supplied by Contractor	LS	1	<div></div> <div>Dollars</div> <div>Cents</div>	<div>\$</div> <div></div>	<div>\$</div> <div></div>
21	Replacement of Existing 20-inch Filter Fill Valve with Pneumatic Operator and 30-inch Filter Drain Valve with Pneumatic Operator at Filter Unit No. 8 - Valves and Operators shall be Supplied by Contractor	LS	1	<div></div> <div>Dollars</div> <div>Cents</div>	<div>\$</div> <div></div>	<div>\$</div> <div></div>
22	30-inch Filter Drain Valve with Pneumatic Operator - Supply Only	EA	1	<div></div> <div>Dollars</div> <div>Cents</div>	<div>\$</div> <div></div>	<div>\$</div> <div></div>
23	20-inch Filter Fill Valve with Extended Bonnet and Pneumatic Operator - Supply Only	EA	1	<div></div> <div>Dollars</div> <div>Cents</div>	<div>\$</div> <div></div>	<div>\$</div> <div></div>
24	Surface Preparation and Application of the Specified Protective Coating System, per Section 09900 entitled "Painting", to all new and existing piping, fittings and valving at a Filter Unit to be Selected by Owner	EA	6	<div></div> <div>Dollars</div> <div>Cents</div>	<div>\$</div> <div></div>	<div>\$</div> <div></div>

NET* Add / Deduct to Base Bid (in numbers)

\$

NET* Add / Deduct to Base Bid (in words)

Dollars

Cents

* Circle One

(Amounts are to be shown in both words and figures. In case of discrepancies, the amount shown in words will govern for each bid item, unit price, and total bid. Extended unit price shall prevail over total price for bid items based upon unit price.)

CITY of DELRAY BEACH

CONSTRUCTION CONTRACT AND GENERAL CONDITIONS FOR

WATER TREATMENT PLANT UPGRADES AND IMPROVEMENTS

City Project No. 17-038
City Bid No. 2018-049



BID SET

JUNE 2018



CITY COMMISSIONERS

MAYOR

VICE MAYOR

DEPUTY VICE MAYOR

COMMISSIONER

COMMISSIONER

CITY MANAGER

- SHELLY PETROLIA

- ADAM FRANKEL

- SHIRLEY JOHNSON

- RYAN BOYLSTON

- BILL BATHURST

- MARK LAUZIER

ENVIRONMENTAL SERVICES DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

TABLE OF CONTENTS
TO
SPECIFICATIONS AND CONTRACT DOCUMENTS
FOR

WATER TREATMENT PLANT UPGRADES AND IMPROVEMENTS
City of Delray Beach Project No. 17-068
City Bid No. 2018-049

TECHNICAL SPECIFICATIONS

DIVISION 1 - GENERAL REQUIREMENTS

01010	SUMMARY OF WORK
01020	ALLOWANCE
01025	MEASUREMENT AND PAYMENT
01041	PROJECT COORDINATION
01045	CUTTING AND PATCHING
01060	REGULATORY REQUIREMENTS
01070	ABBREVIATIONS
01090	REFERENCE STANDARDS
01152	APPLICATION FOR PAYMENT
01153	CHANGE ORDER PROCEDURES
01200	PROJECT MEETINGS
01300	SUBMITTALS
01400	QUALITY CONTROL
01510	TEMPORARY FACILITIES
01530	PROTECTION OF EXISTING FACILITIES
01550	SITE ACCESS AND STORAGE
01560	TEMPORARY ENVIRONMENTAL CONTROLS
01600	MATERIALS & EQUIPMENT
01650	FACILITY STARTUP
01700	PROJECT CLOSE-OUT
01720	PROJECT RECORD DOCUMENTS
01721	DISINFECTION AND BACTERIOLOGICAL TESTING

DIVISION 2 - SITE WORK

02050	DEMOLITION
-------	------------

DIVISION 5 - METALS

05060	WELDING
05120	STRUCTURAL STEEL
05550	METAL FABRICATIONS

DIVISION 6- WOOD AND PLASTICS

06600	FABRICATED FIBERGLASS
-------	-----------------------

DIVISION 9 - FINISHES

09900	PAINTING
-------	----------

DIVISION 11- EQUIPMENT

11301 POLYETHYLENE STORAGE TANKS

DIVISION 15- MECHANICAL

15000 PIPING
15020 PIPE SUPPORTS
15100 VALVES
15995 PIPELINE TESTING AND DISINFECTION

DIVISION 16 – ELECTRICAL

16050 ELECTRICAL – GENERAL PROVISIONS

APPENDICIES

APPENDIX A – PALM BEACH COUNTY HEALTH DEPARTMENT PWS PERMIT

DIVISION 1

GENERAL REQUIREMENTS

SECTION 01010 SUMMARY OF WORK

PART 1 - GENERAL

1.01 WORK COVERED BY CONTRACT DOCUMENTS

- A. The work covered by these specifications comprises, in general, the furnishing of all labor, equipment, materials, and performing all operations to construct specific upgrades and improvements at the City of Delray Beach Water Treatment Plant (WTP) as described and specified further in the Technical Specifications and as shown on the Contract Drawings.
- B. The project scope of work generally includes, but is not limited to the following tasks:
 - 1. Rehabilitation of Clarifier No. 1 shall be as shown on the Drawings and shall general include:
 - a. Pressure washing, clean-out and proper disposal, per local, State and/or Federal regulations, of all lime sludge deposits from the interior of the clarifier structure.
 - b. Replacement of the existing steel angle supports within the thirteen (13) radial launders. Each launder is equipped with a total of seven (7) angle iron supports.
 - c. Replacement of the existing steel plate “T” shape reinforcement members which span the inner launder at the connection point to each of the thirteen (13) radial launders.
 - d. Replacement of the supports for the thirteen (13) radial launders at the point of connection to the pre-stressed concrete clarifier wall.
 - e. Rehabilitation and replacement of the existing steel reinforcing angle along the top of the interior inner launder wall.
 - f. Replacement of the four (4) existing jacking/leveling fixtures located between the walkway super structure and interior inner launder walls.
 - g. Rehabilitation of the existing base supports for the existing southernmost catwalk at the point of connection to the top of the pre-stressed concrete clarifier wall.
 - h. General spot repairs and rehabilitation of existing mild steel components which exhibit advanced corrosion and section loss.
 - i. Surface preparation and application of the specified protective coating systems in Section 09900 entitled “Painting” to all

immersed and non-immersed clarifier components, conduit, PVC piping, walkways, platforms, etc. All existing galvanized steel, aluminum and/or Type 316 stainless steel components which are not currently coated shall not be prepped and coated.

Replacement of the existing clarifier mechanical drive components and electrical and control systems is specifically excluded from the scope of work.

2. Replacement of the existing 30-inch butterfly valve and pneumatic operator on the existing ductile iron drain piping **AND** the existing 20-inch butterfly valve with extended bonnet and pneumatic operator on the existing ductile iron fill piping at Filter No. 1. The Contractor shall supply the valves and operators for installation.
3. Supply and install of a new 8,500 gallon high density polyethylene (HDPE) bulk storage tank for use with a 12% solution of sodium hypochlorite. The proposed tank will be installed within an existing concrete secondary containment structure. The project includes the supply and install of interconnecting piping, fittings, valves, instrumentation, appurtenances and miscellaneous components.

C. Alternate Bid Items

The following Alternate Bid Items shall be completed as additional work to the project scope, if desired by and at the written direction of the Owner. Payment under these items shall be made at the Contractor's unit price for each unit performed and shall include full compensation for all labor, material and equipment required to perform the tasks indicated. The work shall be completed per unit.

Alternate Bid Item No. 1:

- Replacement of one (1) additional, existing 30-inch butterfly valve and pneumatic operator on the existing ductile iron drain piping **AND** one (1) additional, existing 20-inch butterfly valve with extended bonnet and pneumatic operator on the existing ductile iron fill piping at a filter unit No. 4 - Valves and operators shall be supplied by Contractor.

Alternate Bid Item No. 2

- Replacement of one (1) additional, existing 30-inch butterfly valve and pneumatic operator on the existing ductile iron drain piping **AND** one (1) additional, existing 20-inch butterfly valve with extended bonnet and pneumatic operator on the existing ductile iron fill piping at a filter unit No. 6 - Valves and operators shall be supplied by Contractor.

Alternate Bid Item No. 3

- Replacement of one (1) additional, existing 30-inch butterfly valve and pneumatic operator on the existing ductile iron drain piping **AND** one (1) additional, existing 20-inch butterfly valve with extended bonnet and pneumatic operator on the existing ductile iron fill piping at a filter unit No. 7 - Valves and operators shall be supplied by Contractor.

Alternate Bid Item No. 4

- Replacement of one (1) additional, existing 30-inch butterfly valve and pneumatic operator on the existing ductile iron drain piping **AND** one (1) additional, existing 20-inch butterfly valve with extended bonnet and pneumatic operator on the existing ductile iron fill piping at a filter unit No. 8 - Valves and operators shall be supplied by Contractor.

Alternate Bid Item No. 5

- Supply Owner, as a spare, one (1) 30-inch filter drain butterfly valve equipped with a pneumatic operator for future installation at an additional filter unit.

Alternate Bid Item No. 6

- Supply Owner, as a spare, one (1) 20-inch filter fill butterfly valve with extended bonnet equipped with a pneumatic operator for future installation at an additional filter unit.

Alternate Bid Item No. 7

- Surface preparation and application of the specified protective coating system, per Section 09900 entitled "Painting", to all new and existing piping, fittings and valving for up to six (6) filter units to be selected by Owner.

D. Except as specifically noted, the Contractor shall provide and pay for:

1. Labor, materials, tools, construction equipment, and machinery.
2. Water and utilities required for construction.
3. Other facilities and services necessary for proper execution and completion of the work.

E. The Contractor shall comply with all codes, ordinances, rules, regulations, orders and other legal requirements of the City of Delray Beach.

1.02 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 suitably stored by the Contractor to prevent damage from exposure, admixture with foreign substances, or 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 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 week from the time of unloading and stringing out.

1.03 PRESERVATION OF PROPERTY

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 plans. 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.

In case of failure on the part of the Contractor to restore such property, or make good such damage for 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.

1.04 CLEAN UP

The Contractor shall keep the construction site free of rubbish and other materials and restore to their original conditions those portions of the site not designated for the 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 operation. 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 immediately restored to original condition as upon completion of the project.

1.05 OPERATOR SAFETY AND CONVENIENCE

The Contractor shall at all times so conduct his work as to ensure the least possible obstruction to traffic, or inconvenience to the facility operations staff working in the vicinity of the work. Provisions shall be made by the Contractor to ensure access to site sidewalks to ensure free and clear access around the project site so as to minimize the impacts to the plant operations. No open excavation shall be left overnight.

1.06 SAFETY AND OSHA COMPLIANCE

- A. The Contractor shall comply in all respects with all Federal, State and Local safety and health regulations. Copies of the Federal regulations may be obtained from the U.S. Department of Labor, Occupation Safety and Health Administration (OSHA), Washington, DC 20210 or their regional offices.
- B. The Contractor shall comply in all respects with the applicable Workman's Compensation Law.

1.07 CONTRACTOR'S USE OF PREMISES

- A. Coordinate use of premises under direction of Owner and Engineer. Contractor is specifically advised that the City of Delray Beach WTP is an active facility which is required to remain in operation and provide uninterrupted service for the duration of the construction activities. Contractor shall include within his bid all costs associated with providing provisions to ensure that the operation and production of the WTP is unaffected for the duration of the construction activities. In the event of a service disruption which is a result of the Contractor's work, upon advisement from the City the Contractor shall take immediate action to resolve the issue(s). If the Contractor fails to make the necessary corrections the Owner will, at his direction, make the necessary corrections at the Contractor's expense.
- B. Assume full responsibility for the protection and safekeeping of equipment and materials stored on the site.
- C. Move any stored Products, under Contractor's control, which interfere with operations of the Owner or separate Contractor.

1.08 NPDES COMPLIANCE

- A. Prior to the commencement of work, the Contractor shall, if necessary to complete the work "in the dry", obtain the permit coverage for stormwater discharge from large and small construction activities and must implement appropriate pollution prevention techniques and SWPPP to minimize erosion and sedimentation to properly manage the stormwater runoff. The Contractor shall

prepare a NPDES Site Plan including sketches and Best Management Practice procedures for review and comment from the Project Manager. The NPDES Site Plan shall include the control of stormwater, ground water and subsurface water during dewatering operations.

(DEP adopted Rule 62-621.300 (4), F.A.C., with specific provisions for requesting permit coverage for the management of stormwater discharge from large and small construction activities.)

- B. The permit coverage for construction activities is to be obtained by submitting DEP form 62-621.300 (4) (b) Notice of Intent (NOI) to Use Generic Permit for Stormwater Discharge from Large and Small Construction Activities and by preparing and implementing a Stormwater Pollution Prevention Plan (SWPPP). After construction is complete, Notice of Termination (NOT) to discontinue the permit coverage is to be submitted by utilizing form 62-621.300 (6).
- C. For additional information contact NPDES Stormwater Section at:

Florida Department of Environmental Protection
Tallahassee, FL 32399-2400
(850) 921-9904

1.09 PROTECTION OR REMOVAL OF UTILITY LINES

- A. Prior to construction the Contractor shall locate for physical location, elevation and dimensions and adequately uncover existing utilities, (within the path of his proposed work), to determine possible conflicts. By starting underground constructions, the Contractor has agreed that they are fully responsible for any and all damages and/or delays that may arise from not having adequately locating the underground utilities. This applies to underground utilities that are shown on the project construction drawings and those that have been physically marked in the field by the various locating organizations, agencies and/or plant operations staff.
- B. Information provided on the plans may be used as an approximate guide to assist the Contractor, however, the Contractor shall rely on actual field investigation to assure that all of the existing utilities are accurately located prior to commencement of his work.
- C. Existing structures reflect the best available information, but it shall be the Contractor's responsibility to acquaint him with all information and to avoid conflict with existing conditions. Protect all existing utility lines that are to be retained, or utility line constructed during excavation operations, from damage during excavation and backfilling; if damaged, repair at Contractor's expense.

- D. Existing Utility Lines to be Retained: Repair damaged lines that are not shown on drawings, or locations of which are not known to Contractor in sufficient time to avoid further damage.
- E. Uncharted or incorrectly charted underground utilities that are discovered during construction shall be incorporated into the project As-Builts with vertical and horizontal coordinates.
- F. Prior to commencement of any excavation, the Contractor shall comply with Florida Statute 553.851 for the protection of underground gas lines and underground telecommunication lines.

END OF SECTION

SECTION 01020 ALLOWANCES

PART 1 - GENERAL

1.01 THE REQUIREMENT

- A. Include in the Total Base Bid Price all allowances stated in the Contract Documents.
- B. Include in the Schedule of Payment Values the amount of each Allowance specified herein.

1.02 CONTRACT ALLOWANCES

- A. Included in this Contract are the following allowances:

Item	Not to Exceed Lump Sum Amount
Miscellaneous Items Allowance	\$ 50,000.00
TOTAL	\$ 50,000.00

- B. Reimbursement.
 - 1. The Contractor is not entitled to the entire allowance amounts as part of the Contract. Reimbursement will be made up to the maximum amount identified for each allowance. If actual reimbursements total less than the amount in 1.02.A, the difference shall be deducted from the Total Base Bid Price by Change Order.
 - 2. Determination of reimbursement amount: The value of any Work authorized by the Owner for an increase or decrease in the Allowance shall be determined by the following method:
 - a. On the basis of the cost of the Work (determined based on final invoice), with a maximum of five (5) percent Contractor markup for overhead and profit on labor and material items and for sub-contractors. There shall be no markup for fee-type charges (e.g. utility Permanent Power charges, permit fees, etc.).
 - b. Payment of the allowance items shall be based on proper documentation from the Contractor (e.g. receipts for materials, labor itemization, machinery documentation, etc.) as deemed required by the Engineer.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01025 MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.01 EXPLANATION AND DEFINITIONS

- A. The following explanation of the Measurement and Payment for the Bid Form items is made for information and guidance. The omission of reference to any item in this description 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.

1.02 PAYMENT

- A. Payment shall be made for the items listed on the Bid Form on the basis of the work actually performed and completed, such work including but not limited to, the furnishing of all necessary labor, materials, equipment, transportation, clean up, and all other appurtenances to complete the construction and installation of the work to the configuration and extent as shown on the drawings and described in the specifications.

The City does not pay for items ordered and/or stored on site. Payment for pay items are paid once the item is installed, measured in place, completed and accepted.

- B. It is intended that all mobilization, insurance, bonds, licenses and other miscellaneous administrative costs, and all other costs to the Contractor not specifically identified in the following item descriptions will be distributed among and included in the unit prices stated. No additional payment shall be made for transportation, communications, office maintenance, clearance testing, and other incidental work or services, and no further payment shall be made for remobilization unless all of the work is suspended by the Engineer for a period in excess of three months and through no fault to the Contractor.
- C. The CONTRACTOR's attention is 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. No separate payment will be made for any item that is not specifically set forth in the Bid Form, and all costs therefore shall be included in the prices named in Bid Form for various appurtenant items of work.
- D. 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 and paid for by the Contractor.**

PART 2 - MATERIALS (NOT USED)

PART 3 - EXECUTION

3.01 BASE BID

GERNERAL CONDITIONS

A. Mobilization, Insurance and Bonds – Bid Item No. 1

1. Payment for mobilization/demobilization, bonds, insurance, scheduling, temporary facilities, permits and all other activities necessary will be made at the Contract Lump Sum (LS) bid price for this item, which price shall be full compensation for all materials, labor, equipment, tools and all other incidentals necessary to complete this item.
2. For mobilization/demobilization the lump sum cost shall include, but not limited to, those operations necessary for the movement of personnel, equipment, permit fees, pay requisitions, meetings, coordination with contractors, and sub-contractors which may or may not be on this site, meetings with residents and/or government agencies, supplies and incidentals to the project site and to maintain services (mail, trash, etc.). The cost of bonds, insurance, survey layout, and clean up of site, shall also be included in this item. The cost of supervision and/or administration of the project shall be deemed to be included in each of the respective items of work bid herein.
3. **Payment item for mobilization, insurance and bonds shall not exceed eight percent (8%) of the contract price. Should the bid price for mobilization, insurance and bonds exceed 8% of the Contract amount, any amount over the 8% will be paid with the Contractor's final payment application.**

B. As-Built Record Drawings– Bid Item No. 2

1. Payment for this item will be made at the Contract Lump Sum (LS) bid price for this item. One set of full size design drawings and an electronic AutoCAD 2016 file of the design drawings on CD will be furnished to the Contractor by the Engineer. The Contractor shall maintain full size (22" x 34") field drawings to reflect the "as-built" items of work as the work progresses.
2. Partial payment will be made for this item based upon the percentage of work completed.
3. The Contractor shall provide complete record drawing information to the Engineer. This information shall include horizontal and vertical dimensions on all structures, northing & easting coordinates, pipe sizes

and material types. Discovered utilities or utilities to be found in different locations shall also be shown on the record drawings. No payment will be made for final "as-built" drawings until final record drawings are received and accepted by the Engineer.

C. **Professional Audio/Video and Site Photographs – Bid Item No. 3**

1. Payment for this item will be made at the Contract Lump Sum (LS) bid price for this item.
2. The Contractor shall provide, prior to start of construction, audio/video and site photographs of the entire project by a professional audio-video documentation service acceptable to the Owner. The video and photographs shall include all structures, stairways, catwalks, piping, valving, fittings, process equipment, staging areas, sidewalks, access driveways, landscaping, etc. immediately adjacent to the work and within/throughout all entry and exit routes to access and complete the work associated with the project. Two (2) copies of the video (DVD format) and photographs shall be provided to the Owner for their use prior to construction activities.
3. A Professional Videographer must be used for this work.

D. **NPDES Permit/Erosion Protection Measures – Bid Item No. 4**

1. Payment for Contractor required NPDES Permit application (Notice of Intent and Notice of Termination), reporting by a person holding a certification as an FDEP NPDES Construction Site Inspector, and associated erosion protection measures including turbidity abatement will be made at the Contract Lump Sum Price (LS) Bid for this item. The percent completion of the project shall be based on the percent of the total project actually constructed and not on the percent of the Contract price completed.
2. This item includes all silt fencing and/or other required BMP protection devices.

E. **Indemnification – Bid Item No. 5**

Payment under this item is included in accordance with Article 1.25 of the General Terms and Conditions.

CLARIFIER NO. 1 REHABILITATION

F. Pressure Washing, Clean-Out and Proper Disposal of Lime Sludge Deposits from Clarifier No. 1 – Bid Item No. 6

1. Payment for pressure washing, clean-out and proper disposal of lime sludge deposits from Clarifier No. 1 will be made at the Contract Lump Sum (LS) bid price for this item, which price shall be full compensation for all materials, labor, equipment, tools and all other incidentals necessary to complete this item.

G. Dust Abatement and Control Measures – Bid Item No. 7

1. The Lump Sum (LS) price for this item shall be full compensation for all materials, labor, equipment, tools and all other incidentals necessary for the dust abatement and control measures per Section 01560 entitled “Temporary Environmental Controls”.

H. Replacement and Repairs of Clarifier Components - Bid Item No. 8

1. The Lump Sum (LS) price for this item shall be full compensation for the replacement and repairs of clarifier components as shown and/or stipulated in the contract drawings and technical specifications. The work shall include full compensation for all materials, labor, equipment, tools and all other incidentals necessary to complete this item.

I. Surface Preparation and Application of the Specified Protective Coating System to all Existing, New and/or Repaired Clarifier Components – Bid No. 9

1. The Lump Sum (LS) price for this item shall be full compensation for the surface preparation and application of the specified protective coating system to all existing, new and/or repaired clarifier components. The work shall include full compensation for all materials, labor, equipment, tools and all other incidentals necessary to complete this item.

FILTER NO. 1 UPGRADES

J. Replacement of Existing 20-inch Filter Fill Valve with Pneumatic Operator and 30-inch Filter Drain Valve with Pneumatic Operator at Filter Unit No. 1 – Valves and Operators shall be Supplied by Contractor – Bid No. 10

1. The Lump Sum (LS) price for this item shall include installing a 30-inch drain valve and pneumatic operator **AND** a 20-inch fill valve with extended bonnet and pneumatic operator at Filter Unit No. 1 as shown on the drawings and specified in the specifications. The price shall include all necessary labor, materials and equipment required to complete the work. The valves and operators shall be supplied by the Contractor.

K. **Surface Preparation and Application of the Specified Protective Coating System to all new and existing Piping, Fittings and Valving at Filter No's. 1 and 2 – Bid No. 11**

1. Payment for the surface preparation and application of the specified protective coating system to all new and existing piping, fittings, and valving at Filter No's.1 and 2 shall be made at the Contractor's Unit price per each (EA) performed.

SODIUM HYPOCHLORITE BULK STORAGE IMPROVEMENTS

L. **Supply and Install 8,500-gallon HDPE Bulk Storage Tank including all Appurtenances – Bid No. 12**

1. The Lump Sum (LS) price for this item shall be full compensation for the supply and install 8,500-gallon HDPE bulk storage tank including all appurtenances. The work shall include full compensation for all materials, labor, equipment, tools and all other incidentals necessary to complete this item.

M. **Supply and Install of Schedule 80 PVC Piping, Valving and Fittings – Bid No. 13**

1. The Lump Sum (LS) price for this item shall be full compensation for the supply and install of Schedule 80 PVC piping, valving, and fittings. The work shall include full compensation for all materials, labor, equipment, tools and all other incidentals necessary to complete this item.

N. **Surface Preparation and Application of the Specified Protective Coating System to all new and existing Schedule 80 PVC piping, fittings and valving within the Secondary Containment Area – Bid No. 14**

1. The Lump Sum (LS) price for this item shall be full compensation for the surface preparation and application of the specified protective coating system to all new and existing schedule 80 PVC piping, fittings and valving within the secondary containment area. The work shall include full compensation for all materials, labor, equipment, tools and all other incidentals necessary to complete this item.

O. **Electrical - Supply and Install all Electrical System Improvements – Bid No. 15**

1. The Lump Sum (LS) price for this item shall be full compensation for the supply and install of all electrical system improvements. The work shall include full compensation for all materials, labor, equipment, tools and all other incidentals necessary to complete this item.

P. **Instrumentation and Controls - Supply and Install all Instrumentation and Controls (I&C) System Improvements – Bid No. 16**

1. The Lump Sum (LS) price for this item shall be full compensation for the supply and install of all instrumentation and controls (I&C) system improvements. The work shall include full compensation for all materials, labor, equipment, tools and all other incidentals necessary to complete this item.

ALLOWANCES

Q. **Miscellaneous Allowance – Including but not limited to Permitting, Unforeseen and/or Concealed Conditions - Bid No. 17**

1. The Lump Sum (LS) price for this item shall be full compensation for miscellaneous allowance items. These items shall include additional work items requested by the Owner or as required to address unforeseen and/or concealed conditions. All work authorized for payment will be approved in writing by the OWNER. The OWNER reserves the right to award any, all or none of the money associated with this allowance.

ALTERNATE BID ITEMS

R. **Replacement of Existing 20-inch Filter Fill Valve with Pneumatic Operator and 30-inch Filter Drain Valve with Pneumatic Operator at Filter Unit No. 4 – Valves and Operators shall be Supplied by Contractor – Bid No. 18**

1. The Lump Sum (LS) price for this item shall include installing a 30-inch drain valve and pneumatic operator **AND** a 20-inch fill valve with extended bonnet and pneumatic operator at Filter Unit No. 4 as shown on the drawings and specified in the specifications. The price shall include all necessary labor, materials and equipment required to complete the work. The valves and operators shall be supplied by the Contractor.
2. The City reserves the right to request the Contractor to perform up to one (1) additional unit under this item.

S. **Replacement of Existing 20-inch Filter Fill Valve with Pneumatic Operator and 30-inch Filter Drain Valve with Pneumatic Operator at Filter Unit No. 6 – Valves and Operators shall be Supplied by Contractor – Bid No. 19**

1. The Lump Sum (LS) price for this item shall include installing a 30-inch drain valve and pneumatic operator **AND** a 20-inch fill valve with extended bonnet and pneumatic operator at Filter Unit No. 6 as shown on the drawings and specified in the specifications. The price shall include all necessary labor, materials and equipment required to complete the work. The valves and operators shall be supplied by the Contractor.
2. The City reserves the right to request the Contractor to perform up to one (1) additional unit under this item.

- T. **Replacement of Existing 20-inch Filter Fill Valve with Pneumatic Operator and 30-inch Filter Drain Valve with Pneumatic Operator at Filter Unit No. 7 – Valves and Operators shall be Supplied by Contractor – Bid No. 20**
1. The Lump Sum (LS) price for this item shall include installing a 30-inch drain valve and pneumatic operator **AND** a 20-inch fill valve with extended bonnet and pneumatic operator at Filter Unit No. 7 as shown on the drawings and specified in the specifications. The price shall include all necessary labor, materials and equipment required to complete the work. The valves and operators shall be supplied by the Contractor.
 2. The City reserves the right to request the Contractor to perform up to one (1) additional unit under this item.
- U. **Replacement of Existing 20-inch Filter Fill Valve with Pneumatic Operator and 30-inch Filter Drain Valve with Pneumatic Operator at Filter Unit No. 8 – Valves and Operators shall be Supplied by Contractor – Bid No. 21**
1. The Lump Sum (LS) price for this item shall include installing a 30-inch drain valve and pneumatic operator **AND** a 20-inch fill valve with extended bonnet and pneumatic operator at Filter Unit No. 8 as shown on the drawings and specified in the specifications. The price shall include all necessary labor, materials and equipment required to complete the work. The valves and operators shall be supplied by the Contractor.
 2. The City reserves the right to request the Contractor to perform up to one (1) additional unit under this item.
- V. **30-inch Filter Drain Valve and Pneumatic Operator - Supply Only – Bid No. 22**
1. Payment for furnishing a 30-inch filter drain valve with pneumatic operator shall be made at the Contractor's Unit Price per each (EA) assembly supplied.
 2. The City reserves the right to request the Contractor to perform up to one (1) additional unit under this item.
- W. **20-inch Filter Fill Valve with Extended Bonnet and Pneumatic Operator - Supply Only – Bid No. 23**
1. Payment for furnishing a 20-inch filter fill valve with extended bonnet and pneumatic operator shall be made at the Contractor's Unit Price per each (EA) assembly supplied.
 2. The City reserves the right to request the Contractor to perform up to one (1) additional unit under this item.

X. **Surface Preparation and Application of the Specified Protective Coating System, per Section 09900 entitled "Painting", to all new and existing valves, piping and fittings at a Filter Unit to be Selected by Owner – Bid No. 24**

1. Payment for the surface preparation and application of the specified protective coating system, per Section 09900 entitled "Painting", to all new and existing piping, fittings and valving shall be made at the Contractor's Unit Price per each (EA) performed.
2. The City reserves the right to request the Contractor to perform up to six (6) additional units.

3.02 **SCHEDULE OF VALUES**

- A. The Contractor shall submit a Schedule of Payment Values for review with the return of the executed Agreement to the Owner. The schedule shall contain the installed value of the component parts of work for the purpose of making progress payments during the construction period.
- B. The schedule shall be given in sufficient detail for the proper identification of work accomplished. The Schedule of Payment Values shall complement the items of work detailed in the construction progress schedule and the construction network analysis in order to accurately relate construction progress to the requested payment. Each item shall include its proportional share of all costs including the Contractor's overhead, contingencies and profit. The sum of all scheduled items shall equal the total value of the Contract.
- C. If the Contractor anticipates the need for payment for materials stored on the project site or off-site in a bonded warehouse, he shall also submit a separate list covering the cost of materials, delivered and unloaded with taxes paid. This list shall also include the installed value of the item with coded reference to the work items in the Schedule of Payment Values. Similar procedures shall be employed for undelivered specifically manufactured equipment and materials as specified herein.
- D. The Contractor shall expand or modify the schedule and associated listing of all work items as required by the Engineer's initial or subsequent reviews to accurately identify, in sufficient detail, the amount and value of the work accomplished.
- E. The Contractor shall make the schedule of values as accurate as possible as the approved values may be used to develop change order pricing, at the Engineers discretion.

END OF SECTION

SECTION 01041 PROJECT COORDINATION

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Engineer will coordinate the work between Prime Contractors as required.
- B. Contractor shall:
 - 1. Coordinate work of his own employees and subcontractors.
 - 2. Expedite his work to assure compliance with schedules.
 - 3. Comply with orders and instructions of Engineer.

1.02 RELATED REQUIREMENTS

- A. Section 01152: Applications for Payment.
- B. Section 01200: Project Meetings.
- C. Section 01310: Construction Schedules.
- D. Section 01300: Submittals
- E. Section 01500: Construction Facilities and Temporary Controls.
- F. Section 01700: Project Closeout.

1.03 CONSTRUCTION ORGANIZATION AND START-UP

- A. Engineer shall establish on-site lines of authority and communications:
 - 1. Schedule and conduct pre-construction meeting and progress meetings as specified in Section.
 - 2. Establish procedures for:
 - a. Submittals
 - b. Reports and records
 - c. Recommendations
 - d. Coordination of drawings
 - e. Schedules

- f. Resolution of conflicts
- 3. Interpret Contract Documents:
 - a. Transmit written interpretations to Prime Contractor, and to other concerned parties.
- 4. Assist in obtaining permits and approvals:
 - a. Verify that contractor and subcontractors have obtained inspections for Work and for temporary facilities.
- 5. Control the use of Site:
 - a. Allocate space for Contractor's use for field offices, sheds, and work and storage areas.
- 6. Inspection and Testing:
 - a. Inspect work to assure performance in accord with requirements of Contract Documents.
 - b. Administer special testing and inspections of suspect Work.
 - c. Reject Work which does not comply with requirements of Contract Documents.

1.04 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 or each phase.
 - b. Recommend to Owner adjustments in schedule to meet required completion dates.
 - c. Document changes in schedule; submit to Owner, Engineer and to involved subcontractors.
 - 3. Observe work of each subcontractor to monitor compliance with schedule.
 - a. Verify that labor and equipment are adequate for the work and the schedule.
 - b. Verify that product procurement schedules are adequate.
 - c. Verify that product deliveries are adequate to maintain schedule.
 - d. Report noncompliance to Engineer, with recommendation for changes.

- B. Process Shop Drawings, Product Data and Samples:
 - 1. Prior to submittal to Engineer, review for compliance with 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. Prepare Coordination Drawings as required to resolve conflicts and to assure coordination of the work of, or affected by, mechanical and electrical trades, or by special equipment requirements.
 - 1. Submit to Engineer.
 - 2. Reproduce and distribute copies to concerned parties after Engineer review.
- D. Maintain Reports and Records at Job Site, available to Engineer and Owner.
 - 1. Daily log of progress of work.
 - 2. Records
 - a. Contracts
 - b. Purchase orders
 - c. Materials and equipment records
 - d. Applicable handbooks, codes and standards
 - e. Project specific Health and Safety Plan
 - 3. Maintain file of record documents

1.05 CONTRACTOR'S CLOSE-OUT DUTIES

- A. At completion of Work, conduct an inspection to assure that:
 - 1. Specified cleaning has been accomplished.
 - 2. Temporary facilities have been removed from site.

B. Substantial Completion:

1. Conduct an inspection to develop a list of Work to be completed or corrected.
2. Assist Engineer in inspection.
3. Supervise correction and completion of work of subcontractors.

1.06 ENGINEER'S CLOSE-OUT DUTIES

A. Final Completion:

1. When Contractor determines that Work is finally complete, conduct an inspection to verify completion of Work.

B. Administration of Contract closeout:

1. Receive and review contractor's final submittals.
2. Transmit to Owner with recommendations for action.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01045 CUTTING AND PATCHING

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Contractor shall be responsible for all cutting, fitting and patching, including related excavation and backfill, required to complete the Work or to:
 - 1. Make its several parts fit together properly.
 - 2. Uncover portions of the Work to provide for installation of ill-timed work.
 - 3. Remove and replace defective work.
 - 4. Remove and replace work not conforming to requirement of Contract Documents.
 - 5. Remove samples of installed work as specified for testing.
 - 6. Provide routine penetrations of non-structural surfaces for installation of piping and electrical conduit.

1.02 RELATED REQUIREMENTS

- A. Section 01010: Summary of Work.
- B. Section 01630: Substitutions and Product Options.

1.03 SUBMITTALS

- A. Submit a written request to Engineer well in advance of executing and cutting or alteration which affects:
 - 1. Work of the Owner or any separate contractor.
 - 2. Structural value or integrity of any element of the project.
 - 3. Integrity or effectiveness of weather-exposed or moisture-resistant element or systems.
 - 4. Efficiency, operational life, maintenance or safety of operational elements.
 - 5. Visual qualities of sight-exposed elements.

- B. Request shall include:
 - 1. Identification of the Project.
 - 2. Description of affected work.
 - 3. The necessity for cutting, alteration or excavation.
 - 4. Effect on work of Owner or any separate contractor, or on structural or weatherproof integrity of Project.
 - 5. Description of proposed work:
 - a. Scope of cutting, patching, alteration, or excavation.
 - b. Trades who will execute the work.
 - c. Products proposed to be used.
 - d. Extent of refinishing to be done.
 - 6. Alternative to cutting and patching.
 - 7. Cost proposal, when applicable.
 - 8. Written permission of any separate contractor whose work will be affected.
- C. Should conditions of Work or the schedule indicate a change of products from original installation, contractor shall submit request for substitution as specified in Section 01630 - Substitutions and Product Options.
- D. Submit written notice to Engineer designating the date and the time the Work will be uncovered.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Comply with specifications and standards for each specific product involved.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Inspect existing conditions of Project, including elements subject to damage or to movement during cutting and patching.

- B. After uncovering work, inspect conditions affecting installation of Products, or performance of work.
- C. Report unsatisfactory or questionable conditions to Engineer in writing; do not proceed with work until Engineer has provided further instructions.

3.02 PREPARATION

- A. Provide adequate temporary support as necessary to assure structural value or integrity of affected portion of work.
- B. Provide devices and methods to protect other portions of Project 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.

3.03 PERFORMANCE

- A. Execute cutting and demolition by methods which will prevent damage to other work, and will provide proper surfaces to receive installation of repairs.
- B. Execute excavating and backfilling by methods which will prevent settlement or damage to other work.
- C. Employ original Installer or Fabricator to perform cutting and patching for:
 - 1. Weather-exposed or moisture-resistant elements.
 - 2. Sight-exposed finished surfaces.
- D. Execute fittings and adjustment of products to provide a finished installation to comply with specified products, functions, tolerances and finishes.
- E. Restore work which has been cut or removed; install new products to provide completed work in accord with requirements of Contract documents.
- F. Fit work airtight to pipes, sleeves, ducts, conduit or other penetrations through surfaces.
- G. Refinish entire surfaces as necessary to provide an even finish to match adjacent finishes;
 - 1. For continuous surfaces, refinish to nearest intersection.
 - 2. For an assembly, refinish entire unit.

END OF SECTION

SECTION 01060 REGULATORY REQUIREMENTS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

- A. Drawings and general provision of Contract, including General and Supplementary Conditions and Division 1 specification sections, apply to work in this section.

1.02 CODE REQUIREMENTS

- A. All work on this Project shall be done in strict accordance with, but not limited to, applicable requirements and portions of the latest editions of the currently adopted codes, revisions, amendments, and their references, in the Jurisdiction having authority.
 - 1. Florida Building Code 2014 (or latest version), including all local jurisdiction amendments, which includes:
 - a. Florida Building Code - Building
 - b. Florida Building Code - Fuel Gas
 - c. Florida Building Code - Mechanical d. Florida Building Code - Plumbing
 - d. Florida Accessibility Code for Building Construction - FBC Chapter 11
 - e. National Electrical Code - FBC Chapter 27
 - f. FBC Referenced Codes and Standards -- Chapter 35
 - 2. Florida Fire Prevention Code, Ch. 4A-60, Florida Administrative Code, which includes:
 - a. NFPA 1 - 2000
 - b. NFPA 101-2000
 - c. Referenced Mandatory Codes and Standards listed in 4A-60.005, FAC
 - d. Referenced Mandatory Codes and Standards listed in NFPA 101-00: Chapter 2
 - e. National Electrical Code (N.E.C.) -- NFPA 70)

3. U.S. Access Board, Americans with Disabilities Act Architectural Guidelines, 1998 (ADAAG) for accessibility requirements for children.
4. American Society of Civil Engineers. Minimum Design Loads for Buildings and Other Structures - ASCE 7-98

1.03 CODE STANDARDS

- A. All work shall conform to applicable portions of the adopted, or if not adopted, the latest edition of the standards listed which shall include, but is not limited to, the following:
 1. Aluminum Association (A.A.)
 2. American Concrete Institute (A.C.I.)
 3. American Institute of Steel Construction (A.I.S.C.)
 4. American National Standards Institute (A.N.S.I.)
 5. American Society for Testing and Materials (A.S.T.M.)
 6. American Society of Mechanical Engineers (A.S.M.E.)
 7. American Society of Heating, Refrigeration and Air Conditioning Engineers (A.S.H.R.A.E.)
 8. American Welding Society (A.W.S.)
 9. Architectural Woodworking Institute (A.W.I.)
 10. Architectural Aluminum Manufacturer's Association (A.A.M.A.)
 11. Commercial Standards (C.S.)
 12. Federal Specifications and Standards (F .S.)
 13. National Occupations Safety and Health Administration (O.S.H.A.)
 14. National Institute for Standards and Technology (N.I.S.T.)
 15. Architectural Sheet Metal Manual (SMACNA) - 1987
 16. Underwriter's Laboratories (U.L.)
 17. U.S. of America Standards Institute (A.S.I.)
 18. U.S. Department of Commerce Product Standards (U.S.D.C.P .S.)

1.04 CODE DISCREPANCIES

- A. In case of discrepancy between the codes, standards, and specifications listed, the most strict or most stringent requirement shall govern.

END OF SECTION

SECTION 01070

ABBREVIATIONS

PART 1 - GENERAL

1.01 THE REQUIREMENT

- A. Wherever in these 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. As a guide to the user of these specifications, the following acronyms or abbreviations which may appear in these specifications shall have the meanings indicated herein.

1.02 ABBREVIATIONS AND ACRONYMS

AAMA	Architectural Aluminum Manufacturer's Association
AASHTO	American Association of the State Highway and Transportation Officials
ACI	American Concrete Institute
ACPA	American Concrete Pipe Association
AFBMA	Anti-Friction Bearing Manufacturer's Association, Inc.
AGMA	American Gear Manufacturer's Association
AHGDA	American Hot Dip Galvanizers Association
AI	The 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
ANSI	American National Standards Institute, Inc.
APA	American Plywood Association
API	American Petroleum Institute
APHA	American Public Health Association
APWA	American Public Works Association
ASA	Acoustical Society of America
ASAE	American Society of Agriculture 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
ASMM	Architectural Sheet Metal Manual
ASSE	American Society of Sanitary Engineers
ASTM	American Society for Testing and Materials
AWPA	American Wood Preservers Association

AWPI	American Wood Preservers Institute
AW S	American Welding Society
AWWA	American Water Works Association
BHMA	Builders Hardware Manufacturer's Association
CMA	Concrete Masonry Association
CRSI	Concrete Reinforcing Steel Institute
DIPRA	Ductile Iron Pipe Research Association
EIA	Electronic Industries Association
ETL	Electrical Test Laboratories
FBC	Florida Building Code
FDEP	Florida Department of Environmental Protection
FOOT	Florida Department of Transportation
FS	Federal Specifications
IEEE	Institute of Electrical and Electronics Engineers
IES	Illuminating Engineering Society
IPCEA	Insulated Power Cable Engineers Association
ISA	Instrument Society of America
ISO	International Organization for Standardization
MBMA	Metal Building Manufacturer's Association
MTI	Marine Testing Institute
NMM	National Association of Architectural Metal Manufacturer's
NACE	National Association of Corrosion Engineers
NBS	National Bureau of Standards
NEC	National Electrical Code
NEMA	National Electrical Manufacturer's Association
NFPA	National Fire Protection Association
NRCA	National Roofing Contractors Association
OSHA	Occupational Safety and Health Administration
PCA	Portland Cement Association
SMACCNA	Sheet Metal and Air Conditioning Contractors National Association
SSPC	Steel Structures Painting Council
SSPWC	Standard Specifications for Public Works Construction
SFWMD	South Florida Water Management District
UL	Underwriters Laboratories, Inc.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01090 REFERENCE STANDARDS

PART 1 - GENERAL

1.01 THE REQUIREMENT

- A. Titles of Sections and Paragraphs
 - 1. Captions accompanying specification sections and paragraphs are for convenience of reference only, and do not form a part of the Specifications.
- B. Applicable Publications
 - 1. Whenever in these Specifications references are made to published specifications, codes, standards, or specifications, standards, or requirements of the respective issuing agencies which have been published as of the date of the opening of bids, shall apply; except to the extent that said standards or requirements may be in conflict with applicable laws, other requirements, it shall be understood that wherever no date is specified, only the latest ordinances, or governing codes.
 - 2. No requirements set forth herein or shown on the Drawings shall be waived because of any provision of, or omission from, said standards or requirements.
- C. Specialists, Assignments
 - 1. In certain instances, specification text requires (or implies) that specific work is to be assigned to specialists or expert entities, who must be engaged for the performance of that work. Such assignments shall be recognized as special requirements over which the Contractor has no choice or option. These requirements shall not be interpreted so as to conflict with the enforcement of building codes and similar regulations governing the Work; also they are not intended to interfere with local union jurisdiction settlements and similar conventions. Such assignments are intended to establish which party or entity involved in a specific unit of work is recognized as "expert" for the indicated construction processes or operations. Nevertheless, the final responsibility for fulfillment of the entire set of contract requirements remains with the Contractor.

1.02 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

- A. Without limiting the generality of other requirements of the specifications, all work specified herein shall conform to or exceed the requirements of all applicable codes.
- B. References herein to "Building Code" or "FBC" shall mean the Florida Building Code. The latest edition of the code as approved and used by the local agency as of the date of the Notice to Proceed, as adopted by the agency having jurisdiction, shall apply to the Work herein, including all addenda, modifications, amendments, or other lawful changes thereto.
- C. In case of conflict between codes reference standards, Drawings and the other Contract , Documents, the most stringent requirements shall govern. All conflicts shall be brought to the attention of the Engineer for clarification and directions prior to ordering or providing any materials or labor. The Contractor shall follow the most stringent requirements.
- D. The Contractor shall construct the Work specified herein in accordance with the requirements of the Contract Documents and the referenced portions of those referenced codes, standards, and Specifications listed herein.
- E. References herein to "OSHA Regulations for Construction" shall mean Title 29. Part 1926. Construction Safety and Health Regulations, Code of Federal Regulations (OSHA), including all changes and amendments thereto.
- F. References herein to "OSHA Standards" shall mean Title 29. Part 1910. Occupational Safety and Health Standards, Code of Federal Regulations (OSHA), including all changes and amendments thereto.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01152

APPLICATION FOR PAYMENT

PART 1 - GENERAL

1.01 THE REQUIREMENT

- A. Submit Applications for Payment to the Owner in accordance with the schedule established by the General Conditions of the Contract Documents.

1.02 FORMAT AND DATA REQUIRED

- A. Submit applications on the form required by and provided by the Owner, with itemized data typed on 8-1/2 inch X 11-inch white paper continuation sheets.
- B. Provide itemized data on continuation sheets:
 - 1. Format, schedules, line items and values (those of the Schedule of Values as accepted by the Owner).

1.03 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 Contractors firm. If signatory is not a corporate office, a letter from a responsible officer must be submitted prior to processing any Application for Payment. The letter must authorize the signatory to sign Applications for Payment.
- 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.

1.04 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. For stored products:
 - a. Item number and identification as shown on the application.
 - b. Description of specific material.
 5. SBE-M/WBE Participation. Submit Schedule 4, updated and notarized SBE-M/WBE Payment Certification form for each payment made during the period covered.
 6. Monthly construction schedule updates.
- B. Submit three (3) copies of data with each original application.
- C. Submit three (3) copies of record drawings with each original application.

1.05 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.

1.06 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 01153 CHANGE ORDER PROCEDURE

PART 1 - GENERAL

1.01 THE REQUIREMENT

- A. Promptly implement change order procedure:
 - 1. Provide full written data required to evaluate changes.
 - 2. Maintain detailed records of Work done on 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.

1.02 RELATED REQUIREMENTS

- A. General Conditions of the Contract Documents.
- B. Supplementary Conditions of the Contract Documents.
- C. Section 01152: Application for Payment

1.03 DEFINITIONS

- A. Change Order: See the General Conditions and the Supplementary General Conditions of the Contract Documents.
- B. Field Order: See the General Conditions and the Supplementary General Conditions of the Contract Documents.
- C. Work Directive Change: See the General Conditions and the Supplementary General Conditions of the Contract Documents.

- D. Construction Change Authorization: A written order to the Contractor, signed by the Owner and the Engineer, which amends the Contract Documents as described, and authorizes the Contractor to proceed with a change which affects the Contract Price and/or the Contract Time, for inclusion in a subsequent Change Order.

1.04 PRELIMINARY PROCEDURES

- A. The Owner or the Engineer 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 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 proposal to the Engineer 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 Price and the Contract Time.
 4. Statement of the effect of the Work on other prime contractors.
 5. Documentation supporting any change in Contract Price or Contract Time, as appropriate.

1.05 CONSTRUCTION CHANGE AUTHORIZATIONS AND WORK DIRECTIVES

- A. In lieu of a Proposal Request, the Engineer 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 Price and any change in the Contract Time.

- C. The Owner and the Engineer 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.

1.06 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 Engineer to evaluate 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 in the form of a CPB schedule subnet.
- 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.
- D. Document requests for product substitution.

1.07 PREPARATION OF CHANGE ORDERS

- A. The Engineer 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 Price and the Contract Time.

1.08 LUMP SUM/FIXED PRICE CHANGE ORDER

- A. Content of Change Orders will be based on either:
 - 1. The Engineer's 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 will sign and date the Change Order as authorization for the Contractor to proceed with the changes.
- C. The Contractor shall sign and date the Change Order to indicate agreement with all of the terms therein.

1.09 UNIT PRICE CHANGE ORDER

- A. The content of the Change Orders will be based on either:
 - 1. 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. At completion of the change, the Engineer 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 Price and/or Contract Time.
3. The Engineer will sign and date the Change Order to establish the change in Contract Price 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 and the Owner will issue a Construction Change Authorization directing the Contractor proceed with the changes.
- B. At completion of the change, the Contractor shall submit itemized accounting and supporting data as provided in the Article "Documentation of Proposals and Claims" of this Section.
- C. The Engineer will determine the allowable costs of such Work, as provided in the General Conditions and the Supplementary General Conditions of the Contract Documents.
- D. The Engineer will sign and date the Change Order to establish the change in Contract Price 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 Price.
- B. Periodically revise the Construction Schedule to reflect each change in Contract Time:
 1. Revise sub-schedule to show changes for other items of Work affected by the change.
- C. Upon completion of Work under a Change Order, enter pertinent changes in Record Documents.

PART 2 - PRODUCT (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01200 PROJECT MEETINGS

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Owner shall schedule and administer preconstruction meeting, periodic progress meetings, and specially called meetings throughout progress of the Work.
 - 1. Prepare agenda for meetings.
 - 2. Distribute written notice of each meeting four days in advance of meeting date.
 - 3. Make physical arrangements for meetings.
 - 4. Preside at meetings.
 - 5. Record the minutes; include significant proceedings and decisions.
 - 6. Reproduce and distribute copies of minutes within three days after each meeting.
 - a. To participants in the meeting.
 - b. To parties affected by decisions made at the meeting.
- B. Representatives of contractors, subcontractors and suppliers attending meetings shall be qualified and authorized to act on behalf of the entity each represents.

1.02 RELATED REQUIREMENTS

- A. Instructions to Bidders: Pre-Bid Conferences.
- B. Section 01300: Submittals.
- C. Section 01700: Contract Closeout.

1.03 PRE-CONSTRUCTION MEETING

- A. Schedule within 20 days after effective date of the agreement.
- B. Location: A central site, convenient for all parties, designated by the Owner.
- C. Attendance:
 - 1. Owner's Representative.

2. Engineer and his professional consultants.
3. Resident Project Representative.
4. Contractor's Superintendent.
5. Major Subcontractors.
6. Others as Appropriate and approved by the Owner.

D. Suggested Agenda:

1. Distribution and discussion of:
 - a. List of major subcontractors and suppliers.
 - b. Projected Construction Schedules.
2. Critical work sequencing.
3. Major equipment deliveries and priorities.
4. Project Coordination.
 - a. Designation of responsible personnel.
5. Procedures and processing of:
 - a. Field decisions.
 - b. Proposal requests.
 - c. Submittals.
 - d. Change Orders.
 - e. 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.

1.04 PROGRESS MEETINGS

- A. Schedule regular periodic meetings, as required.
- B. Hold called meetings as required by progress of the Work.
- C. Location of the meetings: Project field office of the Contractor or other site directed by the Engineer.
- D. Attendance:
 - 1. Engineer, and his professional consultants as needed.
 - 2. Subcontractors as appropriate to the agenda.
 - 3. Suppliers as appropriate to the agenda.
 - 4. Others.
- E. Suggested Agenda:
 - 1. Review, approval of minutes of previous meeting.
 - 2. Review of Work progress since previous meeting.
 - 3. Field observations, problems, conflicts.
 - 4. Problems which impede Construction Schedule.
 - 5. Review of off-site fabrication, delivery schedules.
 - 6. Corrective measures and procedures to regain projected schedule.
 - 7. Revisions to Construction Schedule.
 - 8. Progress, schedule, during succeeding work period.
 - 9. Coordination of schedules.
 - 10. Review of submittal schedules; expedite as required.
 - 11. Maintenance of quality standards.
 - 12. Pending changes and substitutions.
 - 13. Review proposed changes for:
 - a. Effect on Construction Schedule and on completion date.
 - b. Effect on other contracts relating to the project.
 - 14. Review of record drawings.

15. Other business.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01300 SUBMITTALS

PART 1 - GENERAL

1.01 THE REQUIREMENT

- A. This Section specifies the means of all submittals. All submittals, whether their final destination is to the Owner, Engineer, or other representatives of the Owner, shall be directed through the Engineer. A general summary of the types of submittals and the number of copies required is as follows:

<u>Minimum Copies to Engineer</u>	<u>Type of Submittal</u>
3 (11x17), 1 CD	Construction Progress Schedule
4	Schedule of Payment Values
2	Pre-Construction Video DVDs
4	Progress Pay Applications
4	Shop Drawings
3	Preliminary O&M Manuals
4, 1 CD	Final O&M Manuals
2	Certificates of Compliance
2	Warranties
3*	Product Samples
3	Aerial / Site Photos
2	Final Record Drawings (hard copy and CD)
2	Bacteriological Testing Results

* Unless otherwise required in the specific Section where requested.

1.02 SUBMITTAL PROCEDURES

- A. Transmit each submittal with a form acceptable to the Engineer, clearly identifying the project, Contractor, the enclosed material, and other pertinent information specified in other parts of this Section. Identify variations from Contract Documents and Product or system limitations which may be detrimental to successful performance of the completed Work.
- B. Revise and resubmit submittals as required, identify all changes made since previous submittals. Resubmittals shall be noted as such.
- C. Distribute copies of reviewed submittals to concerned parties. Instruct parties to promptly report any inability to comply with provisions.

1.03 CONSTRUCTION SCHEDULES

- A. The scheduling of the work under the Contract shall be performed by the Contractor in accordance with the requirements of this Section. The development of the schedule, the cost loading of the schedule, monthly payment requisitions and project status reporting requirements of the Contract shall employ computerized Critical Path Method (CPM) scheduling. The CPM schedule shall be cost loaded based on the Schedule of Values approved by the Engineer in accordance with the requirements of this Section. Use Microsoft Projects to prepare the CPM schedule as well as all required schedule updates. Method employed shall be precedence diagramming method (PDM).
- B. The Contractor shall have the capability of preparing and utilizing the specified progress scheduling techniques. A statement of capability shall be submitted in writing to the Engineer with the return of the executed Agreement to the Owner and will verify that either the Contractor's organization has in-house capability qualified to use the technique or that the Contractor employs a consultant who is so qualified. Capability shall be verified by description of the construction projects to which the Contractor or his consultant has successfully applied the scheduling technique and which were controlled throughout the duration of the project by means of systematic use and updating of the construction progress schedule, the network analysis, and associated reports. The statement shall also provide the contact persons for the referenced projects with current telephone and address information. The submittal shall include the name of the individual on the Contractor's staff or qualified scheduling Consultant who will be responsible for the construction progress schedule and associated reports and for providing the required updating information of same.
- C. Activity durations shall be in whole working days (Monday - Friday). The workday calendar date correlation shall be based on an 8-hour day (7:30 a.m. – 4:30 p.m.) and a 40-hour week with allowance for standard holidays, normal weather, and other special requirements. The City's standard holidays are:

1. New Year's Day
2. Martin Luther King, Jr. Day
3. President's Day
4. Memorial Day
5. Independence Day
6. Labor Day
7. Veterans Day
8. Thanksgiving Day
9. Day after Thanksgiving Day
10. Christmas Eve
11. Christmas Holiday

Each work activity shall not exceed 20 days duration nor \$100,000 unless specifically approved by the Engineer. Procurement activities are exempt from this limitation.

- D. If the Contractor desires to make changes in his method of operating which affect the construction progress schedule and related items, he shall notify the Engineer in writing stating which changes are proposed and the reasons for these changes. If the Engineer accepts these changes, in writing, the Contractor shall revise and submit, without additional cost to the Owner, all of the affected portions of the construction progress schedule and associated reports. The construction progress schedule and related items shall be adjusted by the Contractor only after prior acceptance, in writing by the Engineer. Adjustments may consist of changing portions of the activity sequence, activity durations, division of activities, or any other adjustments as may be required. The addition of extraneous, nonworking activities and activities which add restraints to the construction progress schedule shall not be accepted.
- E. Except where earlier completions are specified, schedule dates which show completion of all work prior to the contract completion date shall, in no event, be the basis for claim for delay against the Owner by the Contractor.
- F. Construction progress schedules and related items which contain activities showing negative float or which extend beyond the contract completion date will not be accepted by the Engineer.
- G. Whenever it becomes apparent from the current construction progress schedule and associated reports that delays to the critical path have resulted and the contract completion date will not be met, or when so directed by the Engineer, the

Contractor shall take some or all of the following actions at no additional cost to the Owner. The Contractor shall submit to the Engineer for approval, a written statement of the steps they intend to take to remove or arrest the delay to the critical path in the current construction progress schedule.

1. Increase construction manpower in such quantities and crafts as will substantially eliminate the backlog of work;
 2. Increase the number of working hours per shift, shifts per day, working days per week, the amount of construction equipment, or any combination of the foregoing, sufficiently to substantially eliminate the backlog of work;
 3. Reschedule activities to achieve maximum practical concurrency of accomplishment of activities, and comply with the revised schedule.
- H. If when so requested by the Engineer, the Contractor should fail to submit a written statement of the steps they intend to take or should fail to take such steps as reviewed and accepted in writing by the Engineer, the Engineer may direct the Contractor to increase the level of effort in manpower (trades), equipment and work schedule (overtime, weekend and holiday work, etc.) to be employed by the Contractor in order to remove or arrest the delay to the critical path in the current construction progress schedule. The Contractor shall promptly provide such level of effort at no additional cost to the Owner.
- I. If the completion of any activity, whether or not critical, falls more than 100 percent behind its previously scheduled and accepted duration, the Contractor shall submit for approval a schedule adjustment showing each such activity divided into two activities reflecting completed versus uncompleted work.
- J. Shop Drawings which are not approved on the first submittal or within the time scheduled, and equipment which does not pass the specified tests and certifications shall be immediately rescheduled.
- K. The contract time will be adjusted only in accordance with the General Conditions and other portions of the Contract Documents as may be applicable. If the Engineer finds that the Contractor is entitled to any extension of the contract completion date, the Engineer's determination as to the total number of days extension shall be based upon the current construction progress schedule and on all data relevant to the extension. Such data shall be included in the next updating of the schedule and related items. Actual delays in activities which, according to the construction progress schedule, do not affect any contract completion date will not be the basis for a change therein.
- L. From time to time it may be necessary for the contract schedule of completion time to be adjusted by the Owner in accordance with the General Conditions and other portions of the Contract Documents as may be applicable. Under such conditions, the Engineer will direct the Contractor to reschedule the work or

contract completion time to reflect the changed conditions, and the Contractor shall revise the construction progress schedule and related items accordingly, at no additional cost to the Owner.

- M. Available float time may be used by the Owner through the Owner's Engineer.
- N. Float or slack time within the construction schedule is not for the exclusive use or benefit of either the Owner or the Contractor, but is jointly owned, as an expiring project resource available to both parties as needed to meet contract milestones and completion dates. The Owner controls the float time and, therefore, without obligation to extend either the overall completion date or any intermediate completion dates the Owner may initiate changes that absorb float time only. Owner initiated changes that affect the critical path on the network diagram shall be the sole grounds for extending the completion dates. Each change request shall include a change impact schedule indicating the effect of this change on the detailed construction schedule. This schedule shall include a narrative description of the schedule change and a computer generated schedule comparison of the current schedule and the schedule revised to indicate the additional work required by the change and its impact on the critical path. Contractor-initiated changes that encroach on the float time may be accomplished only with the Owner's concurrence. Such changes, however, shall give way to Owner-initiated changes competing for the same float time.
- O. To the extent that the construction project schedule, associated report, or any revision thereof shows anything not jointly agreed upon or fails to show anything jointly agreed upon, it shall not be deemed to have been accepted by the Engineer. Failure to include on a schedule any element of work required for the performance of this Contract shall not excuse the Contractor from completing all work required within any applicable completion date, notwithstanding the review of the schedule by the Engineer.
- P. Review and acceptance of the construction progress schedule, and related reports, by the Engineer is advisory only and shall not relieve the Contractor of the responsibility for accomplishing the work within the contract completion date. Omissions and errors in the construction progress schedule, and related reports shall not excuse performance less than that required by the Contract and in no way make the Engineer an insurer of the Contractor's success or liable for time or cost overruns flowing from any shortcomings in the construction progress schedule, and related reports.
- Q. Monthly progress payment amounts shall be determined from the monthly progress updates of the CPM schedule activities as correlated to the Schedule of Values.
- R. Contractor is responsible for determining the sequence of activities, the time estimates of the detailed construction activities and the means, methods, techniques and procedures to be employed.

- S. Detailed network activities shall include: construction activities; the submittal and approval of, of samples of materials and Shop Drawings; the procurement of materials and equipment; the fabrication of materials and equipment and their delivery, installation, testing, start-up and training. Schedule, logic, and operating constraints and sequences shall be as listed in Specifications. Milestones shall be selected by Contractor and Engineer.
- T. Contractor shall consult with his Subcontractors (and suppliers) relating to the preparation of his construction plan and Construction Schedule. Subcontractors shall receive copies of the Contractor's Construction Schedule and shall be continually advised of any updates or revisions to the Construction Schedule as the work progresses. When the Contractor submits his Construction Schedule to the Engineer or makes any proposed updates or revisions to such Schedule, it will be assumed by the Owner and Engineer that the Contractor has consulted with and has the concurrence of his Subcontractors. Contractor shall be solely responsible for ensuring that all Subcontractors comply with the requirements of the Construction Schedule for their portions of the work.
- U. Responsibility codes shall be established for the Contractor, Engineer, Owner, Subcontractors, suppliers, etc.

1.04 CPM SCHEDULE SUBMITTALS

- A. All schedule submittals including revisions and updates shall include three (3) copies of the schedule data plus one (1) copy on electronic media acceptable to the Engineer with label(s) identifying the file name and revision number. The electronic media shall be properly packaged and shipped so as to prevent damage or loss of the data.
- B. Preliminary CPM Schedule and revised Original CPM Schedule Submittals: The Preliminary CPM Schedule shall be submitted within fifteen (15) days from the Pre-construction Conference, unless otherwise required by the Contract Documents. Owner and Engineer shall review the Preliminary CPM Schedule within ten (10) days. The Revised Original CPM Schedule shall be submitted by the Contractor within fifteen (15) days from the return of the Preliminary CPM Schedule. Both the Preliminary CPM Schedule and Revised Original CPM Schedule submittals shall have identical format, and shall consist of tabular and graphic reports. The following required reports must be included:
 - 1. Tabular schedule listings which shall be sorted by Activity number, Early Start, Total Float, and Responsibility code, with the following data elements:
 - a. Activity number/ID
 - b. Activity description
 - c. Duration

- d. Early start date
 - e. Early finish date
 - f. Late start date
 - g. Late finish date
 - h. Free float
 - i. Total float
 - j. Responsibility
2. A successor-predecessor report which shall identify the successor and predecessor activities for each activity and ties between schedule activities.
 3. Project Overview Bar Chart: The project bar chart shall be sorted by Activity number. The overview bar chart shall indicate the major components of the project work and the sequence relations between major components and subdivisions of major components. The overview bar chart shall indicate the relationships and time frames in which the various components of the work will be made substantially complete in order to meet the project milestones and contract completion date.
- C. Upon acceptance of the Original CPM Schedule, the Early Start and Early Finish dates for all activities shall be fixed as Planned Start and Planned Finish dates, except where Late Start and Late Finish dates are specifically agreed to by Owner and Engineer, for future variance calculations.
- D. Following acceptance of the Original CPM Schedule, the Contractor shall monitor the progress of the work and adjust the schedule each month to reflect actual progress and any changes in planned future activities. Progress shall be evaluated monthly by the Contractor (Subcontractor) and the Engineer. Schedule updates shall reflect the current status of each activity on which work has started or is due to start, based on the preceding construction schedule; show actual progress, to identify those activities started and those completed during the previous period; show the estimated time required to complete *or* the percent complete of each activity started but not yet completed; and reflect any necessary changes to the schedule, network analysis or report to accurately reflect progress. Activities shall not be considered to be complete until they are 100 percent complete. Each schedule update must be complete including all information requested in the Original CPM Schedule Submittal shown in Article 1.04, Paragraph B of this Section.
1. Neither the submission nor the updating of the Contractor's Revised Original CPM Schedule Submittal, nor the submission, updating, change or revision of any other report, curve, schedule or narrative, shall have the effect of amending, modifying, or limiting in any way the Contractors

obligations under this Contract. Only a signed, fully executed Change Order can modify these contractual obligations.

2. Upon approval of a Change Order, or upon receipt by the Contractor of authorization to proceed with additional work, the change shall be reflected in the next submittal of the CPM Schedule by the Contractor. The Contractor shall utilize a sub-network in the schedule depicting the changed work and its effect on other activities. The sub-network shall be tied to the main network with the appropriate logic so that a true analysis of the critical Path can be made.
 3. Monthly schedule updates shall be submitted with the Application for Progress Payment.
- E. A three (3) week rolling schedule shall be provided for each weekly meeting showing the items worked the previous week and those scheduled to be in progress during the next two (2) weeks. The three-week rolling schedule shall use a bar chart format and be accompanied by a tabular report of the activities included. The previous week's schedule shall be indicated as a "target" schedule for comparison.
- F. A shop drawing submittal schedule shall be provided.

1.05 SCHEDULE OF PAYMENT VALUES

- A. The Contractor shall prepare a preliminary Schedule of Values to correspond with the Project Overview Bar Chart as required under Article 1.04, Paragraph B of this Section for submission at the Pre-construction Conference and a detailed Schedule of Values to correspond with the Revised Original CPM Schedule as required under Article 1.04, Paragraph C in conjunction with the Revised Original CPM Schedule submission.
1. 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 Value items than proposed by the Contractor is necessary the Contractor shall add the additional items so identified by the Engineer.
 2. A cross-reference list shall be developed in two parts:
 - a. List each schedule activity with the respective valued items making up the total cost of the activity;

- b. List each valued item with the respective schedule 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. The schedule shall be given in sufficient detail for the proper identification of Work accomplished. Each item shall include its proportional share of all costs including the Contractor's overhead, contingencies and profit. The sum of all scheduled items shall equal the total value of the Contract.
- C. If the Contractor anticipates the need for payment for materials stored on the project site, he/she shall also submit a list covering the cost of materials, delivered and unloaded with taxes paid.
- D. The Contractor shall expand or modify the above schedule and materials listing as required by the Engineer's initial or subsequent reviews.

1.06 SHOP DRAWINGS

- A. The Contractor shall submit for review Shop Drawings for concrete reinforcement, structural details, piping layout and appurtenances, wiring, color selection charts, Contractor Furnished Equipment, materials and equipment fabricated especially for this Contract, and materials and equipment for which such Drawings are specified or specifically requested by the Engineer.
- B. Shop Drawings shall show the principal dimensions, weight, structural and operating features, space required, clearances for disassembly and maintenance, type and/or brand of finish or shop coat, grease fittings, etc., depending on the subject of the Drawings.
- C. When so specified, or if considered by the Engineer to be acceptable, the manufacturer's specifications, catalog data, descriptive matter, illustrations, etc. may be submitted for review in place of Shop Drawings. In such case, the requirements shall be as specified for Shop Drawings, insofar as applicable.
- D. The Contractor shall be responsible for the prompt submittal of all Shop Drawings so that there shall be no delay to the Work due to the absence of such Drawings. The Engineer will review the Shop Drawings within 21 calendar days of receipt of such Drawings Reviewed.

Shop Drawings will be returned to the Contractor by regular mail, posted no later than 21 days after receipt.

- E. Time delays caused by rejection of submittals are not cause for extra charges to the Owner or time extensions.

F. Requirements

1. All Shop Drawings shall be submitted to the Engineer through the Contractor. The Contractor is responsible for obtaining Shop Drawings from his Subcontractors and returning reviewed Drawings to them. All Drawings shall be clearly marked with the name of the project, Owner, Contractor, and building, equipment, or structure to which the drawing applies and CPM Activity Number. Drawings shall be suitably numbered and stamped by the Contractor. Each shipment of Drawings shall be accompanied by a letter of transmittal giving a list of the drawing numbers and the names mentioned above.

G. Product Data

1. Where manufacturer's publications in the form of catalogs, brochures, illustrations, or other data sheets are submitted in lieu of prepared Shop Drawings, such submission shall specifically indicate the particular item offered. Identification of such items and relative pertinent information shall be made with indelible ink. Submissions showing only general information will not be accepted. Non-applicable information shall be crossed out.
2. Product data shall include materials of construction, dimensions, performance characteristics, capacities, wiring diagrams, piping and controls, etc.

H. Warranties

1. When warranties are called for, a sample of the warranty shall be submitted with the Shop Drawings. The sample warranty shall be the same form that will be used for the actual warranty. Actual warranties shall be originals and notarized.

I. Work Prior to Review

1. No material or equipment shall be purchased, fabricated especially for this Contract, or delivered to the project site until the required Shop Drawings have been submitted, processed and marked either "FURNISH AS SUBMITTED" or "FURNISH AS CORRECTED". All materials and Work involved in the construction shall be as represented by said Drawings.
2. The Contractor shall not proceed with any portion of the Work (such as the construction of foundations) for which the design and details are dependent upon the design and details of equipment for which submittal review has not been completed.

J. Contractor's Review

1. Only submittals which have been checked and corrected should be submitted to the Contractor by his Subcontractors and vendors. Prior to submitting Shop Drawings to the Engineer, the Contractor shall check thoroughly all such Drawings to satisfy himself that the subject matter thereof conforms to the Drawings and Specifications In all respects.
2. Drawings which are correct shall be marked with the date, checker's name and indications of the Contractor's approval, and then shall be submitted to the Engineer. Drawings submitted to the Engineer without Contractor's approval will be returned to the Contractor unreviewed.

K. Contractor's Responsibility

1. The Engineer's review of Shop Drawings will be general and shall not relieve the Contractor of the responsibility for details of design, dimensions, etc., necessary for proper fitting and construction of the Work required by the Contract and for achieving the specified performance.

L. Contractor's Modifications

1. For submissions containing departures from the Contract Documents, the Contractor shall include proper explanation in his letter of transmittal. Should the Contractor submit for review equipment that requires modifications to the structures, piping, layout, etc. detailed on the Drawings, he shall also submit for review details of the proposed modifications. If such equipment and modifications are accepted, the Contractor, at no additional cost to the Owner, shall do all Work necessary to make such modifications.

M. Substitutions

1. Whenever a particular brand or make of material, equipment, or other item is specified, or is indicated on the Drawings, it is for the purpose of establishing a standard of quality, design, and type desired and to supplement the detailed specifications. Any other brand or make which, in the opinion of the Engineer, is equivalent to that specified or indicated may be offered as a substitute subject to the following provisions:
 - a. Contractor shall submit for each proposed substitution sufficient details, complete descriptive literature, and performance data together with samples of the materials, where feasible, to enable the Engineer to determine if the proposed substitution is equal.
 - b. Contractor shall submit certified tests, where applicable, by an independent laboratory attesting that the proposed substitution is equal.

- c. Contractor shall submit a list of installations where the proposed substitution is equal.
- d. Contractor shall fill out and submit a "Substitution Request Form" supplied by Engineer.
- e. Where the acceptance of a substitution requires revision or redesign of any part of the Work, all such revision and redesign, and all new Drawings and details required therefore, shall be provided by the Contractor at his own cost and expense, and shall be subject to review of the Engineer.
- f. In all cases the Engineer shall be the sole judge as to whether a proposed substitution is to be accepted. The Contractor shall abide by the Engineer's decision when proposed substitute items are judged to be unacceptable and shall in such instances furnish the item, or substitute, as specified. No substitute items shall be used in the Work without written acceptance of the Engineer.
- g. Acceptance of any proposed substitution shall in no way release the Contractor from any of the provisions of the Contract Documents.

N. Complete Submittals

- 1. Each submittal shall be complete in all aspects incorporating all information and data required to evaluate the products' compliance with the Contract Documents. Partial or incomplete submissions shall be returned to the Contractor without review.

O. Shop Drawing Distribution

- 1. The Contractor shall submit a minimum of 8 (eight) copies of all Shop Drawings to the Engineer for review. Shop drawings will be reviewed, stamped and distributed with the appropriate box checked either "FURNISH AS SUBMITTED", "FURNISH AS CORRECTED", "REVISE AND RESUBMIT" or "RETURNED WITHOUT REVIEW". The distribution of processed Shop Drawings will be as follows:
 - a. Drawings marked "FURNISH AS SUBMITTED" or "FURNISH AS CORRECTED"
 - 2 copies returned to the Contractor
 - 2 copies transmitted to the Owner
 - 3 copies remain at the Engineer's office
 - 1 copy for the Engineer's field personnel
 - b. Drawings marked "REVISE AND RESUBMIT"
 - 6 copies returned to the Contractor (or sepiu when furnished)
 - 2 copies remain at the Engineer's office

c. Drawings marked "RETURNED WITHOUT REVIEW"

All copies returned to the Contractor

2. If the Contractor requires additional copies of returned Shop Drawings, he shall include extra Drawings in his original submittal. The Engineer will process the Drawings and return them to the Contractor.

P. If during the course of construction, information shown on a shop drawing is revised, the shop drawing shall be resubmitted, for record purposes.

1.07 WARRANTIES

A. Warranties called for in the Contract Documents shall be originals and submitted to the Owner through the Engineer. Warranties shall be submitted prior to request for payment.

B. When advance copies of warranties are required, they shall be submitted with, and considered as Shop Drawings.

C. Minimum 1-year warrantee from date of acceptance by Owner shall be provided for all equipment, labor and services, unless a longer duration is stated elsewhere in these specifications.

1.08 CERTIFICATES

A. Two copies of certificates of compliance and test reports shall be submitted for requested items to the Engineer prior to request for payment.

1.09 PRODUCT SAMPLES

A. Contractor shall furnish for review all product samples as required by the Contract Documents or requested by the Engineer to determine compliance with the specifications.

B. Samples shall be of sufficient size or quantity to clearly illustrate the quality, type, range of color, finish, or texture and shall be properly labeled to show complete project identification, the nature of the material, trade name of manufacturer, and location of the Work where the material represented by the sample will be used.

C. Samples shall be checked by the Contractor for conformance to the Contract Documents before being submitted to the Engineer and shall bear the Contractor's stamp certifying that they have been so checked. Transportation charges on samples submitted to the Engineer shall be prepaid by the Contractor.

D. Engineer's review will be for compliance with the Contract Documents, and his comments will be transmitted to the Contractor with reasonable promptness.

- E. Acceptable samples will establish the standards by which the completed Work will be judged.

1.10 OPERATION AND MAINTENANCE MANUALS

- A. The Contractor shall furnish and deliver to the Engineer three (3) preliminary and five (5) final (complete) Operation and Maintenance (O&M) Manuals plus one (1) CD electronic PDF copy for the substantial, complete systems including instructions, technical bulletins, and any other printed matter such as diagrams, prints, or drawings, containing full information required for the proper operations, maintenance, and repair of all Contractor furnished equipment. Also included shall be a spare parts diagram and complete spare parts list. These requirements are a prerequisite to the operation and acceptance of equipment. Each O&M Manual shall be bound together in appropriate three-ring, hard cover binders. A detailed table of contents shall be provided for each Manual. Provide an appropriate ID label on the binder edge. Provide tabs and separate sections for operation, maintenance, spare parts, etc.
- B. Written operations and maintenance instructions are required for all equipment items supplied for this project. The amount of detail shall be commensurate with the complexity of the equipment item. Extensive pictorial cuts of equipment are required for operator reference in servicing. At a minimum, the O&M manuals shall include:
 - 1. Information contained in the Approved Shop Drawing
 - 2. Installation Instructions
 - 3. Storage Instructions
 - 4. Startup Instructions
 - 5. Shut-Down Instructions
 - 6. Maintenance Instruction and Lubrication schedules
 - 7. Troubleshooting Procedures
 - 8. Detailed Drawings
 - 9. Detailed Electrical Schematics
 - 10. Spare Parts List
 - 11. Name, address, and phone numbers of Service Rep.
 - 12. Warranty
- C. Information not applicable to the specific piece of equipment installed on this project shall be stricken from the Manual by the Contractor. Information provided

shall include a source of replacement parts and names of service representatives, including addresses and telephone numbers.

- D. When written instructions include Shop Drawings and other information previously reviewed by the Engineer, only those editions which were accepted by the Engineer, and which accurately depict the equipment installed, shall be incorporated in the O&M Manual.
- E. Maintenance and Lubrication Schedules: The Contractor shall include in the O&M Manual, for all Contractor furnished mechanical equipment, valves, etc., complete maintenance and lubrication schedules. Separate forms will be submitted for each piece of equipment.

1.11 RECORD DATA AND 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 will be provided to the Contractor which shall be kept at the job site for this purpose. Prior to Substantial Completion of the project, as paid for in this Contract, the Contractor shall deliver to the Engineer or Owner the drawings with accurate notations recorded thereon as necessary to revise the drawings for record purposes. The Contractor will be held responsible for the accuracy of such data and shall bear any costs incurred finding utilities as a result of incorrect data furnished by the Contractor. Record drawings shall comply with the City of Delray Beach Utilities Department minimum design and construction standards.

1.12 SITE PHOTOGRAPHS AND PRECONSTRUCTION VIDEO

A. PRECONSTRUCTION VIDEO REQUIREMENTS

- 1. The Contractor shall provide a color audio-video recording showing the entire preconstruction site. All audio/video recordings shall be taken by a professional commercial video photographer. The video photographer shall be an established enterprise that routinely provides these services. The videos shall be in standard electronic compact disc/DVD format, indicating the date, project name, and a brief description of the location where the video was taken. The Contractor shall submit two (2) copies of the preconstruction audio-video to the Engineer for review and approval.
- 2. Submit qualifications and references of the professional commercial video photographer. Include the names and addresses of two references that the professional video photographer has performed color audio-visual recording on projects of a similar nature, including one within the last six months.

3. No construction shall begin prior to the review and approval of the preconstruction audio-video DVD by the Engineer.
4. The total audio-video recording system and the procedures employed in its use shall be such as to produce a finished product that will fulfill the technical requirements of the project. The video portion of the recording shall produce bright sharp, and clear pictures with accurate colors and shall be free from distortion, and any other form of picture imperfection. All video recordings shall, by electronic means, display on the screen the time of day, the month, day, and year of the recording.
5. The following shall be included with the audio-video documentation:
 - a. Coverage is required within and adjacent to the water treatment plant facilities, equipment and staging areas where the work is to be constructed. The coverage shall also include all entry and/or access routes to the areas where the project work will be performed at the site.
 - b. Documentation of the conditions of the adjacent facilities or any affected structures as a result of the impending construction.
 - c. Videos shall be properly identified by video DVD number and project name. Video DVD shall include direction of coverage, the date and time of coverage.
 - d. Provide a written video DVD log to aid in locating any section of the construction site that may be in question.
 - e. The video DVD log shall include sufficient detailed to determine the condition of all existing facilities, equipment and components in close proximity to the work to aid in the replacement and restoration of these facilities, if deemed warranted by the engineer.

B. PHOTOGRAPHIC SURVEY

1. In addition to the DVD, the Contractor shall take “before and after” digital still photographs of each home and/or property. The photographs of each facility or structure shall consist of a set of photographs (3 minimum).
2. The digital “file” name is to be the area or structure being photographed and shall be incorporated as part of the image. The Contractor shall provide the Engineer the following:
 - a. One (1) CD with the digital files in appropriate subdirectory and a digital file log.
 - b. Two (2) sets of “Before” color prints and one (1) set of “After” color prints of each digital file, with the file name displayed. Color print sets are to be bound with a Table of Contents and divided and tabbed facility or structure.

- c. “Before” photographs (color prints and CD) shall be submitted 21 days in advance of the commencement of the work. “After” photographs (color prints and CD) shall be submitted with the final Application For Payment.
3. The Contractor shall maintain a bound set of pre-construction photographs available at the Project Site for use during the project.

1.13 HEALTH AND SAFETY PLAN

A. HEALTH AND SAFETY PLAN REQUIREMENTS

1. The Contractor shall prepare and implement a site specific Health and Safety (H&S) Plan. The H&S Plan shall be prepared to meet all applicable construction safety requirements stipulated by the Occupational Safety and Health Administration (OSHA) and as defined by 29 CFR Part 1926, at a minimum. The Contractor shall submit a copy of the site specific H&S Plan **for reference only**. ***The Contractor is solely responsible for worker and jobsite safety.*** Submission of the site specific H&S Plan shall in no way suggest or imply that the City, its Employees, Engineer or any other entity assumes whole or partial liability for the Contractor’s obligation to implement and employ safe working practices and procedures for the duration of the project.

END OF SECTION

SECTION 01400 QUALITY CONTROL

PART 1 - GENERAL

1.01 INSPECTION AT PLACE OF MANUFACTURE

- A. Unless otherwise specified, all products, materials, and time and equipment shall be subject to inspection by the Engineer at the place of manufacture.
- B. The presence of the Engineer at the place of manufacture however, shall not relieve the Contractor of the responsibility for furnishing products, materials, and equipment which comply with all requirements of the Contract Documents. Compliance is a duty of the Contractor, and said duty shall not be avoided by any act or omission on the part of the Engineer.

1.02 SAMPLING AND TESTING

- A. Unless otherwise specified, all sampling and testing shall be in accordance with the methods prescribed in the current standards of the ASTM 100 as applicable to the class and nature of the article or materials considered; however, the Owner reserves the right to use any generally-accepted system of sampling and testing which, in the opinion of the Engineer, will insure the Owner that the quality of the workmanship is in full accord with the Contract Documents.
- B. Any waiver by the Owner of any specific testing or other quality assurance measures, whether or not such waiver is accompanied by a guarantee of substantial performance as a relief from the specified testing or other quality assurance requirements as originally specified, and whether or not such guarantee is accompanied by a performance bond to assure execution of any necessary corrective or remedial Work, shall not be construed as a waiver of any requirements of the Contract Documents.
- C. Notwithstanding the existence of such waiver, the Engineer reserves the right to make independent investigations and tests for failure of any portion of the Work to meet any of the requirements of the Contract Documents, which shall be reasonable cause for the Engineer to require the removal or correction and reconstruction of any such work in accordance with the General Conditions.

1.03 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 any conditions 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.
- C. The Contractor shall check and familiarize himself with the overall general conditions prevailing along the route of construction and at the construction site.

1.04 INSPECTION AND TESTING

- A. The Contractor will employ and pay for the services of an independent testing laboratory for specified testing as specified by the Engineer.
- B. The work or actions of the testing laboratory shall in no way relieve the Contractor of his obligations under the Contract. The laboratory testing work will include such inspections and testing required by the Contract Documents, existing laws, codes, ordinances, etc. The testing laboratory will have no authority to change the requirements of the Contract Documents, nor perform, accept or approve any of the Contractor's Work.
- C. The Contractor shall allow the Engineer ample time, safe access and opportunity for inspection and testing materials and equipment to be used in the Work. The Contractor shall advise the Engineer 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. The Contractor shall at all times furnish the Engineer and his representatives, inspection and testing facilities including labor, and allow proper time for inspecting and testing materials, equipment, and workmanship. 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 and accepted for use. The Contractor shall furnish, at his own expense, all samples of materials required by the Engineer for testing, and shall make his own arrangements for providing water, electric power, or fuel for the various inspections and tests of structures and equipment.
- D. The Owner will bear the cost of all tests, inspections, or investigations undertaken by the order of the Engineer 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. Whenever nonconformance is determined by the Engineer 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 to ascertain subsequent conformance with the Contract Documents.

- E. Inspections shall be scheduled for regular working hours only, except for special occasions where service interruptions cannot be scheduled during normal working hours. The Engineer shall be given a minimum two (2) full working days notification for scheduled inspections, and a minimum of seven (7) full working days notification for service interruptions.

1.05 RIGHT OF REJECTION

- A. The Engineer, acting for the Owner, shall have the right, at all times and places, to reject any articles or materials to be furnished hereunder which, in any respect, fail to meet the requirements of the Contract Documents, regardless of whether the defects in such articles or materials are detected at the point of manufacture or after completion of the Work at the site. If the Engineer or its representative, through an oversight or otherwise, has accepted materials or Work which is defective or which is contrary to the Contract Documents, such materials, no matter in what stage or condition of manufacture, delivery, or erection, may be subsequently rejected by the Engineer for the Owner.
- B. The Contractor shall promptly remove rejected articles or materials from the site of the Work after notification of rejection. All costs of removal and replacement of rejected articles or materials as specified herein shall be borne by the Contractor.

1.06 OTHER CONSTRUCTION CONSIDERATIONS

- A. Cutting and Patching
 - 1. The Contractor shall perform all cutting and patching of the 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 shall only cut or alter work with the written consent of the Engineer and of the other Contractors whose work will be affected.
- B. Sleeves and Openings
 - 1. The Contractor shall provide all openings, chases, etc., to fit its own work and that of any other Subcontractors and Contractors. All such openings or chases shown on the Contract Drawings, or reasonably implied thereby, or as confirmed or modified by acceptable shop, setting or erecting drawings, shall be provided by the Contractor.
- C. Where pipes or conduits are to pass through slabs or walls, or where equipment frames or supports are to be installed as integral part of an opening, the sleeves, openings, forms, or frames shall be furnished by the installer of the pipes, conduits, or equipment, but shall be placed by the Contractor. Where hanger inserts, anchor bolts, and similar items are to be embedded in concrete as an

integral part of a slab or wall, they shall be furnished by the installer of the pipe or other equipment requiring the hanger, etc., but shall be placed by the Contractor.

- D. Any cost resulting from correction of defective, ill-timed, or mislocated work or for subsequent work which becomes necessary because of omitted openings, chases, sleeves, frames, inserts, etc., shall be borne by the Contractor or subcontractor responsible therefore. The Contractor shall not arbitrarily cut, drill, alter, damage, or otherwise endanger the work of another Contractor. In no case shall beams, lintels, or other structural members be cut without the proper authorization of the Engineer. The nature and extent of any corrective or additional work shall be subject to the acceptance of the Engineer following consultation with the affected parties.
- E. Weather Conditions
 - 1. Work that may be affected by inclement weather shall be suspended until proper conditions prevail. In the event of impending storms, the Contractor shall take necessary precautions to protect all work, materials and equipment from exposure.
- F. Fire Protection
 - 1. The Contractor shall take all necessary precautions to prevent fires at or adjacent to the Work, including its own buildings and trailers. Adequate fire extinguisher and hose line stations shall be provided throughout the work area.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01510 TEMPORARY FACILITIES

PART 1 - GENERAL

1.01 THE REQUIREMENT

- A. Unless otherwise stipulated, the Contractor shall provide for utilities and services for his own operations as outlined herein. These shall include temporary power, lighting, sanitary facilities, ventilation, etc. required for the duration of the project. Such facilities shall comply with regulations and requirements of OSHA, Florida Power and Light, NEC and all applicable Federal, State and local codes, etc.
- B. Prior to installation of temporary sanitary facilities, consult with the Engineer on acceptable locations, access and related facilities

1.02 POWER AND LIGHTING

The Owner will provide 120-volt electrical power at no cost to the Contractor as required to complete the stipulated Work for the duration of the project.

- A. If an alternate source of power is required, the Contractor shall be solely responsible for coordinating, installing, maintaining and decommissioning a temporary power source including all associated costs for such service(s). The temporary components shall include but not be limited to temporary wiring, switches, connections and meters.
- B. Construction Lighting
 - 1. In addition to providing for a safe construction distribution system, the Contractor shall provide a safe and adequate artificial lighting system for work areas which do not have sufficient natural light.
 - 2. All Work conducted at night or under conditions of deficient daylight shall be suitably lighted to insure proper Work and to afford adequate facilities for inspection and safe working conditions. Temporary lighting shall be maintained during nonworking periods if the area is subject to access by the public or plant personnel.
- C. Electrical Connections
 - 1. All temporary connections for electricity shall be subject to review by the Engineer, the Owner, and the power company representative, and shall be removed in like manner at the Contractor's expense prior to final acceptance of the Work.

D. Separation of Circuits

1. Unless otherwise permitted by the Engineer, circuits separate from lighting circuits shall be used for all power purposes.

E. Construction Wiring

1. All wiring for temporary electric light and power shall be properly installed and maintained and shall be securely fastened in place. All electrical facilities shall conform to the requirements of Subpart K of the OSHA Safety and Health Standards for Construction.

1.03 WATER SUPPLY

- A. The Owner will provide a source of potable water for construction purposes free of charge. Potable water must be used for construction of the proposed facility upgrades and improvements. Potable water will be provided from point of use hose bibbs located within the project area.
- B. Care shall be exercised in the use of water, and provisions shall be made to protect the water supply from contamination and indiscriminate use by unauthorized persons.
- C. Potable Water
 1. All drinking water on the site during construction shall be furnished by the Contractor for the duration of the project.

1.04 TEMPORARY SANITARY FACILITIES

- A. Contractor shall provide temporary sanitary facilities during construction. Facilities shall be maintained and emptied on a regular basis so as to not create a nuisance.

1.05 TEMPORARY VENTILATION

- A. The Contractor shall provide and maintain adequate ventilation for a safe working environment. In addition, forced air ventilation shall be provided for the curing of installed materials, humidity control, and the prevention of hazardous accumulations of dust, gases, or vapors. Where warranted, the Contractor shall also provide continuous gas monitors of the type and sensitivity necessary to ensure a safe working environment.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01530 PROTECTION OF EXISTING FACILITIES

PART 1 - GENERAL

1.01 THE REQUIREMENT

- A. The Contractor shall protect all existing utilities and improvements 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 of all utilities shown and shall fully assess the limits of all utilities that may interfere with the Work prior to commencement. All such assessments shall be performed as soon as practicable after award of Contract and, in any event, a sufficient time in advance of construction to avoid possible delays to the Contractor's Work. When such assessment show the utility location as shown to be in error, the Contractor shall so notify the Engineer.

1.02 EXISTING UTILITIES AND IMPROVEMENTS

- A. The Contractor shall protect all existing utilities and other improvements which may be impaired or otherwise impacted during construction operations. 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. 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 necessary.
- B. Where the proper completion of the Work requires the temporary or permanent removal and/or relocation of an existing utility or other improvement which is shown, the Contractor shall remove and, without unnecessary delay, temporarily replace or relocate such utility or improvement in a manner satisfactory to the Engineer and Owner. In all cases of such temporary removal or relocation, restoration to former location shall be accomplished by the Contractor in a manner that will restore or replace the utility or improvement as nearly as possible to its former locations and to as good or better of a condition than found prior to removal.
- C. Existing utility lines that are shown or the locations of which are made known to the Contractor prior to completion of the Work which are to be retained, and all utility lines that are constructed as part of the project shall be protected from

damage and, if damaged, shall be immediately repaired by the Contractor. In case of failure on the part of the Contractor to restore such utilities, 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.

- D. In the event that the Contractor damages any existing utility lines that are not shown or the locations of which are not made known to the Contractor prior to excavation, a written report thereof shall be made immediately to the Engineer. If directed by the Engineer, repairs shall be made by the Contractor under the provisions for changes and extra Work contained the General Conditions.
- E. All costs of locating and repairing damage not due to failure of the Contractor to exercise reasonable care; costs of removing or relocating such utility facilities not shown in the Contract Documents with reasonable accuracy; and costs for equipment on the project which was actually used for that portion of the Work which was necessarily interrupted or idled by Work involved with the removal or relocation of such utility facilities, will be paid for as extra Work in accordance with the provisions of the General Conditions. Compensation shall not include Contractor's costs for the coordination of his activities with the utility company affected. Contractor shall schedule work in such a manner to prevent any delays caused by the utilities companies relocating or supporting their facilities, where applicable. The Contractor will be paid no compensation for any loss of time or delay.
- F. All repairs to a damaged improvement are subject to inspection and approval by an authorized representative of the improvement owner before being concealed by backfill or other Work.

1.03 PROTECTION OF ELECTRONICS

- A. Where the Contractor's work generates dust or moisture in the vicinity of electronic devices (new or existing), the Contractor is solely responsible to prevent dust and moisture from entering the devices, whether those devices are turned over to the Owner or not.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01550 SITE ACCESS AND STORAGE

PART 1 - GENERAL

1.01 CONTRACTOR'S SITE ACCESS

- A. Unless otherwise required by the Owner, delivery and Contractor access will be from the site entrance off of S.W. 7th Street and such access shall be kept unrestricted.

1.02 CONTRACTOR'S WORK AND STORAGE AREA

- A. A designated Contractor staging area shall be provided within the fenced limits of the City of Delray Beach Water Treatment Plant. Responsibility for protection and safekeeping of equipment and materials within this area will be solely that of the Contractor and no claim shall be made against the Owner by reasons of any act of an employee or trespasser. Should an occasion arise necessitating access to an area occupied by stored equipment and/or materials, the Contractor shall immediately move them. No equipment or materials shall be placed upon the Owner's property until it is acceptable to the Owner.
- B. Upon completion of the Contract, the Contractor shall remove from the storage areas all of their equipment, temporary fencing, surplus materials, rubbish, etc., and repair any damage to the staging area.

1.03 SECURITY

- A. The Contractor shall care for and protect against loss or damage of all material to be incorporated in the construction for the duration of the project and shall repair or replace damaged or lost materials and damage to structures. The Contractor shall be responsible for providing, maintaining and securing fences for material storage purposes for the duration of the project. Security fencing shall be provided separate from any existing fencing in order to limit access to/from the staging area. It shall be the Contractor's responsibility to determine the areas and limits of the secured areas to meet the requirements of this Section.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01560 TEMPORARY ENVIRONMENTAL CONTROLS

PART 1 - GENERAL

1.01 EXPLOSIVES AND BLASTING

- A. The use of explosives on the Work will not be permitted.

1.02 DUST ABATEMENT

- A. The Contractor shall furnish all labor, equipment, and means required and shall carry out effective measures wherever and as often as necessary to prevent its operation from producing dust in amounts damaging to property, cultivated vegetation, or domestic animals, or causing a nuisance to persons living in or occupying buildings in the vicinity. The Contractor shall be responsible for any damage resulting from any dust originating from its operations. The dust abatement measures shall be continued until the Contractor is relieved of further responsibility by the Engineer. No separate payment will be allowed for dust abatement measures and all costs thereof shall be included in the Schedule of Values.
- B. Provide positive methods and apply dust control materials to minimize raising dust from construction operations, and provide positive means to prevent airborne dust from dispersing into the atmosphere.
- C. Contractor shall prepare and submit a detailed Dust Control Plan specific to the surface preparation work required as part of the rehabilitation of Clarifier No. 1. The plan shall specify what materials and methods will be employed to contain all airborne dust and contaminants within the limits of the clarifier structure. Contractor is specifically advised that the Delray Beach Water Treatment Plant is an active facility which provides potable drinking water to its consumers. All measures necessary shall be employed to prevent the introduction of dust, debris and contaminants into the potable water process treatment systems. The Contractor shall be required to submit and receive approval from the Engineer, in writing, of the Dust Control Plan, prior to commencing with the surface preparation work.

1.03 RUBBISH CONTROL

- A. During the progress of the Work, the Contractor shall keep the site of the Work and other areas used by it in a neat and clean condition, and free from any accumulation of rubbish. The Contractor shall dispose of all rubbish and waste materials of any nature occurring at the Work site, and shall establish regular

intervals of collection and disposal of such materials and waste. Disposal of all rubbish and surplus materials shall be off the site of construction in accordance with local codes and ordinances governing locations and methods of disposal, and in conformance with all applicable safety laws and the particular requirements of Part 1926 of the OSHA Safety and Health Standards for Construction.

1.04 SANITATION

A. Toilet Facilities

1. Fixed or portable chemical toilets shall be provided wherever needed for the use of employees. Toilets at construction job sites shall conform to the requirements of Part 1926 of the OSHA Standards for Construction.
2. Such facilities shall be made available when the first employees arrive on the Worksite, shall be properly secluded from public observation, and shall be constructed and maintained in suitable numbers and at such points and in such manner as may be required.
3. The Contractor shall maintain the sanitary facilities in a satisfactory and sanitary condition at all time and shall enforce their use. They shall rigorously prohibit the committing of nuisances on the site of the Work, on the lands of the Owner, or on an adjacent property.
4. The Owner and the Engineer shall have the right to inspect any building or other facility erected, maintained, or used by the Contractor, to determine whether or not the sanitary regulations have been complied with.

B. Sanitary and Other Organic Wastes

1. The Contractor shall establish a regular daily collection of all sanitary and organic wastes. All wastes and refuse from sanitary facilities provided by the Contractor or organic material wastes from any other source related to the Contractor's operations shall be disposed of away from the site in a manner satisfactory to the Engineer and in accordance with all laws and regulations pertaining thereto.

1.05 CHEMICALS

- ##### A.
- All chemicals used during project construction or furnished for project operation, whether defoliant, soil sterilant, herbicide, pesticide, disinfectant, polymer, paint, fuel, solvent, or reactant of other classification, shall show approval of either the U.S. Environmental Protection Agency or the U.S. Department of Agriculture. The handling, storage, use, and disposal of all such chemicals and disposal of residues shall be in strict accordance with all applicable rules and regulations of Federal, State, and local jurisdictional agencies and the printed instructions of the manufacturer and all regulatory requirements. Copies of antidote literature shall

be kept at the storage site and at the Contractor's job site office. A supply of antidotes shall be kept at the Contractor's office.

- B. Contractor shall maintain a current file of applicable MSDS sheets readily accessible to all employees as required by OSHA Part 1926.

1.06 NOISE CONTROL

- A. Noise resulting from the Contractor's work shall not exceed the noise levels and other requirements stated in local ordinances. The Contractor shall be responsible for curtailing noise resulting from his operation. He shall, upon written notification from the Engineer or the noise control officers, make any repairs, replacements, adjustments, and additions and furnish mufflers when necessary to fulfill requirements.

1.07 PRECAUTIONS DURING ADVERSE WEATHER

- A. During adverse weather, and against the possibility thereof, the Contractor shall take all necessary precautions so that the work may be properly done and satisfactory in all respects. When required, protection shall be provided by use of tarpaulins, wood, and building paper shelters, or by other acceptable means. The Contractor shall be responsible for all changes caused by adverse weather.
- B. The Engineer 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 conditions may be, in any season.

1.08 HURRICANE AND STORM WARNINGS

- A. The Contractor shall take all precautions necessary to protect the job site during hurricane and storm watches and warnings. In the event of storm event, the Contractor will be required to comply with all emergency preparedness procedures stipulated by the City's Community Emergency Response Team (CERT) as well as Palm Beach County Emergency Operations Center (PBCEOC)

1.09 PERIODIC CLEANUP AND BASIC SITE RESTORATION

- A. During construction, the Contractor shall regularly remove from the site (once a week minimum) all accumulated debris and surplus materials of any kind which results from its operations. Unused equipment and tools shall be stored at the Contractor's yard or base of operations for the project.
- B. The Contractor shall perform the cleanup work on a regular basis and as frequently as ordered by the Engineer. Basic site restoration in a particular area shall be accomplished immediately following the installation or completion of the

required facilities in that area. Furthermore, such work shall also be accomplished, when ordered by the Engineer, if partially completed facilities must remain incomplete for some time period due to unforeseen circumstances.

- C. Upon failure of the Contractor to perform periodic clean-up and basic restoration of the site to the Engineer's satisfaction, the Engineer may, upon 5 days prior written notice to the Contractor, employ such labor and equipment as it deems necessary for the purpose, and all costs resulting therefrom shall be charged to the Contractor and deducted from amounts of money that it may be due.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01600 MATERIALS AND EQUIPMENT

PART 1 - GENERAL

1.01 THE REQUIREMENT

- A. The word "Products," as used herein, is defined to include purchased items for incorporation into the Work, regardless of whether specifically purchased for project or taken from Contractor's stock of previously purchased products. The word "Materials," is defined as products which must be substantially cut, shaped, worked, mixed, finished, refined, or otherwise fabricated, processed, installed, or applied to form units of Work. The word "Equipment" is defined as products with operational parts, regardless of whether motorized or manually operated, and particularly including products with service connections (wiring, piping, and other like items). Definitions in this paragraph are not intended to negate the meaning of other terms used in Contract Documents, including "specialties", "systems", "structure", "finishes", "accessories", "furnishings", "special construction", and similar terms, which are self-explanatory and have recognized meanings in the construction industry.
- B. Equipment Specifications may not deal individually with minute items required such as components, parts, controls, and devices which may be required to produce the equipment performance specified or as required to meet the equipment warranties. Where such items are required, they shall be included by the supplier of the equipment, whether or not specifically called for in the Contract Documents.
- C. Where the words "provide", "furnish", "include", or "install" are used in the Specifications or on the Drawings, it shall mean to furnish, install, and test complete and ready for operation, the items mentioned. If an item is either called for in the Specifications or called for on the Drawings, it shall be considered sufficient for including same in the Work.

1.02 QUALITY ASSURANCE

- A. Source Limitations
 - 1. To the greatest extent possible for each unit of Work, the Contractor shall provide products, materials, or equipment of a singular generic kind from a single source.

B. Compatibility of Options

1. Where more than one choice is available as options for Contractor's selection of a product, material, or equipment, the Contractor shall select an option which is compatible with other products, materials, or equipment already selected. Compatibility is a basic general requirement of product/material selections.

1.03 DESIGN

- A. Equipment and appurtenances shall be designed in conformity with the ASME, AIEE, NEMA, and other generally accepted applicable standards and shall be rugged construction and of sufficient strength to withstand all stresses which may occur during fabrication, testing, transportation, installation, and all conditions of operation. All bearings and moving parts shall be adequately protected by bushings or other acceptable means against wear, and provision shall be made for adequate lubrication by readily accessible devices. Details shall be designed for appearance as well as utility. Protruding members, joints, corners, gear covers, etc., shall be finished in appearance.
- B. All exposed welds on machinery shall be ground smooth and the comers of structural shapes shall be rounded or chamfered.

1.04 PRODUCT DELIVERY-STORAGE-HANDLING

- A. The Contractor shall deliver, handle, and store products in accordance with supplier's written recommendations and by methods and means which will prevent damage, deterioration, and loss including theft. Delivery schedules shall be controlled to minimize long-term storage of products at site and overcrowding of construction spaces. In particular, the Contractor shall provide delivery/installation coordination to ensure minimum holding or storage times for products recognized to be flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other sources of loss.

1.05 TRANSPORTATION AND HANDLING

- A. Products shall be transported by methods to avoid product damage and shall be delivered dry and in undamaged condition in supplier's unopened containers or packaging.
- B. The Contractor shall provide equipment and personnel to handle products, materials, and equipment including those provided by Owner, by methods to prevent soiling and damage.
- C. The Contractor shall provide additional protection during handling to prevent marring and otherwise damaging products, packaging, and surrounding surfaces.

1.06 STORAGE AND PROTECTION

- A. Products shall be stored in accordance with supplier's written instructions, with seals and labels intact and legible. Sensitive products shall be stored in weather-tight enclosures and temperature and humidity ranges shall be maintained within tolerances required by supplier's written instructions.
- B. For exterior storage of fabricated products, they shall be placed on sloped supports above ground. Products subject to deterioration shall be covered with impervious sheet covering; ventilation shall be provided to avoid condensation.
- C. Loose granular materials shall be stored on solid surfaces in a well-drained area and shall be prevented from mixing with foreign matter.
- D. Storage shall be arranged to provide access for inspection. The Contractor shall periodically inspect to assure products are undamaged and are maintained under required conditions.
- E. Storage shall be arranged in a manner to provide access for maintenance of stored items and for inspection.
- F. Where applicable, materials stored in a wellfield zone are subject to daily inspection by the Owner. Inspections will be performed to ensure compliance with facility wellfield permits.
- G. Contractor shall provide Material Safety Data Sheets (MSDS) for stored products in accordance with Florida Right to Know Law and shall maintain a clearly marked binder of all applicable MSDS for use by the Contractor's employees as required by OSHA Part 1926.
- H. Containers storing liquid products shall be stored in secondary containment pallets or in a secondary containment area that is capable of containing 110% volume of the fluid and shall be inspected daily.

1.07 MAINTENANCE OF STORAGE

- A. Stored products shall be periodically inspected on a scheduled basis. The Contractor shall maintain a log of inspections and shall make said log available to the Engineer on request.
- B. The Contractor shall verify that storage facilities comply with supplier's product storage requirements.
- C. The Contractor shall verify that supplier-required environmental conditions are maintained continually.

- D. The Contractor shall verify that surfaces of products exposed to the elements are not adversely affected and that any weathering of finishes is acceptable under requirements of Contract Documents.

1.08 MAINTENANCE OF EQUIPMENT STORAGE

- A. For mechanical and electrical equipment in long-term storage, the Contractor shall provide a copy of the supplier's service instructions to accompany each item, with notice on enclosed instruction shown on exterior of package.
- B. Equipment shall be serviced on a regularly scheduled basis, and a log of services shall be maintained and submitted as a record document to the Engineer.

1.09 LUBRICANTS

- A. During testing and prior to acceptance, the Contractor shall furnish all lubricants necessary for the proper lubrication of all equipment furnished under this Contract.

1.10 SPECIAL TOOLS

- A. For each type of equipment being furnished, the Contractor shall provide a complete set of all special tools (including calibration and test equipment) which may be necessary for the adjustment, operation, maintenance and disassembly of such equipment.
- B. Special tools shall be delivered at the same time as the equipment to which they pertain. The Contractor shall properly store and safeguard such special tools until completion of the Work, at which time they shall be delivered to the Owner.

1.11 PROTECTION AGAINST ELECTROLYSIS

- A. Where dissimilar metals are used in conjunction with each other, suitable insulation shall be provided between adjoining surfaces so as to eliminate direct contact and any resultant electrolysis. The insulation shall be bituminous impregnated felt, heavy bituminous coatings, nonmetallic separators or washers, or other acceptable materials.

1.12 FASTENERS

- A. All necessary bolts, anchor bolts, nuts, washers, plates, and bolt sleeves shall be furnished by the Contractor in accordance herewith. Bolts shall have suitable washers and, where so required, their nuts shall be hexagonal.

- B. All bolts, anchor bolts, nuts, washers, plates, and bolt sleeves shall be Type 316 stainless steel unless otherwise specifically indicated or specified.
- C. Unless otherwise specified, stud, tap, and machine bolts shall be of the best quality refined bar iron. Hexagonal nuts of the same quality of metal as the bolts shall be used.

1.13 SALVAGED AND EXCAVATED MATERIALS

- A. In the absence of special provisions in other Sections of the Specifications, salvage materials, equipment, or supplies that occur are the property of the Owner and shall be cleaned and stored as directed by the Engineer.
- B. All excavated materials needed for backfilling operation shall be stored on site. Where additional area is needed for stockpiling, it shall be obtained by the Contractor.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01650 FACILITY STARTUP

PART 1 - GENERAL

1.01 DEFINITIONS

- A. Facility Startup: Includes putting Project in operating order, cleaning, adjusting and balancing equipment, initial operation (startup) of equipment item, operating equipment, starting systems, operation of systems, testing of equipment and systems, and demonstration and verification of the completed facility as a unit.
- B. Functional Test: A test or tests in the presence of the Engineer and/or Owner to demonstrate that the installed equipment or system meets manufacturer's installation and adjustment requirements and other requirements specified including, but not limited to, noise, vibration, alignment, speed, proper electrical and mechanical connections, thrust restraint, proper rotation, and initial servicing.
- C. Operation Period: The operation period begins when the facility has been successfully started up as defined under Paragraph Startup Test Period and has met all Substantial Completion requirements.
- D. Performance Test: A test performed in the presence of the Engineer and/or Owner and after any required functional test specified, to demonstrate and confirm that the equipment and/or system meet the specified performance requirements.
- E. Significant Interruption: May include any of the following events:
 - 1. Failure of Contractor to maintain qualified onsite startup personnel as scheduled.
 - 2. Failure to meet specified performance for more than two consecutive hours.
 - 3. Failure of any critical equipment unit, system, or subsystem that is not satisfactorily corrected within five hours after failure.
 - 4. Failure of noncritical unit, system, or subsystem that is not satisfactorily corrected within eight hours after failure.
 - 5. As may be determined by Engineer.
- F. Startup Test Period:
 - 1. Startup of the entire facility or any portion thereof includes coordinated operation of the facilities by the Contractor, Subcontractors, Owner operating personnel, and manufacturer's representatives for equipment items and systems after all required functional tests have been completed

and those performance tests deemed necessary for the safe operation of the entire facility have been completed.

2. Startup of the system or any portion thereof shall be considered complete when, in the opinion of the Engineer, the system or designated portion has operated in the manner intended for seven continuous days without significant interruption. This period is in addition to any training, functional, or performance test periods specified elsewhere. A significant interruption will require the startup then in progress to be stopped and restarted after corrections are made.

G. System:

1. The overall process, or a portion thereof, that performs a specific function. A system may consist of two or more subsystems as well as two or more types of equipment.

1.02 SUBMITTALS

A. Administrative Submittals:

1. Functional and performance test schedules and plan for equipment, units, and systems at least 14 days prior to start of related testing. Include test plan, procedures, and log format.
2. Schedule and plan of facility startup activities at least 14 days prior to commencement.

B. Quality Control Submittals:

1. Manufacturer's Certificate of Proper Installation as required.
2. Test Reports: Functional and performance testing, in format acceptable to Engineer and certification of functional and performance test for each piece of equipment or system specified.
3. Certifications of Calibration: Testing equipment.

1.03 CONTRACTOR FACILITY STARTUP RESPONSIBILITIES

A. General:

1. Demonstrate proper installation, adjustment, function, performance, and operation of equipment, systems, control devices, and required interfaces individually and in conjunction with process instrumentation and control system.
2. Coordinate and pay for services related to having a manufacturer's representative onsite during system startup to witness and confirm proper

operation of all equipment to be installed, inclusive of any Owner Furnished Equipment, if applicable. For the current project the Manufacturer's Representatives for the filter fill and drain valves and the respective pneumatic operators manufactured by Dezuirk is:

a. Fluid Control Specialties

Attn: Richard Geibert

111 Maritime Drive, Sanford, Florida 32771

Phone: (407) 302-5611

Fax: (407) 302-5612

1.04 OWNER/ENGINEER FACILITY STARTUP RESPONSIBILITIES

A. General:

1. Review Contractor's test plan and schedule.
2. Witness each functional or performance test.
3. Coordinate other plant operations, if necessary, to facilitate Contractor's tests.
4. Provide water, power, chemicals for bulk tanks and diesel fuel for new diesel fuel tank, and other items as required for testing, unless otherwise indicated. The Contractor shall be responsible for providing all chemicals for disinfection of storage tanks and pipelines.

B. Startup Test Period:

1. Operate process units and devices, with support of Contractor.
2. Provide sampling, labor, and materials as required and provide laboratory analyses.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 TESTING PREPARATION

A. General:

1. Complete Work associated with the unit and related processes before testing, including related manufacturer's representative services.

2. Furnish qualified manufacturer's representatives when required to assist in testing. Manufacturer's representative shall provide certification of proper installation prior to initiating startup activities.
 3. Utilize the Manufacturer's Certificate of Proper Installation Form at the end of this Section supplemented as necessary, to document functional and performance procedures, results, problems, and conclusions.
 4. Schedule and attend pretest (functional and performance) meetings related to test schedule, plan of test, materials, chemicals, and liquids required, facilities' operations interface, Engineer and Owner involvement.
 5. Designate and furnish one or more persons to be responsible for coordinating and expediting Contractor's facility startup duties. The person or persons shall be present during facility startup meetings and shall be available at all times during the facility startup period.
 6. Provide temporary valves, gauges, piping, test equipment and other materials and equipment required to conduct testing.
- B. Cleaning and Checking: Prior to starting functional testing:
1. Calibrate testing equipment for accurate results.
 2. Inspect and clean equipment, devices, connected piping, and structures so they are free of foreign material.
 3. Lubricate equipment in accordance with manufacturer's instructions.
 4. Turn rotating equipment by hand and check motor-driven equipment for correct rotation.
 5. Open and close valves by hand and operate other devices to check for binding, interference, or improper functioning.
 6. Check power supply to electric-powered equipment for correct voltage.
 7. Adjust clearances and torques.
 8. Test piping for leaks.
 9. Obtain complete Manufacturer's Certificate of Proper Installation.
- C. Ready-to-test determination will be by Engineer and/or Owner based at least on the following:
1. Notification by Contractor of equipment and system readiness for testing.
 2. Acceptable testing plan.
 3. Acceptable Operation and Maintenance Manuals.
 4. Receipt of Manufacturer's Certificate of Proper Installation, if specified.

5. Adequate completion of Work adjacent to, or interfacing with, equipment to be tested.
6. Availability and acceptability of manufacturer's representative, when specified, to assist in testing of respective equipment, and satisfactory fulfillment of other specified manufacturers' responsibilities.
7. Equipment and electrical tagging complete.
8. All spare parts and special tools delivered to Owner.

3.02 FUNCTIONAL TESTING

A. General:

1. Begin testing at a time mutually agreed upon by the Owner and/or Engineer, manufacturer's representative(s), and Contractor.
2. Notify in writing Owner, Engineer, and manufacturer's representative at least 14 days prior to scheduled date of functional tests.
3. Separate items of equipment demonstrated to function properly during subsystem testing may require no further functional test if documentation of subsystem testing is acceptable to Engineer.
4. Conduct functional test until each individual component item or system has achieved 2 continuous hours of satisfactory operation. Demonstrate all operational features and controls function during this period while in automatic modes.
5. If, in Engineer's opinion, each system meets the functional requirements specified, such system will be accepted as conforming for purposes of advancing to performance testing phase, if required. If, in Engineer's opinion, functional test results do not meet requirements specified, the systems will be considered as nonconforming.
6. Performance testing shall not commence until the equipment or system meets functional tests specified.

3.03 PERFORMANCE TESTING

A. General:

1. Begin testing at time mutually agreed upon by the Owner, and/or Engineer, manufacturer's representative(s), and Contractor, as appropriate.
 - a. Engineer will be present during test.
 - b. Notify Engineer and Owner at least 14 days prior to scheduled date of test.

2. Follow approved testing plan and detailed procedures specified.
3. Unless otherwise indicated, furnish all labor, materials, and supplies for conducting the test and taking all samples and performance measurements.
4. Prepare performance test report summarizing test method. Include test logs, pertinent calculations, and certification of performance.

3.04 STARTUP TEST PERIOD

- A. Test Reports: As applicable to the equipment furnished, certify in writing that:
 1. Necessary hydraulic structures, piping systems, and valves have been successfully tested.
 2. Equipment systems and subsystems have been checked for proper installation, started, and successfully tested to indicate that they are operational.
 3. Systems and subsystems are capable of performing their intended functions.
 4. Facilities are ready for intended operation.
- B. Attend planning meetings and arrange for attendance by key major equipment manufacturer representatives as required by the Contract Documents.
- C. Designate and furnish one or more persons to be responsible for coordinating and expediting Contractor's facility startup duties.
- D. When facility startup has commenced, schedule remaining Work so as not to interfere with or delay the completion of facility startup. Support the facility startup activities with adequate staff to prevent delays and process upsets. This staff shall include, but not be limited to, major equipment and system manufacturers' representatives, Subcontractors, electricians, instrumentation personnel, millwrights, pipe fitters and plumbers.
- E. Supply and coordinate specified manufacturer's facility startup services.
- F. Make adjustments, repairs, and corrections necessary to complete facility startup.
- G. After the facility is operating, complete the testing of those items of equipment, systems, and subsystems which could not be or were not adequately or successfully tested prior to startup test period.

3.05 PARTIAL UTILIZATION

- A. After successful performance testing of a particular equipment type or system, Owner may elect to start up a portion of the equipment or system for continuous operation.

3.06 CONTINUOUS OPERATIONS

- A. Owner will accept equipment and systems as substantially complete and ready for continuous operation only after successful facility startup is completed and documented, and reports submitted, and manufacturers' services completed for training of Owner's personnel. Manufacturer's representatives shall provide operational support to the Owner for a period up to 30 days after substantial completion to ensure Owner staff is completely and adequately trained to operate the systems and that the system is meeting all specified performance criteria. Contractor shall coordinate and cooperate with manufacturer's representatives and Owner to correct and/or repair any deficiencies in the contractors work related to the systems.

END OF SECTION

MANUFACTURER'S CERTIFICATE OF PROPER INSTALLATION

OWNER _____

EQPT SERIAL NO. _____

EQPT TAG NO. _____

EQPT/SYSTEM _____

PROJECT NO. _____

SPEC. SECTION _____

I hereby certify that the above - referenced equipment/system has been:

(Check Applicable)

- ___ Installed in accordance with Manufacturer's recommendations.
- ___ Inspected, checked, and adjusted.
- ___ Serviced with proper initial lubricants.
- ___ Electrical and mechanical connections meet quality and safety standards.
- ___ All applicable safety equipment has been properly installed.
- ___ System has been performance tested, and meets or exceeds specified performance requirements. (When complete system of one manufacturer)

Comments: _____

I, the undersigned Manufacturer's Representative, hereby certify that I am (i) a duly authorized representative of the Manufacturer, (ii) empowered by the manufacturer to inspect, approve, and operate his equipment and (iii) authorized to make recommendations required to assure that the equipment furnished by the manufacturer is complete and operational, except as may be otherwise indicated herein. I further certify that all information contained herein is true and accurate.

Date: _____, 20 ____

Manufacturer: _____

By Manufacturer's Authorized Representative: _____

(Authorized Signature)

SECTION 01700 PROJECT CLOSEOUT

PART 1 - GENERAL

1.01 FINAL CLEANUP

- A. The Contractor shall promptly remove from the vicinity of the completed Work, all rubbish, unused materials, concrete forms, construction equipment, and temporary structures and facilities used during construction. Final acceptance of the Work by the Owner will be withheld until the Contractor has satisfactorily complied with the foregoing requirements for final cleanup of the project site.

1.02 CLOSEOUT TIMETABLE

- A. The Contractor shall establish dates for equipment testing, acceptance periods, and onsite instructional periods (as required under the Contract). Such dates shall be established not less than two weeks prior to beginning any of the foregoing items, to allow the Owner, the Engineer, and their authorized representatives sufficient time to schedule attendance at such activities.

1.03 FINAL ACCEPTANCE PREREQUISITES

- A. Prior to requesting the Owner's final inspection for certification of final acceptance and final payment, the following shall be completed, and any known exceptions shall be listed in the request for final inspection:
 - 1. Submit final payment request, accounting for all changes to the Contract price.
 - 2. Submit final warranty of title, and consent of surety for final payment.
 - 3. Conform with Article 1.04 of this Section.
 - 4. Perform the final repair and cleaning in conformance with Articles 1.06 and 1.07 of this Section.
 - 5. Change over all utilities to the Owner's name.

1.04 FINAL SUBMITTALS

- A. Before the final acceptance of the project, the Contractor shall submit to the Engineer (or to the Owner if indicated) certain records, certifications, etc., which are specified elsewhere in the Contract Documents. Missing, incomplete, or unacceptable items, as determined by the Engineer or the Owner, shall constitute

grounds for withholding final payment to the Contractor. A partial list of such items appears below, but it shall be the Contractor's responsibility to submit any other items which are required in the Contract Documents:

1. Written Test results of project components, where required.
2. Performance affidavits for equipment, where required.
3. During the entire construction operation, the Contractor shall maintain records of all deviations from the Drawings and Specifications and shall prepare therefrom record drawings showing correctly and accurately all changes and deviations from the Work made during construction to reflect the Work as it was actually constructed. General requirements for record documents are indicated in individual sections of these Specifications. The specific submittal requirements are indicated in Section 01720. The Contractor shall not use record documents for construction purposes and shall protect from deterioration and loss in a secure fire-resistive location. The Contractor shall provide access to record documents for the Engineer's or Owner's inspection during normal working hours.
4. Written guarantees, where required.
5. Certificates of inspection and acceptance by local governing agencies having jurisdiction.
6. Releases from all parties who are entitled to claims against the subject project, property, or improvement pursuant to the provisions of law.
7. Corrected, as-built O&M manuals.
8. Bonds for roofing, maintenance, etc., as required.
9. Any occupancy permits, operating certifications, final inspection or test certificates, and similar releases enabling the Owner's full and unrestricted use of the Work and access to the services and utilities.
10. Final meter readings for utilities, measured record of stored fuel, and similar data as of the time of substantial completion or when the Owner takes possession of and responsibility for corresponding elements of the Work.

1.05 PUNCH LISTS

- A. Final cleaning and repairing shall be scheduled upon completion of the project.
- B. The Engineer will make his final inspection whenever the Contractor has notified the Engineer that the work is ready for the inspection. Any work not found acceptable and requiring cleaning, repair, and/or replacement will be noted on the "Punch" list. Work that has been inspected and accepted by the Engineer shall be maintained by the Contractor, until final acceptance of the entire project.

- C. Whenever the Contractor has completed the items on the punch list, he shall again notify the Engineer that it is ready for final inspection. This procedure will continue until the entire project is accepted by the Engineer. The "Final Payment" will not be processed until the entire project has been accepted by the Engineer and all of the requirements in Article 1.03 entitled "Final Submittals" have been satisfied.

1.06 TOUCH-UP AND REPAIR

- A. The Contractor shall touch-up and repair damage to all field painted and factory finished equipment. Touch-up of equipment panels, etc., shall match as nearly as possible the original finish. If in the opinion of the Engineer the touch-up work is not satisfactory, the Contractor shall repaint the item.

1.07 CLEANING

- A. Following certification of substantial completion and immediately before the final acceptance inspection of the project, the Contractor shall accomplish the cleaning and final adjustments of the various building and project site components as follows:
 - 1. Remove temporary protection devices and facilities which were installed during the course of the work to protect previously completed work for the remainder of the construction period.
 - 2. Clean all glass and adjust all windows and doors for proper operation.
 - 3. Clean and lubricate all finish hardware after adjustment for proper operation.
 - 4. Touch up marks or defects in painted surfaces, and touch up any similar defects in factory finished surfaces.
 - 5. Wax all resilient flooring materials.
 - 6. Remove bitumen from gravel stops, fascias, and other exposed surfaces.
 - 7. Remove all stains, marks, fingerprints, soil, spots, and blemishes from all finish surfaces, tile, stone, brick, and similar surfaces.
 - 8. 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. Contractor shall 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.

- C. 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.

1.08 MAINTENANCE AND GUARANTEE

- A. The Contractor shall comply with all maintenance and guarantee requirements of the Contract Documents.
- B. Replacement of earth fill or backfill, where it has settled below the required finish elevations, shall be considered as a part of such required repair work. and any repair or resurfacing constructed by the Contractor which becomes necessary by reason of such settlement shall likewise be considered as a part of such required repair work unless the Contractor shall have obtained a statement in writing from the affected private owner or public agency releasing the Owner from further responsibility in connection with such repair or resurfacing.
- C. The Contractor shall make all repairs and replacements promptly upon receipt of written order from the Owner. If the Contractor fails to make such repairs or replacements promptly, the Owner reserves the right to do the Work and the Contractor and his surety shall be liable to the Owner for the cost thereof.

1.09 GREASE AND OIL

- A. All grease and oil required for testing of equipment shall be furnished by the Contractor. The Contractor shall also furnish a one-year supply of lubricants including grease and oil of the type recommended by the manufacturer for each item of equipment supplied.

1.10 TOOLS

- A. Any special tools (including grease guns or other lubricating devices) which may be necessary for the adjustment, operation, and maintenance of any equipment shall be furnished with the respective equipment. The Contractor shall furnish a complete list of tools and instructions for their use, recommended by the manufacturer or supplier with the Shop Drawing Submittal.

1.11 SPARE PARTS

- A. Spare parts for equipment shall be furnished where indicated in the equipment specifications. Spare parts shall be identical and interchangeable with original parts. Parts shall be supplied and prepared for storage in clearly identified containers, except large or bulky items which may be wrapped in polyethylene.

- B. The parts shall be stored separately in a locked area, maintained by the Contractor, and shall be delivered to the Owner at a location designated by the Owner. The Contractor shall furnish an inventory listing all spare parts for each piece of equipment in the form included at the end of this section.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

SPARE PARTS INVENTORY SUMMARY SHEET

Page ____ of ____

EQUIPMENT NO. _____ DATE _____

LOCATION _____ REV. _____

NAME _____

PARTS SUPPLIER _____

ADDRESS _____

PHONE () _____

SPARE PARTS INVENTORY:

<u>Stock No.</u>	<u>Description</u>
------------------	--------------------

[illegible]

NOTE: Use additional sheets as required.

END OF SECTION

SECTION 01720 PROJECT RECORD DRAWINGS

PART 1 - GENERAL

1.01 THE REQUIREMENT

- A. The Contractor shall keep and maintain, at the job site, one record copy of all drawings, specifications, addenda, change orders, and other modifications to the Contract, approved shop drawings, and field test records.
- B. The Contractor shall hand mark the record drawings to indicate all project conditions, locations, configurations, and any other changes or deviations which may vary from the details represented on the original Contract 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 Contract 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 shall not be proceeded by the Engineer, until the drawings are received. The Contractor shall submit one set of record drawings.
- E. Final payment will not be acted upon until the Contractor has prepared and delivered record as-built drawings to the Engineer. Said up-to-date record drawings shall be in the form of a set of prints with carefully plotted information hand marked in red.
- F. Upon substantial completion of the Work and prior to final acceptance, the Contractor shall finalize and deliver a complete set of record drawings to the Engineer, conforming to the construction records of the Contractor. This set of drawings shall consist of hand marked 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.

1.02 MARKING DEVICES

- A. The Contractor shall provide indelible ink pens for recording information in a color code.

1.03 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. Provide the opportunity for the Engineer's surveyor to obtain the following information. \
- D. Piping and Tubing: Record drawings shall show the following field information:
 - 1. Show material used to construct lines.
 - 2. Show location of new tees, crosses, bends, terminal ends, valves, air release valves, and sampling points, etc., by distances from known above ground reference points (manholes, catch basins, and structures).
 - 3. Show location of all sleeves and casing pipes.
 - 4. Show all variations in required cover over pipe.
 - 5. Show elevation, horizontal control and material of all water mains, sewer lines, electric conduit, chemical feed lines, etc., crossed or otherwise exposed during construction.
- E. Structures: Record drawings show the following information:
 - 1. All slab elevations (top, bottom, intermediate).
 - 2. Top elevations of all beams and/or platforms.
 - 3. All horizontal locations including at least two corners for structures.
 - 4. For buildings shown ridge elevation and eave elevation.
- F. Equipment: Record drawings shall show the following information:
 - 1. Centerline elevations of all new pipes and equipment.
 - 2. Elevation of suction bells or pump intakes.
 - 3. Equipment top elevations.

4. Distance between pumps (centerline to centerline).
 5. Horizontal control for at least one corner, or center.
 6. All equipment base elevations.
 7. All motor and pump nameplate data. (This can be provided in summary form on a separate sheet).
 8. Mechanical equipment type, model, manufacturer, serial numbers and locations.
- G. Exterior Electrical/Instrumentation Conduits: Record drawings shall show the following information:
1. All horizontal and vertical control of all buried conduit.
 2. Conduit material and size for all conduits (shall be shown on the conduit/cable schedule).
 3. Number and sizes of wires in each conduit (shall be shown on the conduit/cable schedule).
 4. Grounding system.
 5. All primary element and transmitter nameplate data. (This can be provided in summary form on a separate sheet).
- H. Field changes of dimension and detail.
- I. Changes made by Field Order, Change Order or Construction Change Directive.
- J. Details not shown on the original Contract Drawings.
- K. Legibly mark each Section of the 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.

1.04 SUBMITTAL

- A. Prior to Substantial Completion, submit Record Documents to the Engineer for review.
- 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. Initially two (2) certified paper prints are to be submitted for review. Following review by the Engineer and Owner, any comments are to be addressed. All proposed data must be crossed out and record data identifiers must be added to the legend and shown on each plan/profile sheet.
- D. Completed operation and maintenance manuals must be submitted with final record drawings.
- E. Flow test results for all new fire hydrants are required.

1.05 DOCUMENT SECURITY AND LABELING

- A. Contractor shall abide by the following regulations:
1. FS Chapter 281.301- Security systems; records and meetings exempt from public access or disclosure.
 2. FS Chapter 119.07 - Inspection, examination, and duplication of records; exemptions.
- B. Documents generated and/or used for this project that fall within the listed regulations above Must Be Labeled With The Following Verbiage:

City of Delray Beach Utilities Document

CONFIDENTIAL

Sensitive Security Information
NOT FOR PUBLIC DISCLOSURE

In Accordance with:
FS, Chapter 281.301
FS, Chapter 119.07

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01721 DISINFECTION AND BACTERIOLOGICAL TESTING

PART 1 – GENERAL

1.1 WORK INCLUDED

- A. This Section covers the work necessary to disinfect the potable water facilities and obtaining subsequent clearances for operation issued by the Owner and all state/local health agencies having jurisdiction over the facility as may be applicable.
- B. See General Conditions and Division 1, GENERAL REQUIREMENTS, which contain information and requirements that apply to the work specified herein and are mandatory for this project.
- C. Any methods specified herein are given as examples for discussion purposes. The constraining requirements are ultimate passage of bacterial tests, protection of materials, health and the environment and conservation of water. The Contractor shall submit, in accordance with the specified shop drawings procedure, a procedure plan for disinfection and testing for achieving the requirements specified herein.

PART 2 – PRODUCTS

2.1 GENERAL

- A. The Contractor shall furnish all labor, chemicals and equipment necessary for completing the disinfection process. The use of chlorine solutions is required as the active disinfecting agent. The Contractor shall be solely responsible for the safe and proper handling of the chlorine compounds or other hazardous chemicals utilized. Only chlorine from a sodium solution will be allowed. The use of calcium hypochlorite will not be allowed. Direct injection and/or use of chlorine gas is prohibited. Sodium hypochlorite solutions must be premixed and fed to tanks or piping and not placed dry.

PART 3 – EXECUTION

3.1 GENERAL

- A. All components of this project, which will contain, transport or otherwise contact potable water shall be disinfected and bacteriologically cleared. The CONTRACTOR is responsible for performing all functions for disinfection. Initial tests for bacteriological clearance will be performed by the ENGINEER and OWNER. Failures of the tests shall be considered the responsibility of the

CONTRACTOR and reapplication of disinfectants and retesting shall be at the CONTRACTOR's sole expense.

- B. Prior to application of disinfectants, tanks and pipelines shall be thoroughly cleansed of loose and suspended material. Pipelines shall be flushed until clear of suspended solids and color. The CONTRACTOR is expected to exercise caution in construction of the facilities to minimize retention of debris and subsequent excessive flushing requirements. The CONTRACTOR shall ensure that the water he utilizes is suitable for flushing and disinfecting the facilities.

3.2 DISINFECTION METHODS

- A. Pipelines (including valves and fittings): See Section 15995, entitled "Pipeline Testing and Disinfection".
- B. Tanks and Water Holding Structures (i.e. Clarifier):
 - 1. Tanks shall be disinfected by of the following method and shall follows the criteria found in AWWA C652:
 - a. A solution containing 200 ppm of available chlorine shall be sprayed or brushed onto the interior surfaces of the tank and allowed to remain 3 hours or until dry before being rinsed off. A solution containing 200 ppm of available chlorine can be prepared by diluting a 1 percent sodium hypochlorite solution to 50 parts of water.
- C. Disposal of chlorinated water shall be in accordance with all applicable regulations. Contractor shall submit a Disposal Plan to Engineer for review and approval prior to initiating the disinfection process.
- D. Testing:
 - 1. After tanks, equipment or pipelines have been cleaned, disinfected and refilled with fresh water from the system, the Contractor shall pay for all costs associate with sample collection and testing by an approved laboratory for conformance to bacterial limitation for public drinking water supplies. As a minimum, two samples on each of 2 consecutive days from each separable part of pipeline will be obtained and analyzed by standard procedures and as outlined by the state and local regulatory agencies. Sampling points shall be as directed by the Engineer. If the minimum samples and required above are not bacterially clear, the disinfectant testing operation shall be repeated at the CONTRACTOR's expense.
 - 2. All pipes and water holding structures shall be disinfected and tested.

- E. Disinfection shall not be conducted until all equipment has been performance tested. If any water holding structure, tank or pipeline is disassembled or entered, cleaning, disinfections and bacteriological testing must be repeated. Following completion of cleaning and disinfection of tanks, equipment and pipelines, refilling these items shall be accomplished by processing potable water from the distribution system.

END OF SECTION

DIVISION 2

SITE WORK

SECTION 02050 DEMOLITION

PART 1 - GENERAL

1.01 THE REQUIREMENT

- A. The Contractor shall remove and dispose of or salvage any existing structure, walls, masonry, piping, conduits, electrical equipment, mechanical equipment, or appurtenances or portions thereof, as shown on the Drawings or required to complete the project.
- B. All materials designated for disposal shall, when released by the Engineer, become the Contractor's property and shall be removed from the site to the Contractor's own place of disposal.

1.02 SUBMITTALS

- A. The Contractor shall submit for review, in accordance with Section entitled "Submittals" the proposed methods, equipment and operation sequence. Include coordination for shut-off, temporary services, continuation of service and other applicable items to ensure no interruption of plant operations except as hereinbefore specified.

1.03 JOB CONDITIONS

- A. The Contractor shall execute the demolition and removal work to prevent damage or injury to structures, occupants thereof and adjacent features which might result from falling debris or other causes, and so as not to interfere with the use, and free and safe passage to and from adjacent structures.
- B. Closing or obstructing of roadways adjacent to the work by the placement or storage of materials will not be permitted. All operations shall be conducted with a minimum interference to traffic.
- C. The Contractor shall repair damage done to facilities to remain, or to any property belonging to the Owner.

1.04 DUST CONTROL

- A. The Contractor shall use temporary enclosures and other suitable methods to limit the amount of dust and dirt rising and scattering in the air to the lowest practical level. Existing electrical and mechanical equipment to remain shall be protected from damage, dust, and debris.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 GENERAL

- A. Prior to commencing work, the Contractor shall check all underground and exposed existing utility and process piping and all equipment in any way associated or in the proximity to the items to be removed and shall verify that the piping is inactive (abandoned) and that electric power to equipment, lighting, controls, etc., has been permanently disconnected. Active services shall be brought to the attention of the Owner for proper action.
- B. The Contractor shall remove all equipment and accessories in a workmanlike manner and shall take all necessary precautions to avoid damaging existing equipment, piping, and structure which are to be retained. Damages shall be repaired or replaced at the expense of the Contractor.

3.02 UNAUTHORIZED REMOVAL

- A. Any equipment, piping and appurtenances removed without proper authorization, shall be replaced to the satisfaction of the Owner at no cost to the Owner.

3.03 DEMOLITION

- A. The Owner may desire to keep certain items of existing equipment which are to be dismantled and removed during the course of construction. Prior to removal of any existing equipment or piping from the site of work, the Contractor shall ascertain from the Engineer whether or not the particular item or items are to be salvaged. Items to be salvaged shall be stockpiled on the site, or delivered to a storage area at a location within a three mile radius of site as directed by the Engineer. All other items of equipment shall be disposed of off-site by the Contractor at his expense, in accordance with applicable laws, ordinances and regulations.

3.04 STRUCTURAL REMOVALS

- A. The Contractor shall remove structures to the lines and grades shown, unless otherwise indicated by the Engineer.
- B. All wood, concrete, brick, tile, concrete block, roofing materials, reinforcement, structural or miscellaneous metals, plaster, wire mesh and other items contained in or upon the structure shall be removed and taken from the project site. These items shall not be used in backfill.

3.05 MECHANICAL REMOVALS

- A. Mechanical removals shall consist of dismantling and removing of existing piping, equipment and other appurtenances as shown or required for the completion of the work. It shall include cutting, capping and plugging as required by the Engineer.

3.06 CLEANUP

- A. The Contractor shall remove from the project site all debris resulting from the demolition and removal operations as it accumulates. Upon completion of the demolition work, all materials, equipment, waste and debris of every sort shall be removed and the premises shall be left clean, neat and orderly.

END OF SECTION

DIVISION 5

METALS

SECTION 05060

WELDING

PART 1 - GENERAL

1.01 THE REQUIREMENTS

- A. The Contractor shall provide all labor, equipment, and materials for all shop and field welding as required by the Drawings and as specified herein.

1.02 SHOP DRAWINGS AND ERECTION PROCEDURES:

- A. Drawings shall include all shop and erection details, including welds. All welds, both shop and field, shall be indicated by standard welding symbols as noted by AWS A2.0. Drawings shall show the size, length and type of each weld.

1.03 STANDARD REFERENCES: The latest edition of the following standard specifications shall apply to the Work of this Section as indicated:

- A. American Welding Society, Structural Welding Code, (AWS)
- B. American Institute of Steel Construction Manual for Steel Construction, 9th Edition, (AISC)
- C. American Society for Testing and Materials:
- D. American Welding Society:
 - 1. D1.1 – Structural Welding Code – Steel
 - 2. D1.6 – Structural Welding Code – Stainless Steel
- E. All welding shall be in accordance with American Welding Society Standard Code D1.1 and D1.6.

1.04 WELDERS QUALIFICATIONS: All welders, including tack welders, shall be qualified in accordance with Section 5, Part C of AWS D1.1 and the corresponding sections of D1.6. The Contractor shall certify by name, to the Owner, the welders so qualified including the code and procedures under which the individual qualified.

- A. Welders and Welding Operators, shop and field, shall be qualified by an independent laboratory using test procedures covered by an independent laboratory using test procedures covered in AWS D1.1, and shall have been employed as a welder using the positions for which he is qualified during the previous 90 days. The Contractor shall provide the Engineer and the laboratory inspector with the names of welders to be employed in the shop and field on the work, certification of the position, date of the last qualification test and the name of the qualifying laboratory.
 - 1. All welders employed in the shop on the fabrication of the steel work shall be qualified for the most difficult welding position during shop fabrication.

2. All welders employed in the field on the erection of the steel work shall be qualified for the most difficult welding position during field erection.
3. The Contractor shall require any welder to retake the test, when, in the opinion of the Engineer, the work of the welder creates a reasonable doubt as to the proficiency of the welder. Recertification of the welder shall be made to the Engineer only after the welder has taken and passed the specified test. The Engineer may require radiographic or ultrasonic testing or may require coupons to be cut from any location in any joint for testing.
4. Should any two radiographic or ultrasonic tests or coupons cut from the work of any welder show strengths, under tests, less than that of the base metal, it will be considered evidence of negligence or incompetence and such welder shall be removed from the Work.
5. When coupons are removed from any part of a structure, the members cut shall be repaired, at no additional cost to the Owner, in a neat and workmanlike manner with joints of type to develop the full strength of the members and joints cut, with peening to relieve residual stress. All sections of welds found defective shall be chipped or cut out to base metal and rewelded before proceeding with the work.
6. Costs of all qualifications, tests and retests shall be borne by the Contractor.

1.05 INSPECTION AND TESTING:

- A. Shop inspections and tests shall include fit-up, preparation of surfaces and welding.
- B. Field inspections and tests shall include fit-up, preparation of surface and welding.

1.06 WARRANTY:

- A. The Manufacturer shall warrant all work specified in this Section against defective materials and workmanship with the Manufacturer's standard warranty, but for no less than one year from the date of Substantial Completion.

PART 2 - MATERIALS

2.01 WELD METAL: The chemical and mechanical properties of all deposited weld metal shall be compatible to the base metal and conform to AWS specifications for electrodes.

2.02 BASE METAL: The parent structural steel shall be a weldable grade with the chemical and mechanical properties to produce a sound and serviceable welded joint.

2.03 FABRICATION:

- A. Surfaces of joints for welded and bolted connections shall be clean, bright metal.
 1. Welded connections will be permitted only where indicated on the drawings. Welded construction shall conform to the AISC and AWS Specifications.

PART 3 - EXECUTION

- 3.01 WELDING METHODS: Unless otherwise approved by the Engineer, welding of steel shall be by an electric arc welding process and shall conform to AWS, Structural Welding Code, and the applicable sections of the AISC.
- 3.02 WELDING EQUIPMENT: Welding equipment shall be capable of providing the welding required by the drawings or specifications herein in accordance with the requirements of joint qualifications in AWS D1.1 and AWS D1.6.
- 3.03 WELDING ELECTRODES:
- A. Electrodes and flux used for submerged arc welding shall be of the same manufacture. The flux shall be free of contamination from dirt, mill scale and foreign material. Fused flux used in welding shall not be reused. Bare electrodes and flux used in combination shall conform to the requirements of AWS D1.1 and AWS D1.6.
 - B. Electrodes for manual shielded metal-arc welding shall conform to AWS D1.1 and AWS D1.6.
- 3.04 QUALIFIED WELDS: Only qualified welded joints shall be permitted in accordance with AWS, Structural Welding Code, and applicable sections of AISC.

END OF SECTION

SECTION 05120 STRUCTURAL STEEL

PART 1 GENERAL

1.1 SECTION INCLUDES:

- A. Structural steel framing members, support members, sag rods and struts.
- B. Base plates, shear stud connectors, and expansion joint plates
- C. Grouting under base plates

1.2 REFERENCES

- A. AISC - Code of Standard Practice - Manual of Steel Construction - Allowable Stress Design (ASD) or Load and Resistance Factor Design (LRFD)
- B. AISC - Specifications for the Design, Fabrication and Erection of Structural Steel for Buildings, 9th Edition.
- C. ASCE 7-98 - American Society of Civil Engineers – Wind Loads
- D. ASTM 992- Structural Steel, ASTM A36, Channels, plates
- E. ASTM A53 - Hot-Dipped, Zinc-coated Welded and Seamless Steel Pipe
- F. ASTM A108 - Steel Bars, Carbon, Cold-Finished, Standard Quality
- G. ASTM A123 - Zinc (Hot Dipped Galvanized) Coatings on Iron and Steel Products.
- H. ASTM A153 - Zinc Coating (Hot Dip) on Iron and Steel Hardware
- I. ASTM A242/A242M - High-Strength Low-Alloy Structural Steel.
- J. ASTM A307 - Carbon Steel Externally Threaded Standard Fasteners.
- K. ASTM A325 - High Strength Bolts for Structural Steel Joints.
- L. ASTM A449 - Quenched and Tempered Steel Bolts and Studs.
- M. ASTM A490 - Quenched and Tempered Alloy Steel Bolts for Structural Steel Joints.
- N. ASTM A500 - Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Round and Shapes.
- O. ASTM A501 - Hot-Formed Welded and Seamless Carbon Steel Structural Tubing.
- P. ASTM A514 - High-Yield Strength, Quenched and Tempered Alloy Steel Plate, Suitable for Welding
- Q. ASTM A529 - Structural Steel with 42 KSI Minimum Yield Point ½" Maximum Thickness
- R. ASTM A563 - Carbon and Alloy Steel Nuts
- S. ASTM A568 - General Requirements for Steel, Carbon and High-Strength Low-Alloy Hot-Rolled Sheet and Cold-Rolled Sheet
- T. AWS A2.0 - Symbols for Welding, Brazing and Nondestructive Examination.
- U. AWS D1.1 - Structural Welding Code
- V. FM - Roof Assembly Classifications
- W. SSPC (Steel Structures Painting Council) - Paint Manual.
- X. UL - Fire Resistance Directory

Y. Florida Building Code.

1.3 SUBMITTALS FOR REVIEW

- A. Section 01300 - Submittals: Procedures for submittals
- B. Shop Drawings:
 - 1. Indicate profiles, sizes, spacing and locations of structural members, openings, attachments and fasteners.
 - 2. Connections
 - 3. Cambers and loads
 - 4. Indicate welded connections with AWS A2.0 welding symbols. Indicate net weld lengths.
 - 5. Shop Drawings shall be dated, signed and sealed by a Specialty Engineer registered in The State of Florida.

1.4 SUBMITTALS FOR INFORMATION

- A. Section 01300 - Submittals: Procedures for submittals
- B. Manufacturer's Mill Certificate: Certify that Products meet or exceed specified requirements.
- C. Mill Test Reports: Submit indicating structural strength, destructive and non-destructive test analysis.
- D. Welders' Certificates: Certify welders employed on the Work, verifying AWS qualifications within the previous 12 months.

1.5 QUALITY ASSURANCE

- A. Fabricate structural steel members in accordance with AISC Code of Standard Practice.
- B. Maintain one copy of each document on site.
- C. Fabricator: Company specializing in performing the work of this section with minimum five years documented experience.
- D. Erector: Company specializing in performing the work of this section with minimum five years documented experience.
- E. Design connections not detailed on the drawings shall be done under direct supervision of a Professional Structural Engineer experienced in design of this work and licensed in the State of Florida.

1.6 REGULATORY REQUIREMENTS

- A. Structural steel design and construction shall comply with Florida Building Code, ASCE 7-98 – Wind loads, and American Institute of Steel Construction, AISC "Specifications for the Design, Fabrication, and Erection of Structural Steel for Buildings, 9th Edition."
- B. Conform to UL, FM and Warnock Hersey Assembly.

1.7 DELIVERY, STORAGE AND PROTECTION

- A. Section 01600 - Materials and Equipment: Transport, handle, store and protect product.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Structural Steel Members: ASTM A36 and A992, Grade 50.
- B. Structural Tubing: ASTM A500, Grade B. ASTM A501.
- C. Pipe: ASTM A53, Type E or S, Grade B.
- D. Shear Stud Connectors: ASTM A108, Grade 1015, headed, uncoated.
- E. Bolts, Nuts, and Washers: ASTM A307, A325 and A490 galvanized to ASTM A153 for galvanized members.
- F. Anchor Bolts: ASTM A307 and A36.
- G. Welding Materials: AWS D1.1; type required for materials being welded.
- H. Sliding Bearing Plates: Teflon coated.
- I. Grout: Non-shrink type, pre-mixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing additives, capable of developing a minimum compressive strength of 7,000 psi at 28 days.
- J. Shop and Touch-Up Primer: SSPC Paint 15, Type 1. Provide a uniform dry film thickness of 1.5 mils.
- K. Touch-up Primer for Galvanized Surfaces: SSPC 20 Type I Inorganic.

2.2 FABRICATION

- A. Continuously seal joined members by intermittent welds and plastic filler. Grind exposed welds smooth.
- B. Fabricate connections for bolt, nut and washer connectors.
- C. Develop required camber of members.

2.3 FINISH

- A. Prepare structural component surfaces in accordance with SSPC SP-2.
- B. Shop prime structural steel members. Do not prime surfaces that will be fireproofed, field welded, in contact with concrete and high strength bolted.
- C. Galvanize structural steel members to ASTM A123. Provide minimum 1.25 oz/sq ft galvanized coating.

2.4 SOURCE QUALITY CONTROL AND TESTS

- A. Provide shop testing and analysis of structural steel sections.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01400 entitled “Quality Control” - Coordination and Meetings:
Verification of existing conditions prior to beginning work

3.2 ERECTION

- A. Allow for erection loads, and for sufficient temporary bracing to maintain structure safe, plumb, and in true alignment until completion of erection and installation of permanent bracing.
- B. Field-weld components and shear studs indicated on shop drawings.
- C. Field-connect members with threaded fasteners; torque to required resistance.
- D. Do not field cut or alter structural members without approval of A/E.
- E. After erection, prime welds, abrasions, and surfaces not shop primed or galvanized, except surfaces to be in contact with concrete.
- F. Grout under base plates. Trowel grouted surface smooth, splay neatly to 45°.

3.3 ERECTION TOLERANCES

- A. Maximum Variation From Plumb: 1/4" per story, non-cumulative.
- B. Maximum Offset From True Alignment: 1/4".

3.4 FIELD QUALITY CONTROL

- A. Section 01400 entitled “Quality Control”: Field inspection, testing of bolt torque, welds and torque of fasteners.

END OF SECTION

SECTION 05500 METAL FABRICATIONS

PART 1 - GENERAL

1.01 THE REQUIREMENT

- A. The Contractor shall furnish and install miscellaneous metal items as shown on the Drawings and specified herein for a complete installation.

1.02 SUBMITTALS

- A. The Contractor shall submit shop drawings and other information to the Engineer for review in accordance with Section 01300 entitled "Submittals". No fabrication shall be started until shop drawings have been reviewed by the Engineer. The drawings shall be made in conformity with standard practice and indicate: fabrication, assembly and erection details, sizes of members, profiles, fastenings, supports and anchors, finishes, patterns, clearances, and connections to other work.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. All materials shall be of the best quality and entirely suited for the particular service. Metals shall be free from defects and have structural properties to safely render required service.
- B. Fastenings shall, insofar as practicable, be noncorrosive, non-staining and concealed. Exposed welds shall be ground smooth to form a neat uniform fillet without weakening base metal. Unexposed welds shall have all slag removed before applying shop coating. Moulded, bent or shaped members shall be formed and clean, sharp rises, without dents, scratches, cracks or other defects. All anchors, bolts, shims and accessory items shall be provided as required for building into or fastening to adjacent work. All ferrous metals shall be galvanized, except as otherwise specified.
- C. Unless otherwise specified the miscellaneous metal work shall be equal to or exceed the requirements of the following standards:

Carbon and Low Alloy Steel
Plates and Structural Fabrication

ASTM Designation
A 36, A 529 or A 283, Grade
C

Sheet Steel	A 570, Grade C
Bars and Rods	A 36 or A 306, Grade 60
Pipe - general use process pipe	A 53 or A 120 Schedule 40 A 524 Grade I
<u>Fasteners*</u>	
Standard Strength Bolts	A 307, Grade A
High Strength Bolts	A 325
Eyebolts	A 489
<u>Steel Coatings</u>	
Zinc - Electrodeposited	A 164
Hot Dipped	A 123 and A 386
Cadmium	A 165
<u>Stainless Steel</u>	
Plate and Sheets	A 167, Type 316
Bars and Shapes	A 276, Type 316
Fasteners*	A 167 and A 276, Type 316
<u>Cast Iron</u>	
Gray	A 48. Class 30B
Malleable	A 47
Ductile	A 536, Grade 60-40-18
<u>Wrought Iron</u>	
Plates	A 42
Sheets	A 162
Shapes and Bars	A 207
Pipe	A 72
<u>Bronze</u>	
Rods, Bars, and Shapes	B 138, Alloy B Soft
<u>Fasteners</u>	
Yellow Brass Cap Screws and Other Small Fasteners	B 16, B 36, or B 134
Silicon Bronze Bolts	B 97, B 98, B 99 and B 124
<u>Aluminum</u>	
Structural Shapes	B 308, Alloy 6061- T6
Castings	B 26, B 85 and B 108
Extruded Bars, Rods and Tubes	B 221 Bars - Alloy 6061
	Other - Alloy 6063
Plates and Sheet	B 209 Plates - Alloy 6061
	Sheets - Alloy 3003

*All fasteners shall be manufactured in the U.S.A. Certifications of compliance shall be submitted for all fasteners supplied on this project.

- D. Materials with more than one specification or grade listed shall conform to specification or grade providing the highest strength and appropriate mechanical properties for the fabrication technique used.

2.02 PROTECTIVE COATINGS

- A. All ferrous metal, except stainless steel and galvanized surfaces, shall be properly cleaned and given one shop coat of primer compatible with the coating system specified in Section 9900 entitled "Painting", Metal work, including anchors, to be encased in concrete shall be shop primed unless specified to be stainless steel or galvanized.

Castings that are to be left unpainted shall be cleaned and coated with a coal-tar-pitch varnish.

- B. Hot-dip galvanizing or zinc coatings applied on products fabricated from rolled, pressed or forged steel shapes, plates, bars and strips shall comply with ASTM A 123. Hot-dip galvanizing or zinc coatings on assembled steel products shall comply with ASTM A 386. The weight of coatings shall be designated in Table 1 for the class and thickness of material to be coated.
- C. Galvanized surfaces for which a shop coat of paint is specified shall be chemically treated to provide a bond for the paint. Except for bolts and nuts, all galvanizing shall be done after fabrication.
- D. Aluminum to be placed adjacent to masonry or dissimilar metals shall be protected with an isolating coating of bitumastic and/or felt.

2.03 STEEL

- A. Unless otherwise noted, all steel shall conform to the following:
 - 1. Carbon steel bolts and fasteners shall conform to ASTM A 307 and shall be galvanized.
 - 2. Other steel shall be mild steel.

2.04 STRUCTURAL AND MISCELLANEOUS ALUMINUM

- A. All structural and miscellaneous aluminum shapes, bars and plates shall be Alloy 6061- T6. Aluminum to be placed adjacent to concrete, masonry or dissimilar metals shall be protected with one coat of bitumastic paint. Mill finish shall be provided.

2.05 FASTENERS

- A. General: Bolts, screws, nuts, washers, anchors and other fasteners shall be first quality and shall conform to the material specifications named herein. All necessary bolts, anchor bolts, nuts, washers, plates and bolt sleeves shall be furnished by the Contractor in accordance herewith. Anchor bolts shall have suitable washers and, where so required, their nuts shall be hexagonal. Stainless steel and silicon bronze bolts shall have a raised letter or symbol on the bolts indicating the manufacturer.

Concrete and masonry inserts shall be drill-in type as manufactured by Phillips Drill Company, Michigan City, Indiana; Hilti, Tulsa, OK; or equal. Powder or gun-driven, fiber, and plastic inserts shall not be used unless specifically noted.

- B. Material: All bolts, anchor bolts, nuts, washers, plates, and bolt sleeves shall be galvanized.

Bolts, anchor bolts, nuts and washers specified to be galvanized shall be zinc coated, after being threaded, by the hot dip process in conformity with ASTM A 123, or A 153, as is appropriate.

- C. Concrete Inserts: Concrete inserts shall be designed to support safely, in the concrete that is used, the maximum load that can be imposed by the bolts used in the inserts.

- D. Dissimilar Metal: All dissimilar metal shall be connected with appropriate fasteners and shall be insulated with a dielectric or approved equal. Unless otherwise specified, aluminum shall be fastened with ASTM A276 Type 316 stainless steel bolts and insulated with micarta, nylon, rubber, or equal.

- E. Anchor Bolts: Anchor bolts shall be set accurately and be carefully held in suitable templates of approved design. Where indicated on the Drawings, specified, or required, anchor bolts shall be provided with square plates at least 4-inches by 1/8 inch or shall have square heads and washers and be set in the concrete forms with suitable pipe sleeves, or both. Drill-in type anchors shall be as shown on the Drawings.

PART 3 - EXECUTION

3.01 FABRICATION

- A. General: All workmanship shall be first class and conform to recognized and accepted best practice. All structural materials shall be thoroughly straightened in the shop by methods that will not injure them before

templates are placed on same for laying out and before any work is done upon them.

- B. Finished members shall be absolutely straight and free from open joints and distortions of any kind. All shearings shall be neatly finished. Flame cutting may be used in the preparation of the various members provided this operation is performed by a machine. All necessary fillets, connections, brackets, posts, and other details not shown on the drawings, but necessary for the work, shall be furnished by the Contractor. Fabrication shall be by welding except where riveted construction is specifically allowed by the Contract Documents.
- C. Steel: Steel fabrication shall meet the applicable requirements of the AISC Specification for Design, Fabrication, and Erection of Structural Steel for Buildings.
- D. Aluminum: Aluminum fabrication shall meet the applicable requirements of the Aluminum Construction Manual, Specifications for Aluminum Structures.
- E. Welding: All welding shall be in accordance with the latest revised standards and recommendations of the American Welding Society. The welding of all joints shall produce complete fusion with the parent metal and shall be free from deleterious metals and cracks. Machine welding shall be used insofar as practicable. Tack welding will not be permitted on exposed surfaces. Finished welded joints shall be reasonably smooth and free from grooves, depressions or other irregularities. Any other irregularities shall be corrected by welding and/or grinding. All scale or flux shall be removed after each pass. Bronze shall be welded by either the inert gas shielded arc method or by brazing with the proper flux and filler metal. All flush welds of butt joints shall be ground smooth where exposed to view.
- F. Castings:
 - 1. Castings shall be tough, sound and free from blow holes, shrinkage cracks or other defects. Castings shall be smooth and clean. Units that have been plugged or filled will be rejected.
 - 2. Iron castings shall be close-grained gray iron or ductile iron.

3.02 INSTALLATION

- A. All miscellaneous items shall be installed in conformance with specifications and details as shown on the drawings, or processed shop drawings. Installation and erection shall conform to the best practice with

each item set plumb, level, true to line and securely anchored in its proper place.

END OF SECTION

DIVISION 6

WOOD AND PLASTICS

SECTION 06600 FABRICATED FIBERGLASS

PART 1 - GENERAL

1.01 THE REQUIREMENT

- A. Furnish all labor, material, equipment and incidentals to fabricate and install the items specified herein and shown on the Drawings. This shall apply to all miscellaneous fiberglass fabrications.

1.02 QUALITY ASSURANCE

- A. Products to comply with the current edition of the applicable National Bureau of Standards, Voluntary Product Standard PS 15.
- B. Safety factors: Liberal safety factors shall be used in the design of all products. Working stresses shall not exceed the lower value of one-third of the yield strength or one-fifth of the ultimate strength of the material. The fiberglass products shall be designed for stresses to which these products will be subjected during fabrication, erection and continuous operation as shown on the drawings.

1.03 SUBMITTALS

- A. Shop drawings: Submitted in accordance with Section 01300 entitled "Submittals" shall include detailed design calculations for all fabricated products.

PART 2 - PRODUCTS

2.01 GENERAL

- A. Products shall be furnished by manufacturers having a minimum of 5 years' experience in the manufacture of similar items with a record of successful installations. Support members shall be as shown on the Drawings and as required in this Section.

2.02 MATERIALS

- A. Fiberglass structural shapes:
 - 1. Structural FRP members supplied under this Section shall be manufactured using the pultrusion process. The composite shall consist of

a glass fiber reinforced polyester resin matrix, approximately 50 percent resin to glass ratio.

2. Glass reinforcement shall be of three varieties:
 - a. A surfacing mat shall be used on all exterior surfaces for maximum chemical resistance.
 - b. Continuous glass strand rovings shall be used internally for longitudinal strength.
 - c. Continuous strand mats shall be used internally for transverse strength.
3. Resin shall be a halogenated polyester, possessing inherent fire and chemical resistance. Antimony trioxide shall be added (3 to 5 percent) to impart Class I flame spread and flammability ratings as per ASTM E-84 and D-635.
4. The following minimum mechanical properties shall apply.
 - a. Ultimate tensile strength 30,000 psi (longitudinal coupon)
Ultimate tensile strength 7,000 psi (transverse coupon)
Ultimate tensile strength 20,000 psi (full section in bending)
 - b. Ultimate compressive strength 30,000 psi (longitudinal coupon)
Ultimate compressive strength 15,000 psi (transverse coupon)
Ultimate compressive strength (full section in bending) 20,000 psi
 - c. Ultimate shear strength 5,500 psi
 - d. Ultimate bearing strength 30,000 psi
 - e. Modulus of elasticity (full section in bending) 2.5×10^6
 - f. Barcol hardness 50
5. All fiberglass intended for external usage shall be gel coated for UV inhibition.

B. Miscellaneous FRP Supports: Minor FRP channels, unistrut, and supports (including clamps and hardware) for small diameter piping (less than 2-inches in diameter), or where otherwise required by drawings, shall be as manufactured by Aickenstrut.

C. FRP Grating: All grating shall be minimum 1-1/2 inch in depth, flush mounted

and able to withstand a 350 pound concentrate load and 100 psf uniform load on a 4.5 foot span with a safety factor of 10 and a deflection of less than 0.30 inches in accordance with the span requirement shown on the drawings. The FRP grating shall be molded from standard fiberglass channel resistant resin. Resin shall be suitable for continuous exposure to highly corrosive acid, alkaline and solvent environments. All cut edges or openings shall be sealed with sealing materials supplied by the manufacturer. The top sides of all grating shall be treated with FRP anti-skid material. The grating shall be supported on embedded or shelf angles, sized by the manufacturer, as shown on the drawings. Support angles shall be of the same material as the grating and satisfy the criteria of this specification. All FRP shelf angles shall be secured with hardware suitable for contact with 20% sodium hydroxide and 12.5% sodium hypochlorite and approved by the Engineer. The grating shall be manufactured by Fibergrate Corporation with VI-CORR premium vinyl ester resin.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. All work shall be erected level, and/or plumb, and shall meet required heights, layout and details precisely. All work shall be adequately fastened, anchored or braced using Type 316 stainless steel hardware.
- B. All work shall be executed in accordance with the best practices of the trade, by persons skilled in the craft.
- C. Installation shall be in strict accordance with manufacturer's instructions and recommendations in the locations shown on the drawings.
- D. All fiberglass installations shall be suitably braced and supported to be fully rigid, stable and secure. Acceptability in this regard shall be solely the Engineer's opinion.

3.02 INSPECTION AND TESTING

- A. Final acceptance test shall demonstrate that products have been properly installed and are in correct alignment.

END OF SECTION

DIVISION 9

FINISHES

SECTION 09900 PAINTING

PART 1 - GENERAL

1.01 THE REQUIREMENT

- A. The Contractor shall furnish all labor, tools, materials, supervision and equipment necessary to do all the work specified herein and as required for a complete installation.

1.02 GENERAL INFORMATION AND DESCRIPTION

- A. The term "paint," as used herein, includes emulsions, enamels, paints, stains, varnishes, sealers, cement filler, cement-latex filler and other coatings, whether used as prime, intermediate, or finish coats.
- B. All paint for concrete and metal surfaces shall be especially adapted for use at water treatment plants and be suitable for use with potable water applications. All paint shall be applied in conformance with the manufacturer's published specifications.
- C. Coatings used in contact with potable water supply shall be approved for use with potable water and shall not impart a taste or odor to the water. Coating shall conform to NSF Standard 60-2001 and Addendum 1.0-2001 to NSF Standard 60-2001.
- D. All building, facilities, structures, and appurtenances, as indicated on the Drawings and as specified herein, shall be painted with not less than one shop coat and two field coats, or one prime coat and two finish coats of the appropriate paint. Items to be painted include, but are not limited to exterior and interior concrete, structural steel, miscellaneous metals, steel and aluminum doors and frames, concrete block, operators, pipe fittings, valves, mechanical equipment, motors, conduit, and all other work which is obviously required to be painted unless otherwise specified.
- E. Baked-on enamel finishes and items with standard shop finishes such as graphic panels, electrical equipment, toilet partitions, lockers, instrumentation, etc., shall not be field painted unless the finish is damaged during shipment or installation. Aluminum, stainless steel, fiberglass and bronze work shall not be painted unless color coding and marking is required or otherwise specified. A list of surfaces not to be coated is included in Article 1.09.
- F. The Contractor shall obtain all permits, licenses and inspections and shall comply with all laws, codes, ordinances, rules and regulations promulgated by authorities

having jurisdiction which may bear on the work. This compliance will include Federal Public Law 91-596 more commonly known as the "Occupational Safety and Health Act of 1970".

- G. Project work is located in a wellfield protection zone. Disposal of paints, cleaners, and solvents shall not be permitted on site. Washing of brushes or rollers with disposal to the ground shall not be permitted on site.

1.03 MANUFACTURERS

- A. All painting materials shall be as manufactured by Tnemec, no substitutions.

1.04 SUBMITTALS

- A. The Contractor shall submit paint manufacturer's data sheets, application instructions, and samples of each finish and color to the Engineer for review, before any work is started in accordance with Section entitled, "Submittals."
- B. Submitted samples of each finish and color shall be prepared so that the area of each sample indicates the appearance of the various coats. For example, where a three coat system is specified, the sample shall be divided into three areas indicating one coat only, two coats and all three coats. The Engineer will provide written authorization constituting a standard, as to color and finish only, for each coating system.
- C. The Contractor shall prepare a complete schedule of surfaces to be coated and shall identify the surface preparation and paint system he proposes to use. The Paint Schedule shall be in conformance with Article 3.03. The schedule shall contain the name of the paint manufacturer, and the name, address and telephone number of the manufacturer's representative that will inspect the Work. The schedule shall be submitted to the Engineer for review as soon as possible following the Notice to Proceed so that the schedule may be used to identify colors and to specify shop painting systems on order for fabricated equipment.

1.05 SERVICES OF MANUFACTURER'S REPRESENTATIVE

- A. The Contractor shall purchase paint from an acceptable manufacturer. The manufacturer shall assign a representative to inspect the application of his product both in the shop and field. The Contractor, through the manufacturer's representative, shall submit his report to the Engineer at the completion of his Work identifying the products used and verifying that said products were properly applied and that the paint systems were proper for the exposure and service.
- B. Services shall also include, but not be limited to: determination of best means of surface preparation, inspection of surfaces prior to application of recommended

coating systems, inspection of complete work, and re- inspection of painted work to be performed six months after the job is completed.

1.06 MANUFACTURER'S INSTRUCTIONS

- A. The manufacturer's published instructions for use as a guide in specifying and applying the manufacturer's proposed paint shall be submitted to the Engineer. Paint shall not be delivered to the job before acceptance of the manufacturer's instructions is given by the Engineer.
- B. A manufacturer's paint will not be considered for use unless that manufacturer's published instructions meet the following requirements:
 - 1. The instructions must have been written and published by the manufacturer for the purpose and with the intent of giving complete instruction for the use and application of the proposed paint in the locality and for the conditions for which the paint is specified or shown to be applied under this Contract.
 - 2. All limitations, precautions, and requirements that may adversely affect the paint; that may cause unsatisfactory results after the painting application; or that may cause the paint not to serve the purpose for which it was intended; that is, to protect the covered material from corrosion, shall be clearly and completely stated in the instructions. These limitations and requirements shall, if they exist, include, but not be limited to the following list:
 - a. Methods of application
 - b. Number of coats
 - c. Thickness of each coat
 - d. Total thickness
 - e. Drying time of each coat, including primer
 - f. Primer required to be used
 - g. Primers not permitted
 - h. Use of a primer
 - i. Thinner and use of thinner
 - j. Temperature and relative humidity limitations during application and after application
 - k. Time allowed between coats
 - l. Protection from sun
 - m. Physical properties of paint including solids content and ingredient analysis

- n. Surface preparation
 - o. Touch up requirements and limitations
- C. Concrete surfaces specified by the paint manufacturer to be acid etched shall be etched in accordance with the manufacturer's instructions. The surface shall then be thoroughly scrubbed with clean water, rinsed, and allowed to dry. The surface shall be tested with a moisture meter to determine when dry before coating.

1.07 QUALITY ASSURANCE

- A. The Contractor shall give the Engineer a minimum of three days advance notice of the start of any field surface preparation work of coating application work. Before application of the prime coat and each succeeding coat, all surfaces to be coated shall be subject to inspection by the Engineer. Any defects or deficiencies shall be corrected by the Contractor before application of subsequent coating.
- B. All such Work shall be performed only in the presence of the Engineer, unless the Engineer has specifically allowed the performance of such Work in his absence.
- C. Review by the Engineer, or the waiver of review of any particular portion of the Work, shall not relieve the Contractor of his responsibility to perform the Work in accordance with these Specifications.
- D. Where special coatings are to be performed by a subcontractor, the Contractor shall provide five references which show that the painting subcontractor has previous successful experience with the specified or comparable coating systems. Include the name, address, and the telephone number for the owner of each installation for which the painting subcontractor provided the protective coating.

1.08 SAFETY AND HEALTH REQUIREMENTS

- A. In accordance with requirements of OSHA Safety and Health Standards for Construction (29CFR1926) and the applicable requirements of regulatory agencies having jurisdiction, as well as manufacturer's printed instructions, appropriate technical bulletins, manuals, and material safety data sheets, the Contractor shall provide and require use of personnel protective and safety equipment for persons working in or about the project site.
- B. All paints must comply with the requirements of the National Ambient Air Quality Standards.

1.09 SURFACES NOT TO BE COATED

- A. *The following list of items shall not be coated unless previously coated or otherwise noted.*

1. Type 316 stainless steel work.
2. Galvanized checkered plate and galvanized pipe stands.
3. Aluminum handrails, walkways, windows, louvers, grating and checkered plate.
4. Flexible couplings, lubricated bearing surfaces, insulation and plastic pipe and conduit.
5. Packing glands and other adjustable parts of mechanical equipment.
6. Finish hardware.
7. Plastic switch plates and receptacle plates.
8. Signs and nameplates.

1.10 ADDITIONAL PAINT

- A. At the end of the project, the Contractor shall turn over to the Owner a gallon can of each type and color of paint, primer, thinner or other coating used in the field painting. If the manufacturer packages the material concerned in gallon cans, then it shall be delivered in unopened labeled cans as it comes from the factory. If the manufacturer does not package the material in gallon cans, and in the case of special colors, the materials shall be delivered in new gallon containers, properly closed with type labels indicating brand, type, color, etc. The manufacturer's literature described the materials and giving directions for their use shall be furnished in three bound copies. A type-written inventory list shall be furnished at the time of delivery.

1.11 SHIPPING, HANDLING AND STORAGE

- A. All painting materials shall be brought to the job site in the original sealed labeled containers of the paint manufacturer and shall be subject to review by the Engineer. Where thinning is necessary, only the product of the manufacturer furnishing the paint shall be used. All such thinning shall be done strictly in accordance with the manufacturer's instructions, and with the full knowledge of the Engineer.
- B. Materials and their storage shall be in full compliance with the requirements of pertinent codes and fire regulations. Receptacles shall be placed outside buildings for paint gates and containers. Paint waste shall not be disposed of in plumbing fixtures, process drains or other plant systems or process units.
- C. All painting material shall be stored in a clean, dry, well-ventilated place, protected from sparks, flame, and direct rays of the sun or from excessive heat.

Paint susceptible to damage from low temperatures shall be kept in a heated storage space when necessary.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Table 09900-1 depicts the coatings referenced in Article 3.03, "Paint Schedule". Table 09900-1 lists Tnemec products as a reference. Equivalent products by the manufacturers listed in Article 1.03 of this Section may be submitted for review.

TABLE 09900-1

PRODUCT LISTING

<u>Tnemec Ref.</u>	<u>Description</u>	<u>Manufacturers Reference</u>
<u>No.</u>		<u>Tnemec</u>
N69-Color	Polyamidoamine Epoxy	Hi-Build Epoxoline II
66-1255	Epoxoline Primer	Hi-Build Epoxoline Primer
66-Color	Polyamide Epoxy	Hi-Build Epoxoline
73-Color	Aliphatic Acrylic Polyurethane	Endura-Shield
157	Modified Waterborne Acrylate	Envirocrete (Sand Texture)
20	Polyamide Epoxy (NSF approved)	Potapox

PART 3 - EXECUTION

3.01 SURFACE PREPARATION

- A. Surfaces to be painted shall be clean and dry, and free of dust, rust, scale and all foreign matter. No solvent cleaning, power or hand tool cleaning shall be permitted unless acceptable to the Engineer or specified herein.
- B. Except as otherwise provided, all preparation of metal surfaces shall be in accordance with Specifications SP-1 through SP-10 of the Steel Structures Painting Council (SSPC). Where Steel Structures Painting Specifications are referred to in these Contract Documents, the corresponding Pictorial Surfaces Preparation Standard shall be used to define the minimum final surface conditions to be supplied. Grease and oil shall be removed and the surface prepared by hand tool cleaning, power tool cleaning or blast cleaning in accordance with the appropriate Specification SP-1 through SP-10.

- C. Weld flux, weld spatter and excessive rust scale shall be removed by power tool cleaning as per SSPC-SP-3-63.
- D. Threaded portions of valve and gate stems, machined surfaces which are limited for sliding contact, surfaces which are to be assembled against gaskets, surfaces or shafting on which sprockets are to fit, or which are intended to fit into bearings, machined surfaces of bronze trim on slide gates and similar surfaces shall be masked off to protect them from the sandblasting of adjacent surfaces. Cadmium-plated or galvanized items shall not sandblasted unless hereinafter specified, except that cadmium-plated, zinc-plated, or sherardized fasteners used in assembly of equipment to the sandblasted shall be sandblasted in the same manner as the unprotected metal. All installed equipment, mechanical drives, and adjacent painted equipment shall be protected from sandblasting. Protection shall prevent any sand or dust from entering the mechanical drive units or equipment where damage could be caused.
- E. Hardware accessories, machined surfaces, plates, lighting fixtures, and similar items in place prior to cleaning and painting, and not intended to be painted, shall be protected or removed during painting operations and repositioned upon completion of painting operations.
- F. Any abraded areas of shop or field applied coating shall be touched up with the same type of shop or field applied coating, even to the extent of applying an entire coating, if necessary. Touch-up coating and surface preparations shall be in addition to and not considered as the first field coat.
- G. Sand from sandblasting shall be thoroughly removed, using a vacuum cleaner if necessary. No surface which has been sandblasted shall be painted until inspected by the Engineer.
- H. Exposed Pipe
 - 1. Bituminous coated pipe shall not be used in exposed locations. Pipe which shall be exposed after project completion shall be primed in accordance with the requirements herein. Any bituminous coated ferrous pipe which is inadvertently installed in exposed locations shall be sandblasted to SSPC-SP-5 White Metal before priming and painting.
 - 2. After installation, all exterior, exposed flanged joints shall have the gap between adjoining flanges and the gap between threaded-on flanges and the pipe barrel sealed with a single component Thiokol caulking prior to painting to prevent rust stains.
- I. Ferrous Metal Surfaces
 - 1. All ferrous metal surfaces not required to be galvanized shall be cleaned of all oil grease, dirt, rust and tight and loose mill scale by blasting in accordance with the following: SSPC-SP-5, White Metal Blast Cleaning and comply with the visual standard NACE 1, for submerged metal and

the underside of components potentially exposed to lime clarified water in Clarifier No.1. SSPC-SP-10 Near White Metal Blast Cleaning, and comply with the visual standard NACE 2 for all other locations. Pickling, complying with SSPC-SP-8, may be substituted for Near White Blast in areas as determined by the Engineer. Priming shall follow sandblasting before any evidence of corrosion occurs, before nightfall and before any moisture is on the surface.

2. Existing painted ferrous metal surfaces shall be cleaned of all oil, grease and dirt by blasting with a minimum 2500 psi high pressure blast. All rust shall be removed in accordance with SSPC-SP-3 and spot primed with the applicable primer.
- J. Field surface preparation of small, isolated areas such as field welds, repair of scratches, abrasions or other marks to the shop prime or finish shall be cleaned by power tools in accordance with SSPC-SP-3, or in difficult and otherwise inaccessible areas by hand cleaning in accordance with SSPC-SP-2 and spot primed.
- K. Primed or Coated Surfaces and Non-Ferrous Surfaces
1. All coated surfaces shall be cleaned prior to application of successive coats. All non-ferrous metals not to be coated shall be cleaned. This cleaning shall be done in accordance with SSPC-SP-1, Solvent Cleaning.
- L. Shop Finished Surfaces
1. All shop-coated surfaces shall be protected from damage and corrosion before and after installation by treating damaged areas immediately upon detection. Abraded or corroded spots on shop-coated surfaces shall be prepared in accordance with SSPC-SP-2, Hand Tool Cleaning and then touched up with the same materials as the shop coat.
 2. All shop coated surfaces which are faded, discolored, or which require more than minor touch-up, in the opinion of the Engineer, shall be repainted. Cut edges of galvanized sheets, electrical conduit, and metal pipe sleeves, not to be finish painted, shall be cleaned in accordance with SSPC-SP-1, Solvent Cleaning and primed with zinc dust-zinc oxide metal primer.
- M. Galvanized and Copper Alloy Surfaces
1. All copper, or galvanized metal surfaces shall be given one coat of epoxy primer.
- N. Concrete and Masonry Surfaces
1. Concrete and masonry surfaces to be painted shall be prepared by removing efflorescence, chalk, dust, dirt, grease, oil, form coating, tar and

by roughening to remove glaze. All surfaces shall be repaired prior to commencement of the coating operation.

2. Concrete and masonry surfaces are to be cured for at least 28 days prior to coating them.
3. Concrete and masonry surfaces subject to foot traffic should be provided with slip resistant finish.

O. New concrete immersion surfaces that are to be coated shall be brush blasted per SSPC- SP7 to produce the necessary "sandpaper texture" surface required for satisfactory adherence of the paint. Areas of concrete, which contain blow holes or voids, shall be filled with the manufacturer's approved filler material.

P. Existing Painted Concrete and Masonry Surfaces

1. Existing painted concrete and masonry surfaces requiring paint as identified herein shall be prepared by applying a minimum 2500 psi high pressure water blast to the existing painted surface to remove all loose paint, chalk, dust, dirt, grease, oil, latents, and other foreign materials. Cracks, chips or voids in the existing concrete shall be repaired in accordance with paint manufacturer recommendations.

Q. Existing Painted Exterior Piping and Equipment.

1. Existing painted exposed piping and equipment requiring paint shall be cleaned per SSPC-SP1 solvent cleaning and scarified (hand sanded). All rust shall be removed per SSPC-SP2 and SP3 (hand and power tool cleaning). All areas cleaned per SSPC-SP2 and SP3 shall be spot primed using Tnemec Series 135, or equal, 2.0 to 4.0 Mils OFT.

R. Wood Surfaces

1. Wood surfaces to be painted shall be cleaned of dirt, oil, and other foreign substances with mineral spirits, scrapers, and/or sandpaper. Finish surfaces exposed to view shall be made smooth by sandpapering. All wood items to be painted and in contact with or built into concrete, masonry or plaster shall be primed. Small, dry, seasoned knots shall be surface scraped and thoroughly cleaned, and shall be given a thin coat of knot sealer before application of the primer coat. Pitch on large, open, unseasoned knots and all other beads or streaks of pitch shall be scraped off, or if still soft, shall be removed with mineral spirits or turpentine and the resinous are thinly coated with no sealer.
2. After priming, all holes and imperfections in finish surfaces shall be filled with putty or plastic wood-filler colored to match the finish coat, allowed to dry, and sandpapered smooth. Unless otherwise authorized, painting shall proceed only when the moisture content of the wood does not exceed 12 percent as measured by a moisture meter.

S. PVC Pipe Surfaces

1. All pipe surfaces shall be lightly sanded before painting.

3.02 SHOP PAINTING

- A. All fabricated steel work and equipment shall receive at the factory at least one shop coat of prime paint compatible with the paint system required by these Specifications. The Contractor shall coordinate all shop priming to ensure compatibility with paint system specified. Surface preparation prior to shop painting shall be as specified. Finish coats may be applied in the shop if acceptable to the Engineer. All shop painted items shall be properly packaged and stored until they are incorporated in the Work. Any painted surfaces that are damaged during handling, transporting, storage or installation shall be cleaned, scraped, and patched before field painting begins so that Work shall be equal to the original painting received at the shop. Equipment or steel Work that is to be assembled on the site shall likewise receive a minimum of one shop coat of paint at the factory. Surfaces of exposed members that will be inaccessible after erection shall be prepared and painted before erection.
- B. The Contractor shall specify the shop paints to be applied when ordering equipment in order to assure compatibility of shop paints with field paints. The paints and surface preparation used for shop coating shall be identified on shop drawings submitted to the Engineer for review. Shop paint shop drawings will not be reviewed until the final project paint system has been submitted by the Contractor and reviewed by the Engineer.
- C. Shop finish coats may be the standard finish as ordinarily applied by the manufacturer if it can be demonstrated to the Engineer that the paint system is equal to and compatible with the paint system specified. However, all pumps, motors and other equipment shall receive at least one field applied finish coat after installation.

3.03 PAINT SCHEDULE

- A. The Contractor shall adhere to this paint schedule, providing those paints named or equal. DFT shall mean the minimum dry film thickness per application measured in mils. Products are referenced by numbers listed in Article 2.01 "Product Listing." The paint schedule identifies the minimum DFT required per coat. If the Contractor does not achieve the specified DFT range in a single coat, he shall provide additional coats as necessary at no additional cost to the Owner.

B. Metal Surfaces, Submerged Exposure (Exterior)

1. Metal surfaces that are submerged in potable water including but not limited to the following types of surfaces shall be painted as described below:

- a. Piping and valves.
- b. Miscellaneous steel plates and fasteners

<u>Application</u>	<u>No.</u>	<u>Product Name</u>	<u>DFT</u>
First - 1 coat	N140-Color	Pota-Pox Plus	6.0 - 10.0
Second - 1 coat	N140-Color	Pota-Pox Plus	<u>6.0 - 10.0</u>
		Min. Total	12.0 Mils.

* Coating must be approved for potable water service in accordance with NSF Standard 61.”

C. Metal Surfaces, Atmospheric (Exterior) Exposure

1. Metal surfaces exposed to the atmosphere that do not come into contact with corrosive atmosphere including the following types of surfaces shall be painted as described below:
 - a. Pumps, motors, machinery, vessels, etc.
 - b. Above ground piping, valves and pipe supports. (Also see pipe color , scheme.)
 - c. Miscellaneous steel shapes, angles, etc.
 - d. Exposed surfaces of electric panels, conduit, ventilation fans, air conditioning units, duct work, etc.
 - e. Monorails

Ferrous Metal

<u>Application</u>	<u>No.</u>	<u>Product Name</u>	<u>DFT</u>
First - 1 coat	66-1255	Hi-Build Epoxoline Primer	3.0 – 5.0
Second – 1 coat	66-Color	Hi-Build Epoxoline	2.0 – 3.0
Finish - 1 coat	73-Color	Endura Shield	<u>2.0 – 3.0</u>
		Min. Total	8.0 Mils.

Non-Ferrous Metal

<u>Application</u>	<u>No.</u>	<u>Product Name</u>	<u>DFT</u>
First - 1 coat	66-Color	Hi-Build Epoxoline	2.0 – 3.0
Second - 1 coat	73-Color	Endura Shield	<u>2.0 – 3.0</u>
		Min. Total	5.0 Mils.

Galvanized

<u>Application</u>	<u>No.</u>	<u>Product Name</u>	<u>DFT</u>
First - 1 coat	66-Color	Hi-Build Epoxoline	2.0 – 4.0
Second - 1 coat	73-Color	Endura Shield	<u>2.0 – 4.0</u>
		Min. Total	5.0 Mils.

D. Metal Surfaces, Interior Exposure

1. Interior metal surfaces (nonsubmerged) that do not come in contact with the corrosive atmosphere including the following types of surfaces shall be painted as follows:
 - a. Pumps, motors, machinery, etc.
 - b. Piping, valves and supports.
 - b. Miscellaneous steel shapes, angles, etc.
 - c. Exposed surfaces of electric panels, conduit, ventilation fans, air conditioning units, duct work, etc.
 - d. Interior doors and frames.

Ferrous Metal

<u>Application</u>	<u>No.</u>	<u>Product Name</u>	<u>DFT</u>
First - 1 coat	N69-Color	Hi-Build Epoxoline II	5.0 – 7.0
Finish - 1 coat	N-69 Color	Hi-Build Epoxoline II	<u>5.0 – 7.0</u>
		Min. Total	12.0 Mils.

Galvanized

<u>Application</u>	<u>No.</u>	<u>Product Name</u>	<u>DFT</u>
First - 1 coat	66-Color	Hi-Build Epoxoline	2.0 – 4.0
Second - 1 coat	73-Color	Endura Shield	<u>2.0 – 4.0</u>
		Min. Total	5.0 Mils.

E. Ductile Iron Pipe, Exterior or Interior Exposure

1. Ductile iron pipe exterior or interior exposure shall receive the following types of paint:

Interior

<u>Application</u>	<u>No.</u>	<u>Product Name</u>	<u>DFT</u>
First - 1 coat	N69-Color	Hi-Build Epoxoline II	5.0 – 7.0
Finish - 1 coat	N69-Color	Hi-Build Epoxoline II	<u>5.0 – 7.0</u>
		Min. Total	12.0 Mils.

Exterior

<u>Application</u>	<u>No.</u>	<u>Product Name</u>	<u>DFT</u>
First - 1 coat	N69-Color	Hi-Build Epoxoline Primer	3.0 – 4.0
Second - 1 coat	66-Color	Hi-Build Epoxoline	2.0 – 3.0
Finish – 1 coat	73-Color	Endura Shield	<u>2.0 – 3.0</u>
		Min. Total	8.0 Mils.

F. PVC Pipes, Exterior or Interior Exposure

1. PVC pipes, valves, and accessories, shall receive the following types of paint:

Interior

<u>Application</u>	<u>No.</u>	<u>Product Name</u>	<u>DFT</u>
Finish - 1 coat	66-Color	Hi-Build Epoxoline	4.0 – 6.0

Exterior

<u>Application</u>	<u>No.</u>	<u>Description</u>	<u>DFT</u>
First - 1 coat	66-Color	Hi-Build Epoxoline	2.0 – 3.0
Finish - 1 coat	73-Color	Endura Shield	<u>2.0 – 3.0</u>
		Min. Total	5.0 Mils.

3.04 **PAINTING**

- A. All paint shall be applied by experienced painters with brushes or other applicators acceptable to the Engineer.
- B. Paint shall be applied without runs, sags, thin spots, or unacceptable marks. Paints shall be applied at the rate specified by the manufacturer to achieve the minimum dry mil thickness required. Additional coats of paint shall be applied, if necessary, to obtain thickness specified.
- C. Contractor shall apply a stripe coating as part of the application of each of the specified painting systems. The stripe coating shall be applied after the prime coat. The stripe coat shall be applied to all seams, edges, corners, bolts, revits, welds and pits. The second full coat shall not be applied until the minimum recoat window for the stripe coating has been achieved and as required to ensure that the recoat window for the prime coating has not been exceeded.
- D. Paint shall be applied with spraying equipment only on those surfaces approved by the Engineer. If the material has thickened or must be diluted for application by spray gun, each coat shall be built up to the same film thickness achieved with undiluted brushed-on material. Where thinning is necessary, only the products of the particular manufacturer furnishing the paint shall be used; and all such thinning shall be done in strict accordance with the manufacturer's instructions, as well as with the full knowledge of the Engineer.
- E. Surfaces not accessible to brushes or rollers may be painted by spray by dauber or sheepskins and paint mitt. If any of these methods is to be used, it shall be done in strict accordance with the manufacturer's instructions, as well as with the full knowledge of the Engineer.
- F. Drying Time
 - 1. A minimum of twenty-four hours drying time shall elapse between application of any two coats of paint on a particular surface unless shorter time periods are a requirement of the manufacturer or specified herein. Longer drying times shall be required for abnormal conditions as defined by the manufacturer.

G. Weather Restrictions

1. No painting whatsoever shall be accomplished in rainy or excessively damp weather when the relative humidity exceeds 85 percent, or when the general air temperature cannot be maintained at 50 degrees F or above throughout the entire drying period. No paint shall be applied when it is expected that the relative humidity will exceed 85 percent or that the air temperature will drop below 50 degrees F within 18 hours after the application of the paint.
2. No painting shall be performed unless the surface temperature is a minimum of 5 degrees above dew point and the temperature must be maintained for the complete duration of curing.
3. No painting shall be performed on windy days where wind velocities are greater than 5 mph.

H. Inspection of Surfaces

1. Each and every field coat of priming and finishing paint shall be inspected by the Engineer or his authorized representative before the succeeding coat is applied. The Contractor shall follow a system of tinting successive paint coats so that no two coats for a given surface are exactly the same color. Areas to receive black protective coatings shall in such cases be tick-marked with white or actually gauged as to thickness when finished.

I. Before application of the prime coat and each succeeding coat, any defects or deficiencies in the prime coat or succeeding coat shall be corrected by the Contractor before application of any subsequent coating.

J. Samples of surface preparation and of painting systems shall be furnished by the Contractor to be used as a standard throughout the job, unless omitted by the Engineer.

K. When any appreciable time has elapsed between coatings, previously coated areas shall be carefully inspected by the Engineer, and where, in his opinion, surfaces are damaged or contaminated, they shall be cleaned and recoated at the Contractor's expense. Recoating times of manufacturer's printed instructions shall be adhered to.

L. Coating thickness shall be determined by the use of a properly calibrated "Nordson- Mikrotest" (or equal) dry mil thickness gauge.

M. The Contractor shall provide free of charge to the Engineer two new "Nordson- Mikrotest" dry film gauges to be used to inspect coating by Engineer and Contractor. One gauge may be used by Contractor and returned each day to the Engineer. Engineer will return gauges to Contractor at completion of job.

N. Special Areas

1. All surfaces which are to be installed against concrete, masonry etc., and will not be accessible for field priming and/or painting shall be back primed and painted as specified herein, before erection. Anchor bolts shall be painted before the erection of equipment and then the accessible surfaces repainted when the equipment is painted.
- O. Special attention shall be given to insure that edges, corners, crevices, welds and rivets receive a film thickness equivalent to that of the adjacent painted surfaces.
- P. Safety
1. Respirators shall be worn by persons engaged or assisting in spray painting. The Contractor shall provide ventilating equipment and all necessary safety equipment for the protection of the workmen and the Work.
- Q. Quality Workmanship
1. The Contractor shall be responsible for the cleanliness of his painting operations and shall use covers and masking tape to protect the Work whenever such covering is necessary, or if so requested by the Owner. ***Contractor is specifically advised that significant portions of the work will be in close proximity to existing potable water treatment systems and components which must remain in service during the course of construction. The Contractor will be required to fully contain his painting operations at all times during the course of construction to eliminate all potential impacts to the existing facility operations, personnel and/or finished water quality. The costs to supply, erect, maintain and tear-down any and all appropriate containment systems, as well as to haul and dispose of any debris contained therein, shall be included within the Contractor's bid cost.*** Any unwanted paint shall be carefully removed without damage to any finished paint or surface. If damage does occur, the entire surface, adjacent to and including the damaged area, shall be repainted without visible lapmarks and without additional cost to the Owner.
- R. Painting found defective shall be scraped or sandblasted off and repainted as the Engineer may direct. Before final acceptance of the Work, damaged surfaces of paint shall be cleaned and repainted as directed by the Engineer.
- S. Any pipe scheduled to be painted and having received a coating of a tar or asphalt compound shall be painted with two coats of "Intertol Tar Stop", "Tnemec Tar Bar" or equal before successive coats are applied in accordance with the paint schedule.

3.05 SCHEDULE OF COLORS

- A. All colors shall be as designated by the Engineer at the shop drawing review. The Contractor shall submit color samples including custom color choices as required to the Engineer as specified in Article 1.04. The Contractor shall submit suitable samples of all colors and finishes for the surfaces to be painted, or on portable surfaces when required by the Engineer. The Engineer shall decide upon the choice of colors and other finishes when alternates exist. No variation shall be made in colors without the acceptance from the Owner. Color names and/or numbers shall be identified according to the appropriate color chart issued by the manufacturer of the particular product in question.

3.06 COLOR CODING AND LETTERING OF PIPING

- A. The Contractor shall paint all piping, valves, equipment, exposed conduits and all appurtenances which are integral to a complete functional mechanical pipe and electrical conduit system in accordance with the colors designated by the Engineer as outlined in Article 3.05 above.
- B. In general, the pumps and equipment shall be painted the same color as the piping system to which it is connected unless otherwise directed by the Engineer. Where colors are not designated for piping and conduit systems they will be selected during the shop drawing review from the paint manufacturer's standard color charts.
- C. Lettering of Piping
 - 1. The Contractor shall apply identification titles and arrows indicating the direction of flow of liquids to all types and sections of all new and existing plant piping. Titles shall be as directed by the Engineer. Identification titles shall be located midway between color coding bands where possible. Identification lettering and arrows shall be placed as directed by the Engineer, but shall generally be located each fifteen feet in pipe length and shall be properly inclined to the pipe axis to facilitate easy reading. Titles shall also appear directly adjacent to each side of any wall or slab the pipeline passes through.
 - 2. The titles shall be provided on precut, prefinished plastic signs that are strapped to the pipe and shall identify the contents by complete names at least once in each area through which it passes and thereafter be abbreviated. Titles and abbreviations shall be approved by Engineer during shop drawing review.
 - 3. Title color shall be black or white as directed and shall have an overall height in inches in accordance with Table 09900-2. Letter type shall be Helvetica Medium upper case. The manufacturer's instructions shall be followed in respect to storage, surface preparation and application. For piping less than 3/4-inch diameter, the Contractor shall furnish and attach

corrosion resistant color tags with the required lettering and a band of color painted for its full circumference.

3.07 OSHA SAFETY COLORS

- A. Items listed in ANSI 253.1-1971, Section 2.1 shall be painted ANSI Red. In general, these items shall include fire protection equipment and apparatus; wall mounted breathing apparatus, danger signs and locations; and stop bars, buttons or switches. In addition all hose valves and riser pipes, fire protection piping and sprinkler systems, and electrical stop switches shall be painted ANSI Red.
- B. Items listed in ANSI 253.1-1971, Section 2.3 shall be painted ANSI Yellow. Yellow shall be the basic color for designating caution and for marking physical hazards such as striking against, stumbling, falling, tripping, and "caught in between". In addition, an 8-inch wide strip on the top and bottom tread of stairways shall be coated.

3.08 WORK IN CONFINED SPACES

- A. The Contractor shall provide and maintain safe working conditions for all employees. Fresh air shall be supplied continuously to confined spaces through the combined use of existing openings, forced-draft fans, or by direct air supply to individual workers. Paint fumes shall be exhausted to the outside from the lowest level in the contained space.
- B. Electrical fan motors shall be explosion proof if in contact with fumes. No smoking or open fires will be permitted in, or near, confined spaces where painting is being done.

3.09 CLEANING

- A. The buildings and all other Work area shall be at all times kept free from accumulation of waste material and rubbish caused by the Work. At the completion of the painting, all tools, equipment, scaffolding, surplus materials, and all rubbish around the inside the buildings shall be removed and the Work left broom clean unless otherwise specified.

TABLE 09900-2
HEIGHT OF PIPING LETTERING

Diameter of Pipe or Pipe Covering	Height of Lettering
3/4 to 1-1/4 inches	1/2 inch
1-1/2 to 2 inches	3/4 inch
2-1/2 to 6 inches	1-1/4 inches
8 to 10 inches	2-1/2 inches
Over 10 inches	3-1/2 inches

Notes:

1. Letter type shall be Helvetica Medium upper case. The manufacturer's instructions shall be followed in respect to storage, surface preparation and application.

END OF SECTION

DIVISION 11

EQUIPMENT

SECTION 11301

POLYETHYLENE STORAGE TANKS

PART 1 - GENERAL

1.01 THE REQUIREMENT

- A. The work covered under this Section includes furnishing and installing all equipment and connections required to install one (1) 8,500 gallon, nominal capacity, high density polyethylene (HDPE) storage tank as well as all associated appurtenances and equipment required for a complete and fully functional bulk storage tank as shown on the Drawings. The system operation is based the use of a 12.5% commercial solution of sodium hypochlorite (1.9 sg).

1.02 ASSEMBLIES OR UNITS

- A. Where the plans and specifications require the Contractor to furnish and install an assembly or unit, the Contractor shall furnish and install all component parts as required by the manufacturer of the assembly or unit.

1.05 MATERIALS OF CONSTRUCTION

- A. Specific construction materials for various system components are set forth in the specification and/or on the Drawings. Any items in contact or potential contact with sodium hypochlorite shall be fabricated from the following materials and be approved for potable water applications by applicable regulatory agencies.

Sodium Hypochlorite	-	FRP, CPVC, Teflon, PVC, PVDF, Alloy 20, Monel, Hastelloy C
---------------------	---	--

1.06 MISCELLANEOUS FITTINGS

- A. The Contractor shall be responsible for providing and installing all miscellaneous fittings, unions and adapters necessary to connect the various system components with the specified piping system(s) and make the entire system functional.

1.07 SCHEDULING

- A. The Contractor is specifically advised that the existing sodium hypochlorite storage tank and feed system at the City of Delray Beach Water Treatment Plant must remain fully functional at all times. Piping tie-ins to the existing sodium hypochlorite fill and metering pump supply piping shall be scheduled and approved, in writing, by the Engineer at least seven (7) days prior to the desired tie-in date. Temporary piping,

valving and equipment shall be supplied and installed as required to maintain the ability to utilize all existing systems.

PART 2 - PRODUCTS

2.01 CHEMICAL STORAGE TANK (1 REQUIRED)

- A. The Contractor shall provide and install one (1) vertical, domed, high density cross-linked polyethylene (XLPE) sodium hypochlorite storage tank with a linear polyethylene (OR-1000) liner. The tank shall be suitable for storage of 5% - 15% sodium hypochlorite at temperatures up to 130° F. The tank shall be fully suitable for the chemicals being stored and sized as set forth herein.

The tank shall be manufactured with resin which includes UV inhibitors and is opaque (i.e. black resin) and be suitable for permanent outdoor sunlight exposed installation in South Florida. All fittings located on the tank dome shall be self aligning, ball type, unless otherwise noted. The Contractor shall supply a minimum five year non pro-rated full replacement warranty against tank failure for the chemicals being stored. All necessary couplings, fittings or adapters to connect all indicated piping systems shall be provided. All materials are subject to the Engineer's approval.

Tank tie downs and restraints and piping shall take into account and provide allowance for tank movement. All tanks shall be restrained with galvanized steel hardware to securely anchor the tank to the concrete floor. The complete tank restraint system shall be supplied and installed by the Contractor.

Flexible connectors shall be utilized on piping to allow for tank movement. Flexible connectors shall be utilized at primary tank connections to allow for tank movement. All tank drains shall have a siphon assembly or other equivalent means to ensure full drainage. An integrally molded, flanged outlet (IMFO) shall be used if available in the specified size. The Contractor shall supply suitable fittings and other reducers to reduce the IMFO size to the designated piping size. The tank and appurtenances shall satisfy the following standards: ANSI B16.5 and ASTM D638, D746, D790, D883, D1505, D1525, D1693, D1998.

The tanks shall be constructed using rotational molding process. Tanks shall consist of cross-linked polyethylene primary tank with a linear polyethylene liner. The tank diameter shall be measured externally. The knuckle radius from the bottom of the tank to the side wall shall be a minimum of 1-inch in length. The minimum tank wall thickness shall be ¼-inch in all places. All cut out edges shall be trimmed and have smooth edges. The tanks shall be designed so that no external bracing, ribs, hoops or support wires are required. The top of tank shall be capable of supporting weight of maintenance personnel. All dimensions, details and accessories shall be as shown on the Drawings and as specified herein.

Table 1- Tank Schedule

<u>Chemical</u>	<u>Number of Tanks</u>	<u>Nominal Capacity</u>	<u>Outer Tank Diameter (ft.)</u>	<u>Tank Height</u>
Sodium Hypochlorite (12% sol)	One	8,500 gallons	10' 0"	16' 9"

The tanks shall be manufactured by one of the following:

- Polyprocessing, Inc.
- Engineer approved equal.

The resin shall be Marlex CL-200 YJN, as manufactured by Phillips Petroleum Company, Inc. or Paxon 7004, as manufactured by Paxon, Inc. or of resins of equal physical and chemical properties.

Each tank shall be provided with the following accessories.

- A. A galvanized steel tie-down system including lugs, cabling anchors, anchor plates and all required hardware. The tie down system shall be adequate to secure the tank in a fashion that will satisfy the local windload regulatory criteria. The anchoring system shall not be generic and shall properly take into account the details of this installation. A Professional Engineer properly and currently licensed in the State of Florida shall certify the adequacy of the tank tie-down system to meet local wind load design criteria per the most recent edition of The Florida Building Code.
- B. A minimum of four lifting lugs shall be provided for each tank.
- C. The storage tank shall be supplied with a 6-inch bulkhead fitting on the top, located as shown on the Drawings, to be used as a vent. Vent piping shall be routed as shown on the Drawings. The vent piping shall be outfitted with a FRP mesh screen secured to the end of the vent pipe to prevent the entry of insects, etc. into the storage tank.
- D. The storage tank shall be supplied with a 2-inch bulkhead fitting on the top, located as shown the Drawings, to be used as a fill line. A 2-inch, Sch. 80 PVC drop installed to an elevation of 2-ft. above the tank bottom elevation shall also be provided. All piping shall be supported by FRP pipe stanchions which are pre-installed by the tank manufacturer.
- E. The tank shall be supplied with a 6-inch bulk head fitting on the top, located as

shown on the Drawings, to facilitate connection of one HydroRanger 200 ultrasonic level sensor with XPS-10 transducer, as manufactured by Siemens, Inc., no substitutions. Each tank level sensing system shall also include one LCD panel display for local tank level indication and shall be capable of remote indication to the plants existing site supervisory and data acquisition (SCADA) system. The components for each of the tank level sensing systems shall be installed at the locations shown on the Drawings and shall allow for local and remote monitoring of the product levels in each of the tanks. Each level sensing systems shall provide the following outputs to the plant SCADA systems:

1. 4-20 mA output indicating the product level in the tanks
2. High level alarm
3. Low level alarm

The supplier shall be responsible for providing adequate lengths of two-conductor shielded cable (18 AWG) to make the connection from each of the ultrasonic level transmitter to be installed to the top of the tank to the panel displays located as shown on the Drawings. The Contractor shall be responsible for installing the supplier provided control wiring within appropriately sized conduit as well as securing the panel meter enclosure and control wire conduit as shown on the Drawings. The panel meter shall be labeled to indicate "NaOCl Tank No. 2". The Contractor is also responsible for extending 120 VAC power to the universal level indicator panels to the location shown on the Drawings.

- F. FRP supports to support external and internal piping shall be attached to the tank by the tank manufacturer.
- G. The tank shall be supplied with a minimum 24-inch, HDPE access manway which is equipped with emergency air surge relief capabilities.

PART 3 – EXECUTION

3.01 GENERAL

- A. All equipment shall be installed in strict accordance with the manufacturer's recommendations, subject to the Engineer's approval. Install all equipment indicated as shown on the drawings and as specified within the specifications. Where conflicts exist between the manufacturer's recommendations and the Engineer's drawings, the discrepancy shall immediately be brought to the attention of the Engineer, prior to proceeding with the work.

3.02 INSTALLATION

- A. The proposed storage tank shall be installed by the Contractor on top of the existing

octagonal concrete tank slab located within the limits of an existing concrete secondary containment structure at the City's WTP site. The tank shall be set in strict accordance with the manufacturer's requirements. Specific consideration shall be given to the proximity of the tank IMFO connection to the notched cut-out in the concrete tank slab.

3.03 TESTING

- A. After installation, the tank shall be field tested. The tank and fittings shall be filled with water for a period of 24 hours. Prior to acceptance, the tank must remain undisturbed for the entire test period and show no evidence of leakage. After the testing period, the tank and all fittings shall be cleaned and dried prior to filling with sodium hypochlorite. The tank shall be free from any defects or damage which may have occurred as a result of, including but limited to, defects in the production process, shipping, installation or performance of the required hydrostatic testing. In the event, that the tank is damaged or determined to be defective, the Contractor shall be responsible for the replacement or repair of the deficiencies noted. The Engineer shall make the final determination on whether or not the noted deficiencies are field repairable or whether a replacement tank will be required. Upon acceptance of test results, the Owner shall schedule for filling of the tank with sodium hypochlorite. Following chemical delivery, the Contractor shall schedule and coordinate a formal startup per Section 01650 entitled "Facility Startup" to place the tank into service.

END OF SECTION

DIVISION 15

MECHANICAL

SECTION 15000 PIPING

PART 1 - GENERAL

1.01 THE REQUIREMENT

- A. The Contractor shall furnish and install all piping systems shown and specified, in accordance with the requirements of the Contract Documents. Each system shall be complete with all necessary fittings, hangers, supports, anchors, expansion joints, flexible connectors, valves, accessories, lining and coating, testing, excavation, backfill and encasement, to provide a functional installation.

1.02 REFERENCE SPECIFICATIONS, CODES AND STANDARDS

- A. Commercial Standards:

ANSI/ASME B1.20.1	Pipe Threads, General Purpose (inch).
ANSI B16.1	Cast Iron Pipe Flanges and Flanged Fittings, Class 125.
ANSI B16.12	Cast Iron Threaded Drainage Fittings
ANSI B16.5	Pipe Flanges and Flanged Fittings, Steel Nickel Alloy and other Special Alloys.
ANSI/ASME B16.3	Malleable Iron Threaded Fittings, Classes 150 and 300.
ANSI/ASME B16.4	Cast Iron Threaded Fittings, Class 125 and 250
ANSI/AWWA C104/A21.5	Cement-Mortar Lining for ductile-Iron Pipe and Fittings for Water.
ANSI/AWWA C110/A21.10	Ductile-Iron and Gray-Iron Fittings 3-in. through 48-in. for Water and Other Liquids.
ANSI/AWWA C111/A21.11	Rubber-Gasket Joints for Ductile-Iron and Gray-Iron Pressure Pipe Fittings.

ANSI/AWWA C151/A21.51	Ductile-Iron Pipe, Centrifugally Cast in Metal Molds or Sand-Lined Molds, for Water or Other Liquids.
ANSI/AWWA C600	Installation of Ductile-Iron Water Mains and Appurtenances.
ANSI/AWWA C900	Polyvinyl Chloride (PVC) Pressure Pipe 4-in. through 12-in. for Water.
ANSI/AWWA L115/A21.15	Flanged Ductile Iron Pipe with Threaded Flanges. Steel Pipe Flanges for Water Works Service, Sizes 4 in. through 144 in.
ANSI/AWS D1.1	Structural Welding Code.
ASTM A 307	Specification for Carbon Steel Externally Threaded Standard Fasteners.
ASTM D 2000	Classification System for Rubber Products in Automotive Applications.
ASTM D 1784	Specifications for Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds.
ASTM D 2241	Specification for Poly (Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR-Series).
ASTM D 2321	Recommended Practice for Underground Installation of Flexible Thermoplastic Sewer Pipe.
ASTM D 3034	Specification for Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings.
ASTM D 1785	Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe, Schedule 40, 80, and 120.
ASTM D 695	Test for Compressive Properties of Rigid Plastics.
ASTM D 1599	Test for Short-Time Rupture Strength of Plastic Pipe, Tubings and Fittings.

1.03 SUBMITTALS

- A. The Contractor shall submit complete shop drawings and certificates, test reports, affidavits of compliance, of all piping systems, in accordance with the requirements in Section 01300, "Submittals", and as specified in the individual piping sections.
- B. Each shop drawing submittal shall be complete in all aspects, incorporating all information and data listed herein and all additional information required to evaluate the proposed piping material's compliance with the Contract Documents. Partial or incomplete submissions will be returned to the Contractor without review.
- C. Data to be submitted shall include, but not be limited to:
 - 1. Catalog Data consisting of specifications, service, pipe size, working pressure, wall thickness, lining, coating, illustrations and a parts schedule that identifies the materials to be used for the various piping components and accessories. The illustrations shall be in sufficient detail to serve as a guide for assembly and disassembly.
 - 2. Complete layout and installation drawings with clearly marked dimensions and elevations.
 - 3. Weight of all component parts.
 - 4. Design calculations where specified.
- D. Certifications: Prior to installation, the Contractor shall furnish an Affidavit of Compliance certified by the pipe manufacturer that the pipe, fittings and specials furnished under this Contract comply with all applicable provisions of AWWA and these specifications. No pipe or fittings will be accepted for use in the Work on this project until the affidavits have been submitted and accepted in accordance with Section 01300, "Submittals".
- E. All expenses incurred in making samples for certification of tests shall be borne by the Contractor.

1.04 QUALITY ASSURANCE

- A. Tests: Except where otherwise specified, all materials used in the manufacture of the pipe shall be tested in accordance with the applicable Specifications and Standards.

1.05 MANUFACTURER'S SERVICE REPRESENTATIVE

- A. Where the assistance of a manufacturer's service representative is advisable, in order to obtain correct pipe joints, supports, or special connections, the Contractor shall furnish such assistance at no additional cost to the Owner.

1.06 SHIPPING, HANDLING AND STORAGE

- A. Special care in handling shall be exercised during delivery, distribution and storage of pipe to avoid damage and setting up stresses. Damaged pipe will be rejected and shall be replaced at the Contractor's expense. Pipe and specials stored prior to use shall be stored in such a manner as to keep the interior free from dirt and foreign matter.
- B. No pipe shall be dropped from cars or trucks to the ground. All pipe shall be carefully lowered to the ground by mechanical means. In shipping, pipe and fittings shall be blocked in such manner as to prevent damage to castings or lining. Any broken or chipped lining shall be carefully patched. Where it is impossible to repair broken or damaged lining in pipe because of its size, the pipe shall be rejected as unfit for use.

1.07 CLEANUP

- A. After completion of the work, all remaining pipe cuttings, joining and wrapping materials, and other scattered debris, shall be removed from the site. The entire piping system shall be handed over in a clean and functional condition.

PART 2 - PRODUCTS

2.01 GENERAL

- A. All pipes, fittings, and appurtenances shall be installed in accordance with the requirements of the applicable Sections of Division 2 and furnished as specified herein.
- B. All piping systems shall be designed for the maximum expected pressure as defined herein.
- C. All pipes shall be adequately supported in accordance with the requirements of the Section entitled "Pipe Supports".
- D. All PVC pipe shall be continuously and permanently marked with the manufacturer's name, pipe size, and pressure rating in psi.

2.02 PVC PIPE - SOLVENT-WELDED

- A. PVC pipe shall be made from all new rigid unplasticized polyvinyl chloride and shall be Normal Impact Class 12454-B, Schedule 80, NSF 61 (Color white or blue) to conform to ASTM D 1785, unless otherwise shown. Elbows and tees shall be of the same material as the pipe.
- B. Unless otherwise shown, joint design shall be for solvent-welded construction. Where required, unions shall be socket-weld type with Viton O-ring.
- C. Solvent cement for socket type, welded joints shall be industrial grade “grey glue” conforming to ASTM D 2564.
- D. Acceptable Manufacturers:
 - 1. Heitage Plastics South Inc.
 - 2. JM Pipe
 - 3. Accord Industries/Universal 100 Products
 - 4. Charlotte

PART 3 - EXECUTION

3.01 GENERAL

- A. The Contractor shall furnish all labor, tools, materials, and equipment necessary for installation and jointing of the pipe. All piping shall be installed in accordance with the Drawings in a neat workmanlike manner and shall be set for accurate line and elevation. The Owner reserves the right, however, to make minor changes in grade and/or alignments as the Work progresses. All piping shall be thoroughly cleaned before installation, and care shall be taken to keep the piping clean throughout the installation.
- B. Before setting wall sleeves, pipes, castings and pipes to be cast in place, the Contractor shall check the Drawings and equipment manufacturer’s drawings which may have a direct bearing on the pipe location. The Contractor shall verify existing piping tie-in connections and verify size, type, and location before fabricating new piping assemblies.
- C. Piping shall be attached to pumps, valves, equipment, etc., in accordance with the respective manufacturers' recommendations. This includes the use of flexible connectors as required.
- D. For piping assembled with threaded, solvent cemented, welded or soldered joints, liberal use of unions shall be made. Unions shall be provided close to main

pieces of equipment and in branch lines to permit ready dismantling of piping without disturbing main pipe lines or adjacent branch lines. A minimum of one union per straight run of pipe between fitting and/or valves with multiple lengths of pipe shall be used.

- E. All changes in directions or elevations shall be made with fittings, unless otherwise shown.

3.02 LAYING PIPE

- A. Proper and suitable tools and appliances for the safe convenient handling and laying of pipe shall be used and shall, in general, agree with manufacturer's recommendations. At the time of laying, the pipe shall be examined carefully for defects, and should any pipe be discovered to be defective after being laid, it shall be removed and replaced with sound pipe by the Contractor at his expense.
- B. Pipe shall be installed in accordance with the manufacturer's recommendation.
- C. Lines shall be laid straight and plumb. No abrupt changes in direction or grade will be allowed.

3.03 SOLVENT CEMENTED JOINTS

- A. Joints shall be made up in accordance with ASTM D2855 and the manufacturers' recommendations. The Contractor is advised to handle the solvent cements in accordance with ASTM F402. Glue shall be industrial grade suitable for specified pipe schedule.

3.04 AS-BUILT DRAWINGS

- A. As Built Drawings shall be submitted to the Engineer prior to acceptance of the Work and placing the piping in service.

3.05 PIPE SCHEDULE

- A. This Section includes schedule of piping specified herein.
- B. The following abbreviations are used in the schedule:
 - 1. Material
 - 304 SS - 304 Stainless Steel (nonwelded joints) or 304L Stainless Steel - low carbon (welded joints)
 - 316 SS - 316 Stainless Steel (nonwelded joints) or 316L Stainless Steel - low carbon (welded joints)
 - DIP - Ductile Iron

- | | | |
|----|--|---|
| | PVC | - Polyvinylchloride |
| 2. | <u>Wall Thickness</u> | |
| | CL | - Class |
| | Sch | - Schedule |
| | SDR | - Standard Diameter Ratio |
| 3. | <u>Joint Type</u> | |
| | CJ | - Compression Joint |
| | FL | - Flanged |
| | PO | - Push on Joint |
| | RJ | - Restrained Joint |
| | SW | - Solvent Welded |
| | Thd | - Threaded |
| | Wld | - Welded |
| 4. | <u>Fitting Type</u> | |
| | 304 SS | - 304 Stainless Steel (nonwelded joints) or 304L Stainless Steel - low carbon (welded joints) |
| | 316 SS | - 316 Stainless Steel (nonwelded joints) |
| | DI | - Ductile Iron |
| | PVC | - Polyvinylchloride |
| | Stl | - Steel |
| 5. | <u>Interior Surface Protection</u> | |
| | AC | - Asphalt Coated |
| | ACCL | - Asphalt Coated Cement Lined |
| | EL | - Epoxy Lined |
| | GAL | - Galvanized |
| | PVC | - PVC Liner |
| 6. | <u>Exterior Surface Protective Coating</u> | |
| | AC | - Asphalt Coated (below ground only) |
| | GAL | - Galvanized |
| | P | - Painted (above ground only) |

C. PIPE SCHEDULE

Service	Nominal Pipe Diameter (inches)	Material	Thickness Class or Schedule	Pressure (PSIG)		Type of Joints	Type of Fittings	Protective Coating	
				Test	Operating			Interior	Exterior
Sodium Hypochlorite Piping	≤ 4"	PVC	Sch. 80	150	100	SW	PVC		P

END OF SECTION

SECTION 15020 PIPE SUPPORTS

PART 1 - GENERAL

1.01 THE REQUIREMENT

- A. The Contractor shall provide all tools, supplies, materials, equipment, and all labor necessary for the furnishing, construction, and installation of all pipe supports, hangers, guides, and anchors shown, specified, or required for a complete and operable piping system, in accordance with the requirements of the Contract Documents.

1.02 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

- A. Commercial Standards
 - ANSI/ASME B31.1 Power Piping.
 - ASTM A 123 Specifications for Zinc (Hot-Galvanized) Coatings on Products Fabricated from Rolled, Pressed, and Forged Steel Shapes, Plates, Bars, and Strip.

1.03 SUBMITTALS

- A. Shop Drawings
 - 1. The Contractor shall furnish complete shop drawings of all pipe supports, hangers, anchors, and guides, as well as calculations for special supports and anchors, in accordance with Section entitled "Submittals."

PART 2 - PRODUCTS

2.01 GENERAL REQUIREMENTS

- A. As a minimum, supports shall be provided where identified on the Drawings. The Contractor shall note that all pipe support locations are not shown on the Drawings and shall follow the Specifications herein in locating supports. Where deviations and modifications are required, they shall be made subject to review by the Engineer.

- B. All supports and parts required for the installation of the piping systems shall conform to the requirements of the ANSI Code for Pressure Piping B-31.1 and MSS Standard practice SP- 58 and SP-69, except as modified and supplemented by the requirements set forth herein. All piping shall be supported in such a manner to fulfill the intent of this Specification.
- C. All piping shall be rigidly supported from the building structure by approved hangers, inserts, or supports. No piping shall be supported from other piping or from metal stairs, ladders, and walkways unless specifically permitted by the Engineer.
- D. Unless otherwise indicated on the Contract Drawings, piping supports shall consist of concrete piers or fabricated steel supports as specified below. Materials and workmanship shall be in full compliance with the Sections entitled "Concrete Formwork", "Concrete Reinforcement", and Division 5 of these Specifications.
- E. Supporting appurtenances shall be arranged to prevent undue stress on equipment to which piping is connected. Supporting appurtenances shall provide the desired pitch as specified or required for proper drainage of the piping. The pipe suspension shall prevent excessive stress, excessive variation in supporting force, and possible resonance with imposed vibration while the system is in operation. All valves and valve operators shall be rigidly supported independently of the piping. Vertical runs of pipe shall be supported independently of the connected horizontal runs. All vertical pipes shall be supported at each floor or at intervals of at least 10 feet by approved pipe collars, clamps, brackets or wall rests. Supporting appurtenances, when used with copper piping, shall be copper, bronze or bronze plated. All piping shall be supported independently of the equipment to which it is connected. All in line devices (flowmeters, etc.) shall be removable without the need for temporary supports for adjacent and connecting piping.
- F. In general, the type of pipe supports to be used shall be as follows unless otherwise shown on the Drawings:

**Height of Centerline
of Pipe Above Floor**

Type of Support

0 - 3 ft.	Concrete Pier
3 - 6 ft.	Adjustable Pipe Saddle or Bracket Supports
Greater than 6 ft.	Hangers

- G. Wall bracket supports shall be used where shown for pipe to be installed adjacent to a wall. Where it is not feasible to install hanger supports, adjustable pipe saddle supports may be used with the permission of the Engineer.

- H. The Contractor shall install pipe supports in conformance with these Specifications unless otherwise shown on the Contract Drawings. Where deviations and modifications are required, they shall be made only with the permission of the Engineer. A detailed layout of pipe supports for each building shall be submitted to the Engineer for review.
- I. For all couplings, supports shall be placed on each side and as close to the coupling as, possible. Supports shall be of the guide type which prevent axial movement resulting in pipe deflection or misalignment.
- J. Structural steel members can be used to support pipe.
- K. Stainless steel piping installed in tanks, channels or conduits shall be supported by hangers, hanger rods, hardware and inserts fabricated of 316 stainless steel.
- L. Where a specific pipe support is called for on the Drawings, this support shall be used as and where indicated for the specific application. In general, spacing of supports shall be as specified herein unless specifically modified by the Engineer.
- M. All support, saddles, bearing plates, and hangers, shall support by direct contact the pipe a minimum of 120 degrees around, except as specified herein.
- N. Where continuous concrete inserts are used, the maximum concentrated load on the end two (2) inches of inserts, with laying lengths of eight (8) inches or longer, shall not be more than 50 percent of the maximum recommended loading of the channel. All pipe supports shall be positioned such that they will not interfere with the use of hoisting equipment, where provided.
- O. Pipes subject to thermal expansion shall be installed perfectly aligned and concentrically guided. These piping (process air, hot water, etc.) support systems shall be roller supports as specified herein and shall be submitted to the Engineer for review. The submittal shall show location of anchors, concentric pipe guides and expansion joints (single or double).

2.02 PIPE SUPPORT SPACING

- A. The distance between supports for each size of pipe shall not exceed those listed in the attached schedule. However, if the pipe size to be supported is not listed in the schedule, the next smaller nominal pipe size spacing shall be used. In all cases, there shall be a minimum of one support per laying length of pipe on uninterrupted horizontal runs. This support shall be placed within one (1) foot of the joint. If the pipe manufacturer recommends a smaller spacing interval than specified herein, then the manufacturer's spacing shall be used.
- B. The distance between supports shall not exceed that listed in the following schedule unless otherwise noted:

<u>Nominal Pipe Size (in.)</u>	<u>Metallic Piping (ft.)</u>	<u>Plastic, Fiberglass and Copper Piping (ft.)</u>
1/2	5	3
3/4 to 1-1/2	6	3
2 to 3	6	4
4	10	5
6 and larger	10	6

2.03 PIPE HANGERS AND HANGER RODS

- A. Where pipe hangers are used, they shall be of the clevis or friction clamp type except where there is longitudinal movement due to temperature changes. Where longitudinal movement occurs, the adjustable yoke roller type hanger shall be used. See the hanger schedule below for location/type of hangers to be used. Pipe hangers shall be capable of supporting the pipe in all conditions of operation. They shall allow free expansion and contraction of the piping, and prevent excessive stress resulting from transferred weight being induced into the pipe or connected equipment.
- B. Hangers shall be designed so that they can not become disengaged by movements of the supported pipe. Lock nuts shall be used on all hangers. All piping systems shall be supported by means of hangers having an individual means of vertical adjustment for leveling of lines after piping is in place.
- C. Spacing and arrangements shall conform to the requirements of Section 6, Chapter 1 of ANSI B31-1 code for pressure piping. Spacing indicated shall be the maximum spacing.
- D. Hanger rods shall be subject to tensile loading only. At hanger locations where lateral or axial movement is anticipated, suitable linkage shall be provided to permit swing. Stainless steel hangers required in the pipe hanger schedule shall be supported by hanger rods, hardware and inserts fabricated of 316 stainless steel. All other rods, hardware and inserts shall be fabricated of hot-dip galvanized steel.
- E. All concrete inserts and/or expansion bolts shall be capable of supporting the maximum working load of the rod which is attached to it.
- F. Sheet metal insulation protector saddle shall be used for all hot water piping, refrigerant piping, etc. Saddle shall be Anvil, or equal.

- G. A neoprene isolation pad shall be provided between galvanized clevis and stainless steel piping.

2.04 SADDLES

- A. Pipe saddles shall be used to cradle horizontal piping when being supported from below except where expansion of pipe requires rollers. All saddles shall be capable of being adjusted after installation.

2.05 BASE ELBOWS, TEES AND CONCRETE PEDESTALS

- A. Base elbows, tees and concrete pedestals shall be provided at the locations shown on the Drawings and as specified. All vertical runs of pipe shall be supported on a base elbow and/or concrete pedestal. After completion of curing of the concrete pedestal, the piping shall be adjusted to the proper grade.

2.06 HARNESSED PIPE SUPPORTS

- A. Pipe harness straps shall be provided on concrete pedestal supports where shown on the Drawings and required by these Specifications.
- B. Harness straps shall be 1/4-inch thick, 316 stainless steel and attached to the concrete pedestal supports by stainless steel anchors.
- C. Strap width shall be in accordance with the Table below:

<u>Pipe Diameter</u>	<u>Strap Width</u>
4 inches and below	2 inches
6 inches and above	3 inches

2.07 METAL FRAMING SYSTEMS

- A. A metal framing system as manufactured by Unistrut, Globe-Strut or approved equal may be used for supporting the piping system. The metal framing system shall be designed and installed according to manufacturer's recommended procedure and shall be capable of supporting the piping system as specified herein.
- B. Channels, inserts and closure strips shall be cold formed mild steel conforming to ASTM A- 245.

- C. Fittings shall be Hot Rolled Steel conforming to ASTM A-30 or ASTM A-245. Fasteners shall conform to ASTM A-30. All pieces shall be hot-dip galvanized after fabrication, unless otherwise noted on the Drawings.

2.08 PLASTIC PIPE SUPPORTS

- A. All pipe supports that will be used with plastic pipe shall be provided with a bearing plate where the width of hanger is less one-half (1/2) of the supported pipe's diameter. The bearing plate must provide bearing 180 degrees around and shall have a minimum laying length of 1/2 the pipe diameter or three (3) inches minimum. The bearing plates shall be rigid, corrosion resistant and not subject to long term plastic flow properties. To assure one hundred (100) percent bearing, the pipe shall be seated on a filler. This material shall be compatible for use with the pipe. Clamps to be used with plastic pipe shall be fitted snug and shall not exert clamp pressure on the pipe. All pipe supports and hardware used for chemical systems shall be fabricated of fiberglass reinforced plastic (FRP).

2.09 THRUST RESTRAINT

- A. Pipe anchors shall be spaced to divide pipe into sections. Anchors shall be located at valves, changes in direction of piping, and major branch connections. Anchors shall be of a type recommended by the pipe manufacturer and reviewed by the Engineer.
- B. On all piping, where sleeve type couplings and flanged adapters are located near fittings or valves, tie rods shall span across the coupling as specified herein to restrain movements of the pipe along its axial direction. Such restraints can be deleted if both ends of the pipe are anchored in a concrete structure with no fitting or valve occurring within the span length, in the suction piping to a pump where the coupling is between the pump and valve, or when the water pressure measured at the crown of the pipe is less than five (5) feet.
- C. All sleeve type couplings shall be harnessed except where noted. The harnessing shall be as shown on the drawings or as specified herein. Harnesses for steel pipe shall be in accordance with AWWA Manual M11 for the pipe size and pressure, working or test whichever is greater.
- D. Harnesses for ductile iron pipe shall be tie rods spanning between adjacent flanges. Friction clamps shall not be permitted. The size and number of tie rods shall be the same as for steel pipe for the same pressure and pipe size.
- E. Where the distance between adjacent flanges is in excess of ten (10) feet or where a harness can not be used, the pipe supports adjacent to the coupling shall restrain the piping preventing any linear or angular movement resulting in the pipe separating from the coupling or misalignment in the joint.

- F. Where expansion joints are used, control units shall be provided. All tie rods and control units shall be installed in accordance with the manufacturer's recommended procedures.
- G. Tie rods and associated hardware shall be 316 stainless steel.
- H. In general, all valves and fittings shall be restrained in an approved manner such that the unbalanced force developed at them shall be supported independent of the piping system.

2.10 MANUFACTURED SUPPORTS

- A. Where not specifically shown or detailed, designs, generally accepted as exemplifying good engineering practice, using stock or production parts, shall be utilized wherever possible. Such parts shall be locally available, new, of best commercial quality, designed and rated for the intended purpose.
- B. Support products shall be supplied by the following manufacturer's, or equal:
 - 1. Basic Engineers, Pittsburgh, PA;
 - 2. Bergen-Paterson Corp., Boston, MA;
 - 3. Elcen Metal Products Company, Franklin Park, IL;
 - 4. Anvil.
 - 5. NPS Industries, Inc., Secaucus, NJ.

2.11 COATING

- A. Unless otherwise shown or specified, all fabricated pipe supports, other than stainless steel or non-ferrous supports, shall be blast-cleaned after fabrication and hot-dip galvanized in accordance with ASTM A 123.
- B. Other than the supports mentioned in Paragraph 2. 11A, all supports shall receive protective coatings in accordance with the requirements of Section entitled "Painting."

PART 3 - EXECUTION

3.01 INSTALLATION

- A. All pipe supports, hangers, brackets, anchors, guides, and inserts shall be fabricated and installed in accordance with the manufacturer's printed instructions

and ANSI/ASME B31.1. All concrete inserts for pipe hangers and supports shall be coordinated with the formwork.

- B. Pipe supports and hangers shall be positioned in such a way as to produce an orderly, neat piping system. All hanger rods shall be vertical, without offsets. Hangers shall be adjusted to line up groups of pipes at the proper grade for drainage and venting, as close to ceilings or roofs as possible, without interference with other Work.
- C. The distance between supports for each size of pipe shall not exceed those listed in the attached schedule. However, if the pipe size to be supported is not listed in the schedule, the next smaller nominal pipe size spacing shall be used. In all cases, there shall be a minimum of one support per laying length of pipe on uninterrupted horizontal runs. This support shall be placed within one foot of the joint. If the pipe manufacturer recommends a smaller spacing interval than specified herein, then the manufacturer's spacing shall be used.
- D. Each section of the pipe line shall be laid out and all connections made while the pipe is held in temporary supports. After completion of connections, the pipe may be clamped in position. When piping is correctly installed, a clamp or pipe connection may be loose or removed without displacement of the pipe line.

3.02 FABRICATION

- A. Pipe hangers and supports shall be fabricated and installed by experienced welders and fitters, using the best welding procedures available. Fabricated supports shall be neat in appearance without sharp corners, burrs, and edges.

END OF SECTION

SECTION 15100 VALVES

PART 1 - GENERAL

1.01 THE REQUIREMENT

- A. The Contractor shall provide all tools, supplies, materials, equipment, and labor necessary for furnishing, installing, adjusting, and testing of all valves and appurtenant work, complete and operable, in accordance with the requirements of the Contract Documents.
- B. The provisions of this Section shall apply to all valves and valve operators specified in the various Sections of these Specifications except where otherwise specified in the Contract Documents.

1.02 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

A. Commercial Standards:

ANSI B16.1	Cast Iron Pipe Flanges and Flanged Fittings, Class 25, 125, 250, and 800.
ANSI B16.5	Pipe Flanges and Flanged Fittings, Steel Nickel Alloy and Other Special Alloys.
ANSI B16.21	Nonmetallic Flat Gaskets for Pipe Flanges
ANSI B18.21	Square and Hex Bolts and Screws - Inch Series
ANSI/ASME B1.20.1	General Purpose Pipe Threads (Inch).
ASTM A 48	Specification for Gray Iron Castings.
ASTM A 126	Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings.
ASTM A 536	Specification for Ductile Iron Castings.
ASTM B 62	Specification for Composition Bronze or Ounce Metal Castings.

ASTM B 584	Specification for Copper Alloy Sand Castings for General Applications.
ASTM D 1784	Specifications for Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds.
ASTM D 2241	Specification for Poly (Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR-Series).
NSF/ANSI 61	Standards for Drinking Water System Components

1.03 SUBMITTALS

- A. Shop Drawings: Shop drawings of all valves and operators including associated wiring diagrams and electrical data, shall be furnished as specified in Section 01300, "Submittals".
- B. Data to be submitted shall include but not be limited to:
 - 1. Catalog data consisting of specifications, assembly and installation drawings, and a parts schedule that identifies the materials to be used various parts and accessories. The illustrations shall be in sufficient detail to serve as a guide for assembly and disassembly.
 - 2. Weight of all component parts and assembled weight.
 - 3. Listing of all lubricants required for the equipment.
 - 4. Spare parts and special tools.
 - 5. Operation and maintenance manuals as required by Section 01300 entitled "Submittals".
 - 6. Certified mechanical and electrical drawings and connection details. Power and control wiring diagrams, including terminals and numbers.
 - 7. Literature and drawings describing the equipment in sufficient detail, including parts list and materials of construction, to indicate full conformance with the detailed Specifications.
 - 8. Manufacturer's certified data showing actuator characteristics of torque, speed, power requirements and consumption, options provided, operational flexibility characteristics to be provided, and total unit weight. This information shall be prepared specifically for each actuator size and type proposed. Catalog sheets showing general information and options available will not be acceptable.

9. Functional description of internal and external instrumentation and controls to be supplied including list of parameters monitored, controlled or alarmed.
10. Valve catalog torque requirements at given ΔP shut-off. Actuator output torque, to include a minimum of 20% safety factor.
11. Field performance test procedures.

1.04 QUALITY ASSURANCE

- A. Unless otherwise specified, each valve body shall be tested under a test pressure equal to twice its design water-working pressure.
- B. Unless otherwise specified, all interior bronze parts of valves shall conform to the requirements of ASTM B 62, or, where not subject to dezincification, to ASTM B 584.

1.05 TOOLS

- A. Special tools, if required for normal operation and maintenance shall be supplied with the equipment.

PART 2 - PRODUCTS

2.01 VALVES – GENERAL REQUIREMENTS

- A. The Contractor shall furnish all valves, stem extensions, and other accessories as shown or specified. All valves shall be new and of current manufacture.
- B. All valves shall have a minimum design pressure rating of 150 psi. For service applications with pressures in excess of 150 psi, valves shall have a minimum pressure rating in excess of the service application working pressure.
- C. All valves and appurtenances shall have the name of the maker and the working pressure for which they are designed cast in raised letters upon some appropriate part of the body.
- D. Cast iron parts of valves shall meet the requirements of ASTM A 126, "Standard Specifications for Grey Iron Castings for Valves, Flanges and Pipe Fittings, Class 'B'". Flanged ends shall be flat-faced and have bolt circle and bolt patterns conforming to ANSI B16.1 Class 125 unless otherwise specified hereinafter.

- E. All castings shall be clean and sound, without defects of any kind and no plugging, welding or repairing of defects will be permitted. All bolt heads and nuts shall be hexagonal conforming to ANSI B18.2.1. Gaskets shall be full face and made of natural or synthetic elastomers in conformance with ANSI B16.21 suitable for the service characteristics, especially chemical compatibility and temperature. Nonferrous alloys of various types shall be used for parts of valves as specified. Where no definite specification is given, the material shall be the recognized acceptable standard for that particular application.
- F. Where subject to dezincification, gate valve stems shall be of bronze to ASTM B 62, containing not more than 5 percent of zinc nor more than 2 percent of aluminum. Where dezincification is not a problem, bronze to ASTM B 584 may be used. For valve stems with a minimum tensile strength of 60,000 psi, a minimum yield strength of 40,000 psi, and an elongation of at least 10 percent in 2 inches, as determined by a test coupon poured from the same ladle from which the valve stems to be furnished are poured.
- G. Except where otherwise specified, ferrous surfaces, exclusive of stainless steel surfaces, in the water passages of all valves 4 inch and larger, as well as the exterior surfaces of all submerged valves, shall receive a fusion-bonded epoxy coating in accordance with AWWA C550. Flange faces of valves shall not be epoxy coated. The Contractor, through the valve manufacturer, shall certify in writing that such coating has been applied and tested in the manufacturing plant prior to shipment, in accordance with these Specifications.

2.02 OPERATORS, GENERAL

- A. Valves and gates shall be furnished with operators, provided by the valve or gate manufacturer. All operators of a given type shall be furnished by the same manufacturer. All valve operators, regardless of type, shall be installed, adjusted, and tested by the valve manufacturer at the manufacturing plant. Operator orientation shall be verified with the Engineer prior to installation. If this requirement is not met, changes to orientation shall be made at no additional cost.
- B. All operators, unless otherwise specified, shall turn counter- clockwise to open. Operators shall have the open direction clearly and permanently marked. All valve operators, manual, electric and pneumatic, shall be provided with the valve by the valve manufacturer. The Contractor, through the valve manufacturer, shall be solely responsible for the selection of the proper operator to meet the operating conditions specified herein. Field calibration and testing of the operators and valves to ensure a proper installation and an operating system shall be the responsibility of the Contractor.
- C. All manual operators shall have levers or handwheels, unless otherwise shown. Valves mounted higher than 6 feet above floor or operating level shall have chain

operators. Chains shall extend to within three (3) feet from operating floor. Unless otherwise shown or specified, valves of sizes 4-inch and larger shall have gear-assisted operators. Valves over five (5) feet to center line shall be rolled toward the operating side to make the handwheel or wrench more accessible.

- D. Operation of valves and gates shall be designed so that the effort required to operate the handwheel, lever or chain shall not exceed 40 pounds applied at the extremity of the wheel or lever. The handwheels on valves 14 inches and smaller shall not be less than 8 inches in diameter, and on valves larger than 14 inches the handwheel shall not be less than 12 inches in diameter.

2.03 OPERATORS, PNEUMATIC

- A. Where indicated on the Drawings, valves shall be supplied with double acting pneumatic operators designed for OPEN/CLOSE service. The actuators shall be pneumatically operated fail-safe spring return to close (i.e. normally closed type) units which meet the standards stipulated in AWWA C541-08.
- B. Pneumatic operators shall be of the vane type with only one (1) moving part. Actuator shall have a vane position indicator milled into the output shaft. One side of the actuator shall be manufactured to ISO/NAMUR mounting standards. Seals shall be double opposed lip seals with stainless steel expanders. Seal backing plates shall be steel. O-ring seals on vane will not be acceptable.
- C. The actuator housing shall be fabricated of pressure die cast ADC1 or A356 aluminum casting will all surfaces coated with thermosetting polyester powder coating. Zinc housings will not be permitted.
- D. Vane/Output Shaft shall be fabricated of steel conforming to ASTM A148 per AWWA C541-2, Grade 115-95 heat treated with electro less nickel plated finish. Vanes seals shall be HBNR highly-saturated Buna Nitrile. Shaft seals shall be Buna N and vane seal expanders shall be via a stainless steel spring.
- E. The pneumatic operators shall have a minimum working pressure of 150 psi per AWWA C541-08 standards with an overload pressure of 220 psi. Actuators with a published 100 psi maximum operating pressure shall not be acceptable. The actuators shall be sized based on 25 psi internal line pressure and a minimum supply air pressure of 80 psi.
- F. The pneumatic operators shall be manufactured by K-TORK Actuators and Controls, a Rotork Company, no substitutions.

2.04 BUTTERFLY VALVES

- A. Where indicated on the Drawings, butterfly valves shall be supplied and installed. Butterfly valves shall conform to AWWA C504 – latest edition, Class 150-B. Valves shall be flanged, mechanical joint, wafer or lug type as shown on the Drawings. The valve body shall be cast iron, one-piece design with one-piece Type 304 stainless steel shaft and EPDM resilient seats. The resilient seat shall be bonded to the valve body. The seat design shall provide bi-directional shutoff to the full rating of the valve. The interior of each valve shall be epoxy lined. Each valve disc shall rotate through an angle of 90-degrees from the fully opened position to the fully closed position. Where indicated on the Drawings, the valves shall be equipped with a minimum 52-inch extended bonnet. Three (3) 30-inch filter drain valves and three (3) 20-inch filter fill valves shall be supplied as part of the current Contract. Each of the valves (Total of 6) shall be equipped with a properly sized pneumatic operator per Article 2.03 of this Section.
- B. Suppliers, or Engineer approved equal.
 - 1. DeZurik

2.05 PLASTIC BALL VALVES

- A. Plastic ball valves shall be used at all PVC pipe installations where required, and be made of polyvinyl chloride (PVC). All valves shall have manual operators unless otherwise specified or shown on the Drawings.
- B. All plastic ball valves shall have solvent weld type union ends or flanged ends to ANSI B16.5, Class 150, for easy removal. The balls shall have full size ports and Teflon seats. All body seals, union O-ring seals, and stem seals shall be Viton. The valves shall be suitable for a maximum working non-shock pressure of 150 psi at Plastic ball valves used for commercial bleach piping shall be provided with factory drilled vent in the balls. The valves shall be installed so that the vent points upstream when the valve is in the closed position. Contractor shall coordinate position of each vented valve with Engineer prior to installation.
- C. Suppliers, or equal:
 - 1. ASAHI-AMERICA.
 - 2. GF Plastic Systems, Inc.
 - 3. ITT Engineered Valves.
 - 4. NIBCO Inc. (Chemtrol).
 - 5. Watts Regulator Company.

2.06 PLASTIC VACUUM BREAKERS

- A. Plastic vacuum breakers shall be suitable for use with the conveyed fluid. Vacuum breakers shall be PVC with Viton or PVDF diaphragms, unless otherwise noted. Vacuum breakers, unless otherwise noted, shall be 1-inch and installed as 316 SS pipe nipples. Where vacuum breakers are installed, solvent welded PVC union fittings shall also be installed to facilitate removal. Thermoplastic breakers shall be Series VBM manufactured by Plastomatic Valves, Inc.

2.07 PLASTIC PRESSURE RELIEF VALVES

- A. Plastic relief valves shall be fabricated of Type 1, Grade 1, PVC Material. Seals shall be Teflon. Valves shall be 1-inch unless otherwise noted and shall be installed on 1-inch 316 SS pipe nipples. The pressure relief shall be field adjustable from 5-125 psi. Where pressure relief valves are installed, solvent welded PVC union fittings shall also be installed to facilitate removal. The valves shall be PRH Series manufactured by Plastomatic Valves, Inc.

PART 3 - EXECUTION

3.01 VALVE INSTALLATION

- A. All valves and appurtenances shall be installed in accordance with the manufacturer's written instructions and in the locations shown, true to alignment and rigidly supported. Any damage to the valves and appurtenances shall be repaired to the satisfaction of the Engineer before they are installed.
- B. All valves shall be installed to provide easy access for operation, removal, and maintenance and to avoid conflicts between valve operators and structural members or handrails.

3.02 PAINTING AND COATINGS

- A. Valves shall be shop primed and field finish painted for interior and exposed service in accordance with the Section 09900 entitled "Painting". Except where otherwise specified, all exposed interior ferrous surfaces, exclusive of stainless steel surfaces, of valves 4-inch and larger, as well as the exterior surfaces of all submerged and buried valves, shall receive a fusion-bonded epoxy coating in accordance with AWWA C550. Flange faces of valves shall not be epoxy coated. The Contractor through the valve manufacturer shall certify in writing that such coating has been applied and tested in the manufacturing plant prior to shipment, in accordance with these Specifications.

3.03 TESTING

- A. All valves shall be hydrostatically field tested at the specified pipeline test pressures specified in the piping sections. Any leakage or “sweating” of joints shall be stopped and all joints shall be tight.

END OF SECTION

SECTION 15995

PIPELINE TESTING AND DISINFECTION

PART 1 - GENERAL

1.01 THE REQUIREMENT

- A. The Contractor shall perform flushing and testing of all pipelines and appurtenant piping, fittings and valves, complete, including conveyance of test water to point of use and all disposal thereof, all in accordance with the requirements of the Contract Documents. The cost of all testing shall be borne by the Contractor.

1.02 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

- ### A. Commercial Standards

ANSI/AWWA C600 Standard for installation of Ductile –Iron and their appurtenances.

ANSI/AWWA C651 Standard for Disinfection Water Mains.

1.03 SUBMITTALS

- A. A testing schedule, including proposed plans for water conveyance, control and disposal shall be submitted in writing for review a minimum of 48 hours before testing is to start.
- B. Contractor shall submit certified test reports as required by this Section.

PART 2 - PRODUCTS

2.01 MATERIALS REQUIREMENTS

- A. All test equipment, temporary valves or bulkheads, or other water control equipment and materials shall be determined and furnished by the Contractor subject to the Engineer's review. No materials shall be used which would be injurious to the construction or its future function.

PART 3 - EXECUTION

3.01 GENERAL

- A. Unless otherwise provided herein, water for testing pipelines will be furnished by the Owner; however, the Contractor shall make all necessary provisions for conveying the water from the Owner.
- B. All pressure pipelines shall be tested in accordance with ASNI/AWWA C600. All testing operations shall be performed in the presence of the Owner.

3.02 HYDROSTATIC TESTING OF WATER AND PROCESS PIPELINES

- A. Prior to hydrostatic testing, all pipelines shall be flushed or blown out as appropriate. The Contractor shall test all pipelines either in sections or as a unit. No section of the pipeline shall be tested until all field-placed concrete or mortar have attained an age of 14 days. The test shall be made by closing valves when available, or by placing temporary bulkheads in the pipe and filling the line slowly with water. The Contractor shall be responsible for ascertaining that all test bulkheads are suitably restrained to resist the thrust of the test pressure without damage to, or movement of, the adjacent pipe. Care shall be taken to see that all air vents are open during filling.
- B. The pipeline shall be filled at a rate which will not cause any surges or exceed the rate at which air can be released through the air valves at a reasonable velocity and all the air within the pipeline shall be properly purged. After the pipeline or section thereof has been filled, it shall be allowed to stand under a slight pressure for at least 24 hours to allow the concrete or mortar lining, as applicable, to absorb what water it will and to allow the escape of air from any air pockets. During this period, bulkheads, valves, and connections shall be examined for leaks. If leaks are found, corrective measures satisfactory to the Engineer shall be taken.
- C. The hydrostatic test shall consist of holding the test pressure on the pipeline for a period of 2 hours. The test pressure for piping shall be as required in Section "Piping", measured at the lowest point of the pipeline section being tested. All visible leaks shall be repaired in a manner acceptable to the Engineer.
- D. The maximum allowable leakage for pipelines shall be 20 U.S. gallons per inch of diameter per mile of pipe per 24 hours for pipe with 20-ft or less joint lengths and with rubber-gasketed joints. In the case of pipelines that fail to pass the prescribed leakage test, the Contractor shall determine the cause of the leakage, shall take corrective measures necessary to repair the leaks, and shall again test the pipelines.

3.03 DISINFECTION OF POTABLE WATER LINES

- A. Before being placed in service, all new chemical lines, potable water lines and repaired portions of, or extension to existing mains shall be disinfected. Disinfection shall be done in accordance with the provisions of AWWA Standard C651 and the Palm Beach County Health Department.
- B. The basic disinfection procedure consists of:
 - 1. Preliminary flushing according to Section 5.2.2 of AWWA C600.
 - 2. Chlorine application according to Section 5.2.3 of AWWA C651.
 - 3. Final flushing according to Section 6.1 and 6.2 of AWWA C651.
 - 4. Bacteriological testing according to Standard Methods for Examination of Water and Wastewater.
 - 5. Repeat procedure (if necessary), until satisfactory bacteriological testing has been achieved.
- C. The Contractor shall pay for all costs associated with sample collection and testing by an approved laboratory for conformance to bacterial limitation for public drinking water supplies. As a minimum, two samples on each of 2 consecutive days from each separable part of pipeline will be obtained and analyzed by standard procedures and as outlined by the state and local regulatory agencies. Sampling points shall be as directed by the Engineer. If the minimum samples and required above are not bacterially clear, the disinfectant testing operation shall be repeated at the Contractor's expense.

END OF SECTION

DIVISION 16

ELECTRICAL

SECTION 16050

ELECTRICAL - GENERAL PROVISIONS

PART 1 – GENERAL

1.01 SCOPE OF WORK

- A. Furnish all labor, materials, equipment and incidentals required for a complete electrical system at the City of Delray Beach Water Treatment Plant Upgrades and Improvements as hereinafter specified and shown on the Drawings.
- B. The work, apparatus and materials which shall be furnished under these Specifications and accompanying Drawings shall include all items listed hereinafter and/or shown on the Drawings. Certain equipment will be furnished as specified in other sections of these Specifications which will require wiring thereto and/or complete installation as indicated. All materials necessary for the complete installation shall be furnished and installed by this CONTRACTOR to provide complete power, lighting, instrumentation, wiring, and control systems as indicated on the Drawings and/or as specified herein.
- C. The CONTRACTOR shall furnish and install the necessary cables, protective devices, conductors, exterior electrical system, etc., to serve the electrical loads as indicated on the Drawings and/or as specified. This CONTRACTOR shall install any control panel furnished under other sections on the specifications.
- D. The work shall include complete testing of all equipment and wiring at the completion of the work and making any minor connection changes or adjustments necessary for the proper functioning of the system and equipment. All workmanship shall be of the highest quality; sub-standard work will be rejected.
- E. For process instrumentation furnish and install all conduit, wire and interconnections between primary elements, transmitters, local indicators and receivers.
- F. It is the intent of these Specifications that the electrical system shall be suitable in everyway for the service required. All material and all work which may be reasonably implied as being incidental to the work of this Section shall be furnished at no extra cost.

1.02 SERVICE AND METERING

- A. Permanent electrical power is existing.

1.03 CODES, INSPECTION AND FEES

- A. All material and installation shall be in accordance with the latest edition of the National Electrical Code and all applicable national, local and state codes.
- B. Pay all fees required for permits and inspections including any charges associated with the service modifications.

1.04 TESTS

- A. Test all systems and repair or replace all defective work. Make all necessary adjustments to the systems and instruct the Owner's personnel in the proper operation of the systems.
- B. The following minimum tests and checks shall be made prior to the energizing of electrical equipment. Test shall be by this CONTRACTOR and a certified test report shall be submitted providing all test results and stating that the equipment meets and operates in accordance with the Manufacturer's and job specifications, and that equipment and installation conforms to all applicable Standards and Specifications:
 - 1. Testing and setting of protective relays for calibration and proper operation.
 - 2. Test all 600 volt wire insulation with a megohm meter after installation. Make tests at not less than 1000 volts. Submit a written certified test report of the results to the engineer.
 - 3. The Engineer shall be notified forty-eight (48) hours before tests are made to enable the Owner to have designated personnel present.

1.05 RELATED WORK

- A. Excavation and backfilling for underground electrical work is included in other divisions.
- B. Concrete work is shown on the Drawings and the responsibility of this CONTRACTOR.

1.06 INTERPRETATION OF DRAWINGS

- A. The Drawings are not intended to show exact locations of conduit runs.
- B. All three-phase circuits shall be run in separate conduits unless otherwise shown on the Drawings.

- C. Unless otherwise approved by the Engineer conduit shown exposed shall be installed exposed; conduit shown concealed shall be installed concealed.
- D. Where circuits are shown as "home-runs" all necessary fittings and boxes shall be provided for a complete raceway installation.
- E. This CONTRACTOR shall harmonize the work of the different trades so that interferences between conduits, piping, equipment, mechanical and civil work will be avoided. All necessary offsets shall be furnished so as to take up a minimum space and all such offsets, fittings, etc., required to accomplish this shall be furnished and installed by this CONTRACTOR without additional expense to the Owner. In case interference develops, the Owner's authorized representative is to decide which equipment, piping, etc., must be relocated, regardless which was installed first.
- F. The locations of equipment, outlets, and similar devices shown on the Drawings are approximate only. Exact locations shall be as approved by the Engineer during construction. Obtain in the field all information relevant to the placing of electrical work and in case of any interference with other work, proceed as directed by the Engineer and furnish all labor and materials necessary to complete the work in an approved manner.
- G. Circuit layouts shown are not intended to show the number of fittings, or other installation details. Furnish all labor and materials necessary to install and place in satisfactory operation all power and other electrical systems shown. Additional circuits shall be installed wherever needed to conform to the specific requirements of the equipment.
- H. The ratings of motors and other electrically operated devices together with the size shown for their branch circuit conductors and conduits are approximate only and are indicative of the probable power requirements insofar as they can determine in advance of the purchase of equipment.
- I. All connections to equipment shall be made as shown, specified, and directed and in accordance with the approved shop drawings, regardless of the number of conductors shown on the Electrical Drawings.

1.07 RECORD DRAWINGS

- A. As the work progresses, legibly record all field changes on a set of project Contract Drawings. Drawings shall be made available to all parties during site visits. When the project is completed, furnish a complete set of reproducible "As-Built" drawings and electronic AUTOCAD 2015 copy for the Project Record Documents.

1.08 COMPONENT INTERCONNECTIONS

- A. Component equipment furnished under this Specification will not be furnished as integrated systems.
- B. Analyze all systems components and their shop drawings; identify all terminals and prepare drawings or wiring tables necessary for component interconnection.

1.09 SHOP DRAWINGS

- A. As specified under other sections shop drawings shall be submitted for approval of all materials, equipment, apparatus, and other items as required by the Engineer.
- B. Shop drawings shall be submitted for the following equipment:
 - 1. Conduit & Wire
 - 2. Circuit Breaker
- C. Prior to submittal by this CONTRACTOR, all shop drawings shall be checked for accuracy and contract requirements. Shop drawings shall bear the date checked and shall be accompanied by a statement that the shop drawings have been examined for conformity to Specifications and Drawings. This statement shall also list all discrepancies with the Specifications and Drawings. Shop drawings not so checked and noted shall be returned.
- D. The Engineer's review shall be only for conformance with the design concept of the project and compliance with the Specifications and Drawings. The responsibility of, or the necessity of, furnishing materials and workmanship required by the Specifications and Drawings which may not be indicated on the shop drawings is included under the work of this Section.
- E. The responsibility for all dimensions to be confirmed and correlated at the job site and for coordination of this work with the work of all other trades is also included under the work of this Section.
- F. No material shall be ordered or shop work started until the Engineer's approval of shop drawings has been given.

1.10 CONDUIT DRAWINGS

- A. In addition to the manufacturer's equipment shop drawings, the Contractor shall submit for the approval, electrical installation working drawings for the lift station site and any other

areas where there is work required to be performed containing the following:

1. Concealed and buried conduit layouts shown on floor plans drawn at not less than 1/4-inch = 1-foot-0-inch scale. The layouts shall include locations of enclosed circuit breakers, process equipment, transformers, lift station control panel, motors, switches large junction or pull boxes, instruments, and any other electrical devices connected to concealed or buried conduits.
2. Plans shall be drawn on high quality reproducible, bond size 36-inch x 24-inch, and shall be presented in a neat, professional manner.
3. Concrete floors and/or walls containing concealed conduits shall not be poured until conduit layouts are approved.
4. Site plan conduit layout drawings shall be at 1" = 30'0".
5. ACAD drawing files are available from the Engineer.

1.11 WARRANTY

- A. Provide a warranty for all the electrical equipment in accordance with the requirements of other sections. Under no circumstances shall the warranty be for less than one year starting from substantial completion.

PART 2 - PRODUCTS

2.01 GENERAL

- A. The materials used in all systems shall be new, unused and as hereinafter specified. All materials where not specified shall be of the very best of their respective kinds. Samples of materials or Manufacturer's specifications shall be submitted for approval as required by the Engineer.
- B. Materials and equipment used shall be Underwriters Laboratories, Inc. listed and conform to applicable standards of NEMA and ANSI.
- C. Electrical equipment shall at all times during construction be adequately protected against mechanical injury or damage by water. Electrical equipment shall not be stored out-of-doors. Electrical equipment shall be stored in dry permanent shelters. If any apparatus has been damaged, such damage shall be repaired by this CONTRACTOR at his own cost and expense. If any apparatus has been subject to possible injury by water, it shall be thoroughly dried out and put through such special tests as directed by the

Engineer, at the cost and expense of this CONTRACTOR, or shall be replaced by this CONTRACTOR at his own expense.

- D. All electrical panels, enclosures, wire ways, boxes, cabinets, etc., shall be fabricated of metal. Nonmetallic substitutes are not acceptable. This does not apply to buried work.

2.02 RACEWAYS AND FITTINGS

- A. PVC schedule 80 conduit shall be used for all locations below grade, unless otherwise noted in part C below.
- B. Conduit fitting material and coating shall match corresponding conduit specification.

2.03 CONDUCTORS

- A. Wire for all power circuits shall be 600-volt insulation, type XHHW-2, stranded. Conductors shall be color coded in accordance with the NEC.

2.04 MISCELLANEOUS EQUIPMENT

- A. Boxes and Fittings:
 - 1. Boxes installed in “corrosive” areas shall be non metallic. Hardware shall be 316 stainless steel.

PART 3 - EXECUTION

3.01 CONDUIT INSTALLATION

- A. Where conduits enter or leave all outlet boxes, cabinets safety switches, tap boxes, motor controllers, etc., other than those having threaded hubs, a standard lock nut shall be used on the outside of the box. Conduits shall be supported as required by the N.E.C.
- B. During construction, all installed raceways shall be temporarily plugged or otherwise protected from the entrance of moisture, dirt, trash, plaster, moisture, etc., through neglect of this CONTRACTOR to so protect them, shall be replaced by this CONTRACTOR without additional expense to the Owner. No kinked, clogged or deformed raceways will be permitted on the job. Raceways shall be cut to proper length so that ends will fit accurately in the outlets. Where raceways cross building expansion joints, a suitable raceway expansion fitting shall be used.

- C. Size of raceway shall not be less than NEC requirements, but in no case shall be less than indicated on the Drawings. Combining of circuits, other than detailed, will not be permitted. This CONTRACTOR shall install larger size raceways than detailed where there is excessive length of unbroken run or excessive number of bends.
- D. Bends in metallic raceways shall be made while "cold" and in no case shall the raceways be heated. Raceways shall not be bent through more than 90°. The radius of bends shall not be less than six (6) times the internal diameter of the raceway. Not more than four (4) (equivalent 90°) bends will be permitted between outlets, the bends at the outlets being counted.
- E. Raceways shall be properly aligned, grouped and supported. Exposed raceways shall be installed at the right angles to or parallel to the principal structural members. Concealed raceways, unless otherwise indicated, may take the most direct route between outlets. Raceways shall be firmly held in place. Raceways shall run to avoid trapping wherever possible. Where areas are indicated for future openings, foundations, etc., all raceways shall be run around such areas. This CONTRACTOR shall provide necessary inserts in poured concrete areas.
- F. CONTRACTOR shall provide 4" high concrete housekeeping pads around all conduits above grade.

3.02 BOXES

- A. Install all outlet boxes, tap, junction or pull boxes, device boxes, etc., necessary for the complete installation as indicated on the Drawing and/or specified herein. All boxes shall be rigidly mounted and shall be equipped with suitable screw fastened covers. Where necessary for boxes to be supported away from the ceiling, structural steel members shall be provided for supports. All raceways entering boxes shall be mechanically and electrically secure. Open knockouts or holes in boxes shall be plugged with suitable blanking devices. Boxes shall be cleared of all plaster, dirt, trash, etc., before the installation of any wiring devices and/or before the installation of cover plates.

3.03 CONDUCTORS

- A. Splices, taps and attachments of fittings and lugs shall be electrically and mechanically secure. Approved solder less lugs and connectors shall be used for all conductors with 2-bolt type being used for sized No. 4/0 and larger. There shall be plenty of slack cable in boxes, outlets and cabinets to insure that there is no binding at the bushings. All lugs shall be of the correct sizes for the conductor in order to fit the conductor into a lug.

B. Splices shall be compression type with heat shrink weatherproof boot.

3.04 GROUNDING

- A. The entire electrical system shall be completely and effectively grounded as required by the NEC and as specified hereinafter.
- B. All metallic raceways shall be mechanically and electrically secure at all joints and at all boxes, cabinets, fittings and equipment. Metallic raceways entering the motor control center control panels or other electrical boxes shall be grounded to the appropriate ground bus. All metallic raceways shall be electrically continuous throughout the entire conduit system. Bond wires shall be used in exterior concrete pull boxes.
- C. The ground plane shall consist of 5/8" x 20' copper ground rods spaced at a minimum of 20' apart. Rods and system ground shall be connected to the service entrance ground as required by the drawings. The ground resistance shall be tested and additional rods or plates added to achieve a dry season resistance not exceeding 5 ohms. The CONTRACTOR shall test the ground resistance of the system by 3 point method fall of potential.

3.05 CONDUCTOR COLOR CODING

- A. All conductors shall be color coded as specified hereinafter. Color coding shall be by means of colored insulation material, colored braid or jacket over the insulation, or by means of suitable colored permanent, non-aging insulation tape equal to Scotch #471 or "Texcel 98" applied to conductors at each outlet, cabinet or junction point.
- B. The following system of color coding shall be strictly adhered to:
 - 1. Ground leads, green.
 - 2. Grounded neutral leads, white.
 - 3. All control leads, other than line connected "hot" leads, shall be yellow, orange and brown and/or I.P.C.E.A. standard control cable coding provided method of identification is different from method used on power conductors.
 - 4. The color coding assigned to each phase wire shall be consistently followed throughout the Work.

3.06 SUPPORTS

- A. This CONTRACTOR shall furnish and install all necessary supports for properly mounting all electrical equipment and raceways. Such supports shall be fabricated and installed in a neat and workmanlike manner, and care shall be taken that at no

time shall any portion of the service rack structure be overloaded. Should the service rack structure sustain damage through carelessness or through failure of this CONTRACTOR to properly support and install the electrical equipment, this CONTRACTOR shall bear all costs involved in repairing or replacing such installation.

- B. All steel shapes exposed to the weather shall be galvanized after all cutting, drilling, and/or welding is done. All shop connections shall be welded or riveted and all field connections shall be bolted on all outdoor structures. Where the field cutting or drilling of galvanized steel is necessary, this CONTRACTOR shall apply one (1) coat of priming paint and one (1) finish coat of aluminum and oil paint.

END OF SECTION

APPENDIX A
PBCHD PWS PERMIT

Mission:

To protect, promote & improve the health of all people in Florida through integrated state, county & community efforts.



Rick Scott
Governor

Celeste Philip, MD, MPH
State Surgeon General & Secretary

Vision: To be the Healthiest State in the Nation

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

**In the matter of an
Application for Permit by:**

Marjorie G. Craig
Utility Director
City of Delray Beach
434 South Swinton Avenue
Delray Beach, FL 33444
craigm@mydelraybeach.com

DEP FILE: 138274-492-WC
County: Palm Beach
Project: City of Delray Beach Water
Treatment Plant Upgrades and
Improvements

NOTICE OF PERMIT ISSUANCE

Enclosed is Permit Number 138274-492-WC for the replacement of sodium hypochlorite bulk storage tanks in a community water treatment facility, issued pursuant to 403.087(1), Florida Statutes

This permit is final and effective on the date filed with the clerk of the Florida Department of Health Palm Beach County (the Department) unless a petition is filed in accordance with the paragraphs below or unless a request for extension of time in which to file a petition is filed within the required time frame and conforms to Rule 62-110.106(4), F.A.C. Upon timely filing of a petition or a request for an extension, this permit will not be effective until further Order of the Department.

A person whose substantial interests are affected by this permit may petition for an administrative proceeding (hearing) in accordance with sections 120.569 and 120.57 of the Florida Statutes. The petition must contain the information set forth below and must be filed (received) with the Agency Clerk, Florida Department of Health Palm Beach County, Division of Environmental Public Health, 800 Clematis Street, West Palm Beach, Florida 33401, within 14 days of receipt of this Notice. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under sections 120.569 and 120.57 of the Florida Statutes. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-106.205, F.A.C.

Florida Department of Health

Palm Beach County, Division of Environmental Public Health
P.O. Box 29, 800 Clematis Street, West Palm Beach, FL 33402
PHONE: 561-837-5900 • FAX: 561-837-5294

FloridaHealth.gov, Flhealthpalmbeach.org



Accredited Health Department
Public Health Accreditation Board

A petition must contain the following information:

- (a) The name and address of each agency affected and each agency's file or identification number, if known;
- (b) The name, address, and telephone number of the petitioner; the name, address, and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial interests will be affected by the agency determination;
- (c) A statement of how and when the petitioner received notice of the agency decision;
- (d) A statement of all disputed issues of material fact. If there are none, the petition must so indicate;
- (e) A concise statement of the ultimate facts alleged, including the specific facts which petitioner contends warrant reversal or modification of the Department's action;
- (f) A statement of the specific rules or statutes the petitioner contends requires reversal or modification of the Department's action, including an explanation of how the alleged facts relate to the specific rules or statutes; and
- (g) A statement of the relief sought by petitioner, stating precisely the action that the petitioner wants the Department to take.

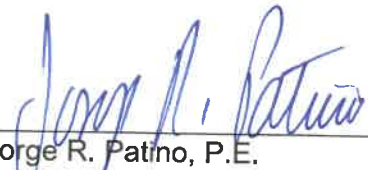
A petition that does not dispute the materials facts on which the Department's action is based shall state that no such facts are in dispute and otherwise contain the same information as set forth above, as required by Rule 28-106.301, F.A.C.

Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that, the Department's final action may be different from the position taken by it in this Notice. Persons whose substantial interests will be affected by any such final decision of the Department on the petition have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above.

When the Order (Permit) is final, any party to the Order has the right to seek judicial review of the Order pursuant to section 120.68 of the Florida Statutes, by filing a Notice of Appeal pursuant to Rule 9.110 of the Florida Rules of Appellate Procedure, with the Clerk of the Department, Florida Department of Health Palm Beach County, Division of Environmental Public Health, 800 Clematis Street, West Palm Beach, Florida 33401; and by filing a copy of the notice of appeal accompanied by the applicable filing fees with the appropriate district court of appeal. The notice of appeal must be filed within 30 days from the date when the final order is filed with the Clerk of the Department.

Executed in the City of West Palm Beach, Florida.

STATE OF FLORIDA DEPARTMENT OF HEALTH
PALM BEACH COUNTY



Jorge R. Patino, P.E.
Environmental Administrator
Division of Environmental Public Health
800 Clematis Street, West Palm Beach, FL 33401
(561) 837-5900

LM/JH/JP

Enclosures: Permit File No.138274-492-WC

CERTIFICATION OF SERVICE

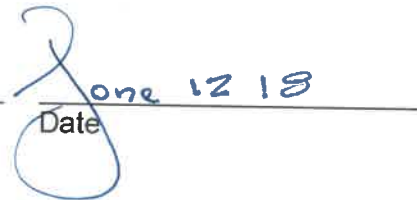
The undersigned duly designated deputy agency clerk hereby certifies that this Notice of Permit Issuance and all copies were mailed/electronically transmitted before the close of business on June 12, 2018 to those persons listed.

Clerk Stamp

FILING AND ACKNOWLEDGEMENT

Filed, on this date, under section 120.52(7), Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.


Clerk


Date

Copies Furnished to:

Engineer-of-Record: Jason A. Pugsley, P.E.
Florida DEP: Kent Edwards

Mission:

To protect, promote & improve the health of all people in Florida through integrated state, county & community efforts.

**Rick Scott**

Governor

Celeste Philip, MD, MPH

State Surgeon General & Secretary

Vision: To be the Healthiest State in the Nation

STATE OF FLORIDA
DOMESTIC WASTEWATER COLLECTION/TRANSMISSION INDIVIDUAL PERMIT

PERMITTEE:

Marjorie G. Craig
Utility Director
City of Delray Beach
434 South Swinton Avenue
Delray Beach, FL 33444
craigm@mydelraybeach.com

PWS ID No.: 4500351

Permit/Certification: 138274-492-WC

Issuance Date: 06/12/2018

Expiration Date: 06/11/2023

County: Palm Beach

Utility: City of Delray beach

Project: City of Delray Beach Water Treatment
Plant Upgrades and Improvements

This permit is issued under the provisions of Chapter 403, Florida Statutes (F.S.), and Chapters 62-4 and 62-604, Florida Administrative Code (F.A.C.).

The above named permittee is hereby authorized to construct the facilities shown on the application and other documents on file with the Department and made a part hereof and specifically described as follows:

Construct: Two (2) 8,500 gallon sodium hypochlorite bulk storage tanks with appurtenances, to replace two (2) 10,000 gallon tanks.

In Accordance With: Application Form DEP 62-555.900(1), specification and engineering drawing sheets G-1, G-2, C-1 through C-9, D-1, and E-1 through E-3 received May 9, 2018, engineering drawing sheet C-11 received June 7 and engineering drawing sheet C-10 received June 11, 2018.

Located: At the Water Treatment Plant located at 200 S.W. 6th Street in the City of Delray Beach, Florida.

To Serve: Water supply to the City of Delray Beach.

Subject to: General Conditions 1 – 15, Regulatory Conditions 1 – 11, Constructions Standards 1 – 9, Operational Requirements 1 – 5, Monitoring Provisions 1 – 3 and Clearance Requirements 1 -3.

Florida Department of Health

Palm Beach County, Division of Environmental Public Health
P.O. Box 29, 800 Clematis Street, West Palm Beach, FL 33402
PHONE: 561-837-5900 • FAX: 561-837-5294

FloridaHealth.gov, FIhealthpalmbeach.org



Accredited Health Department
Public Health Accreditation Board

A. General Conditions

The permittee shall be aware of and operate under the Permit Conditions below. These applicable conditions are binding upon the permittee and enforceable pursuant to Chapter 403, Florida Statutes. [F.A.C. Rule 62-555.533(1)]

1. The terms, conditions, requirements, limitations and restrictions set forth in this permit, are "permit conditions" and are binding and enforceable pursuant to Sections 403.141, 403.727, or 403.859 through 403.861, F.S. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.
2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.
3. As provided in Subsections 403.087(6) and 403.722(5), F.S., the issuance of this permit does not convey any vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state, or local laws or regulations. This permit is not a waiver of or approval of any other department permit that may be required for other aspects of the total project which are not addressed in this permit.
4. This permit conveys no title to land or water, does not constitute State recognition or acknowledgment of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title.
5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.
6. The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed and used by the permittee to achieve compliance with the conditions of this permit, as required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.
7. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law and at reasonable times (reasonable time may depend on the nature of the concern being investigated), access to the premises where the permitted activity is located or conducted to:
 - a. Have access to and copy any records that must be kept under conditions of the permit;
 - b. Inspect the facility, equipment, practices, or operations regulated or required under this permit; and
 - c. Sample or monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:
 - a. A description of and cause of noncompliance; and
 - b. The period of noncompliance, including dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the noncompliance. The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the Department for penalties or for revocation of this permit.
9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the Florida Statutes or Department rules, except where such use is prescribed by Sections 403.111 and 403.73, F.S. Such evidence shall only be used to the extent it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.
10. The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance; provided, however, the permittee does not waive any other rights granted by Florida Statutes or Department rules. A reasonable time for compliance with a new or amended surface water quality standard, other than those standards addressed in Rule 62-302.500, shall include a reasonable time to obtain or be denied a mixing zone for the new or amended standard.
11. This permit is transferable only upon Department approval in accordance with Rule 62- 4.120 and 62-730.300, F.A.C., as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.
12. This permit or a copy thereof shall be kept at the work site of the permitted activity.
13. This permit also constitutes:
 - a. Determination of Best Available Control Technology (BACT)
 - b. Determination of Prevention of Significant Deterioration (PSD)
 - c. Certification of compliance with State Water Quality Standards (Section 401, PL 92-500)
 - d. Compliance with New Source Performance Standards
14. The permittee shall comply with the following:
 - a. Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.
 - b. The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application for this permit. These materials shall be retained at least three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.

- c. Records of monitoring information shall include:
 - i. the date, exact place, and time of sampling or measurements;
 - ii. the person responsible for performing the sampling or measurements;
 - iii. the dates analyses were performed;
 - iv. the person responsible for performing the analyses;
 - v. the analytical techniques or methods used;
 - vi. the results of such analyses.
- 15. When requested by the Department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware the relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

B. Regulatory Section

1. All construction must be in accordance with this permit. Before commencing work on project changes for which a construction permit modification is required per 62-555.536(1), the permittee shall submit to the Department a written request for a permit modification. Each such request shall be accompanied by one copy of a revised construction permit application, the proper processing fee and one copy of either a revised preliminary design report or revised drawings, specifications and design data. [F.A.C. Rule 62-555.536].
2. Permitted construction or alteration of public water supply systems must be supervised during construction by a professional engineer registered in the State of Florida if the project was designed under the responsible charge of a professional engineer licensed in the State of Florida. The permittee must retain the service of a professional engineer registered in the State of Florida to observe that construction of the project is in accordance with the engineering plans and specifications as submitted in support of the application for this permit. [F.A.C. Rule 62-555.520(3)].
3. If prehistoric or historic artifacts, such as pottery or ceramics, stone tools or metal implements, dugout canoe remains, or any other physical remains that could be associated with Native American cultures, or early colonial or American settlement are encountered at any time within the project site area, the permitted project should cease all activities involving subsurface disturbance in the immediate vicinity of such discoveries. The permittee, or other designee, should contact the Florida Department of State, Division of Historical Resources, Compliance and Review Section at 850.245.6333 or 800.847.7278, as well as the appropriate permitting agency office. Project activities should not resume without verbal and/or written authorization from the Division of Historical Resources and the permitting agency. In the event that unmarked human remains are encountered during permitted activities, all work shall stop immediately and the proper authorities notified in accordance with Section 872.05, *Florida Statutes*.
4. If delays will cause project completion to extend beyond the expiration date of this permit, the permittee shall submit to the Department a request to extend the expiration date of this permit including the appropriate processing fee. This request shall specify the reasons for the delay and shall be submitted to the Department for approval prior to the expiration date of this permit. Note that no specific construction permit shall be extended so as to remain in effect longer than five years. [F.A.C. Rule 62-555.536(4)].

5. In accordance with General Condition #11 of this permit, this permit is transferable only upon Department approval. Persons proposing to transfer this permit must apply jointly for a transfer of the permit within 30 days after the sale or legal transfer of ownership of the permitted project that has not been cleared for service by the Department using form, 62-555.900(8), Application for Transfer of a PWS Construction Permit along with the appropriate fee. [F.A.C. Rule 62-555.536(5)]
6. This permit satisfies Drinking Water permitting requirements only and does not authorize construction or operation of this facility prior to obtaining all other necessary permits from other program areas within the Department, or required permits from other state, federal, or local agencies.
7. This permit is for CONSTRUCTION ONLY of the distribution system project. This permit shall not infer that the clearance necessary for connection will be granted. Any such clearance shall be granted only when the connection point has been permitted and cleared for use by the Department and the public water system to which the water main extension will be connected, has the capacity necessary to meet the design water demands of all customers to be served by the water main extension. Partial clearance may be granted, if required.
8. If gasoline contamination is found at the construction site, work shall be stopped and the proper authorities notified. With the approval of the Department, ductile iron pipe and fittings, and solvent resistant gaskets materials shall be used in the contaminated area. The ductile pipe shall be used in the contaminated area. The ductile iron pipe shall extend 100 feet beyond any solvent noted. Any contaminated soil that is excavated shall be placed on an impermeable mat, covered with waterproof covering, and held for disposal. If the site cannot be properly cleaned, then consultation with the Department is necessary prior to continuing with the project construction.
9. This permit does not constitute approval of construction on jurisdictional wetland areas; therefore such approval must be obtained separately from the Water Management District or from DEP ERP Section, as applicable, Permittee shall provide a copy of the permit approval to the Department if water main installation involves activities on wetlands.
10. Suppliers of water shall notify the appropriate DEP District Office or ACHD and affected water customers by no later than the previous business day before initiating any planned permanent or temporary conversion from free chlorine to chloramines or vice versa for disinfection. [F.A.C. Rule 62-555.350(10)(c)]
11. Permittee shall ensure that the well and drinking water treatment facilities will be protected to prevent tampering, vandalism, and sabotage as required by Rule 62-555.315(1) & 62-555.320(5), F.A.C.

C. Construction Standards

1. All products, including paints, which shall come into contact with potable water, either directly or indirectly, shall conform with National Sanitation Foundation (NSF) International, Water Chemicals Codex, Food Chemicals Codex, American Water Works Association (AWWA) Standards and the Food and Drug Administration, as provided in Rule 62-555.320(3), F.A.C.
2. Water supply facilities, including mains, pipe, fittings, valves, fire hydrants and other materials shall be installed in accordance with the latest applicable AWWA Standards and Department rules and regulations. The system shall be pressure and leak tested in accordance with AWWA Standard C600 C603, or C605, as applicable, and disinfected in accordance with AWWA Standard C651-653, as well as in accordance with Rule 62-555.340, F.A.C.
3. The installation or repairs of any public water system, or any plumbing in residential or nonresidential facilities providing water for human consumption, which is connected to a public water system shall be lead free in accordance with Rule 62-555.322, F.A.C.
4. When any existing asbestos cement (AC) pipes are replaced under this permit, the permittee shall do so in accordance with the applicable rules of Federal Asbestos Regulation and Florida DEP requirements. **For specific requirements applicable to AC pipes, the permittee should contact the Air and Waste Management section at DOH Palm Beach County prior to commencing any such activities at (561) 837-5900 #3. Please be aware that a notification is required to be submitted to the Department for a regulated project**
5. Setback distances between potable water wells and sanitary hazards shall be in accordance with 62-555.312, F.A.C. Reclaimed water land application areas must not be located within the setback distance from potable water supply wells established in Chapter 62-610, F.A.C.
6. Permittee shall maintain vertical clearance and horizontal separation between water mains and sanitary sewers, storm sewers, etc. unless approved otherwise by the Department, as provided in Rule 62-555.314, F.A.C., and Section 8.6 of *Recommended Standards for Water Works*, a manual adopted by reference in Rule 62-555.330(3), F.A.C.
7. The new or altered aboveground piping at the drinking water treatment plant shall be color coded and labeled as recommended in Section 2.14 of "Recommended Standards for Water Works, 1997 Edition". [F.A.C. Rule 62-555.320(10)]
8. Permittee shall ensure that there shall be no cross-connection with any non-potable water source in accordance with Rule 62-555.360, F.A.C.
9. The hydropneumatic tank that will be utilized for this project must meet ASME code requirements for the construction and installation of unfired pressure vessels, as provided in Rule 62-555.320(20), F.A.C., and Section 7.2 of *Recommended Standards for Water Works*, a manual adopted by reference in Rule 62-555.330(3), F.A.C.

D. Operational Requirements

1. The supplier of water shall operate and maintain the public water system so as to comply with applicable standards in F.A.C. Rule 62-550 and 62-555.350.
2. The permittee shall provide an operation and maintenance manual for the new or altered treatment facilities to fulfill the requirements under subsection 62-555.350(13), F.A.C. The manual shall contain operation and control procedures, and preventative maintenance and repair procedures, for all plant equipment and shall be made available for reference at the plant or at a convenient location near the plant. Bound and indexed equipment manufacturer manuals shall be considered sufficient to meet the requirements of the subsection.
3. The permittee shall submit a monthly operations report (MOR) DEP Form 62-555.900, to the Department no later than the tenth of each succeeding month.
4. The permittee shall have complete record drawings produced for the project in accordance with Rule 62-555.530(4), F.A.C.
5. The permittee or suppliers of water shall telephone the State Warning Point (SWP), at 1-800-320-0519 immediately (i.e., within two hours) after discovery of any actual or suspected sabotage or security breach, or any suspicious incident, involving a public water system in accordance with the F.A.C. Rule 62-555.350(10).

E. Monitoring Provisions

1. Permittee shall follow the guidelines of Chapters 62-550, 62-555, and 62-560, F.A.C., regarding public drinking water system standards, monitoring, reporting, permitting, construction, and operation.

This facility is a Community Water System as defined in F.A.C. Rule 62-550.200(12) and shall comply with the applicable chemical, radiological, lead and copper, and bacteriological monitoring requirements of F.A.C. Rule 62-550. Such requirements shall be initiated within the quarter that the water treatment facility is placed into service (i.e. January—March or April—June, the preceding are examples of quarters) and the results submitted to the Department.

2. The water treatment plant shall maintain throughout the distribution system a minimum combined chlorine residual of 0.6 mg/l or its equivalent. A minimum system pressure of 20 psi must be maintained throughout the system. Also, safety equipment shall be provided and located outside of chlorine room.
3. To address copper pipe corrosion control and potential black water issues, permittee shall collect at least one sample of raw water from each new well in accordance with F.A.C. Rule 62-555.315(5). The sample shall be analyzed for alkalinity, dissolved iron, dissolved oxygen (D.O.), pH, total sulfide, and turbidity, and the results shall be submitted to the Department.

F. Clearance Requirements

1. The permittee must instruct the engineer of record to request system clearance from the Department within sixty (60) days of completion of construction, testing and disinfecting the system. Bacteriological test results shall be considered unacceptable if the test were completed more than 60 days before the Department received the results. [F.A.C. Rule 62-555.340(2)(c)]

Permitted construction or alteration of a public water system may not be placed into service until a letter of clearance has been issued by this Department. [F.A.C. Rule 62-555.345]

2. Prior to placing this project into service, Permittee shall submit, at a minimum, all of the following to the Department for evaluation and approval for operation, as provided in Rules 62-555.340 and 62-555.345, F.A.C.:
 - a. the engineer's *Certification of Construction Completion and Request for Clearance to Place Permitted PWS Components Into Operation* {DEP Form 62-555.900(9)}; certified record drawings, if there are any changes noted for the permitted project.
 - b. copy of a satisfactory pressure test of the process piping performed in accordance with AWWA Standards. [F.A.C. Rule 62-555.320(21)(a)(1)]
 - c. two consecutive days of satisfactory distribution bacteriological analytical results (see paragraph 3 below).
 - d. For new Community or Nontransient Noncommunity water systems, the permittee must provide a list of positions with employee names, titles and responsibilities. For the required licensed operator(s) provide a copy of the license specific to the water system for each operator. If a position is vacant, indicate the projected hiring date. Indicate the positions/employees that are responsible for acting on behalf of the water system in case of emergency, those authorized to spend money, or to make other decisions. Provide telephone numbers and email contact addresses for these responsible positions/employees. Show only positions/employee information pertaining to the water system. [F.A.C. Rule 62-555.525]
 - e. 10 satisfactory bacteriological analysis results performed on the raw water to be taken 10 consecutive weekdays, or taken twice a day, 6 hours apart for 5 consecutive weekdays.
 - f. satisfactory chemical clearance, to include Primary Inorganic Contaminants, Secondary Contaminants, Volatile Organic Contaminants (VOCs), Synthetic Organic Contaminants (SOCs, aka Pesticides and PCBs), Radionuclides (Gross Alpha, Radium-226, Radium-228, Uranium), Alkalinity, Dissolved Iron, Dissolved Oxygen, pH, Total Sulfide, and Turbidity results from a certified laboratory.

In order to facilitate the issuance of a letter of clearance, the Department requests that all of the above information be submitted as one package.

3. The new facilities shall be cleaned, disinfected, and bacteriologically cleared in accordance with Chapter 62-555, F.A.C. The bacteriological clearance data representative of the storage tank (two samples on consecutive days), the well discharge piping and distribution system (in accordance with the instructions for Bacteriological Sampling Locations shown below) and the untreated well water (two samples per day for 5 consecutive days collected at least six hours apart for each of the two wells) shall be submitted to the Department with the engineer's certification of construction completion. [Section 62-555.340 and 62-555.315(6)(b), F.A.C.]

Bacteriological Sampling Locations: Copies of satisfactory bacteriological analyses taken from locations within the distribution system or water main extension to be cleared, in accordance with Rules 62-555.315 (6), 62-555.340 and 62-555.330, F.A.C. and American Water Works Association (AWWA) Standard C 651-92 as follows:

- *The endpoint of the proposed addition;*
- *Any water lines branching off a main extension;*
- *Every 1,200 feet of water main;*
- *Each location shall be sampled on two separate days (at least 6 hours apart) with sample point locations and chlorine residual readings **clearly indicated** on the report and/or drawings.*
- *Bacteriological sample results will be considered unacceptable if the tests were completed more than 60 days before the Department receives the results.*

Executed in *Palm Beach County, Florida.*

**FLORIDA DEPARTMENT OF HEALTH
PALM BEACH COUNTY**



Alina M. Alonso, MD, Director
DATE: *6/12/18*



APPLICATION FOR A SPECIFIC PERMIT TO CONSTRUCT PWS COMPONENTS

See page 4 for instructions.

I. General Project Information

A. Name of Project: City of Delray Beach Water Treatment Plant Upgrades and Improvements

B. Description of Project and Its Purpose:

A summary of the work scope is presented below:

The project includes the reduction in the sodium hypochlorite bulk storage tank volume at the WTP. The current permit includes two (2) 10,000-gallon storage tanks. The City desires to reduce this storage volume to two (2) 8,500-gallon storage tanks. This reduction is a result of operational and tank failure issues associated with the previously permitted 10,000-gallon tanks. In response to these tank issues, the City has installed one (1) 8,500-gallon storage tank which has already outlived the previously installed, larger tanks.

C. Does project create a "new system" as described under subsection 62-555.525(1), F.A.C.? ☐ Yes, and a completed copy of Form 62-555.900(20), New Water System Capacity Development Financial and Managerial Operations Plan, is attached. ☒ No.

D. Location of Project

1. County Where Project Located: Palm Beach County

2. Description of Project Location:

Delray Beach Water Treatment Plant at 200 S.W. 6th Street, Delray Beach, FL 33444

3. Latitude and Longitude of Each New Treatment Plant and Each New Raw Water Source (attach additional sheets if necessary):

Name of New Treatment Plant or Raw Water Source	Latitude	Longitude
Not Applicable	° ' "N	° ' "W
	° ' "N	° ' "W
	° ' "N	° ' "W
	° ' "N	° ' "W
	° ' "N	° ' "W

E. Estimate of Cost to Construct Project: ~ \$60,000.00

F. Estimate of Dates for Starting and Completing Construction of Project: August 2018 - December 2019

G. Applicant

PWS/Company Name: <u>City of Delray Beach</u>		PWS Identification No.: <u>*4500351</u>
PWS Type: <input checked="" type="checkbox"/> Community <input type="checkbox"/> Non-Transient Non-Community <input type="checkbox"/> Transient Non-Community <input type="checkbox"/> Consecutive		
Contact Person: <u>Marjorie G Craig, P.E.</u>		Contact Person's Title: <u>Utility Director</u>
Contact Person's Mailing Address: <u>434 South Swinton Avenue</u>		
City: <u>Delray Beach</u>	State: <u>Florida</u>	Zip Code: <u>33444</u>
Contact Person's Telephone Number: <u>561-243-7000</u>		Contact Person's Fax Number: <u>561-243-7060</u>
Contact Person's E-Mail Address: <u>craigm@mydelraybeach.com</u>		

* This information is required only if the applicant is a public water system (PWS).

H. Public Water System (PWS) Supplying Water to Project

PWS Name: <u>City of Delray Beach</u>		PWS Identification No.: <u>4500351</u>
PWS Type: <input checked="" type="checkbox"/> Community <input type="checkbox"/> Non-Transient Non-Community <input type="checkbox"/> Transient Non-Community <input type="checkbox"/> Consecutive		
PWS Owner: <u>City of Lake Worth</u>		
Contact Person: <u>Marjorie G Craig, P.E.</u>		Contact Person's Title: <u>Utility Director</u>
Contact Person's Mailing Address: <u>434 South Swinton Avenue</u>		
City: <u>Delray Beach</u>	State: <u>Florida</u>	Zip Code: <u>33461</u>
Contact Person's Telephone Number: <u>561-243-7000</u>		Contact Person's Fax Number: <u>561-243-7060</u>
Contact Person's E-Mail Address: <u>craigm@mydelraybeach.com</u>		

RECEIVED

MAY 09 2018

Florida Department of Health - PBC
Plan Review

APPLICATION FOR A SPECIFIC PERMIT TO CONSTRUCT PWS COMPONENTS

Project Name: City of Delray Beach Master Lift Station No. 1 Rehabilitation	Applicant: City of Delray Beach
---	---------------------------------

I. Public Water System (PWS) that Will Own Project after It Is Placed into Permanent Operation

PWS Name: City of Delray Beach		PWS Identification No.: *4500351
PWS Type: * <input checked="" type="checkbox"/> Community <input type="checkbox"/> Non-Transient Non-Community <input type="checkbox"/> Transient Non-Community <input type="checkbox"/> Consecutive		
PWS Owner: City of Delray Beach		
Contact Person: Marjorie G Craig, P.E.		Contact Person's Title: Utility Director
Contact Person's Mailing Address: 434 South Swinton Avenue		
City: Delray Beach	State: Florida	Zip Code: 33444
Contact Person's Telephone Number: 561-243-7000		Contact Person's Fax Number: 561-243-7060
Contact Person's E-Mail Address: craigm@mydelraybeach.com		

* This information is required only if the owner/operator is an existing PWS.

J. Professional Engineer(s) or Other Person(s) in Responsible Charge of Designing Project*

Company Name: Mathews Consulting, Inc.		
Designer(s): Jason A. Pugsley, P.E.		Title(s) of Designer(s): Vice President/Florida Ops Mgr.
Qualifications of Designer(s):		
<input checked="" type="checkbox"/> Professional Engineer(s) Licensed in Florida – License Number(s): 67426		
<input type="checkbox"/> Public Officer(s) Employed by State, County, Municipal, or Other Governmental Unit of State [†]		
<input type="checkbox"/> Plumbing Contractor(s) Licensed in Florida – License Number(s): ^		
Mailing Address of Designer(s): 477 S. Rosemary Avenue, Suite 330		
City: West Palm Beach	State: Florida	Zip Code: 33401
Telephone Number of Designer(s): 561-655-6175		Fax Number of Designer(s): 561-6556179
E-Mail Address(es) of Designer(s): jpugsley@baxterwoodman.com		

* Except as noted in paragraphs 62-555.520(3)(a) and (b), F.A.C., projects shall be designed under the responsible charge of one or more professional engineers licensed in Florida.

[†] Attach a detailed construction cost estimate showing that the cost to construct this project is \$10,000 or less.

[^] Attach documentation showing that this project will be installed by the plumbing contractor(s) designing this project, documentation showing that this project involves a public water system serving a single property and fewer than 250 fixture units, and a detailed construction cost estimate showing that the cost to construct this project is \$50,000 or less.

II Certifications

A. Certification by Applicant

I am duly authorized to sign this application on behalf of the applicant identified in Part I.G of this application. I certify that, to the best of my knowledge and belief, this project complies with Chapter 62-555, F.A.C., and provides assurance of compliance with Chapter 62-550, F.A.C. I also certify that construction of this project has not begun yet.

 Signature and Date	Marjorie G Craig, P.E. Printed or Typed Name	UTILITIES Utility Director Title
------------------------	---	--

B. Certification by PWS Supplying Water to Project

I am duly authorized to sign this application on behalf of the PWS identified in Part I.H of this application. I certify that said PWS will supply the water necessary to meet the design water demands for this project. I certify that, to the best of my knowledge and belief, said PWS's connection to this project will not cause said PWS to be, or contribute to said PWS being, in noncompliance with Chapter 62-550 or 62-555, F.A.C. I also certify that said PWS has reviewed the preliminary design report or drawings, specifications, and design data for this project and that said PWS considers the connection(s) between this project and said PWS acceptable as designed.

• Name(s) of Water Treatment Plant(s) to Which this Project Will Be Connected: City of Delray Beach Central Water Treatment Plant

• Total Permitted Maximum Day Operating Capacity of Plant(s), gpd: 26 MGD

• Total Maximum Day Flow at Plant(s) as Recorded on Monthly Operating Reports During Past 12 Months, gpd: 22 MGD

 Signature and Date	Marjorie G Craig, P.E. Printed or Typed Name	UTILITIES Utility Director Title
------------------------	---	--

APPLICATION FOR A SPECIFIC PERMIT TO CONSTRUCT PWS COMPONENTS

Project Name: City of Delray Beach Master Lift Station No. 1 Rehabilitation

Applicant: City of Delray Beach

C. Certification by PWS that Will Own Project after It Is Placed into Permanent Operation

I am duly authorized to sign this application on behalf of the PWS identified in Part I.I of this application. I certify that said PWS will own this project after it is placed into permanent operation. I also certify that said PWS has reviewed the preliminary design report or drawings, specifications, and design data for this project and that said PWS considers this project acceptable as designed.

Marjorie G Craig 5/1/18 Marjorie G Craig, P.E. Utilities Director
Signature and Date Printed or Typed Name Title

D. Certification by Professional Engineer(s) in Responsible Charge of Designing Project*

I, the undersigned professional engineer licensed in Florida, am in responsible charge of preparing the preliminary design report or drawings, specifications, and design data for this project. I certify that, to the best of my knowledge and belief, the design of this project complies with Chapter 62-555, F.A.C., and provides assurance of compliance with Chapter 62-550, F.A.C.

Signature, Seal, and Date:

Affix Seal

Printed/Typed Name: Jason A. Pugsley, P.E.
License Number: 67426
Portion of Engineering Document(s) for Which Responsible: General, Civil, Mechanical

Signature, Seal, and Date:

Affix Seal

Printed/Typed Name:
License Number:
Portion of Engineering Document(s) for Which Responsible:

Signature, Seal, and Date:

Affix Seal

Printed/Typed Name:
License Number:
Portion of Engineering Document(s) for Which Responsible:

Signature, Seal, and Date:

Affix Seal

Printed/Typed Name:
License Number:
Portion of Engineering Document(s) for Which Responsible:

* Except as noted in paragraphs 62-555.520(3) (a) and (b), F.A.C., projects shall be designed under the responsible charge of one or more professional engineers (PEs) licensed in Florida. If this project is being designed under the responsible charge of one or more PEs licensed in Florida, Part II.D of this application shall be completed by the PE(s) in responsible charge. If this project is not being designed under the responsible charge of one or more PEs licensed in Florida, Part II.D does not have to be completed.

APPLICATION FOR A SPECIFIC PERMIT TO CONSTRUCT PWS COMPONENTS

INSTRUCTIONS: This application shall be completed and submitted by persons proposing to construct or alter public water system components unless such proposed construction or alteration is permitted under the Department of Environmental Protection's (DEP's) "General Permit for Construction of Water Main Extensions for Public Water Systems," in which case Form 62-555.900(7) is to be completed and submitted, or under the DEP's "General Permit for Construction of Lead or Copper Corrosion Control, or Iron or Manganese Sequestration, Treatment Facilities for Small or Medium Public Water Systems," in which case Form 62-555.900(18) is to be completed and submitted. Complete and submit one copy of this application to the appropriate DEP District Office or Approved County Health Department (ACHD) along with payment of the proper application processing fee and one copy of the following information:

- either a preliminary design report or drawings, specifications, and design data (the preliminary design report or drawings, specifications, and design data shall contain all pertinent information required under subsection 62-555.520(4), F.A.C.); and
- the Florida Public Service Commission (FPSC) certificate of authorization to provide water service if the project involves construction of a new public water system subject to the jurisdiction of the FPSC.

All information provided on this application shall be typed or printed in ink. Application processing fees are listed in paragraph 62-4.050(4) (n), F.A.C. Checks for application processing fees shall be made payable to the Department of Environmental Protection or to the appropriate ACHD. Preliminary design reports, drawings, specifications, and design data prepared under the responsible charge of one or more professional engineers licensed in Florida shall be signed, sealed, and dated by the professional engineer(s) in responsible charge. NOTE THAT A SEPARATE APPLICATION AND A SEPARATE APPLICATION PROCESSING FEE ARE REQUIRED FOR EACH NON-CONTIGUOUS PROJECT.*

* *Non-contiguous projects are projects that are neither interconnected nor located nearby one another (i.e., on the same site, on adjacent streets, or in the same neighborhood).*

GENERAL NOTES

DEFINITIONS

1. CITY - THE CITY OF DELRAY BEACH
2. CONTRACTOR - UTILITY CONTRACTOR AND ALL UTILITY SUBCONTRACTORS
3. ENGINEER - ENGINEER RESPONSIBLE FOR INSPECTION AND CERTIFICATION

PROCEDURE NOTES:

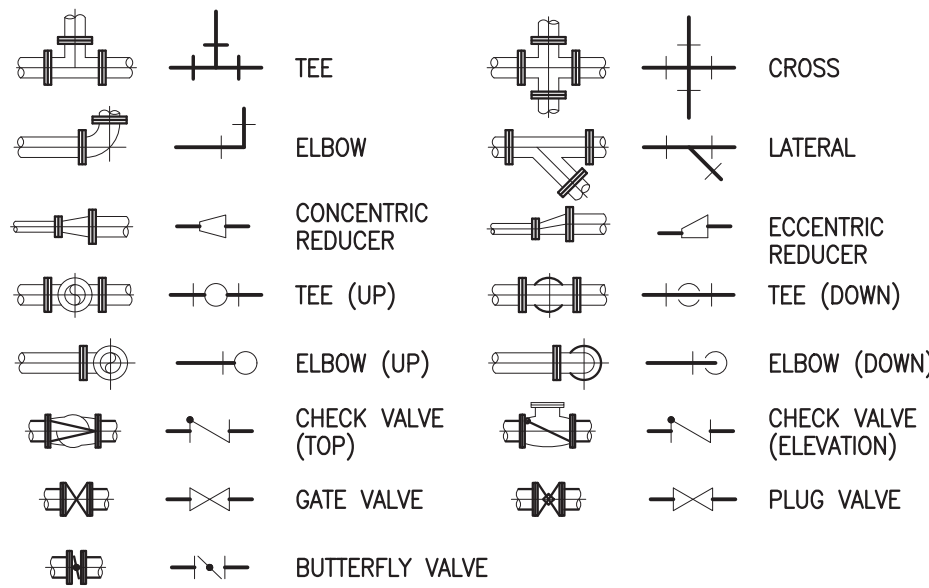
3. A PRE-CONSTRUCTION MEETING IS TO BE HELD PRIOR TO DELIVERY OF MATERIALS AND INITIATION OF ANY CONSTRUCTION WORK. THE MEETING SHALL BE ATTENDED BY THE CITY, CONTRACTOR, SUBCONTRACTORS, ENGINEER AND OTHER INTERESTED PARTIES.
2. ANY DEVIATIONS TO THE APPROVED PLANS MUST BE APPROVED BY THE CITY PRIOR TO THE PRE-CONSTRUCTION MEETING.
3. A MINIMUM OF THREE (3) COPIES OF THE REQUIRED SHOP DRAWINGS SHALL BE SUBMITTED FOR APPROVAL PRIOR TO SCHEDULING THE PRE-CONSTRUCTION MEETING. ALL PIPE MANUFACTURERS SHALL SUBMIT THREE (3) COPIES OF AN AFFIDAVIT THAT THE PIPE AND COATINGS WERE MANUFACTURED IN ACCORDANCE WITH AWWA C151/A21.51-91.
4. ALL APPLICABLE PERMITS MUST BE OBTAINED WITH COPIES PROVIDED TO THE CITY PRIOR TO COMMENCEMENT OF CONSTRUCTION.
5. THE CONTRACTOR SHALL MAINTAIN A CURRENT APPROVED SET OF CONSTRUCTION DOCUMENTS ON SITE AT ALL TIMES.
6. ALL MATERIALS SUPPLIED SHALL CONFORM TO THE SHOP DRAWINGS AS APPROVED BY THE CITY PRIOR TO CONSTRUCTION. ALL REQUESTS FOR MATERIAL SUBSTITUTION SHALL BE APPROVED PRIOR TO DELIVERY OF THESE MATERIALS TO THE JOB SITE.
7. THE LOCATION OF THE EXISTING UTILITIES AS SHOWN ON THE PLANS ARE APPROXIMATE ONLY. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OF THE FACILITIES SHOWN NOR FOR ANY FACILITY NOT SHOWN. THE EXACT LOCATIONS SHALL BE DETERMINED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. IN ADDITION, THE CONTRACTOR SHALL BE RESPONSIBLE TO VERIFY IF OTHER UTILITIES (NOT SHOWN ON THE PLAN) EXIST WITHIN THE AREA OF CONSTRUCTION. SHOULD THERE BE UTILITY CONFLICTS, THE CONTRACTOR SHALL INFORM THE CITY AND NOTIFY THE RESPECTIVE UTILITY OWNER TO RESOLVE THE UTILITY CONFLICTS AND THE UTILITY ADJUSTMENTS AS REQUIRED.
8. THE CONTRACTOR SHALL BE RESPONSIBLE AT ALL TIMES THROUGHOUT THE DURATION OF CONSTRUCTION FOR THE PROTECTION OF EXISTING AND NEWLY INSTALLED STRUCTURES, EQUIPMENT, UTILITIES, ETC. FROM DAMAGE OR DISRUPTION OF SERVICE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR TAKING SUCH MEASURES AS NECESSARY TO PROTECT THE HEALTH, SAFETY, AND WELFARE OF THOSE PERSONS HAVING ACCESS TO THE WORK SITE.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING LOCATIONS OF ALL OTHER UTILITY FACILITIES.
10. THE CONTRACTOR SHALL SCHEDULE INSPECTIONS AND TESTS WITH THE CITY A MINIMUM OF 48 HOURS IN ADVANCE.
11. CONTRACTOR SHALL NOT DISTURB EXISTING CITY FACILITIES WITHOUT THE PRESENCE OF A CITY INSPECTOR. CITY UTILITY SYSTEM VALVES AND APPURTENANCES MAY ONLY BE OPERATED BY CITY PERSONNEL.
12. FACILITIES PROPOSED HEREIN SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE APPROVED PLANS. DEVIATIONS FROM THE APPROVED PLANS MUST BE APPROVED IN ADVANCE BY THE CITY.
13. UPON COMPLETION OF CONSTRUCTION AND PRIOR TO FINAL ACCEPTANCE OF THE WORK, A FINAL INSPECTION SHALL VERIFY PROPER ADHERENCE TO ALL FACETS OF THE PLANS AND SPECIFICATIONS.
14. AS-BUILT DRAWINGS SHALL BE PREPARED BY A REGISTERED LAND SURVEYOR, REGISTERED IN THE STATE OF FLORIDA, AND SUBMITTED BY THE CONTRACTOR TO THE CITY.
15. PRIOR TO COMMENCEMENT OF ANY EXCAVATION, THE CONTRACTOR SHALL COMPLY WITH FLORIDA STATUTE 553-851 FOR PROTECTION OF UNDERGROUND GAS PIPE LINES.
16. CONTRACTOR SHALL NOTIFY SUNSHINE STATE ONE (1-800-432-4770) 48 HOURS IN ADVANCE OF CONSTRUCTION.
17. SITE INFORMATION BASED ON A AS-BUILT DRAWINGS PROVIDED BY THE CITY.
18. ALL CONSTRUCTION SHALL BE DONE IN A SAFE MANNER, SPECIFICALLY, THE RULES AND REGULATIONS OF THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION AND THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES SHALL BE STRICTLY OBSERVED.
19. ALL CONSTRUCTION SHALL CONFORM TO THE STANDARDS AND REQUIREMENTS OF THE AGENCIES HAVING JURISDICTION WHERE THE PROJECT IS CONSTRUCTED.
20. ALL OPEN TRENCHES AND HOLES SHALL BE PROPERLY MARKED AND BARRICADED TO ASSURE THE SAFETY OF BOTH VEHICULAR AND PEDESTRIAN TRAFFIC.
21. CONTRACTOR SHALL PERFORM ALL WORK NECESSARY TO LOCATE, EXCAVATE AND PREPARE FOR CONNECTIONS TO THE EXISTING SYSTEMS ALL AS SHOWN ON THE DRAWINGS.
22. CONTRACTOR SHALL MONITOR AND PROHIBIT THE DEFACING OF FRESHLY PLACED CONCRETE SURFACES. ANY CONCRETE SURFACES DEFACED SHALL BE REPLACED AT NO ADDITIONAL COST TO THE CITY.
23. PROJECT SITE SAFETY:
 - A. THE ENGINEER/OWNER OR THEIR EMPLOYEES HAVE NO AUTHORITY TO EXERCISE ANY CONTROL OVER THE CONTRACTOR, ANY SUB-CONTRACTOR OR OTHER ENTITY OR THEIR EMPLOYEES IN CONNECTION WITH THEIR WORK OR ANY JOBSITE HEALTH OR SAFETY PRECAUTIONS.
 - B. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR JOBSITE SAFETY, AND WARRANTS THAT THIS INTENT IS MADE EVIDENT BY THE AGREEMENT BETWEEN OWNER AND CONTRACTOR.
 - C. ALL EXISTING OVERHEAD AND UNDERGROUND UTILITIES SHOWN ON THESE DRAWINGS OR ENCOUNTERED THROUGH THE PROGRESSION OF WORK AT THIS PROJECT SITE ARE ASSUMED TO BE LIVE, CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SAFETY PRECAUTIONS WHEN WORKING AROUND EXISTING OVERHEAD OR UNDERGROUND

GENERAL MECHANICAL NOTES:

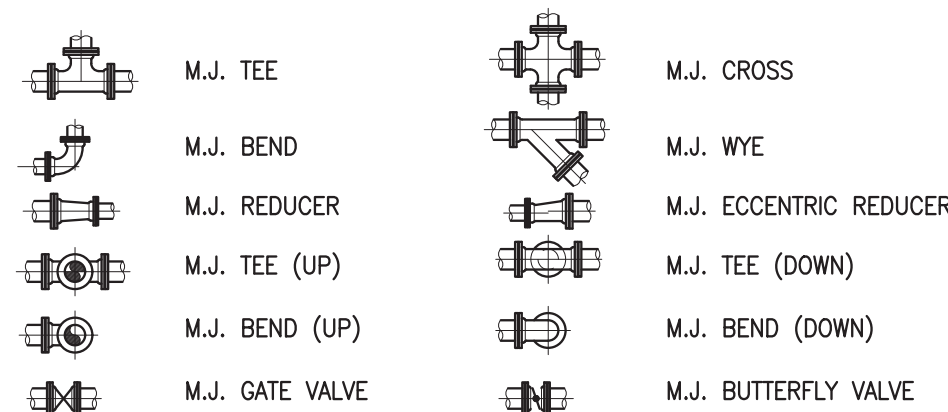
1. THE TYPE, SIZE, MATERIAL OF THE PIPING SYSTEM IS INDICATED ON THE DRAWINGS, WHERE PIPING SYSTEMS OF DIFFERING SIZE, MATERIAL OR RATINGS ARE CONNECTED (NEW OR EXISTING), THE CONTRACTOR SHALL SUPPLY AND INSTALL ALL NECESSARY FITTING, TRANSITIONS AND/OR ADAPTERS NECESSARY. THE MATERIAL AND PRESSURE RATING SHALL BE CONSISTENT WITH THE PIPING SYSTEMS TO WHICH THESE ARE CONNECTED AND SUBJECT TO THE ENGINEERS APPROVAL.
2. THE CONTRACTOR SHALL CONFIRM SIZE, MATERIAL AND LOCATION OF ALL MECHANICAL EQUIPMENT AND COORDINATE STRUCTURAL/ARCHITECTURAL REQUIREMENTS TO ACCOMMODATE MECHANICAL EQUIPMENT REQUIREMENTS.
3. ALL NON-BURIED PIPING, VALVES AND ANCILLARY COMPONENTS SHALL BE RIGIDLY SUPPORTED SUBJECT TO THE ENGINEERING APPROVAL USING FRP AND/OR 316 SS SUPPORTS, UNLESS OTHERWISE NOTED.
4. SECURE ALL 2" PIPING AND UNDER TO ADJACENT WELLS WITH FRP UNISTRUT, AICKENSTRUT OR EQUAL, AND FRP CLAMPS AND 316 SS HARDWARE. MAXIMUM INTERVAL 6- FEET.
5. SECURE AND SUPPORT ALL NON-BURIED PIPING GREATER THAN 2" DIAMETER, NOT ON CROSS TRENCH SUPPORTS, WITH 3/8" x 3" MIN 316 SS PIPE SUPPORT BRACKETS, WITH 1/4" BLACK NEOPRENE GASKET AND 316 SS HARDWARE. MINIMUM INTERVAL TO ACHIEVE RIGIDITY AND COMPLIANCE WITH MANUFACTURERS SUPPORT RECOMMENDATIONS, BUT NOT LESS THAN 6- FEET AND AT FITTINGS.
6. CONTRACTOR IS SPECIFICALLY ADVISED THAT PORTIONS OF THE WORK MAY REQUIRE THE MANIPULATION OF EXISTING VALVES, GATES, ETC. TO ALLOW/FACILITATE COMPLETION OF THE WORK, WHERE REQUIRED. THE CONTRACTOR IS ALSO ADVISED THAT PERFECT SEATING AND/OR CLOSURE OF ALL VALVES, GATES, ETC. IS NOT GUARANTEED AND LEAKAGE MAY OCCUR. WHERE LEAKAGE OCCURS, THE CONTRACTOR SHALL MAKE PROVISIONS FOR TEMPORARY PUMPING, STOPPAGE, ETC. AS REQUIRED TO COMPLETE THE WORK.

PIPE FITTING SYMBOLS

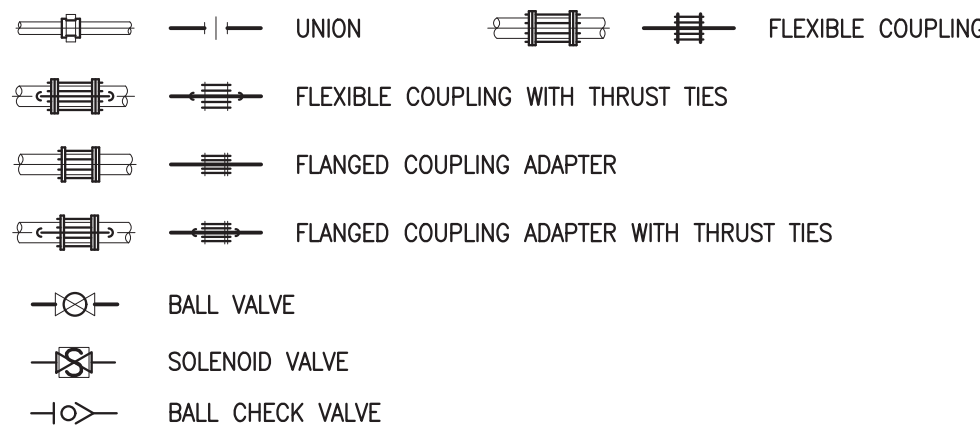
FLANGED



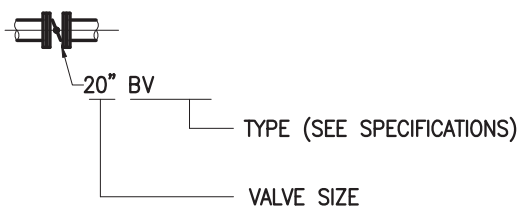
MECHANICAL JOINT



MISCELLANEOUS

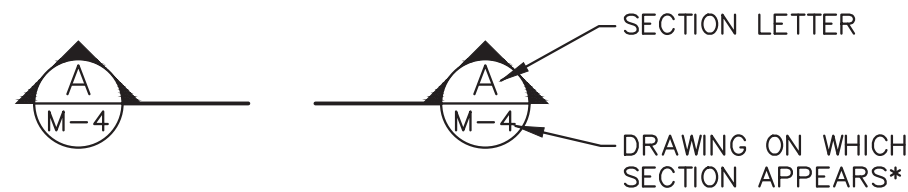


VALVE IDENTIFICATION (MANUAL & CHECK)

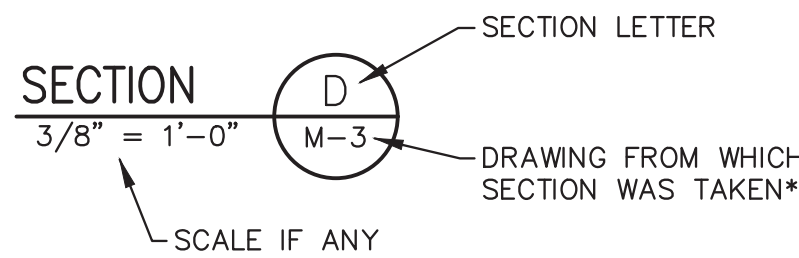


SECTION IDENTIFICATION

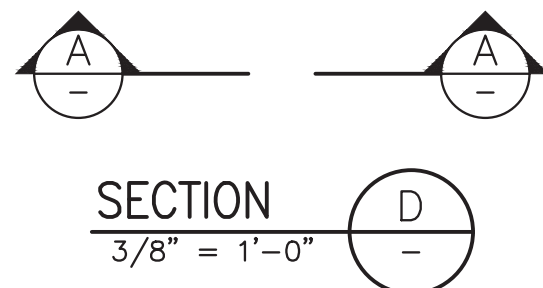
- (1) SECTION CUT ON DRAWING M-3:



- (2) ON DRAWING M-4 THIS SECTION IS IDENTIFIED AS:



NOTE:
IF PLAN AND SECTION ARE SHOWN ON SAME DRAWING,
DRAWING NUMBER IS REPLACED BY A DASH. AS SHOWN
BELOW.



ENGINEERING ABBREVIATIONS

	A/C	AIR CONDITIONER	INV. EL.	INVERT ELEVATION
	AG	AMMONIA GAS	INV. EL.	INVERT ELEVATION
AL. OR ALUM.	ALUMINUM		I.P.S.	IRON PIPE SIZE
ADDIT	ADDITIONAL		IRR.	IRRIGATION
AL. ORALUM.	ALUMINUM		JT.	JOINT
APPROX.	APPROXIMATELY		LBS/FT	POUNDS PER FOOT
A.R.V.	AIR RELEASE VALVE		LG.	LONG
ASPH.	ASPHALT		LME	LAKE MAINTENANCE EASEMENT
ASSY	ASSEMBLY		L.P.	LOW POINT
B.F.P.	BACKFLOW PREVENTOR		L.W.L.	LOW WATER LEVEL
BCSCHFP	BITUMINOUS COATED CORRUGATED STEEL HIGH FLOW PIPE		MANUF.	MANUFACTURER
BLDG.	BUILDING		MAX.	MAXIMUM
BLK.	BLOCK		M.C.	MEMBRANE CONCENTRATE
BOTT. OR BTM	BOTTOM		MECH.	MECHANICAL
B.F.	BUTTERFLY		M.H.	MANHOLE
C.B.	CATCH BASIN		N.I.C.	NOT IN CONTRACT
C.C.	CENTER TO CENTER		MIN.	MINIMUM
C.V.	CHECK VALVE		M.J.	MECHANICAL JOINT
C.B.S.	CONCRETE BLOCK STRUCTURE		N.P.T.	NATIONAL PIPE THREAD
CHATT.	CHATTANOOCHE		NO.	NUMBER
CHL.	CHLORINE		N.T.S.	NOT TO SCALE
CLS	CHLORINE SOLUTION LINE		O.C.	ON CENTER
CLR.	CLEAR OR CLEARANCE		O.D.	OUTSIDE DIAMETER
C.O.	CLEAN OUT		O.F.	OUTSIDE FACE
COL.	COLUMN		OPNG.	OPENING
CONC.	CONCRETE		PE	PLANT EFFLUENT
CONST.	CONSTRUCT OR CONSTRUCTION		PI	PLANT INFLOW
CONT.	CONTINUOUS		PL	PLATE
DBL	DOUBLE		P/L	PROPERTY LINE
DE	DRAINAGE EASEMENT		PR.	PAIR
DET.	DETAIL		PRB	POLLUTION RETARDANT BAFFLE
DFM	PLANT DRAIN FORCE MAIN		P.R.V.	PRESSURE RELIEF VALVE
DIA.	DIAMETER		P.V.C.	POLYVINYLCHLORIDE
DIAG.	DIAGONAL		P.W.	POTABLE WATER
D.I.P.	DUCTILE IRON PIPE		R. OR RAD.	RADIUS
DIM.	DIMENSION		R.A.S.	RETURN ACTIVATED SLUDGE
DWG.	DRAWING		RC	RECLAIMED WATER
DWN.	DOWN		R.W.	RAW WATER
EA.	EACH		RED.	REDUCER
ECC.	ECCENTRIC		REINF.	REINFORCING
E.O.P.	EDGE OF PAVEMENT		REQ'D.	REQUIRED
E.F.	EACH FACE		RPR	RESIDENT PROJECT
EFF.	EFFLUENT			REPRESENTATIVE
ELECT.	ELECTRIC		R/W	RIGHT OF WAY
EL. OR ELEV.	ELEVATION		R.W.	REUSE WATER OR RIGHT OF WAY
EQUIP.	EQUIPMENT		SAN.	SANITARY
EQUIP. MFRS.	EQUIPMENT MANUFACTURER(S)		SCH.	SCHEDULE
ER	EQUALIZATION RETURN		SECT.	SECTION
E.W.	EACH WAY		SHT.	SHEET
EXP.	EXPANSION		SPEC.	SPECIFICATION
EXIST.	EXISTING		SQ.	SQUARE
EXT.	EXTERIOR		S.S.	STORM SEWER OR STAINLESS STEEL
F.F.	FINISH FLOOR		S.S. OR SST	STAINLESS STEEL
F.H.	FIRE HYDRANT		STA.	STATION
FIN.	FINISH		STD.	STANDARD
FL.	FLANGE		STL.	STEEL
F.M.	FORCE MAIN		STRUCT.	STRUCTURE
FTG.	FOOTING		STY.	STORY
GAL.	GALVANIZED OR GALLON		S/W	SIDEWALK
GR.	GRADE		TEMP.	TEMPERATURE OR TEMPORARY
G.S.P.	GALVANIZED STEEL PIPE		THD.	THREADED
G.S.T.	GROUND STORAGE TANK		THK.	THICK
G.V.	GATE VALVE		T.O.S.	TOP OF SLAB OR TOP OF STEEL
H.	HIGH		T.O.P.	TOP OF PIPE
H.P.	HIGH POINT		TYP.	TYPICAL
H.W.L.	HIGH WATER LEVEL		VERT.	VERTICAL
HORIZ.	HORIZONTAL		W.	WIDE
I.E.	INVERT ELEVATION		W/	WITH
I.D.	INSIDE DIAMETER		W.A.S.	WASTE ACTIVATED SLUDGE
INF.	INFLUENT		WTR.	WATER
INJ.	INJECTION		W/L	WATER LEVEL
ISO.	ISOMETRIC		W.M.	WATER MAIN
INSUL.	INSULATION		W.W.F.	WELDED WIRE FABRIC

NOTES:

1. CONTRACTOR SHALL FIELD VERIFY LOCATION OF ALL UTILITY CROSSINGS, INCLUDING PARALLELING OF UTILITIES, PRIOR TO CONSTRUCTION OF THE PROPOSED FACILITIES.
2. IRRIGATION SYSTEMS NOT SHOWN, BUT MAY NOT EXIST THROUGHOUT PROJECT AREA. CONTRACTOR SHALL REPLACE ALL DAMAGED IRRIGATION PIPING, HEADS AND CONTROL LINES IN KIND, SO THAT SYSTEM PROVIDES ORIGINAL COVERAGE. ZONES TO BE CAPPED OFF AT CONSTRUCTION LINE. BALANCE OF IRRIGATION ZONES TO REMAIN ACTIVE AND MAINTAINED.
2. ALL FITTINGS SHALL HAVE RESTRAINED JOINTS, IF REQUIRED.
3. CONTRACTOR SHALL REFER TO DETAILS ON DRAWING D-1 FOR STANDARD DETAIL CONSTRUCTION INFORMATION.
4. ALL AREAS DISTURBED BY CONSTRUCTION ACTIVITIES SHALL BE RESTORED IN KIND AT THE CONTRACTORS COST.
5. IN AREAS OF UNDERGROUND UTILITIES CONTRACTOR SHALL HAND-DIG AS NECESSARY TO AVOID DAMAGING EXISTING UTILITIES. CONTRACTOR IS RESPONSIBLE FOR REPLACING ANY DAMAGED UTILITIES AS A RESULT OF CONSTRUCTION ACTIVITIES.



CITY of DELRAY BEACH
ENVIRONMENTAL SERVICES DEPARTMENT

434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

Phone: (561) 243-7322

Fax: (561) 243-7314

MATHEWS CONSULTING
a **BAXTER & WOODMAN** company

477 S. Rosemary Avenue, Suite 330, West Palm Beach, Florida 33401
Phone: 561-655-6175 • Fax: 561-655-6179
www.baxterwoodman.com EB-31795

ENGINEER'S SEAL

FOR THE
CITY OF DELRAY BEACH

DESIGNED BY	JAP
DRAWN BY	HLN
CHECKED BY	JAP
DATE	06/18

REVISION	DATE	DESCRIPTION	BY

CITY OF DELRAY BEACH
WATER TREATMENT PLANT UPGRADES AND IMPROVEMENTS

GENERAL NOTES AND INFORMATION

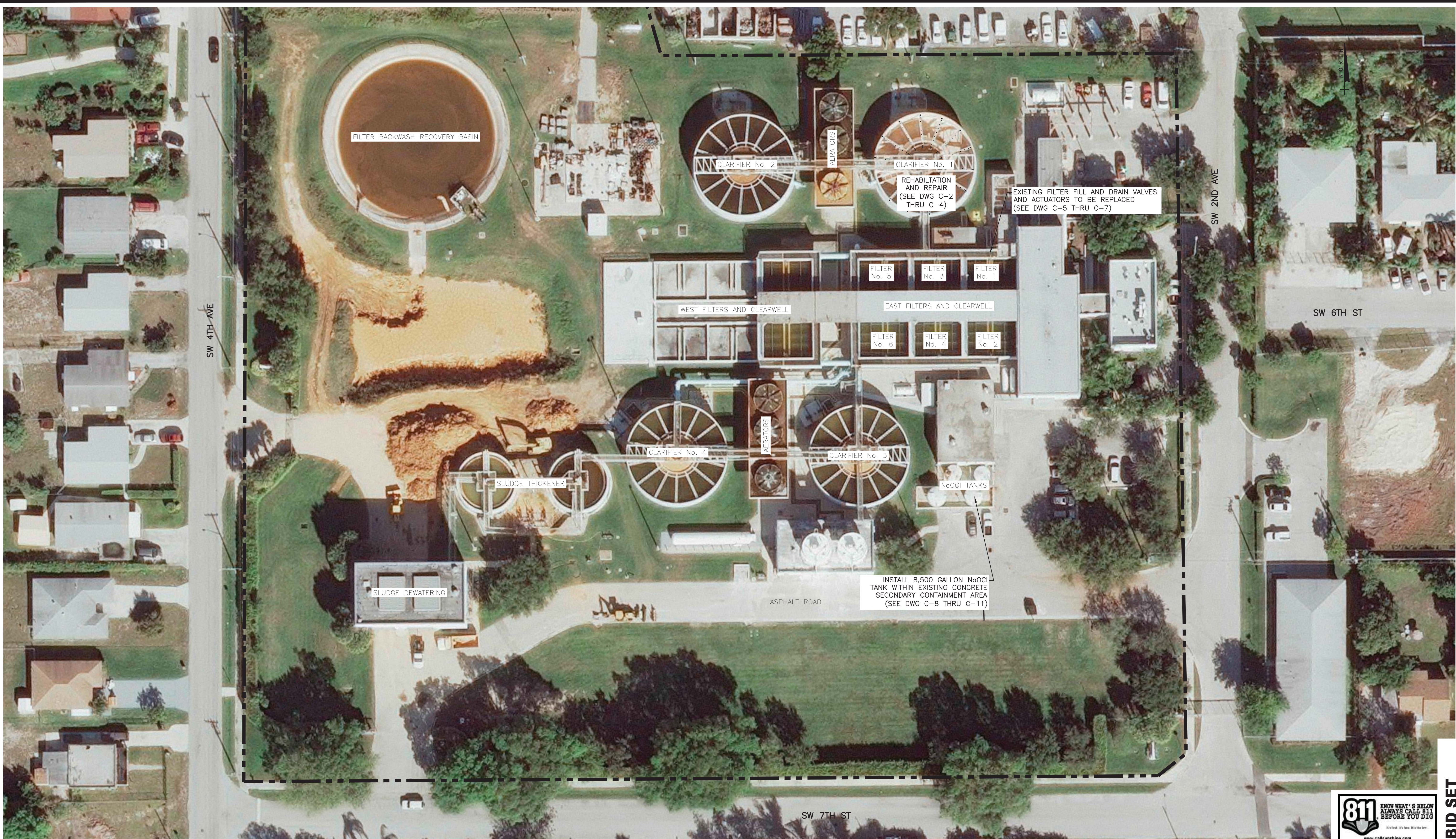
PROJECT NO.
170852

DRAWING NO

G-2

FILE ID. G-2-170852G-L&M

Acad Version : R22.0s (LMS Tech) User Name : 793.hin Date/Time : Fri, 15 Jun 2018 - 12:41pm Current Plots/Style : ByColor Layout Tab: D2-SP Path Name : I:\WestPalmBeach\DEBEC\170852-WP Upgrades and Imps\CAD\Working Folder\C-1-170852C-Overall-SP.dwg



BID SET



CITY of DELRAY BEACH ENVIRONMENTAL SERVICES DEPARTMENT

434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444
Phone: (561) 243-7322 Fax: (561) 243-7314



a BAXTER & WOODMAN company

477 S. Rosemary Avenue, Suite 330, West Palm Beach, Florida 33401
Phone: 561-655-6175 • Fax: 561-655-6179
www.baxterwoodman.com EB-31795

ENGINEER'S SEAL

FOR THE
CITY OF DELRAY BEACH

DESIGNED BY	JAP
DRAWN BY	HLN
CHECKED BY	JAP
DATE	06/18

REVISION	DATE	DESCRIPTION	BY

CITY OF DELRAY BEACH
WATER TREATMENT PLANT UPGRADES AND IMPROVEMENTS

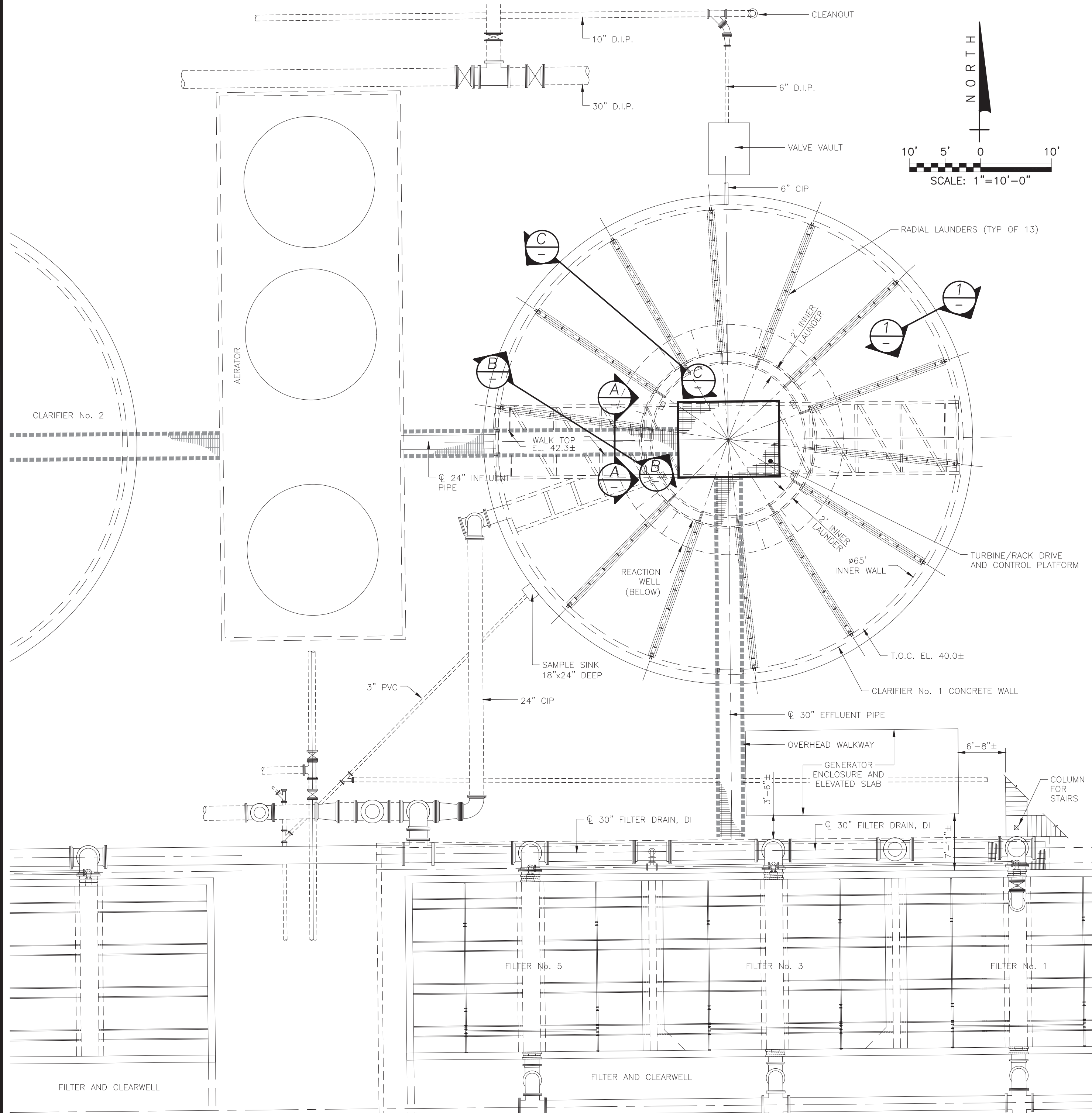
WATER TREATMENT PLANT
OVERALL SITE PLAN

PROJECT NO.
170852

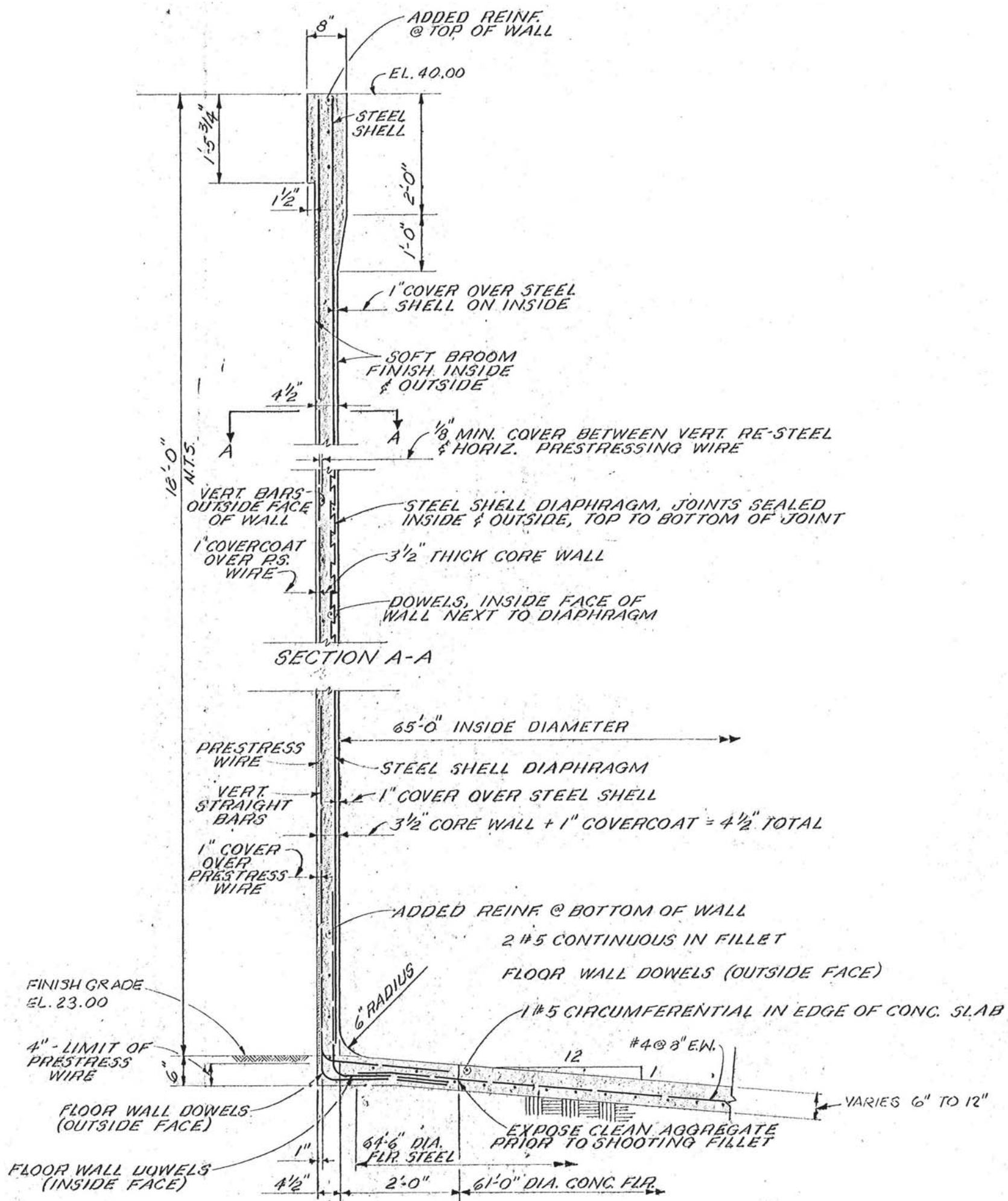
DRAWING NO.
C-1

FILE ID: C-1-170852C-Overall-SP

Acad Version : R22.0s (LMS Tech) User Name : 793hjn Date/Time : Fri, 15 Jun 2018 - 12:41pm Layout Tab: X1-SP Current Plots: ByColor Path Name : I:\WestPalmBeach\BIBEC\170852-WP Upgrades and Imps\CAD Working Folder\C-2-170852C-X1-SP.dwg



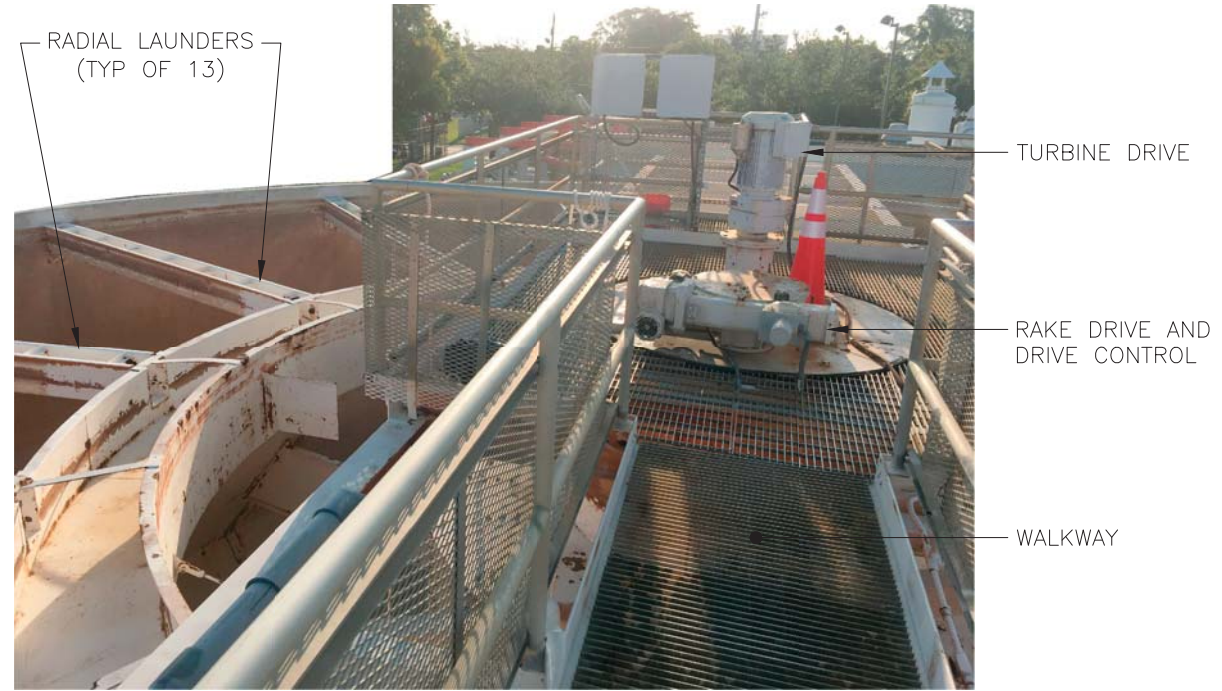
CLARIFIER No.1 PLAN VIEW



1 CLARIFIER No.1 TYP. WALL AND FLOOR SECTION
N.T.S.

NOTES:

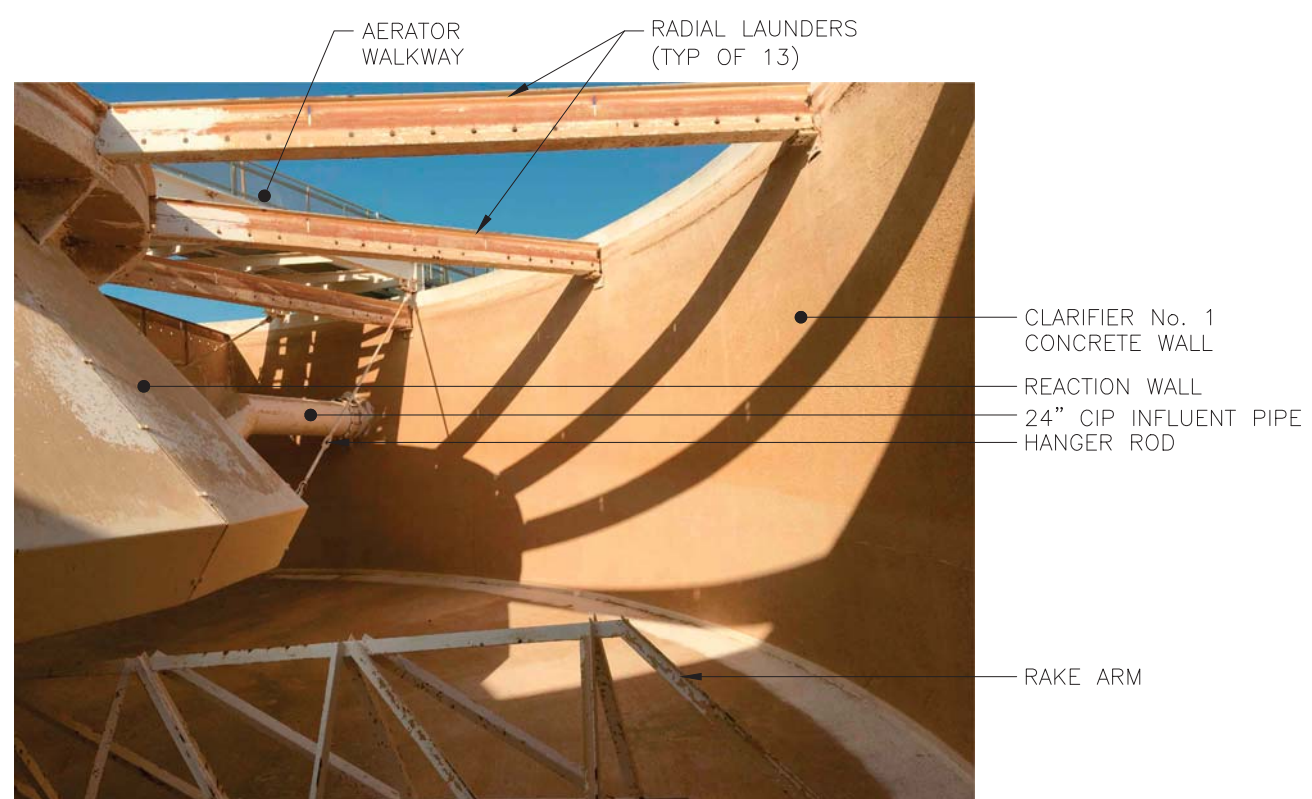
- EXISTING UTILITY LOCATIONS ARE APPROXIMATE ONLY AND ARE BASED ON INFORMATION PROVIDED BY RECORD DRAWINGS. CONTRACTOR SHALL VERIFY EXACT LOCATION, DEPTH, SIZE AND MATERIAL OF PIPING VIA TEST PITS PRIOR TO COMMENCING WORK.
- CONTRACTOR SHALL NOTIFY CITY IN WRITING A MINIMUM OF 7 DAYS PRIOR TO DISRUPTING, TEMPORARILY DISCONNECTING OR CONNECTING INTO ANY EXISTING UTILITY. CONTRACTOR SHALL NOT PROCEED UNTIL GIVEN WRITTEN AUTHORIZATION FROM CITY STAFF.
- RESTORE ALL DISTURBED GRASSED SURFACES USING SOD TO MATCH EXISTING.
- ALL SHUTDOWN WORK SHALL BE COORDINATED WITH AND APPROVED BY CITY STAFF.
- ALL ELEVATIONS REFERENCED TO NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD1929).



A CLARIFIER DRIVE
N.T.S.



B EFFLUENT LAUNDERS
N.T.S.



C CLARIFIER MECHANISM
N.T.S.



BID SET



CITY of DELRAY BEACH
ENVIRONMENTAL SERVICES DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444
Phone: (561) 243-7322 Fax: (561) 243-7314



477 S. Rosemary Avenue, Suite 330, West Palm Beach, Florida 33401
Phone: 561-655-6175 • Fax: 561-655-6179
www.baxterwoodman.com EB-31795

ENGINEER'S SEAL

FOR THE
CITY OF DELRAY BEACH

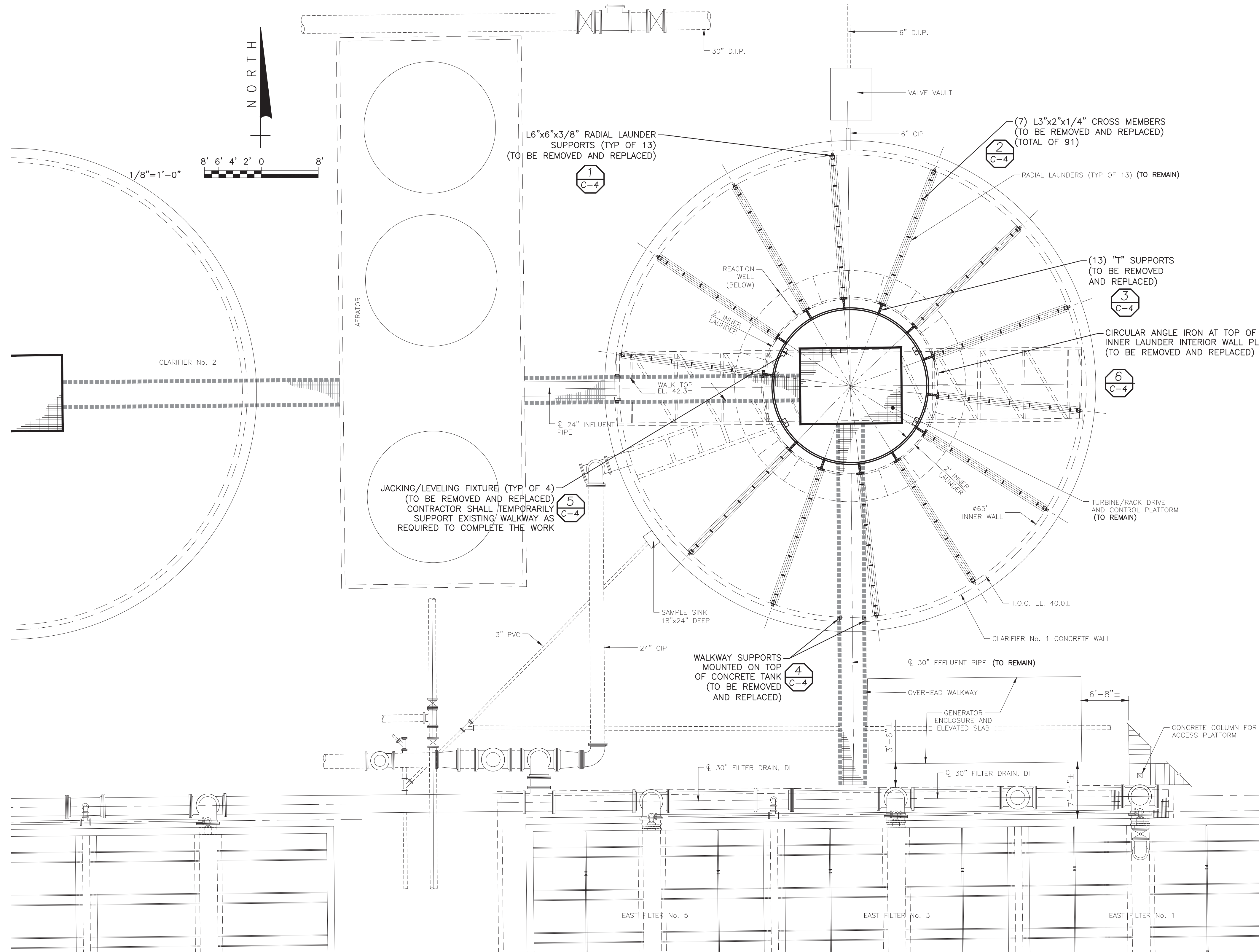
DESIGNED BY	JAP
DRAWN BY	HLN
CHECKED BY	JAP
DATE	06/18

REVISION	DATE	DESCRIPTION	BY

CITY OF DELRAY BEACH WATER TREATMENT PLANT UPGRADES AND IMPROVEMENTS
CLARIFIER No. 1 EXISTING PLAN AND SECTION

PROJECT NO. 170852
DRAWING NO. C-2
FILE ID. C-2-170852C-X1-SP

Acad Version : R22.0s (LMS Tech) User Name : 793hjn Date/Time : Fri, 15 Jun 2018 - 12:41 pm Current Plotstyle : ByColor Layout Tab: C-3 Path Name : I:\WestPalmBeach\DEBC\170852-WP Upgrades and Imps\CAD\Working Folder\C-3-4-170852C-P1-SP.dwg



CLARIFIER No.1 PLAN VIEW

NOTES:

- WHERE EXISTING STEEL MEMBERS/COMPONENTS ARE TO BE REMOVED AND REPLACED, ALL REPLACEMENT COMPONENTS SHALL BE FABRICATED OF ASTM A36 STEEL OF THE IDENTICAL SIZE, SHAPES AND WEIGHT OF THE EXISTING COMPONENTS TO BE REPLACED. ALL REPLACEMENT COMPONENTS SHALL BE EITHER BOLTED OR WELDED INTO PLACE AS REQUIRED TO MATCH THE EXISTING INSTALLATION DETAILS. ALL WELDING SHALL BE IN ACCORDANCE WITH STANDARDS PUBLISHED BY THE AMERICAN WELDING SOCIETY (AWS).
- UPON COMPLETION OF THE PROPOSED REPAIRS, ALL NEW AND EXISTING STEEL SURFACES SHALL BE SAND BLASTED TO A NEAR WHITE FINISH (SP-10) PER THE STANDARDS ESTABLISHED BY THE SOCIETY FOR PROTECTIVE COATING (SSPC) AND COATED PER THE REQUIREMENTS STIPULATED IN SECTION 09900 OF THE TECHNICAL SPECIFICATIONS.
- ALL STEEL SURFACES IN CONTACT WITH CONCRETE SHALL BE DIELECTRICALLY ISOLATED USING MIN. 3/8" THICK NEOPRENE PADS.



BID SET



CITY of DELRAY BEACH
ENVIRONMENTAL SERVICES DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444
Phone: (561) 243-7322 Fax: (561) 243-7314



a **BAXTER & WOODMAN** company
477 S. Rosemary Avenue, Suite 330, West Palm Beach, Florida 33401
Phone: 561-655-6175 Fax: 561-655-6179
www.baxterwoodman.com EB-31795

ENGINEER'S SEAL
FOR THE
CITY OF DELRAY BEACH

DESIGNED BY	JAP
DRAWN BY	HLN
CHECKED BY	JAP
DATE	06/18

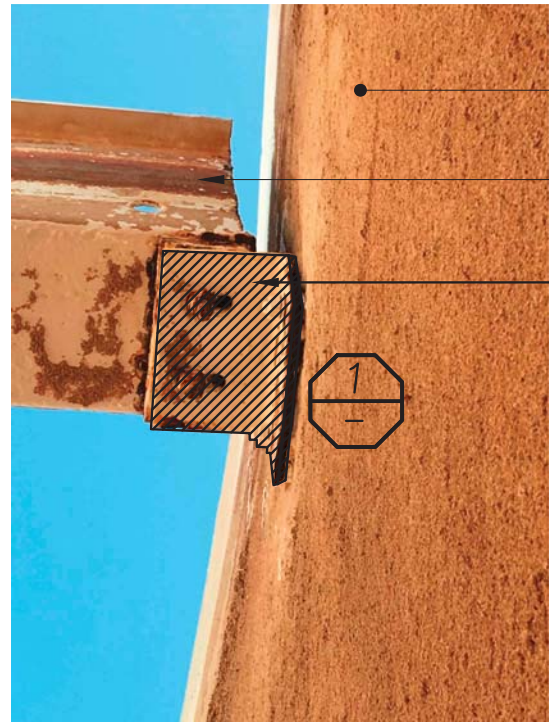
REVISION	DATE	DESCRIPTION	BY

CITY OF DELRAY BEACH
WATER TREATMENT PLANT UPGRADES AND IMPROVEMENTS

CLARIFIER No. 1
PROPOSED PLAN AND KEYNOTES

PROJECT NO. 170852
DRAWING NO. C-3
FILE ID: C-3_4-170852C-P1-SP

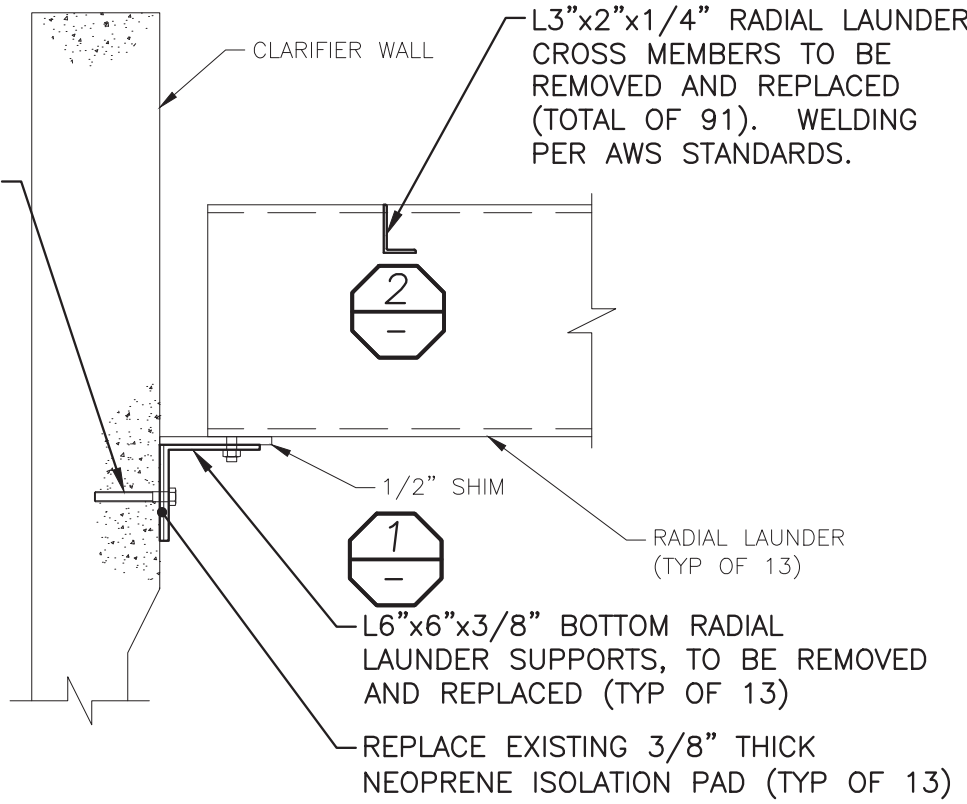
Acad Version : R22.0s (LMS Tech)
User Name : 793hjn
Date/Time : Fri, 15 Jun 2018 - 12:41pm
Current Plotstyle : ByColor
Path Name : I:\WestPalmBeach\BIBEC\170852-WTP Upgrades and Imps\CAD\Working Folder\C-3_4-170852C-P1-SP.dwg
Layout Tab: C-4



EXISTING RADIAL LAUNDER
CONCRETE TANK CONNECTION
N.T.S.

DRILL OUT AND REPLACE
EXISTING ANCHORS W/ TYPE
316 SS EPOXY SET
ANCHORS, AS REQUIRED.
REPLACEMENT ANCHORS
SHALL BE SAME SIZE AS
EXISTING.

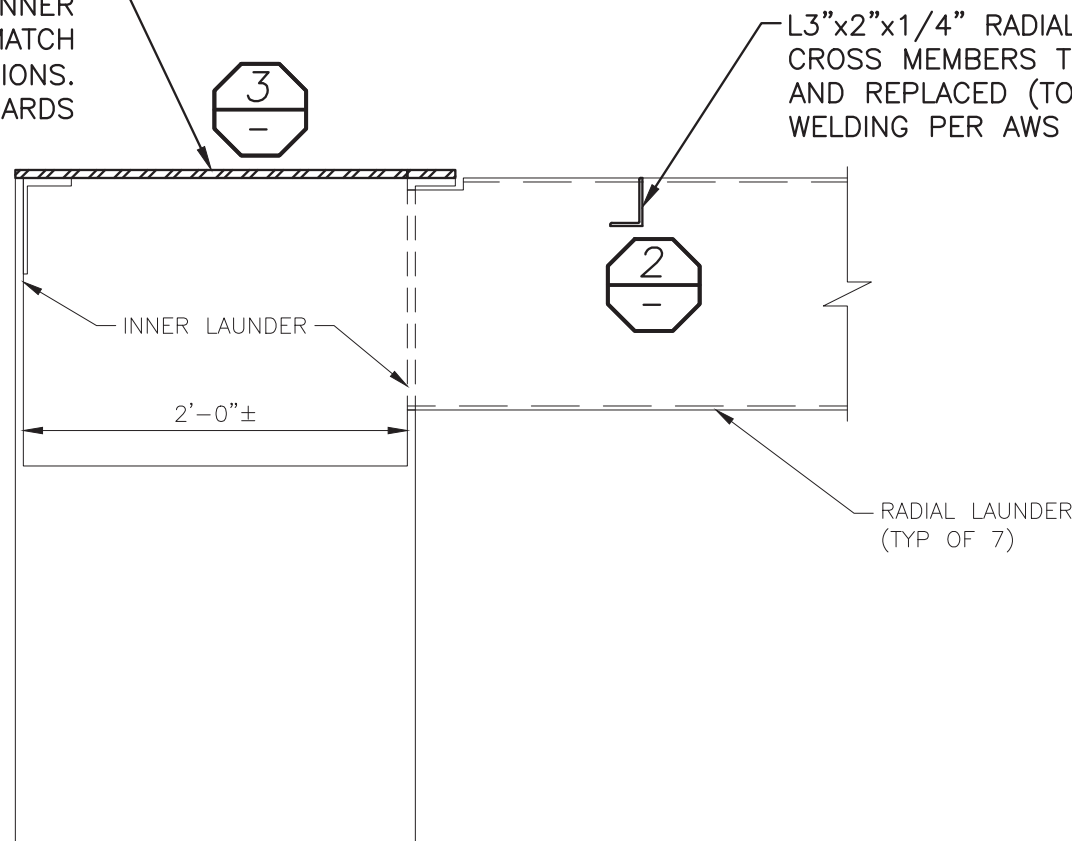
L6"x6"x3/8" BOTTOM RADIAL
LAUNDER SUPPORT (TO BE REMOVED AND REPLACED)



TYP SECTION
1"=1'-0"

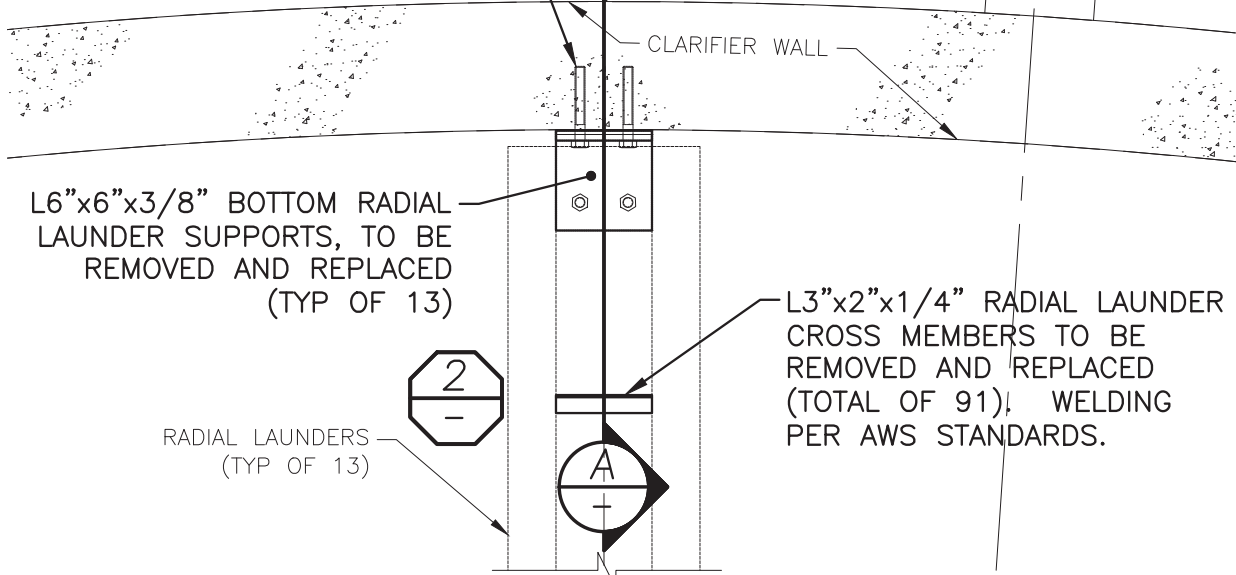
REMOVE AND REPLACE EXISTING
3"x1/4" THICK "T" SUPPORTS AT
EACH RADIAL LAUNDER-INNER
LAUNDER TIE-IN (TYP OF 13) MATCH
EXISTING "T" SUPPORT DIMENSIONS.
WELDING PER AWS STANDARDS

L3"x2"x1/4" RADIAL LAUNDER
CROSS MEMBERS TO BE REMOVED
AND REPLACED (TOTAL OF 91).
WELDING PER AWS STANDARDS.

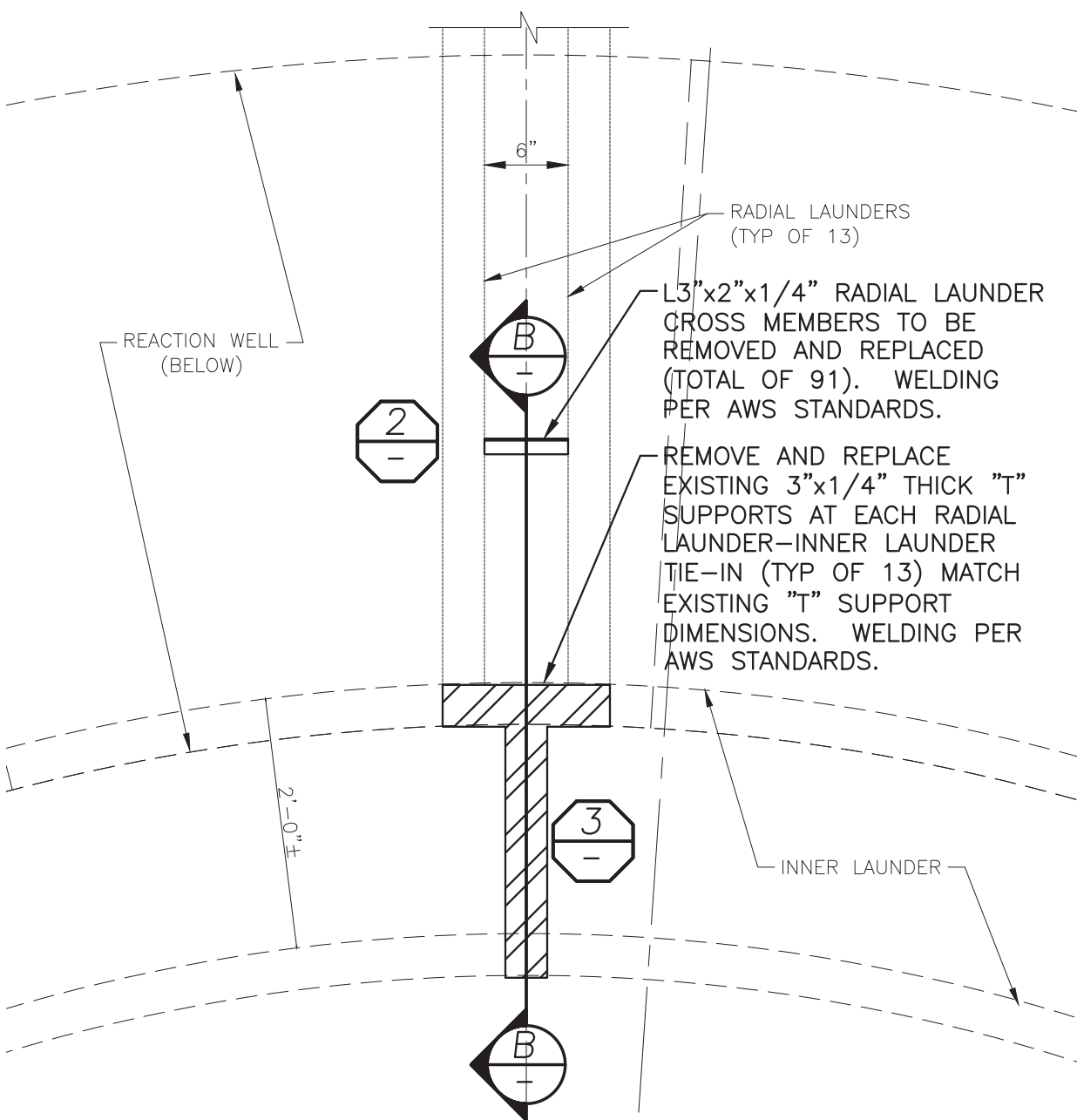


TYP SECTION
1"=1'-0"

DRILL OUT AND REPLACE
EXISTING ANCHORS, AS
REQUIRED. REPLACEMENT
ANCHORS SHALL BE SAME
SIZE AS EXISTING AND SHALL
BE EPOXY SET.



@ RADIAL LAUNDER CONCRETE TANK CONNECTION
1"=1'-0"



@ RADIAL LAUNDER-INNER LAUNDER TIE-IN
1"=1'-0"

L6"x6"x3/8" BOTTOM
RADIAL LAUNDER
SUPPORTS (TYP OF 13)
(TO BE REMOVED AND
REPLACED)

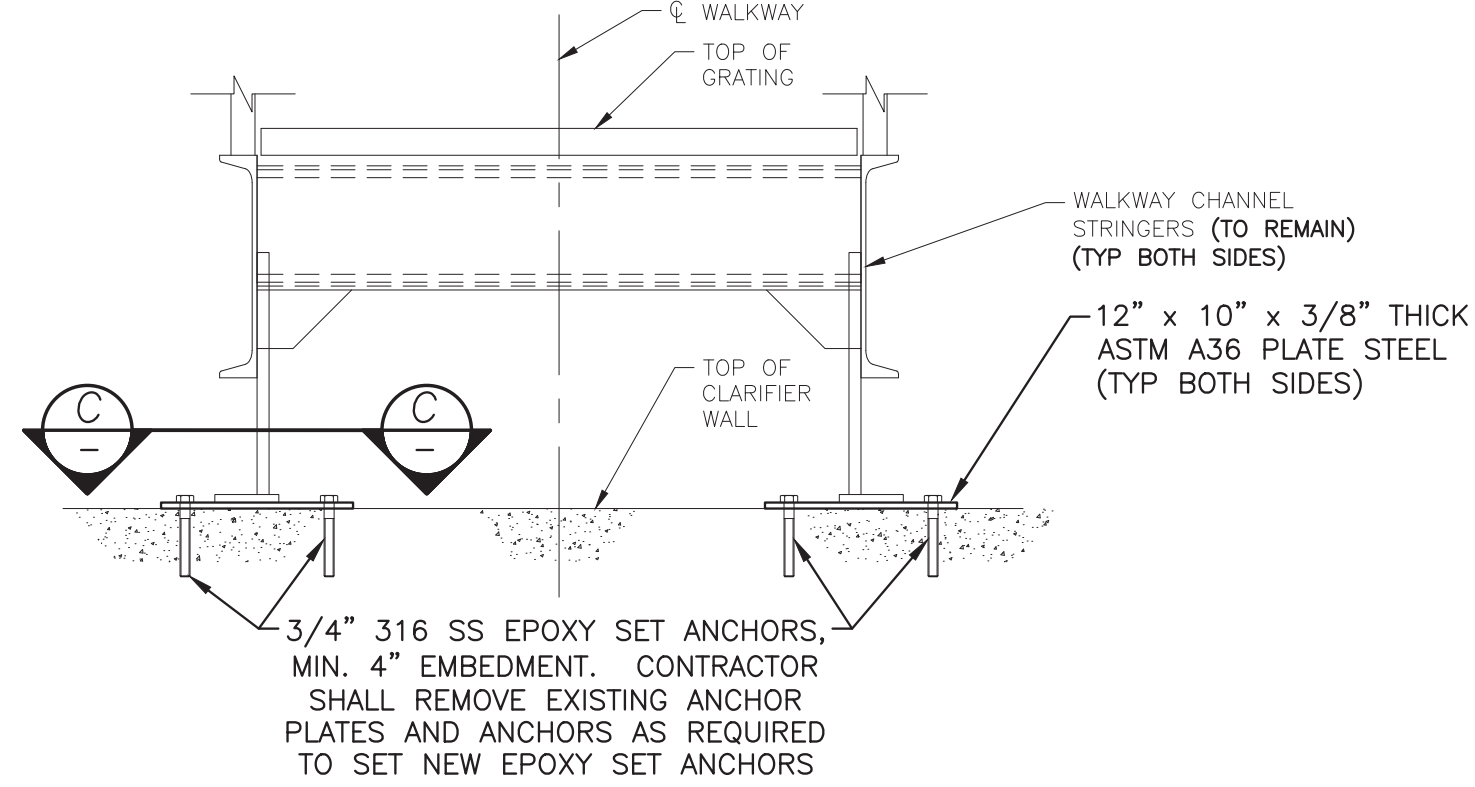
(7) L3"x2"x1/4" CROSS MEMBER
(TOTAL OF 91)
(TO BE REMOVED AND
REPLACED)

RADIAL LAUNDERS
(TO REMAIN)

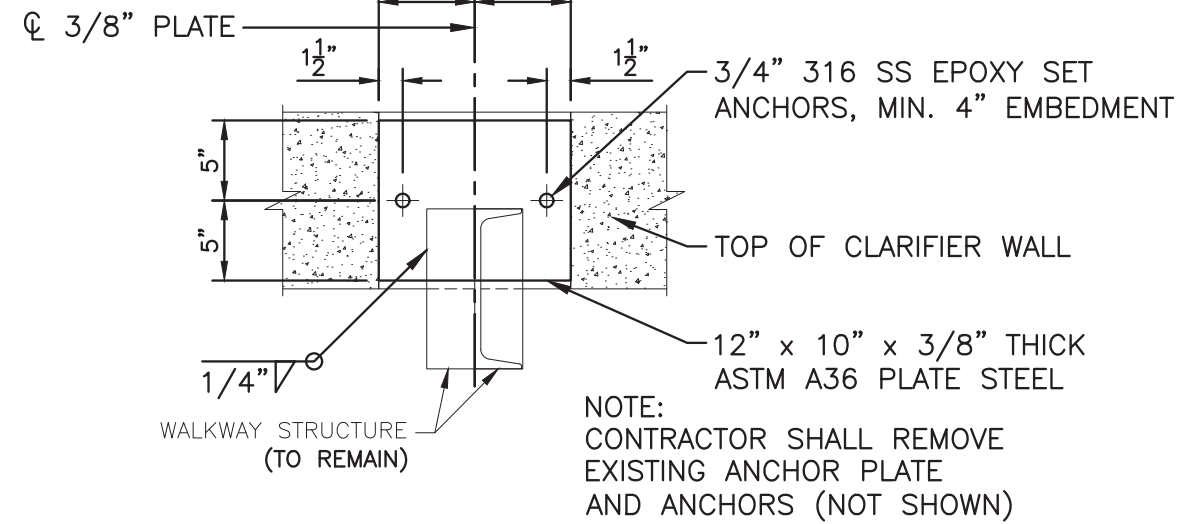


EXISTING EFFLUENT LAUNDERS
AND "T" SUPPORTS
N.T.S.

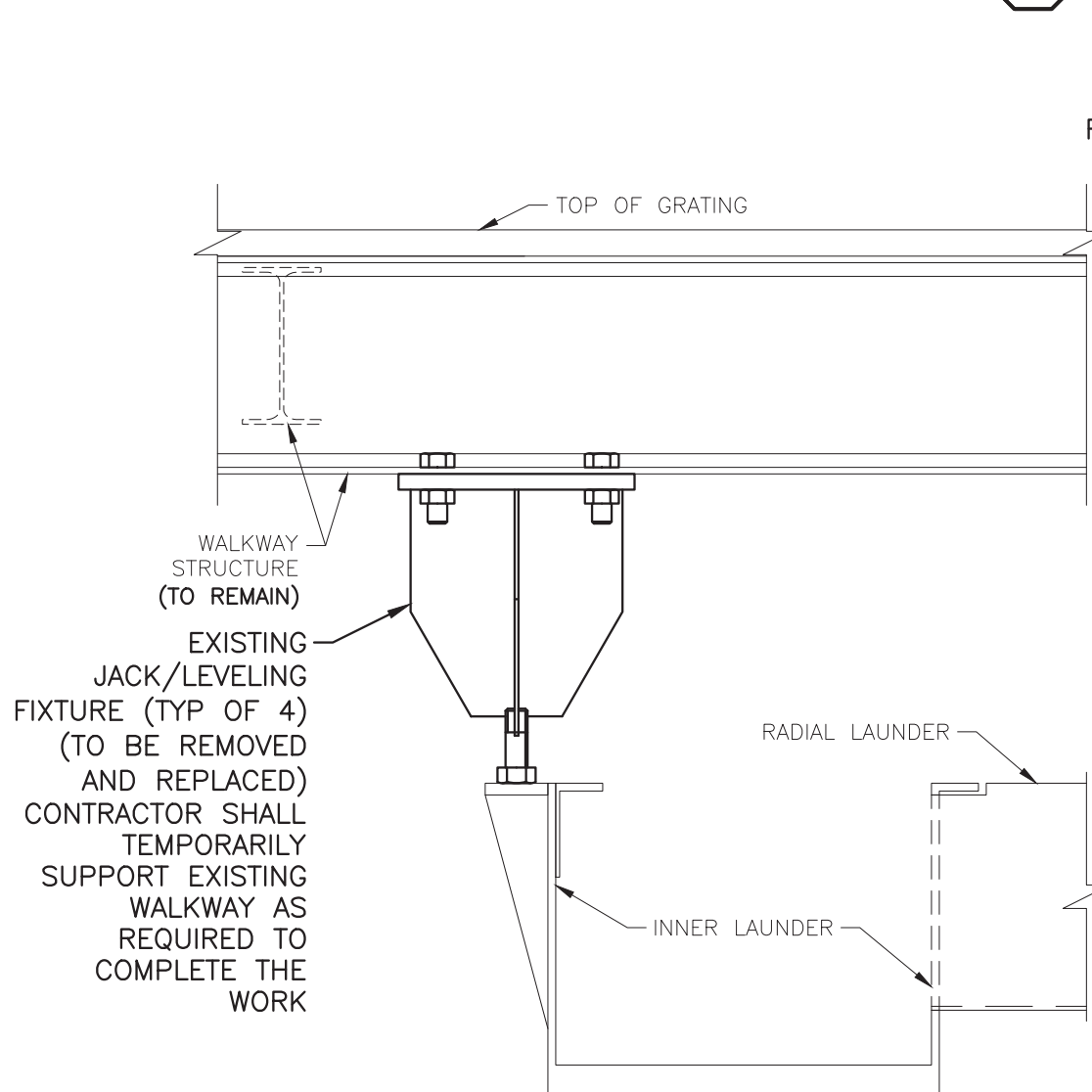
"T" SUPPORT
(TOTAL OF 13)
(TO BE REMOVED
AND REPLACED)



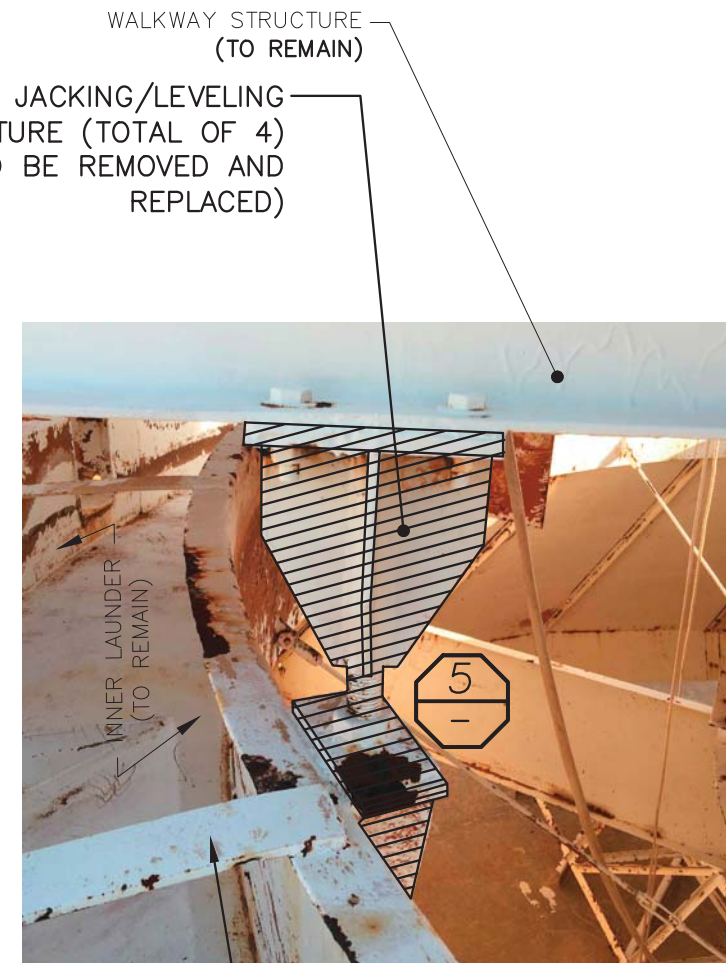
TYP PLAN VIEW
1"=1'-0"



WALKWAY STRUCTURE CONNECTION TO CONCRETE TANK
1"=1'-0"



TYPICAL LEVELING FIXTURE SECTION
1"=1'-0"



"T" SUPPORT (TOTAL OF 13)
(TO BE REMOVED AND REPLACED)

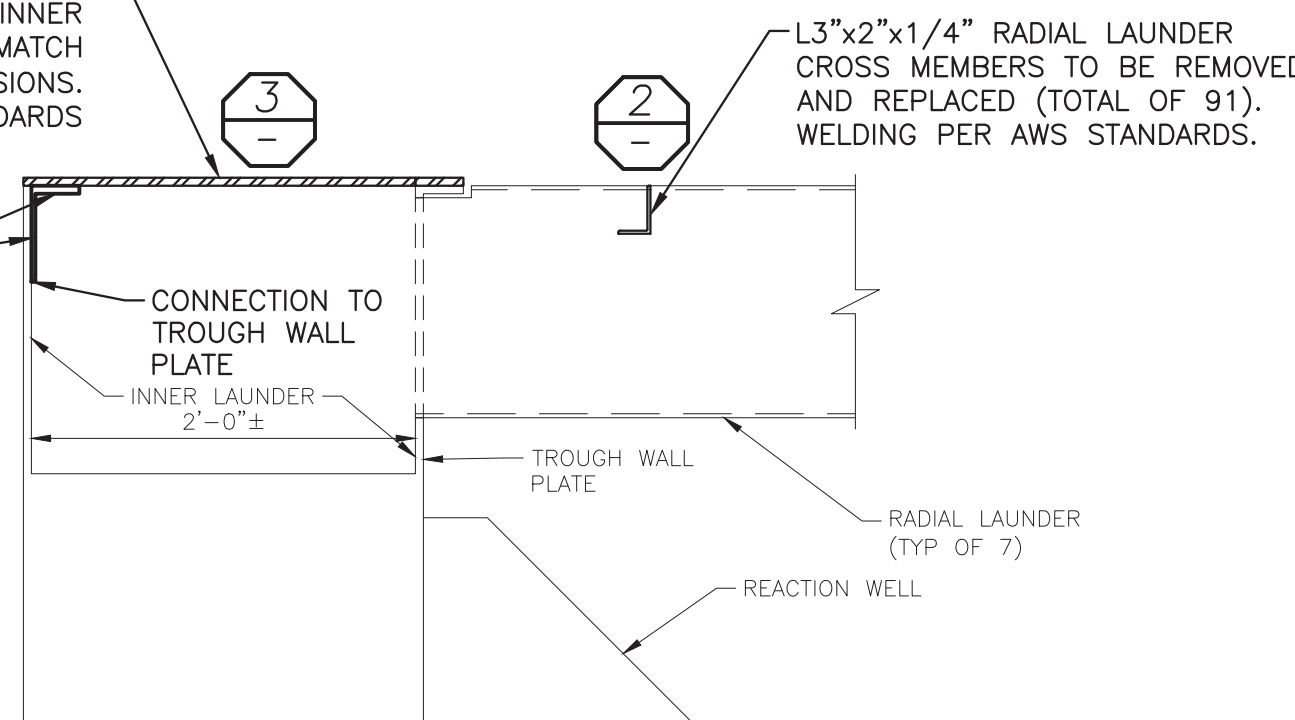
EXISTING JACKING-LEVELING
FIXTURE
N.T.S.



EXISTING WALKWAY STRUCTURE
CONNECTION TO CONCRETE TANK
N.T.S.

REMOVE AND REPLACE EXISTING
3"x1/4" THICK "T" SUPPORTS AT
EACH RADIAL LAUNDER-INNER
LAUNDER TIE-IN (TYP OF 13) MATCH
EXISTING "T" SUPPORT DIMENSIONS.
WELDING PER AWS STANDARDS

REMOVE CIRCULAR
ANGLE IRON AT TOP
OF INNER LAUNDER
EXTERIOR TROUGH.
REPLACE ANGLE AT
CONNECTION TO
TROUGH WALL PLATE.



TYPICAL INNER LAUNDER EXTERIOR ANGLE CONNECTION SECTION
1"=1'-0"

NOTES:
REFER TO DRAWING SHEET C-3 FOR NOTES



BID SET



CITY of DELRAY BEACH
ENVIRONMENTAL SERVICES DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444
Phone: (561) 243-7322 Fax: (561) 243-7314

MATHEWS CONSULTING
a BAXTER & WOODMAN company

477 S. Rosemary Avenue, Suite 330, West Palm Beach, Florida 33401
Phone: 561-655-6175 • Fax: 561-655-6179
www.baxterwoodman.com EB-31795

ENGINEER'S SEAL
FOR THE
CITY OF DELRAY BEACH

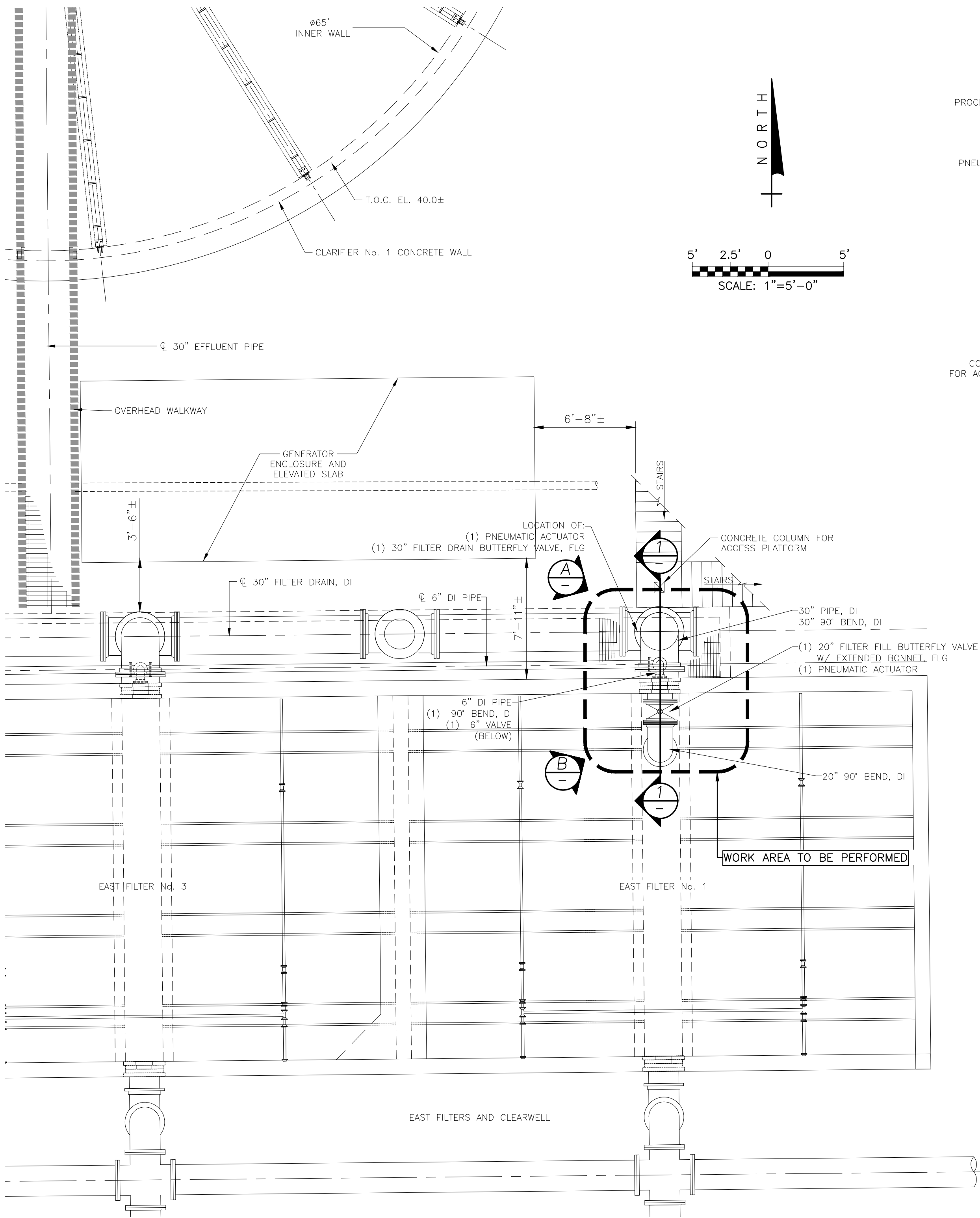
DESIGNED BY	JAP
DRAWN BY	HLN
CHECKED BY	JAP
DATE	06/18

REVISION	DATE	DESCRIPTION	BY

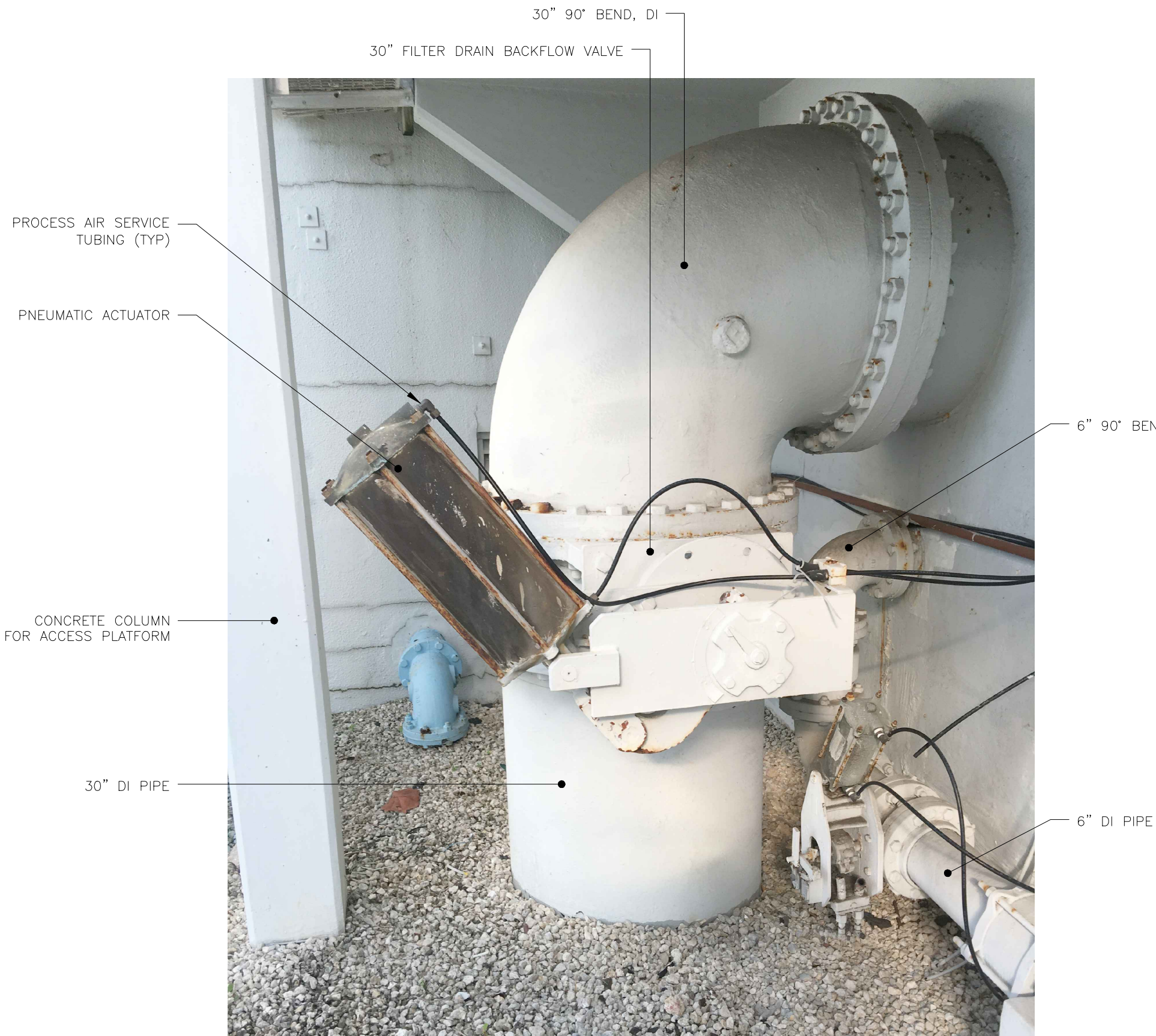
CITY OF DELRAY BEACH
WATER TREATMENT PLANT UPGRADES AND IMPROVEMENTS
CLARIFIER No. 1
PROPOSED DETAILS AND SECTIONS

PROJECT NO. 170852
DRAWING NO. C-4
FILE ID: C-3_4-170852C-P1-SP

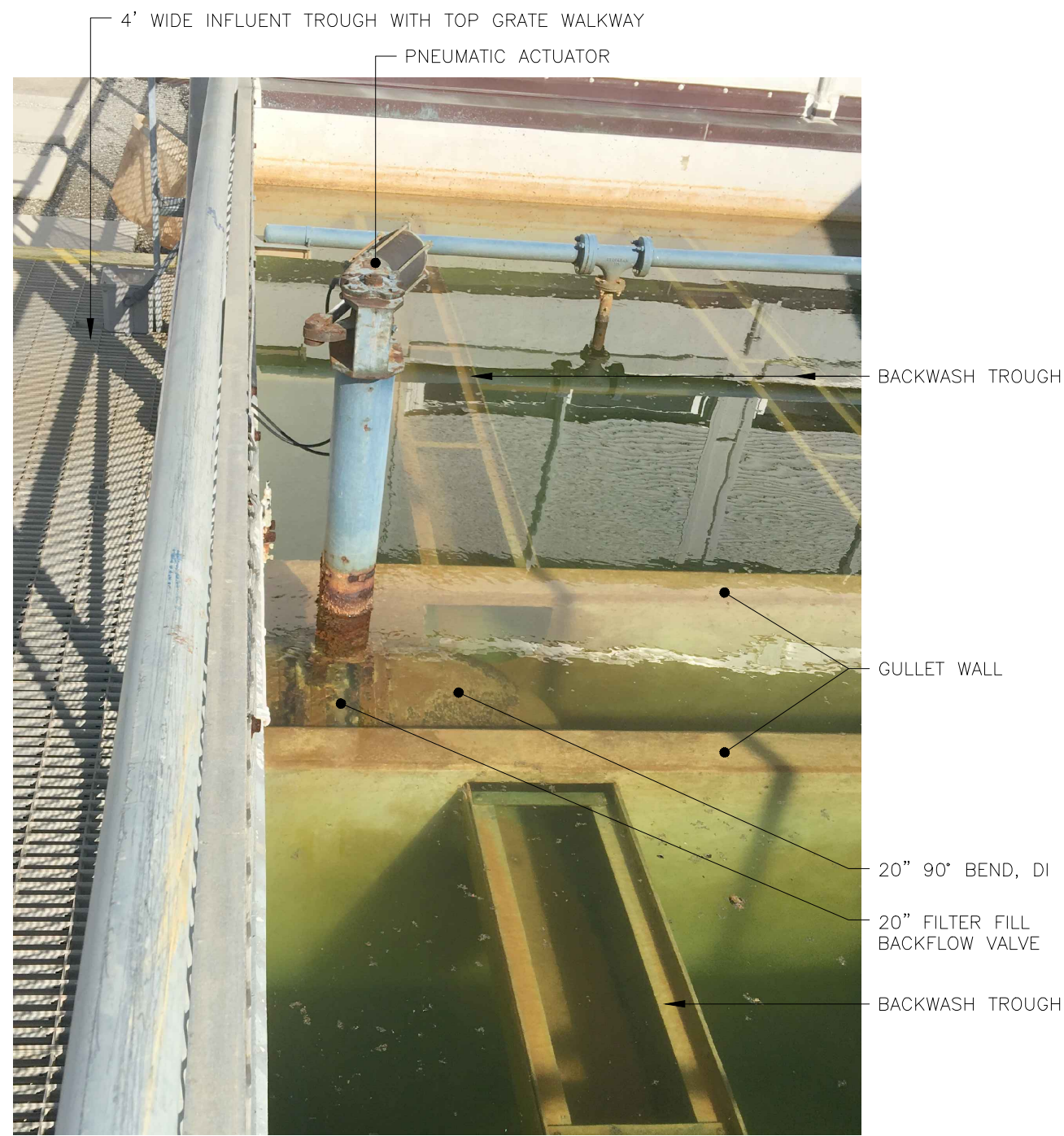
Acad Version : R22.0s (LMS Tech) User Name : 733hr Current Plotstyle : ByColor Layout Tab: X2-SP Date/Time : Fri, 20 Jul 2018 - 8:30am Path Name : I:\WestPalmBeach\DEBC\170852-WTP Upgrades and Imps\CAD\Working Folder\C-5-170852C-X2-SP.dwg



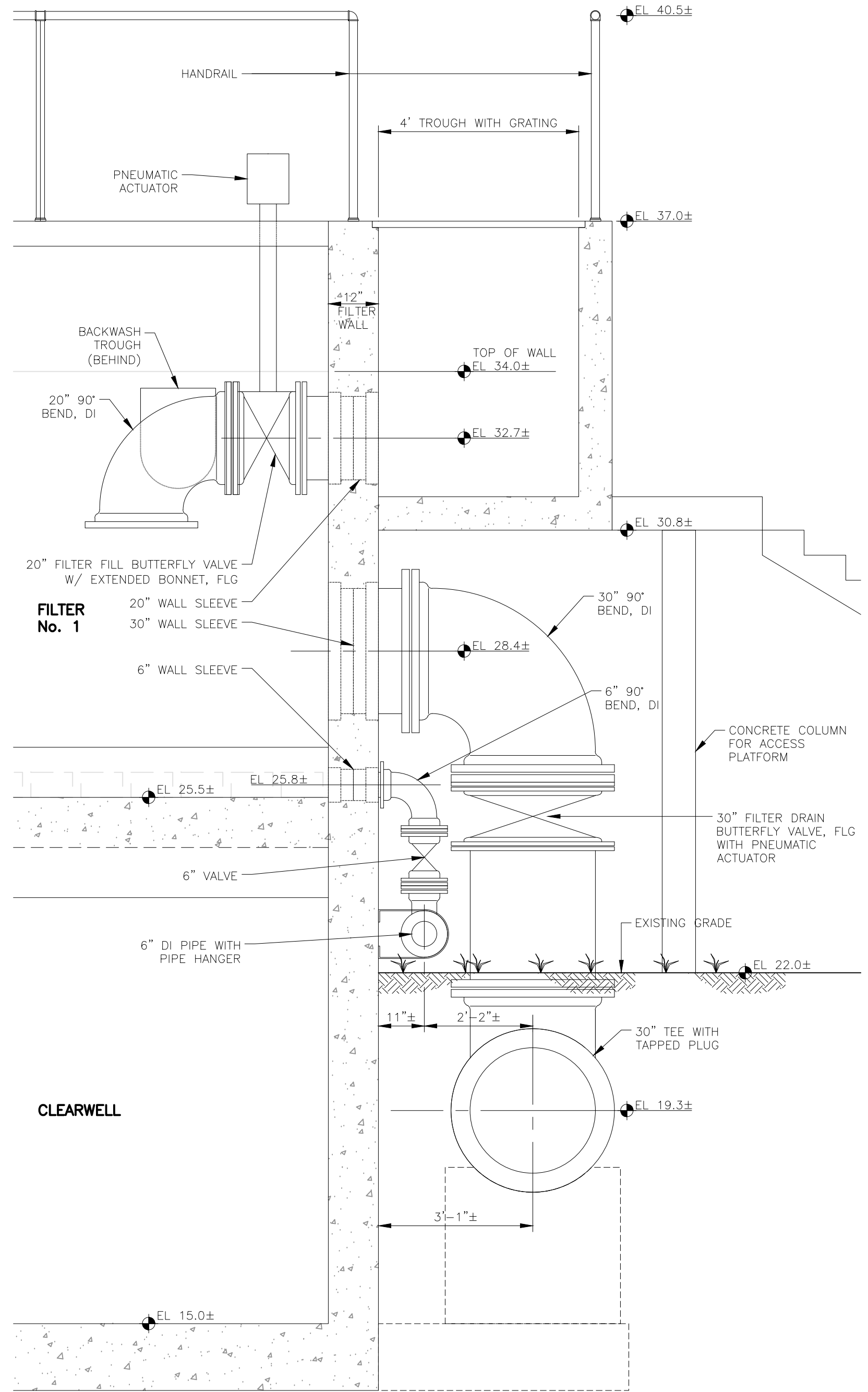
EAST FILTER AND CLEARWELL PLAN VIEW



A FILTER DRAIN VALVE
N.T.S.



B FILTER FILL VALVE
N.T.S.



1 FILTER No. 1 SECTION
1"=2'-0"

NOTES:

- EXISTING UTILITY LOCATIONS ARE APPROXIMATE ONLY AND ARE BASED ON LIMITED INFORMATION PROVIDED BY RECORD DRAWINGS. CONTRACTOR SHALL VERIFY EXACT LOCATION, DEPTH, SIZE AND MATERIAL OF PIPING VIA TEST PITS PRIOR TO COMMENCING WORK.
- CONTRACTOR SHALL NOTIFY CITY IN WRITING A MINIMUM OF 7 DAYS PRIOR TO DISRUPTING, TEMPORARILY DISCONNECTING OR CONNECTING INTO ANY EXISTING UTILITY. CONTRACTOR SHALL NOT PROCEED UNTIL GIVEN WRITTEN AUTHORIZATION FROM CITY STAFF.
- RESTORE ALL DISTURBED GRASSSED SURFACES USING SOD TO MATCH EXISTING.
- ALL SHUTDOWN WORK SHALL BE COORDINATED WITH AND APPROVED BY CITY STAFF.
- ALL ELEVATIONS REFERENCED TO NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD1929).
- CONTRACTOR SHALL PAINT ALL NEW AND EXISTING PIPING, VALVES, FITTINGS AND ACTUATORS AT FILTER UNITS No. 1 AND 2.



BID SET



CITY of DELRAY BEACH
ENVIRONMENTAL SERVICES DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444
Phone: (561) 243-7322 Fax: (561) 243-7314

MATHEWS CONSULTING
a BAXTER & WOODMAN company

477 S. Rosemary Avenue, Suite 330, West Palm Beach, Florida 33401
Phone: 561-655-6175 • Fax: 561-655-6179
www.baxterwoodman.com EB-31795

ENGINEER'S SEAL

FOR THE
CITY OF DELRAY BEACH

DESIGNED BY JAP
DRAWN BY HLN
CHECKED BY JAP

DATE 06/18

REVISION	DATE	DESCRIPTION	BY

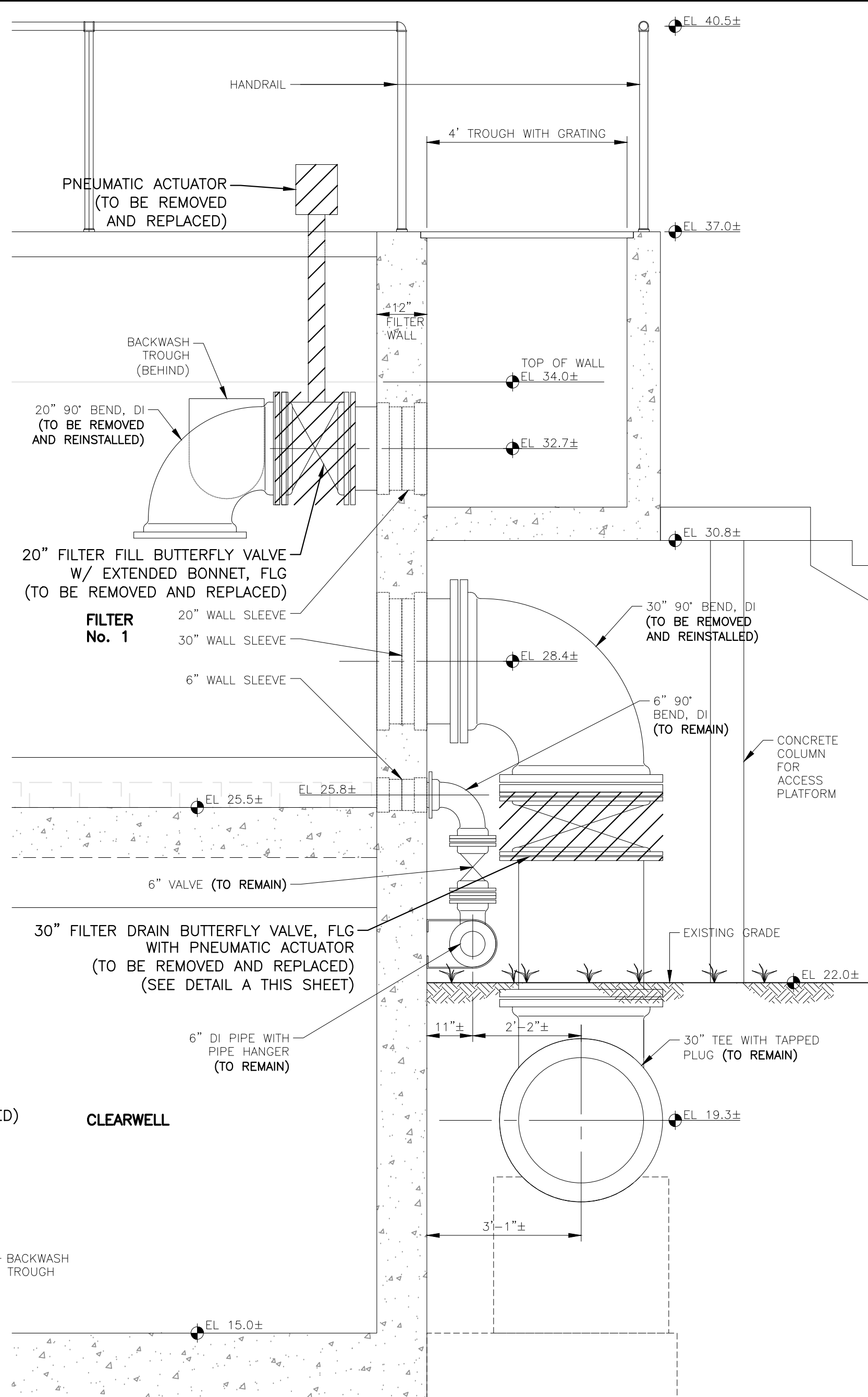
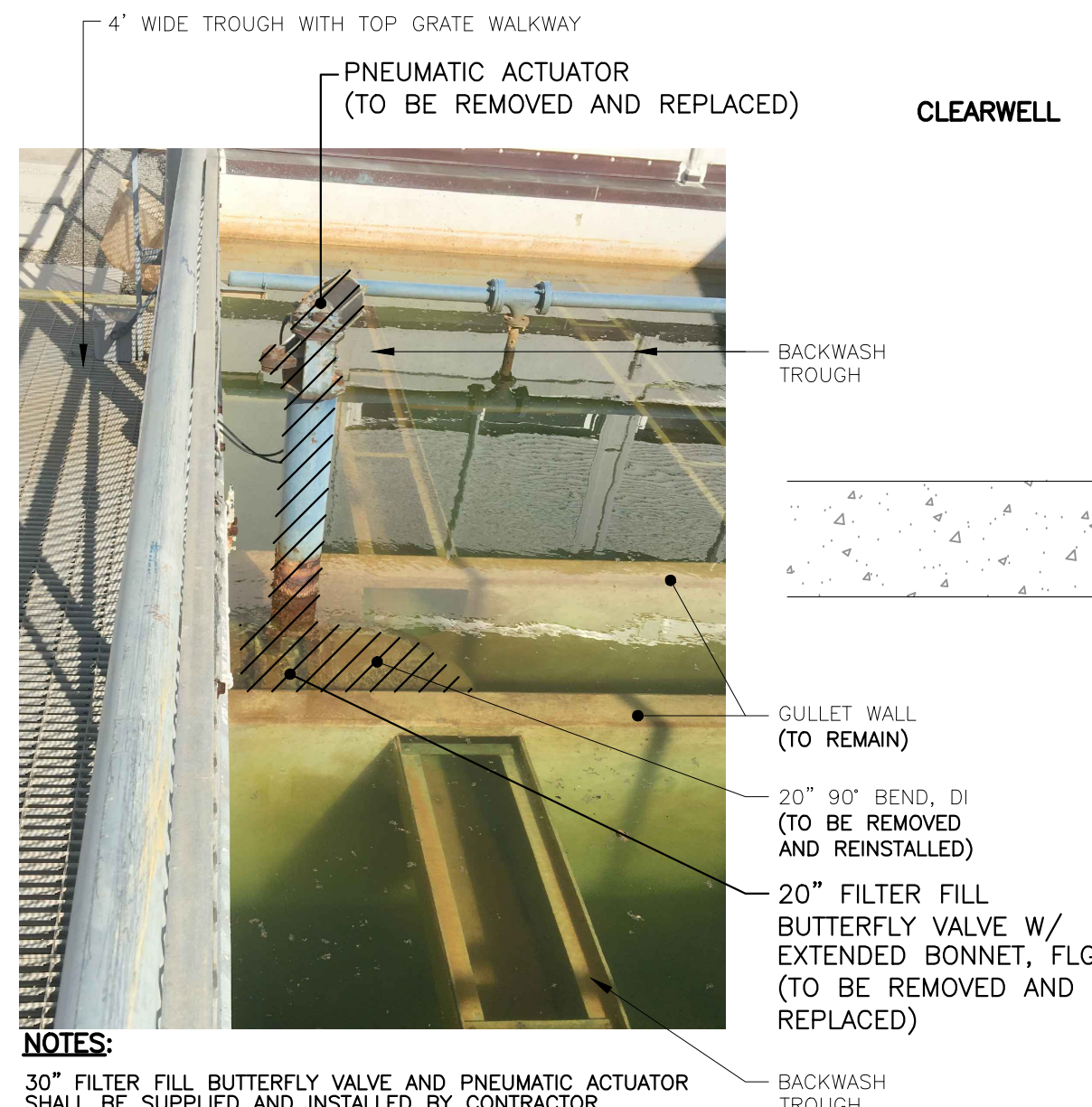
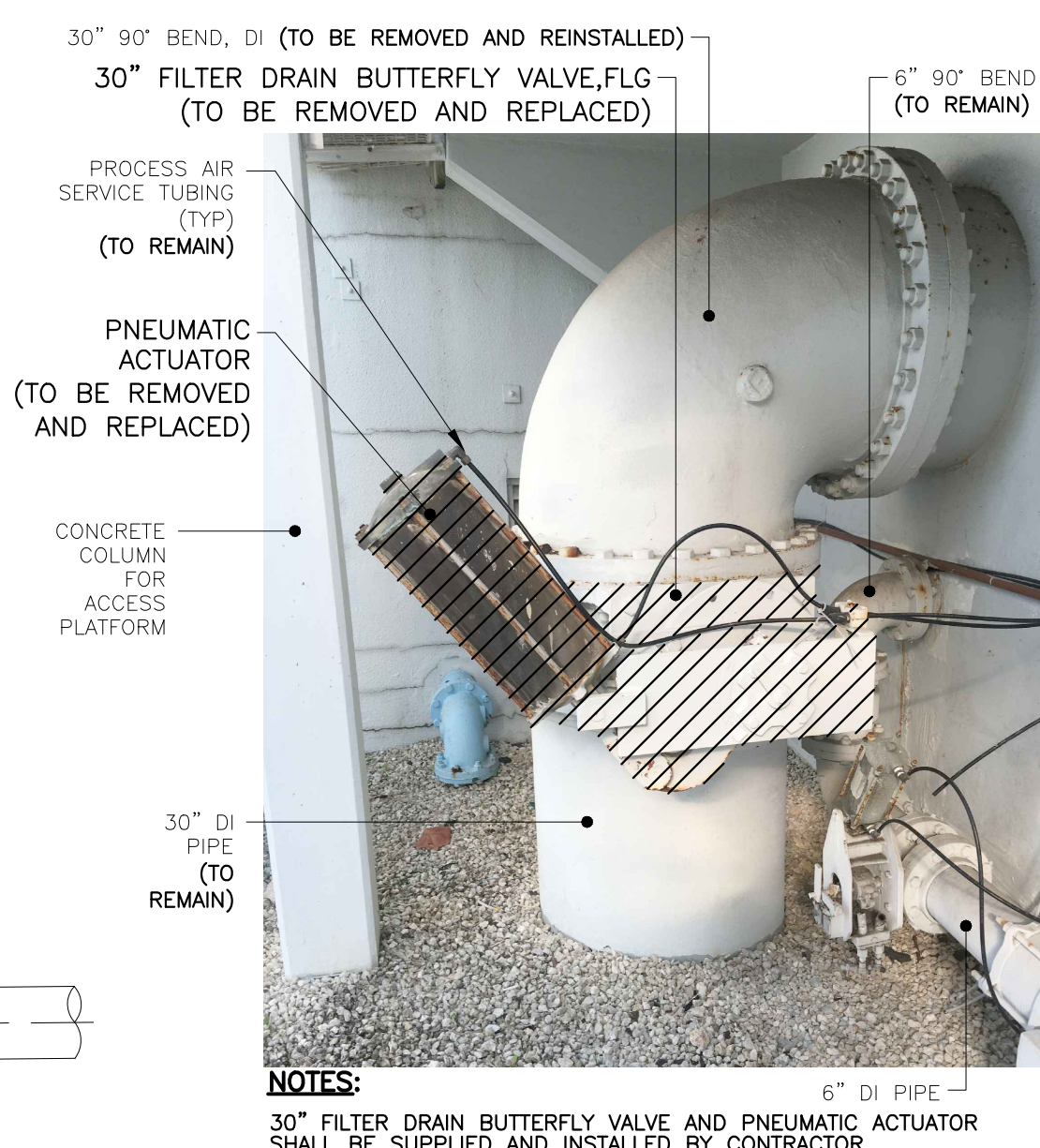
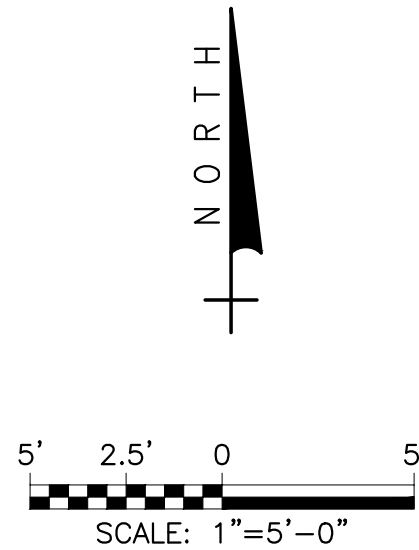
CITY OF DELRAY BEACH
WATER TREATMENT PLANT UPGRADES AND IMPROVEMENTS

FILTER No. 1
EXISTING PLAN AND SECTION

PROJECT NO.
170852

DRAWING NO.
C-5

FILE ID: C-5-170852C-X2-SP



1. EXISTING UTILITY LOCATIONS ARE APPROXIMATE ONLY AND ARE BASED ON LIMITED INFORMATION PROVIDED BY RECORD DRAWINGS. CONTRACTOR SHALL VERIFY EXACT LOCATION, DEPTH, SIZE AND MATERIAL OF PIPING VIA TEST PITS PRIOR TO COMMENCING WORK.
2. CONTRACTOR SHALL NOTIFY CITY IN WRITING A MINIMUM OF 7 DAYS PRIOR TO DISRUPTING, TEMPORARILY DISCONNECTING OR CONNECTING INTO ANY EXISTING UTILITY. CONTRACTOR SHALL NOT PROCEED UNTIL GIVEN WRITTEN AUTHORIZATION FROM CITY STAFF.
3. RESTORE ALL DISTURBED GRASSSED SURFACES USING SOD TO MATCH EXISTING.
4. ALL SHUTDOWN WORK SHALL BE COORDINATED WITH AND APPROVED BY CITY STAFF.
5. ALL ELEVATIONS REFERENCED TO NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD1929).
6. CONTRACTOR SHALL PAINT ALL NEW AND EXISTING PIPING, VALVES, FITTINGS AND ACTUATORS AT FILTER UNITS No. 1, 2, AND 3.

LEGEND:

 REMOVE AND REPLACE



**KNOW WHAT'S BELOW
ALWAYS CALL 811
BEFORE YOU DIG**

It's fast. It's free. It's the law.

www.callsunshine.com

BID SET

Acad Version : R22.0s (LMS Tech) Date/Time : Fri, 20 Jul 2018 - 8:30am Current Plotstyle : ByColor Layout Tab: D2-SP
User Name : 793hln Path/Name : I:\WestPointBeach\DEIB\170852-WTP Upgrades and Imps\CAD\Working Folder\C-6-170852C-D2-SP.dwg



CITY of DELRAY BEACH
ENVIRONMENTAL SERVICES DEPARTMENT
 434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444
 Phone: (561) 243-7322 Fax: (561) 243-7314

MATHEWS CONSULTING 
a **BAXTER & WOODMAN** company
semary Avenue, Suite 330, West Palm Beach, Florida
Phone: 561-655-6175 • Fax: 561-655-6179
www.baxterwoodman.com EB-31795

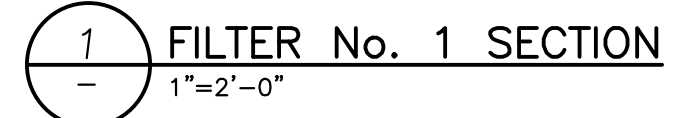
ENGINEER'S SEAL

FOR THE
CITY OF DELRAY BEACH

DESIGNED BY	JAP				
DRAWN BY	HLN				
CHECKED BY	JAP				
DATE	06/18	REVISION	DATE	DESCRIPTION	BY

<p align="center">CITY OF DELRAY BEACH WATER TREATMENT PLANT UPGRADES AND IMPROVEMENTS</p>	
<p align="center">FILTER No. 1 DEMOLITION PLAN AND SECTION</p>	

PROJECT NO.	170852
DRAWING NO.	C-6
FILE ID.	C-6-170852C-D2-SP



1. EXISTING UTILITY LOCATIONS ARE APPROXIMATE ONLY AND ARE BASED ON LIMITED INFORMATION PROVIDED BY RECORD DRAWINGS. CONTRACTOR SHALL VERIFY EXACT LOCATION, DEPTH, SIZE AND MATERIAL OF PIPING VIA TEST PITS PRIOR TO COMMENCING WORK.
2. CONTRACTOR SHALL NOTIFY CITY IN WRITING A MINIMUM OF 7 DAYS PRIOR TO DISRUPTING, TEMPORARILY DISCONNECTING OR CONNECTING INTO ANY EXISTING UTILITY. CONTRACTOR SHALL NOT PROCEED UNTIL GIVEN WRITTEN AUTHORIZATION FROM CITY STAFF.
3. RESTORE ALL DISTURBED GRASSED SURFACES USING SOD TO MATCH EXISTING.
4. ALL SHUTDOWN WORK SHALL BE COORDINATED WITH AND APPROVED BY CITY STAFF.
5. ALL ELEVATIONS REFERENCED TO NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD1929).
6. CONTRACTOR SHALL PAINT ALL NEW AND EXISTING PIPING, VALVES, FITTINGS AND ACTUATORS AT FILTER UNITS No. 1 AND 2.



BID SET

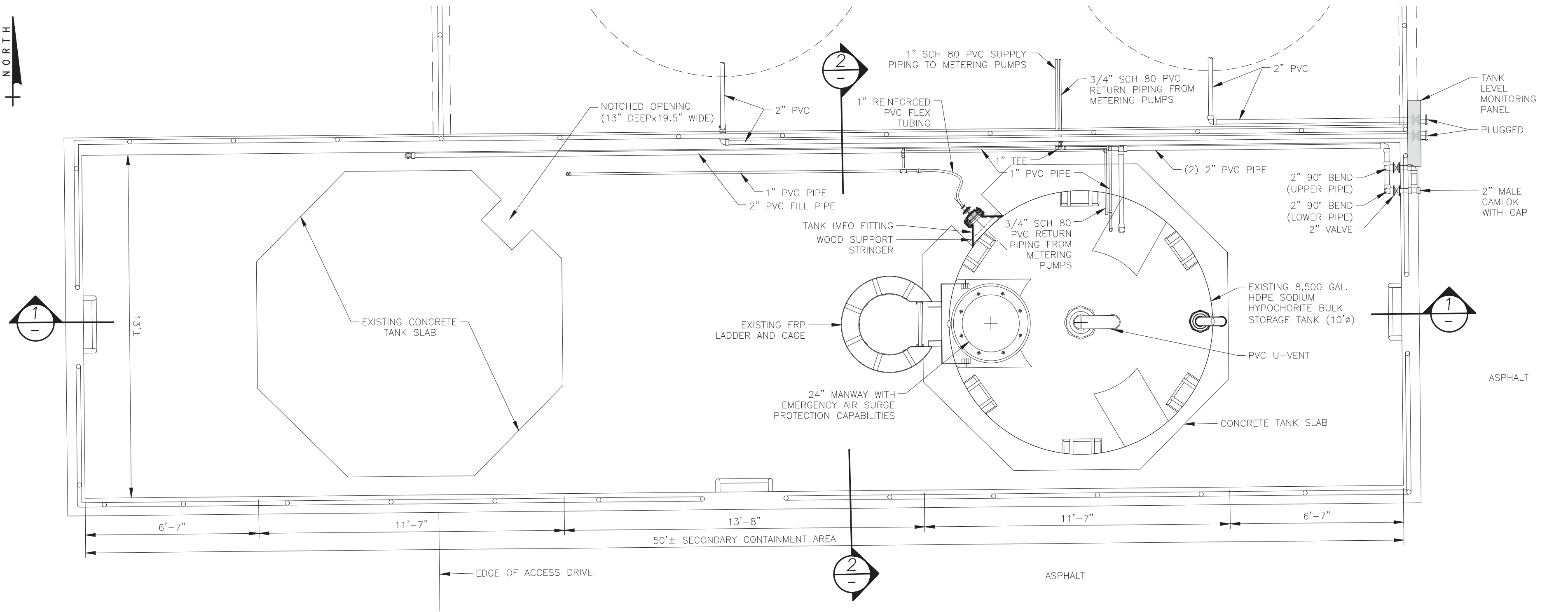


DESIGNED BY	JAP				
DRAWN BY	HLN				
CHECKED BY	JAP				
DATE	06/18	REVISION	DATE	DESCRIPTION	BY

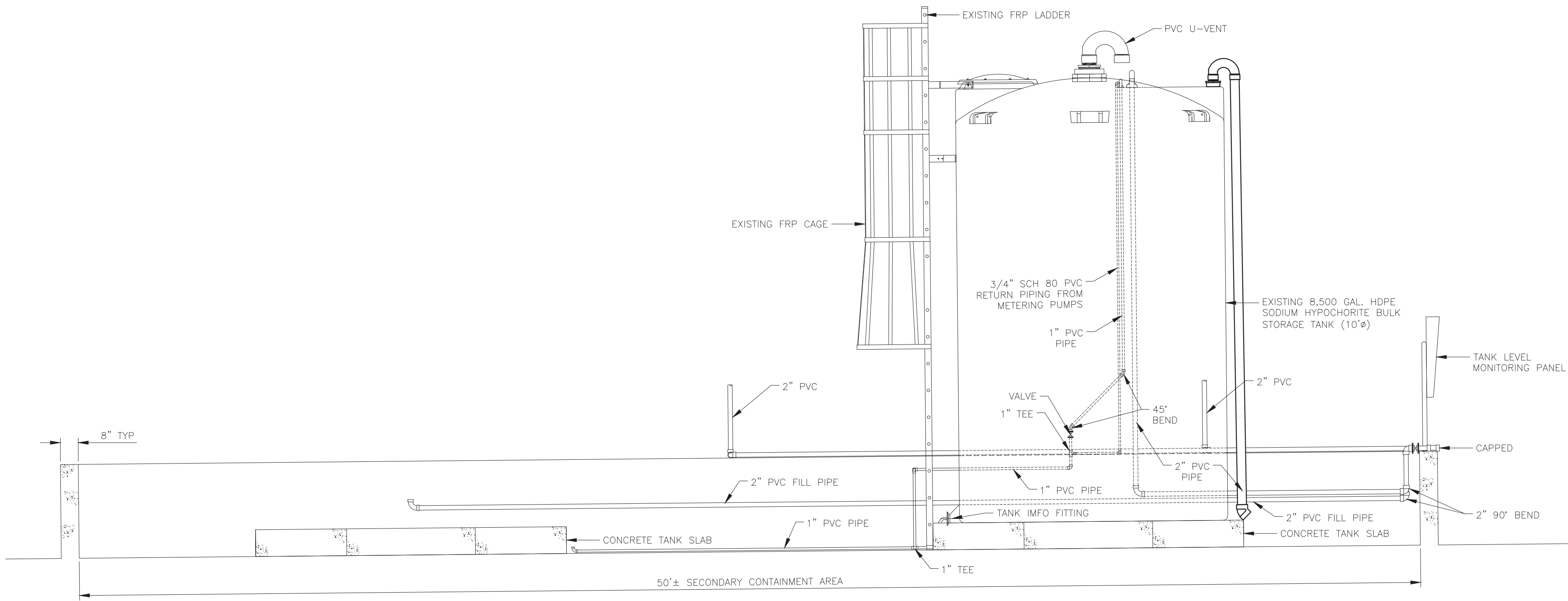
FILTER No. 1
PROPOSED PLAN AND SECTION

LE ID. C-7-170852C-P2-SP

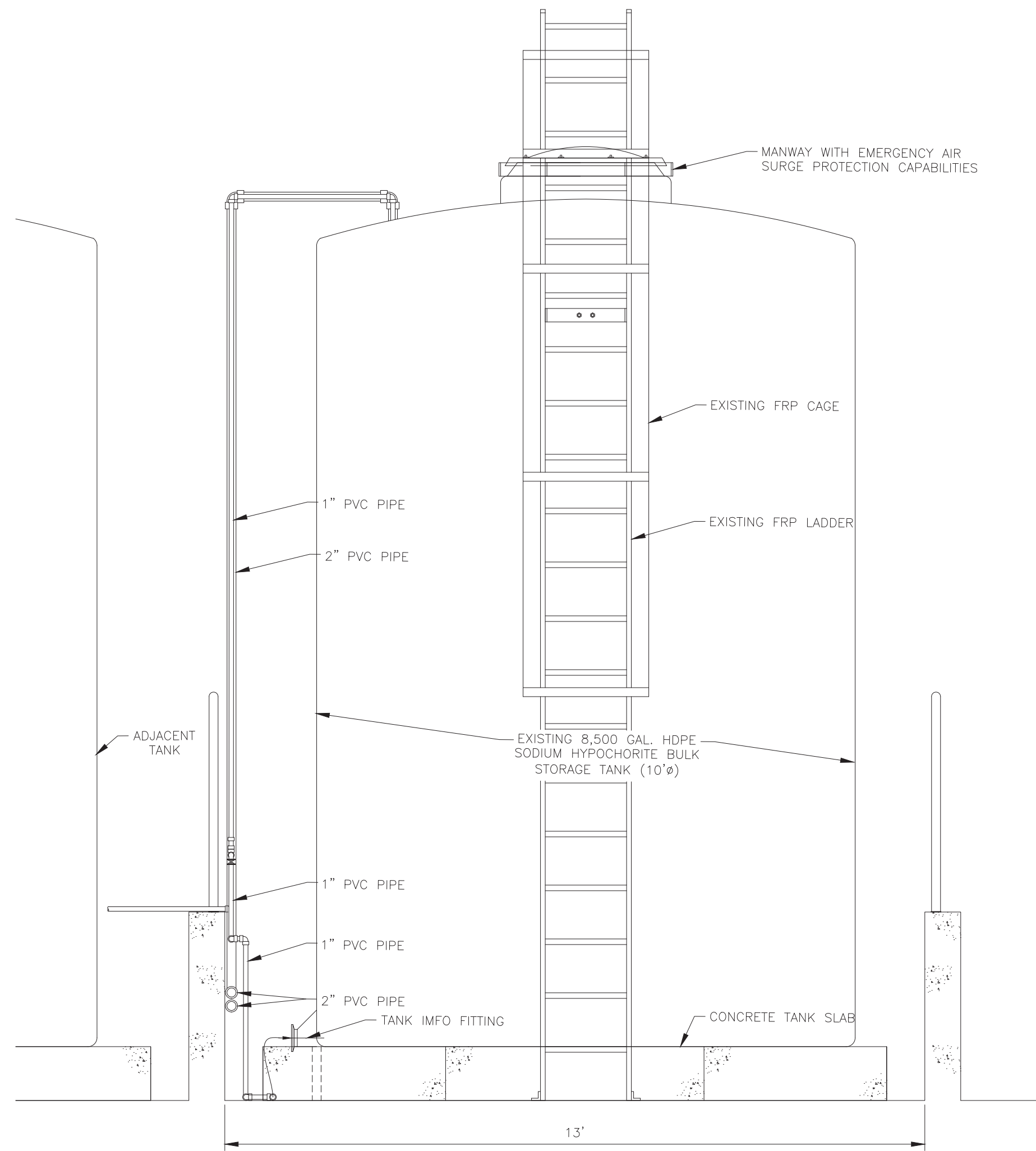
Acad Version : R22.0s (LMS Tech) User Name : 793hn
Date/Time : Fri, 15 Jun 2018 - 12:42pm Current Plotstyle : ByColor Layout Tab: C-8
Path Name : I:\WestPalmBeach\BIBEC\170852-WTP Upgrades and Imps\CAD\Working Folder\C-8-170852C-X3-SP.dwg



STORAGE TANK PLAN VIEW
1"=3'-0"



1 SECTION
1"=3'-0"



2 SECTION
1"=3'-0"

GENERAL NOTES:

- EXISTING UTILITY LOCATIONS ARE APPROXIMATE ONLY AND ARE BASED ON LIMITED INFORMATION PROVIDED BY RECORD DRAWINGS. CONTRACTOR SHALL VERIFY EXACT LOCATION, DEPTH, SIZE AND MATERIAL OF PIPING VIA TEST PITS PRIOR TO COMMENCING WORK.
- CONTRACTOR SHALL NOTIFY CITY IN WRITING A MINIMUM OF 7 DAYS PRIOR TO DISRUPTING, TEMPORARILY DISCONNECTING OR CONNECTING INTO ANY EXISTING UTILITY. CONTRACTOR SHALL NOT PROCEED UNTIL GIVEN WRITTEN AUTHORIZATION FROM CITY STAFF.
- ALL SHUTDOWN WORK SHALL BE COORDINATED WITH AND APPROVED BY CITY STAFF.
- ALL ELEVATIONS REFERENCED TO NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD1929).
- SECURE AND ROUGHLY SUPPORT ALL PIPING WITH FRP SUPPORTS
- UNLESS OTHERWISE NOTED, ALL FITTINGS SHALL BE THREADED BULKHEAD TYPE. CONNECTING PIPE SHALL MATE TO THE SPECIFIED CONNECTION.
- PROVIDE SUPPORT BRACKETS BY TANK MANUFACTURER FOR FILL, VENT AND DROP ASSEMBLIES. MATERIAL TO MATCH PIPING MATERIAL OR TANK MATERIAL.
- INVERT ELEVATION OF ALL PIPING INSIDE CONTAINMENT SHALL SET 6-INCHES ABOVE THE SLAB AND SUPPORTED w/ FRP SUPPORTS AND 316 SS HARDWARE AT 4 FOOT (MAX) INTERVALS OR AS REQUIRED TO OBTAIN RIDGED SUPPORT.
- ALL TANK FITTINGS ON DOME SHALL BE PVC SELF ALIGNING BALL TYPE.



CITY of DELRAY BEACH
ENVIRONMENTAL SERVICES DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444
Phone: (561) 243-7322 Fax: (561) 243-7314

MATHEWS CONSULTING
a BAXTER & WOODMAN company

477 S. Rosemary Avenue, Suite 330, West Palm Beach, Florida 33401
Phone: 561-655-6175 • Fax: 561-655-6179
www.baxterwoodman.com EB-31795

ENGINEER'S SEAL

FOR THE
CITY OF DELRAY BEACH

DESIGNED BY	JAP
DRAWN BY	HLN
CHECKED BY	JAP
DATE	06/18

REVISION	DATE	DESCRIPTION	BY

CITY OF DELRAY BEACH
WATER TREATMENT PLANT UPGRADES AND IMPROVEMENTS

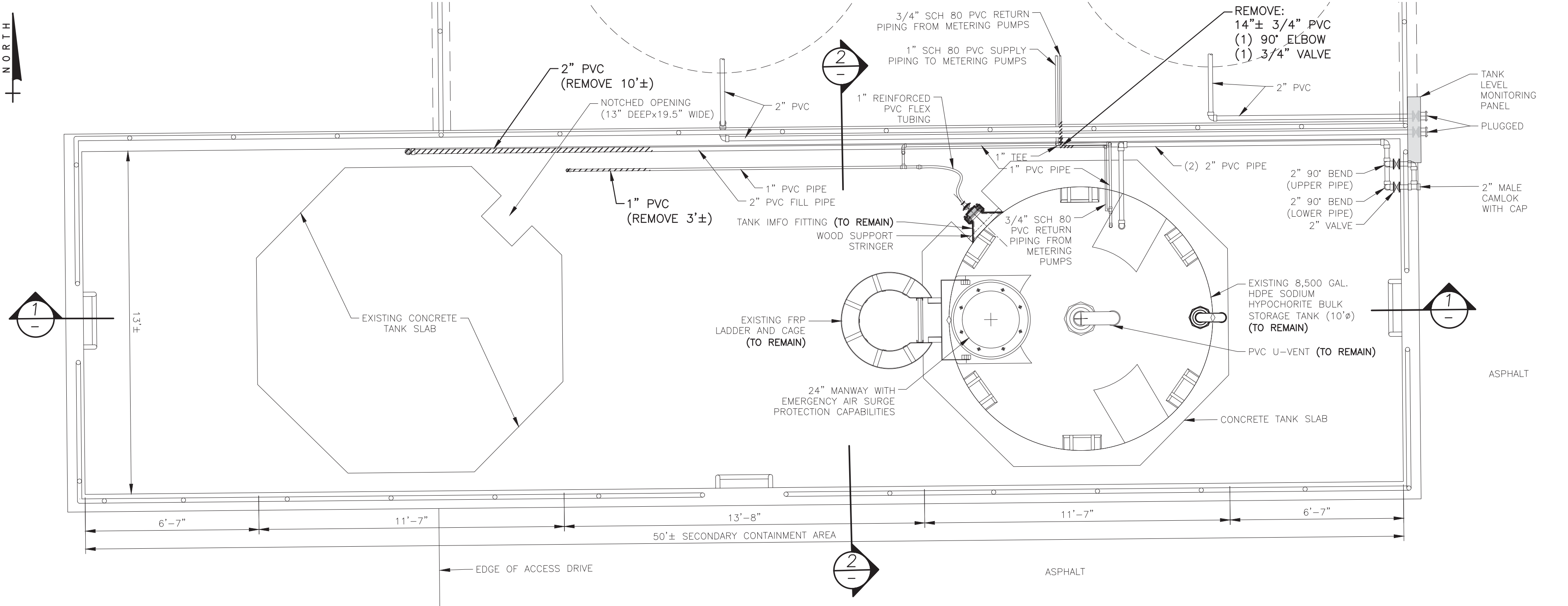
HYPOCHLORITE STORAGE TANK
EXISTING PLAN AND SECTION

PROJECT NO. 170852
DRAWING NO. C-8
FILE ID: C-8-170852C-X3-SP

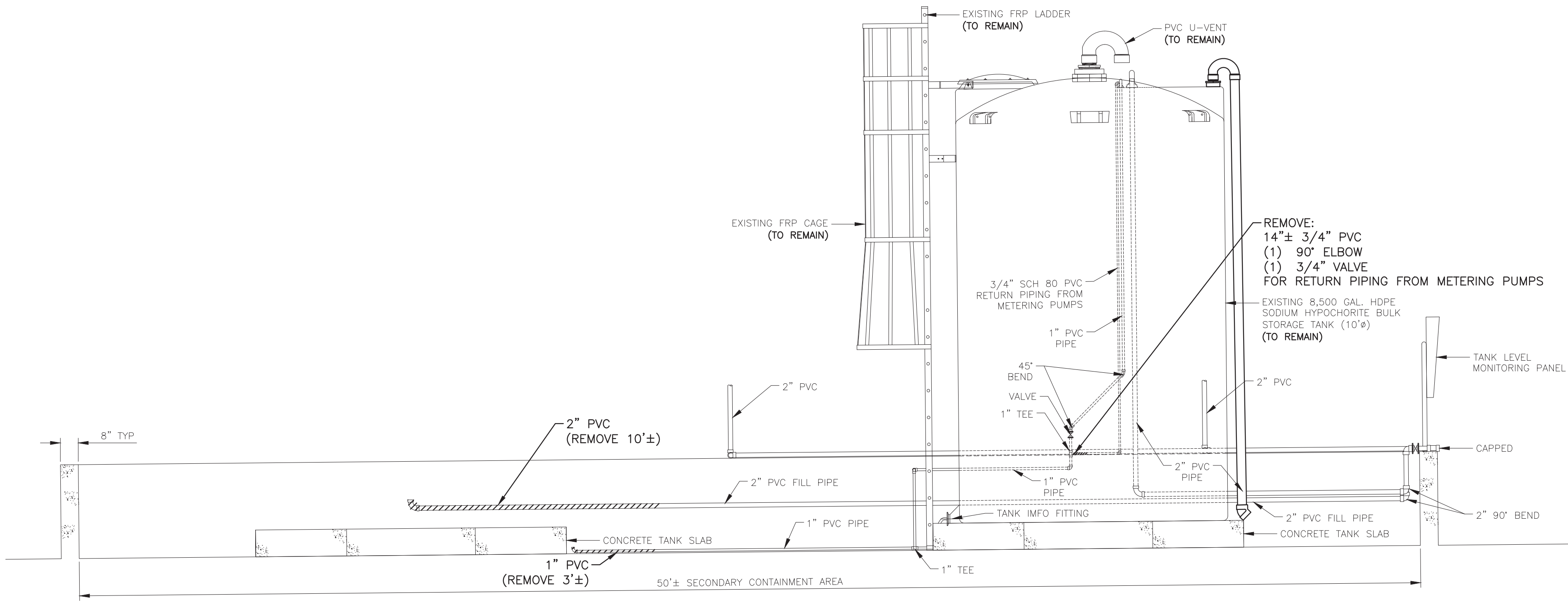


BID SET

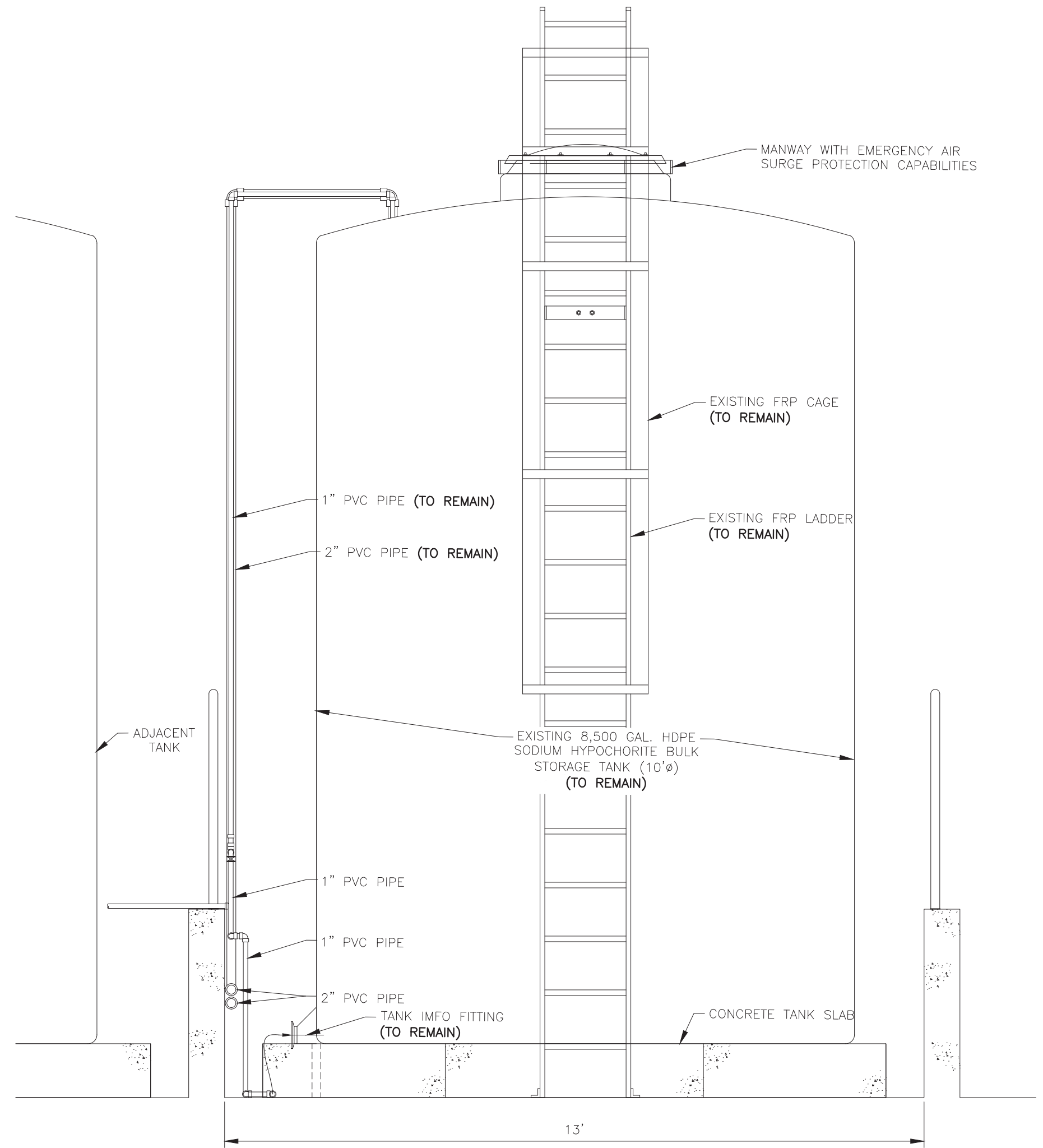
Acad Version : R22.0s (LMS Tech) User Name : 793hr Current Plots/Style : ByColor Layout Tab: C-9 Date/Time : Fri, 15 Jun 2018 - 12:42pm Path Name : I:\WestPalmBeach\BIBEC\170852-WTP Upgrades and Imps\CAD\Working Folder\C-9-170852C-D3-SP.dwg



STORAGE TANK PLAN VIEW
1"=3'-0"



1 SECTION
1"=3'-0"



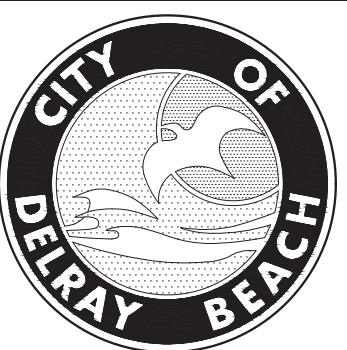
2 SECTION
1"=2'-0"

GENERAL NOTES:

- EXISTING UTILITY LOCATIONS ARE APPROXIMATE ONLY AND ARE BASED ON LIMITED INFORMATION PROVIDED BY RECORD DRAWINGS. CONTRACTOR SHALL VERIFY EXACT LOCATION, DEPTH, SIZE AND MATERIAL OF PIPING VIA TEST PITS PRIOR TO COMMENCING WORK.
- CONTRACTOR SHALL NOTIFY CITY IN WRITING A MINIMUM OF 7 DAYS PRIOR TO DISRUPTING, TEMPORARILY DISCONNECTING OR CONNECTING INTO ANY EXISTING UTILITY. CONTRACTOR SHALL NOT PROCEED UNTIL GIVEN WRITTEN AUTHORIZATION FROM CITY STAFF.
- ALL SHUTDOWN WORK SHALL BE COORDINATED WITH AND APPROVED BY CITY STAFF.
- ALL ELEVATIONS REFERENCED TO NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD1929).
- SECURE AND ROUGHLY SUPPORT ALL PIPING WITH FRP SUPPORTS
- UNLESS OTHERWISE NOTED, ALL FITTINGS SHALL BE THREADED BULKHEAD TYPE. CONNECTING PIPE SHALL MATE TO THE SPECIFIED CONNECTION.
- PROVIDE SUPPORT BRACKETS BY TANK MANUFACTURER FOR FILL, VENT AND DROP ASSEMBLIES. MATERIAL TO MATCH PIPING MATERIAL OR TANK MATERIAL.
- INVERT ELEVATION OF ALL PIPING INSIDE CONTAINMENT SHALL SET 6-INCHES ABOVE THE SLAB AND SUPPORTED w/ FRP SUPPORTS AND 316 SS HARDWARE AT 4 FOOT (MAX) INTERVALS OR AS REQUIRED TO OBTAIN RIDGED SUPPORT.
- ALL TANK FITTINGS ON DOME SHALL BE PVC SELF ALIGNING BALL TYPE.

LEGEND:

 REMOVE AND REPLACE



CITY of DELRAY BEACH
ENVIRONMENTAL SERVICES DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444
Phone: (561) 243-7322 Fax: (561) 243-7314



477 S. Rosemary Avenue, Suite 330, West Palm Beach, Florida 33401
Phone: 561-655-6175 • Fax: 561-655-6179
www.baxterandwoodman.com EB-31795

ENGINEER'S SEAL

FOR THE
CITY OF DELRAY BEACH

DESIGNED BY	JAP
DRAWN BY	HLN
CHECKED BY	JAP
DATE	06/18

REVISION	DATE	DESCRIPTION	BY

CITY OF DELRAY BEACH
WATER TREATMENT PLANT UPGRADES AND IMPROVEMENTS

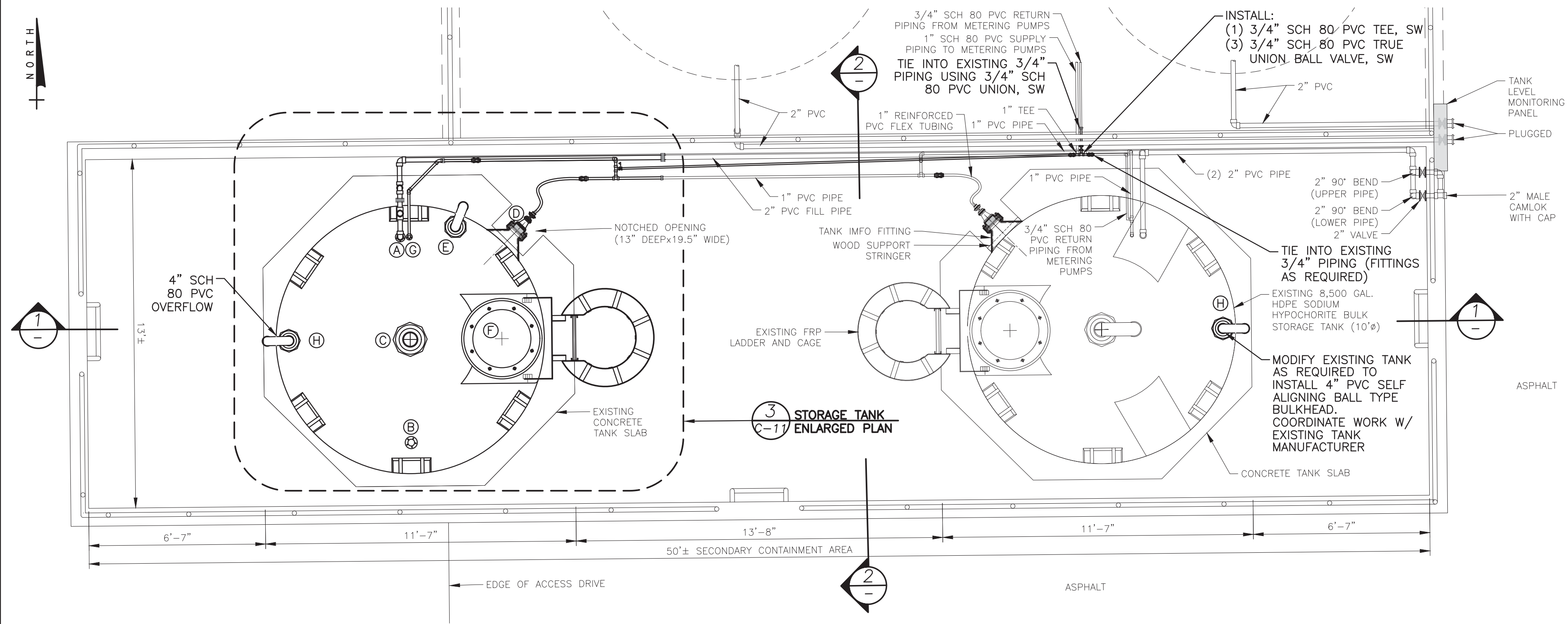
HYPOCHLORITE STORAGE TANK
DEMOLITION PLAN AND SECTION

PROJECT NO. 170852
DRAWING NO. C-9
FILE ID. C-9-170852C-D3-SP

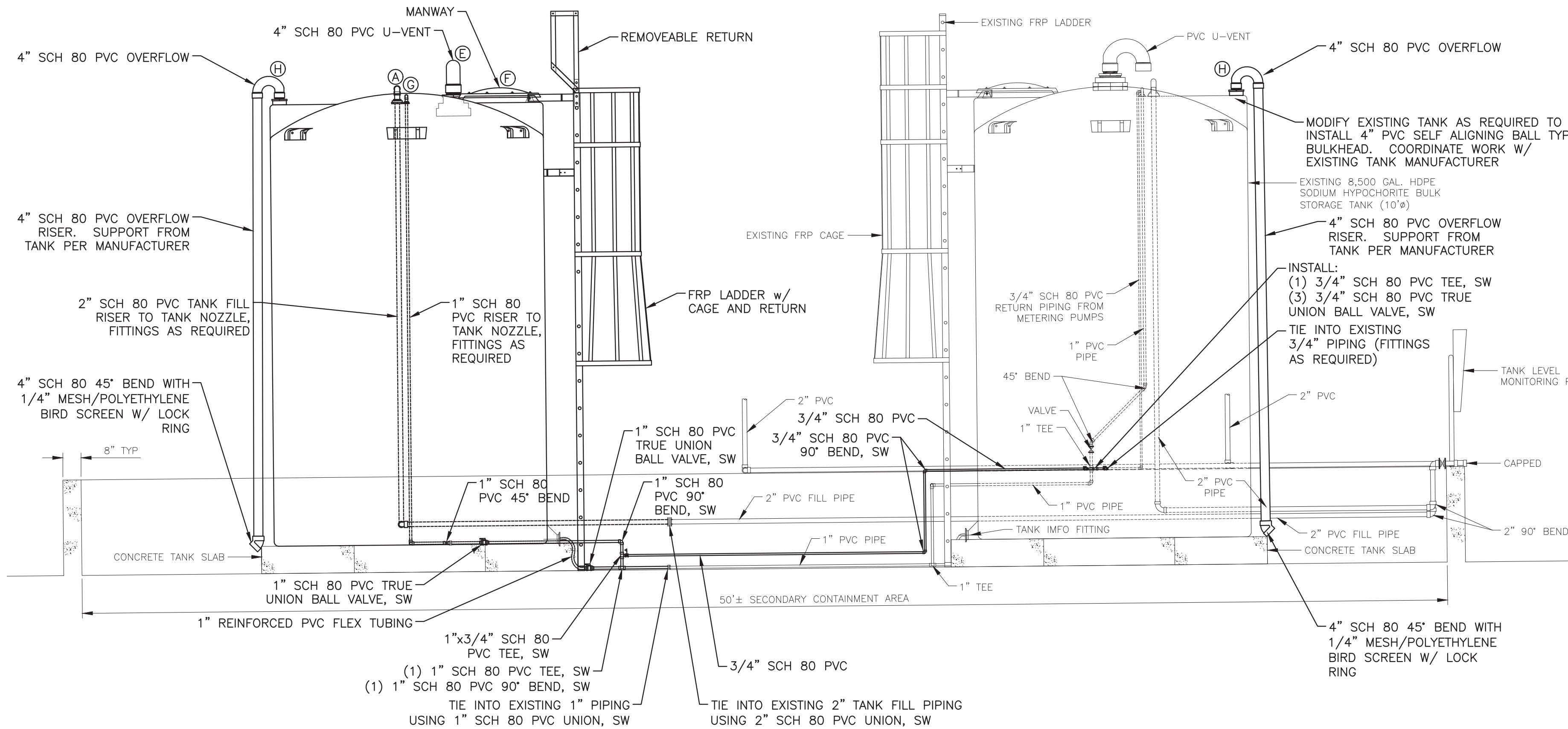


BID SET

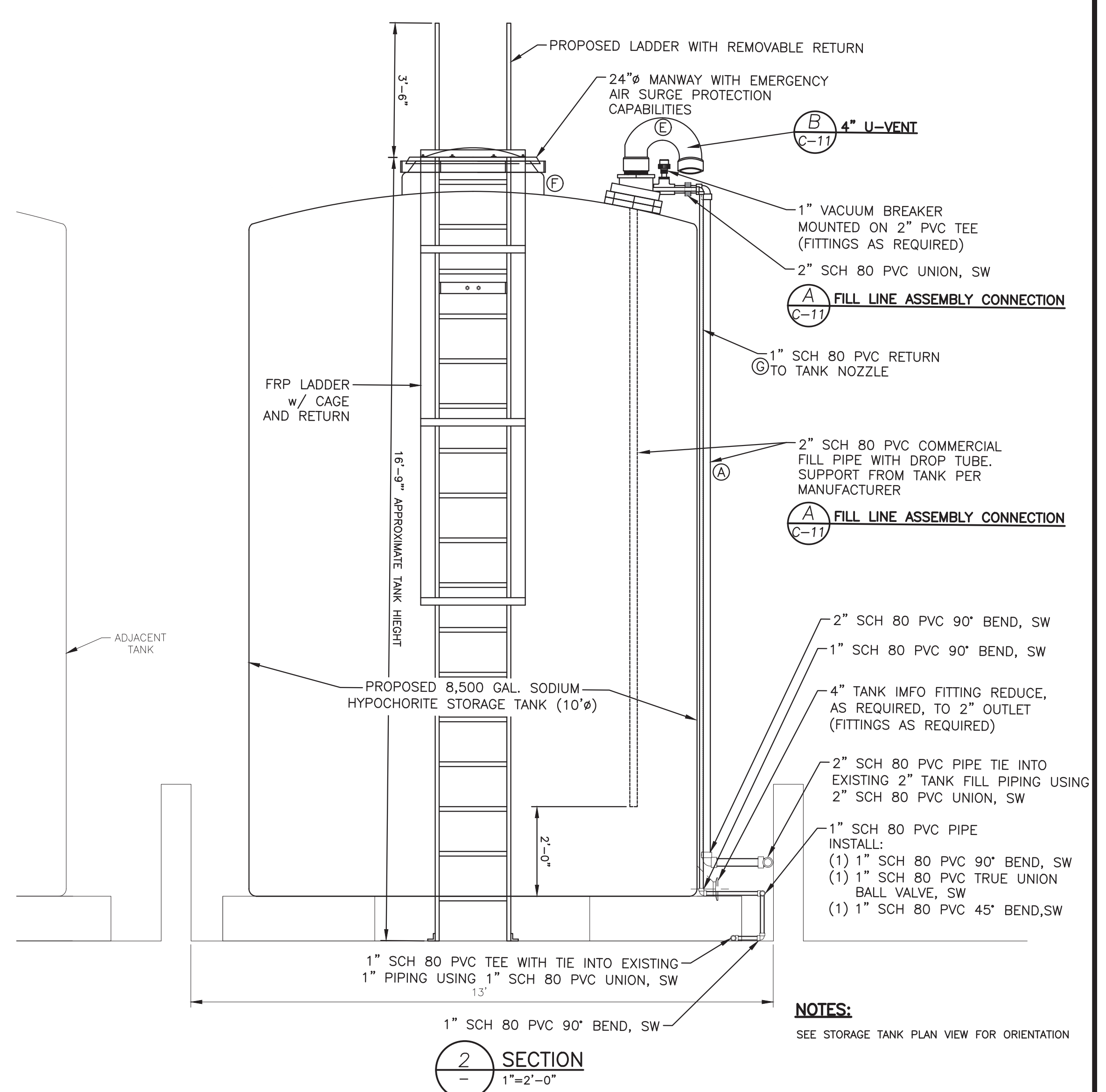
Acad Version : R22.0s (LMS Tech) User Name : 793hcn
Date/Time : Fri, 15 Jun 2018 - 12:42pm
Current Plotstyle : ByColor
Path Name : I:\WestPalmBeach\BID\BID\70852-WP Upgrades and Imps\CAD\Working Folder\C-10-11-170852C-P3-SP.dwg
Layout Tab: C-10



STORAGE TANK PLAN VIEW
1"=3'-0"



SECTION 1
1"=3'-0"



SECTION 2
1"=2'-0"

GENERAL NOTES:

- EXISTING UTILITY LOCATIONS ARE APPROXIMATE ONLY AND ARE BASED ON LIMITED INFORMATION PROVIDED BY RECORD DRAWINGS. CONTRACTOR SHALL VERIFY EXACT LOCATION, DEPTH, SIZE AND MATERIAL OF PIPING WITH TEST PITS PRIOR TO COMMENCING WORK.
- CONTRACTOR SHALL NOTIFY CITY IN WRITING A MINIMUM OF 7 DAYS PRIOR TO DISRUPTING, TEMPORARILY DISCONNECTING OR CONNECTING INTO ANY EXISTING UTILITY. CONTRACTOR SHALL NOT PROCEED UNTIL GIVEN WRITTEN AUTHORIZATION FROM CITY STAFF.
- ALL SHUTDOWN WORK SHALL BE COORDINATED WITH AND APPROVED BY CITY STAFF.
- ALL ELEVATIONS REFERENCED TO NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD1929).
- SECURE AND RIGIDLY SUPPORT ALL PIPING WITH FRP SUPPORTS
- UNLESS OTHERWISE NOTED, ALL FITTINGS SHALL BE THREADED BULKHEAD TYPE. CONNECTING PIPE SHALL MATE TO THE SPECIFIED CONNECTION.
- PROVIDE SUPPORT BRACKETS BY TANK MANUFACTURER FOR FILL, VENT AND DROP ASSEMBLIES. MATERIAL TO MATCH PIPING MATERIAL OR TANK MATERIAL.
- INVERT ELEVATION OF ALL PIPING INSIDE CONTAINMENT SHALL SET 6-INCHES ABOVE THE SLAB AND SUPPORTED W/ FRP SUPPORTS AND 316 SS HARDWARE AT 4 FOOT (MAX) INTERVALS OR AS REQUIRED TO OBTAIN RIDGED SUPPORT.
- ALL TANK FITTINGS ON DOME SHALL BE PVC SELF ALIGNING BALL TYPE.
- ALL NEW AND EXISTING SCH 80 PVC PIPING, VALVES AND FITTINGS WITHIN THE LIMITS OF THE SODIUM/HYPOCHLORITE SECONDARY CONTAINMENT AREA SHALL BE PAINTED PER SECTION 09900, ENTITLED "PAINTING".

PROPOSED STORAGE TANK			
ITEM	QTY	DESCRIPTION	TANK FITTINGS - SIZE / TYPE
(A)	1	2" COMMERCIAL FILL W/ DROP TUBE	2" / BULK HEAD w/ THREADED NIPPLE
(B)	1	2" FUTURE CONNECTION	2" / BULK HEAD w/ THREADED NIPPLE AND CAP
(C)	1	UNTRASONIC LEVEL SENSOR	6" / FLANGED BALL FITTING
(D)	1	4" IMFO	4" / PVC VANSTONE FLANGE
(E)	1	4" VENT	4" / BULK HEAD w/ THREADED NIPPLE
(F)	1	MANWAY	24" DIA. PRESSURE RELIEF P.E. MANWAY
(G)	1	1" RETURN PIPING	2" / BULK HEAD w/ BALL FITTING, REDUCE AS REQUIRED
(H)	1	4" OVERFLOW RISER	4" BULKHEAD W/ THREADED NIPPLE



CITY of DELRAY BEACH
ENVIRONMENTAL SERVICES DEPARTMENT

434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444
Phone: (561) 243-7322 Fax: (561) 243-7314



477 S. Rosemary Avenue, Suite 330, West Palm Beach, Florida 33401
Phone: 561-655-6175 • Fax: 561-655-6179
www.baxterandwoodman.com EB-31795

ENGINEER'S SEAL

FOR THE
CITY OF DELRAY BEACH

DESIGNED BY	JAP				
DRAWN BY	HLN				
CHECKED BY	JAP				
DATE	06/18	REVISION	DATE	DESCRIPTION	BY

CITY OF DELRAY BEACH
WATER TREATMENT PLANT UPGRADES AND IMPROVEMENTS

HYPOCHLORITE STORAGE TANK
PROPOSED PLAN AND SECTION

PROJECT NO.
170852

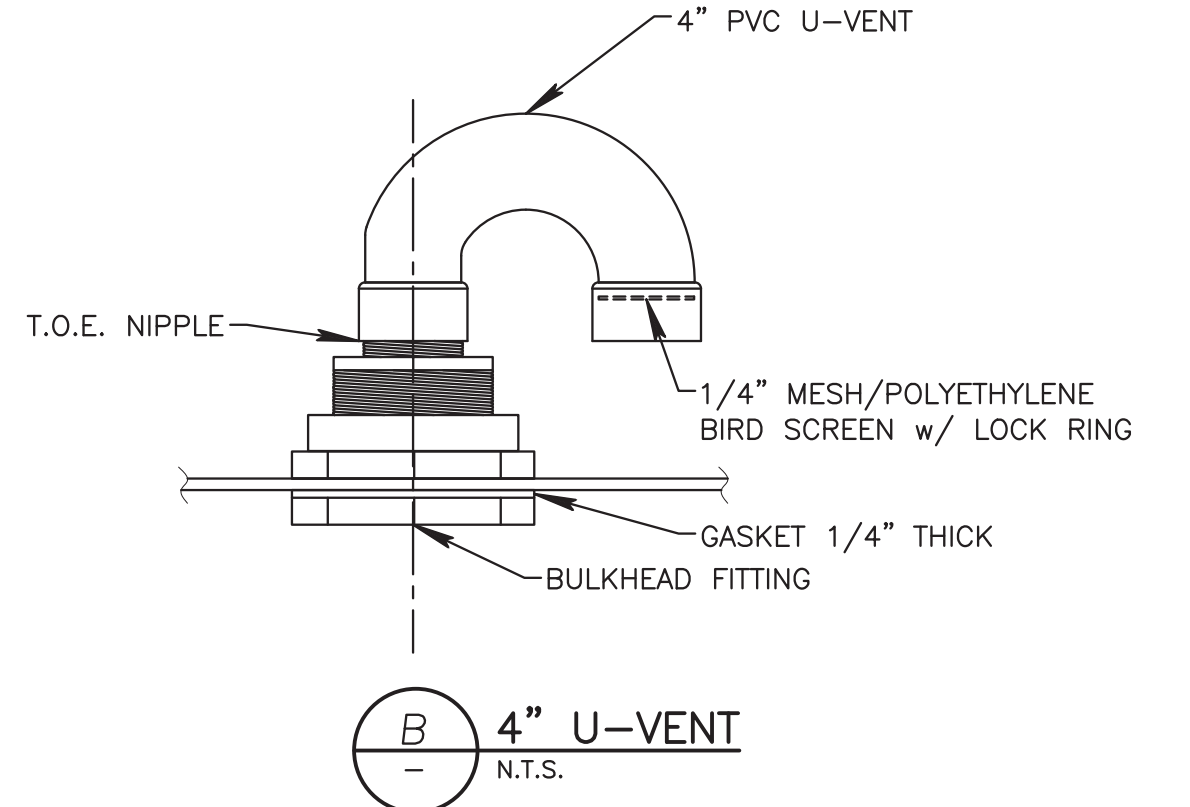
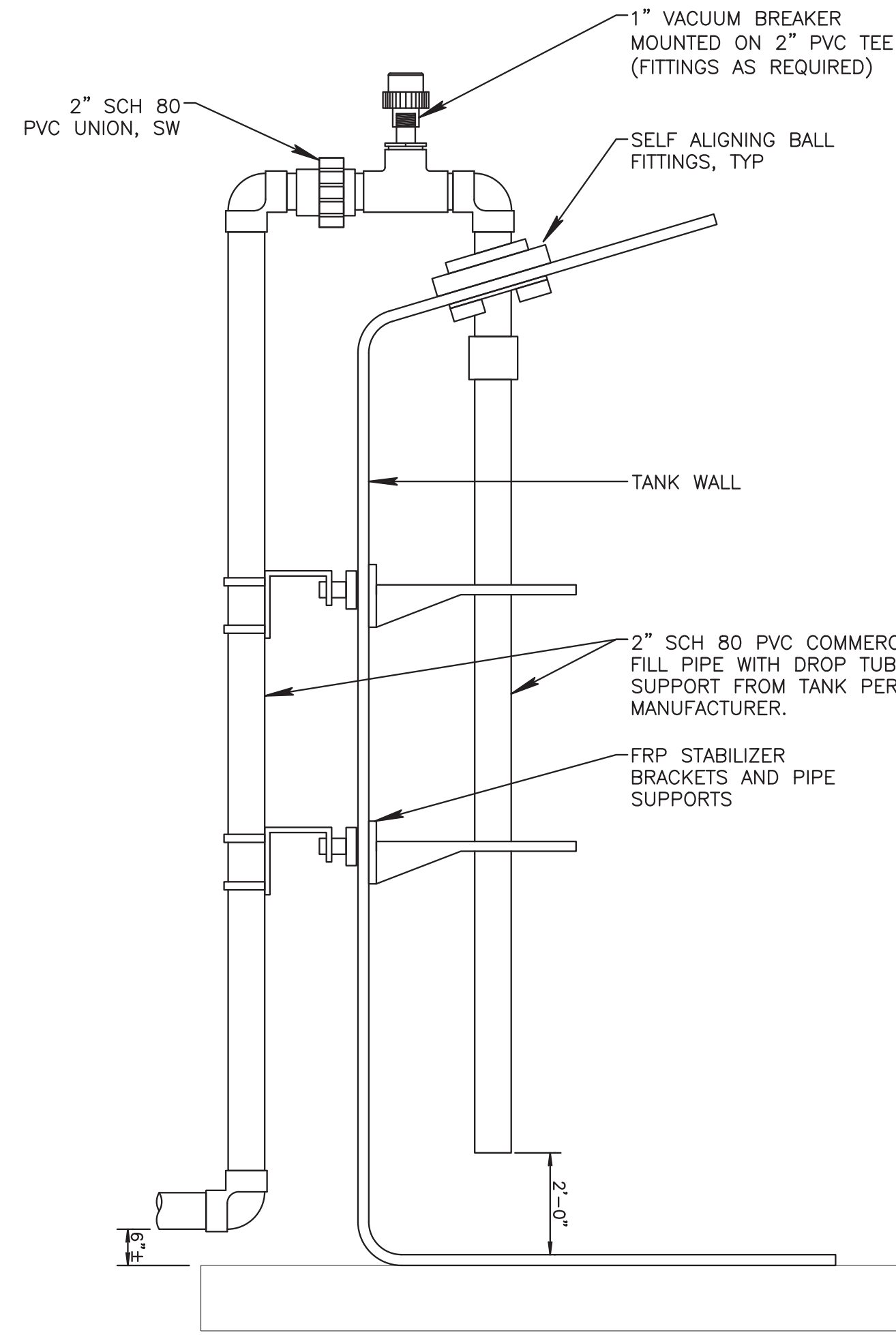
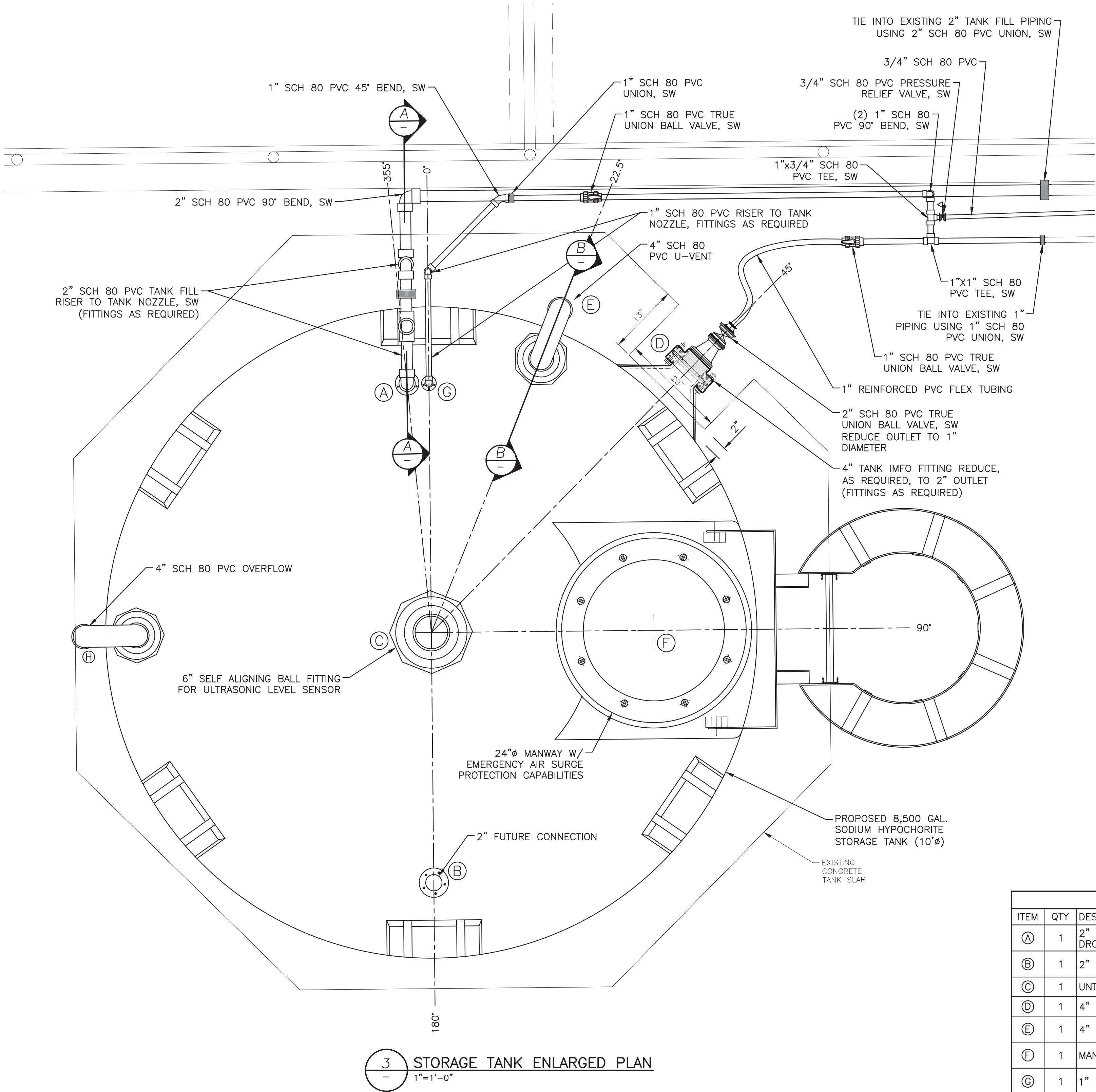
DRAWING NO.
C-10

FILE ID: C-10_11-170852C-P3-SP



BID SET

Acad Version : R22.0s (LMS Tech)
User Name : 793hrn
Date/Time : Fri, 15 Jun 2018 - 12:43pm
Current Plotstyle : ByColor
Path Name : I:\WestPalmBeach\DEBC\170852-WTP Upgrades and Imps\CAD\Working Folder\C-10-11-170852C-P3-SP.dwg
Layout Tab: C-11



GENERAL NOTES:

- EXISTING UTILITY LOCATIONS ARE APPROXIMATE ONLY AND ARE BASED ON LIMITED INFORMATION PROVIDED BY RECORD DRAWINGS. CONTRACTOR SHALL VERIFY EXACT LOCATION, DEPTH, SIZE AND MATERIAL OF PIPING VIA TEST PITS PRIOR TO COMMENCING WORK.
- CONTRACTOR SHALL NOTIFY CITY IN WRITING A MINIMUM OF 7 DAYS PRIOR TO DISRUPTING, TEMPORARILY DISCONNECTING OR CONNECTING INTO ANY EXISTING UTILITY. CONTRACTOR SHALL NOT PROCEED UNTIL GIVEN WRITTEN AUTHORIZATION FROM CITY STAFF.
- ALL SHUTDOWN WORK SHALL BE COORDINATED WITH AND APPROVED BY CITY STAFF.
- ALL ELEVATIONS REFERENCED TO NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD1929).
- SECURE AND RIGIDLY SUPPORT ALL PIPING WITH FRP SUPPORTS
- UNLESS OTHERWISE NOTED, ALL FITTINGS SHALL BE THREADED BULKHEAD TYPE. CONNECTING PIPE SHALL MATE TO THE SPECIFIED CONNECTION.
- PROVIDE SUPPORT BRACKETS BY TANK MANUFACTURER FOR FILL, VENT AND DROP ASSEMBLIES. MATERIAL TO MATCH PIPING MATERIAL OR TANK MATERIAL.
- INVERT ELEVATION OF ALL PIPING INSIDE CONTAINMENT SHALL SET 6-INCHES ABOVE THE SLAB AND SUPPORTED w/ FRP SUPPORTS AND 316 SS HARDWARE AT 4 FOOT (MAX) INTERVALS OR AS REQUIRED TO OBTAIN RIDGED SUPPORT.
- ALL TANK FITTINGS ON DOME SHALL BE PVC SELF ALIGNING BALL TYPE.
- ALL NEW AND EXISTING SCH 80 PVC PIPING, VALVES AND FITTINGS WITHIN THE LIMITS OF THE SODIUM/HYPOCHLORITE SECONDARY CONTAINMENT AREA SHALL BE PAINTED PER SECTION 09900, ENTITLED "PAINTING".

PROPOSED STORAGE TANK			
ITEM	QTY	DESCRIPTION	TANK FITTINGS - SIZE / TYPE
(A)	1	2" COMMERCIAL FILL W/ DROP TUBE	2" / BULK HEAD w/ THREADED NIPPLE
(B)	1	2" FUTURE CONNECTION	2" / BULK HEAD w/ THREADED NIPPLE AND CAP
(C)	1	UNTRASONIC LEVEL SENSOR	6" / FLANGED BALL FITTING
(D)	1	4" IMFO	4" / PVC VANSTONE FLANGE
(E)	1	4" VENT	4" / BULK HEAD w/ THREADED NIPPLE
(F)	1	MANWAY	24" DIA. PRESSURE RELIEF P.E. MANWAY
(G)	1	1" RETURN PIPING	2"/ BULK HEAD w/ BALL FITTING, REDUCE AS REQUIRED
(H)	1	4" OVERFLOW RISER	4" BULKHEAD W/ THREADED NIPPLE



CITY of DELRAY BEACH
ENVIRONMENTAL SERVICES DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444
Phone: (561) 243-7322 Fax: (561) 243-7314

MATHEWS CONSULTING
a **BAXTER & WOODMAN** company

477 S. Rosemary Avenue, Suite 330, West Palm Beach, Florida 33401
Phone: 561-655-6175 • Fax: 561-655-6179
www.baxterwoodman.com EB-31795

ENGINEER'S SEAL

FOR THE
CITY OF DELRAY BEACH

DESIGNED BY	JAP
DRAWN BY	HLN
CHECKED BY	JAP
DATE	06/18

REVISION	DATE	DESCRIPTION	BY

CITY OF DELRAY BEACH
WATER TREATMENT PLANT UPGRADES AND IMPROVEMENTS

HYPOCHLORITE STORAGE TANK
ENLARGED PROPOSED PLAN AND DETAILS

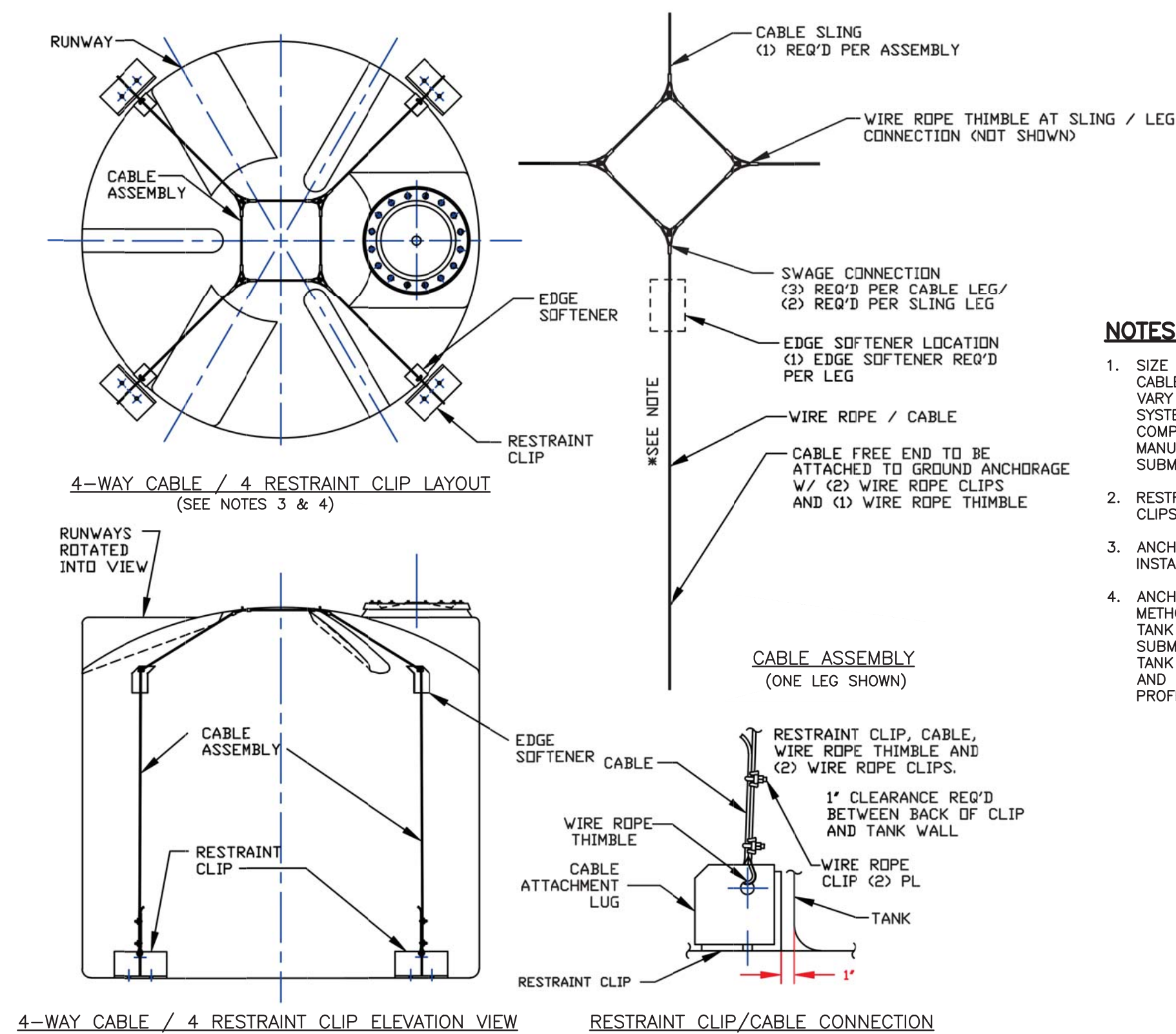
PROJECT NO.
170852

DRAWING NO.
C-11

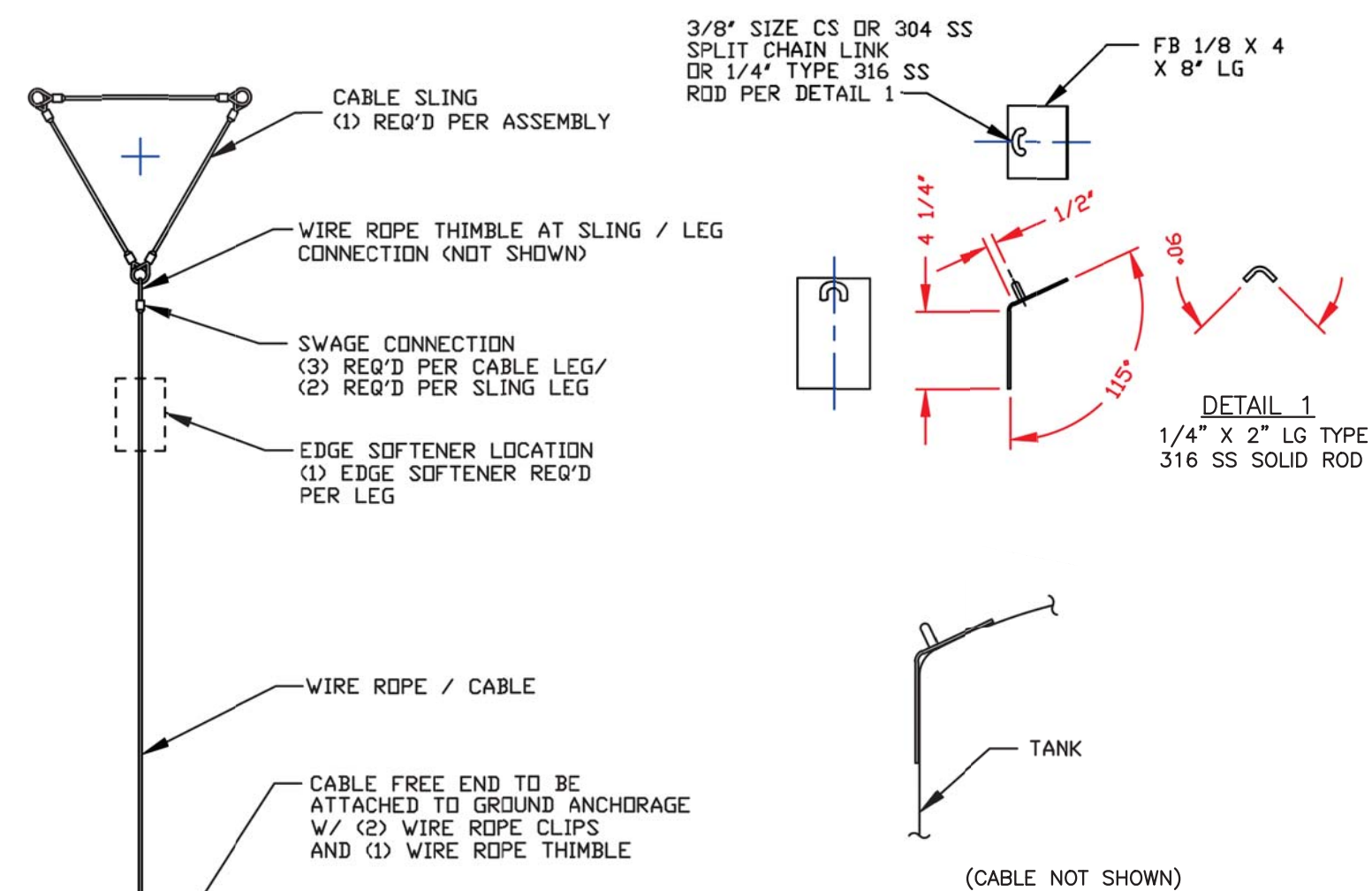
FILE ID: C-10_11-170852C-P3-SP



BID SET



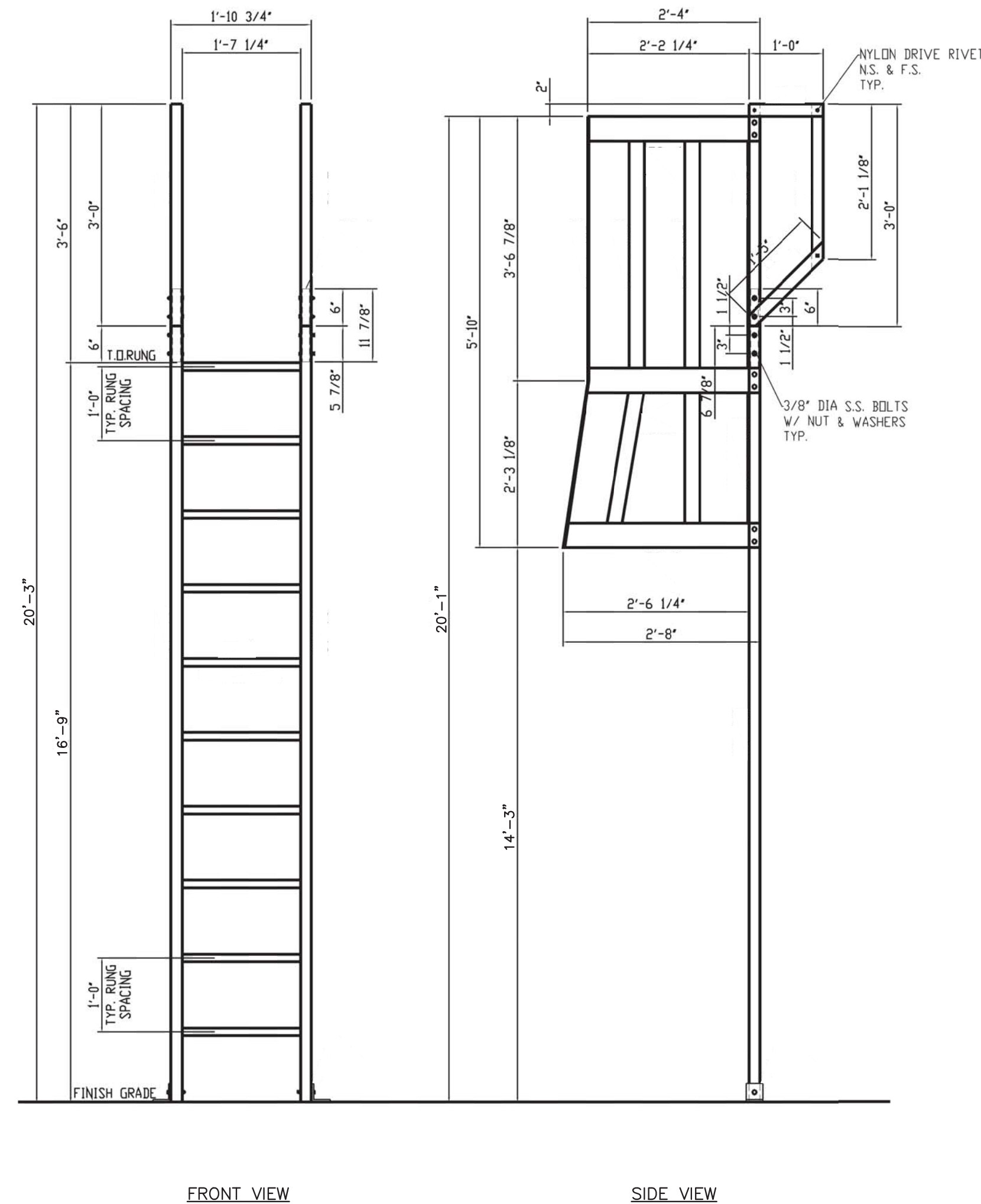
TYPICAL RESTRAINT SYSTEM DETAIL
N.T.S.



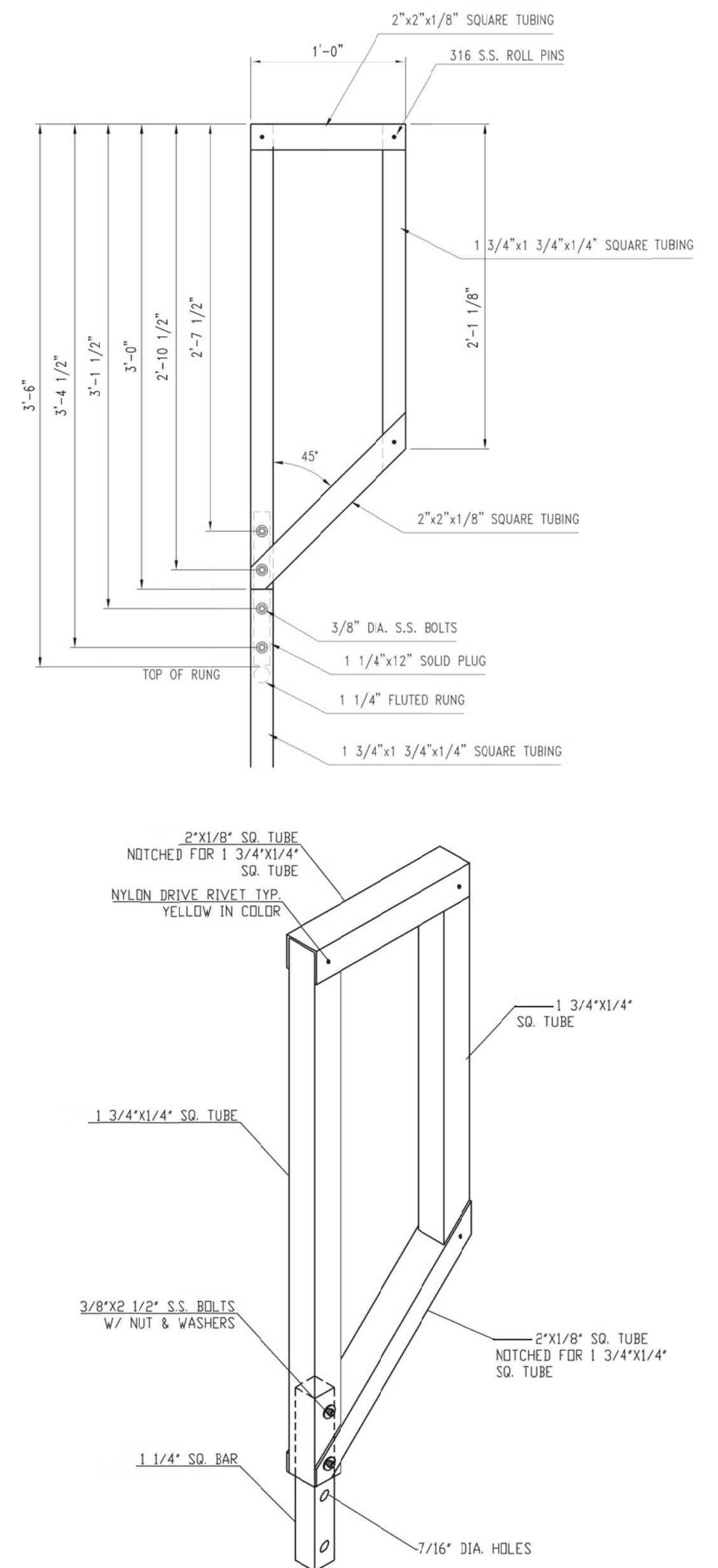
NOTES:

1. BREAK RADII APPROX. 3/8 INCHES.
2. BREAK ALL SHARP CORNERS.
3. AS REQUIRED BY TANK MANUFACTURER.
4. ALL CABLE SYSTEM SHALL BE HOT DIPPED GALVANIZED STEEL.

CABLE ASSEMBLY FOR VERTICAL TANK RESTRAINT SYSTEMS
N.T.S.



FRP LADDER W/ CAGE & RETURN
N.T.S.



LADDER RETURN DETAIL
N.T.S.



CITY of DELRAY BEACH
ENVIRONMENTAL SERVICES DEPARTMENT

434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444
Phone: (561) 243-7322 Fax: (561) 243-7314

MATHEWS CONSULTING
a **BAXTER & WOODMAN** company

477 S. Rosemary Avenue, Suite 330, West Palm Beach, Florida 33401
Phone: 561-655-6175 • Fax: 561-655-6179
www.baxterwoodman.com EB-31795

ENGINEER'S SEAL

FOR THE
CITY OF DELRAY BEACH

[illegible]

CITY OF DELRAY BEACH
WATER TREATMENT PLANT UPGRADES AND IMPROVEMENTS

STANDARD DETAILS

PROJECT NO.
170852

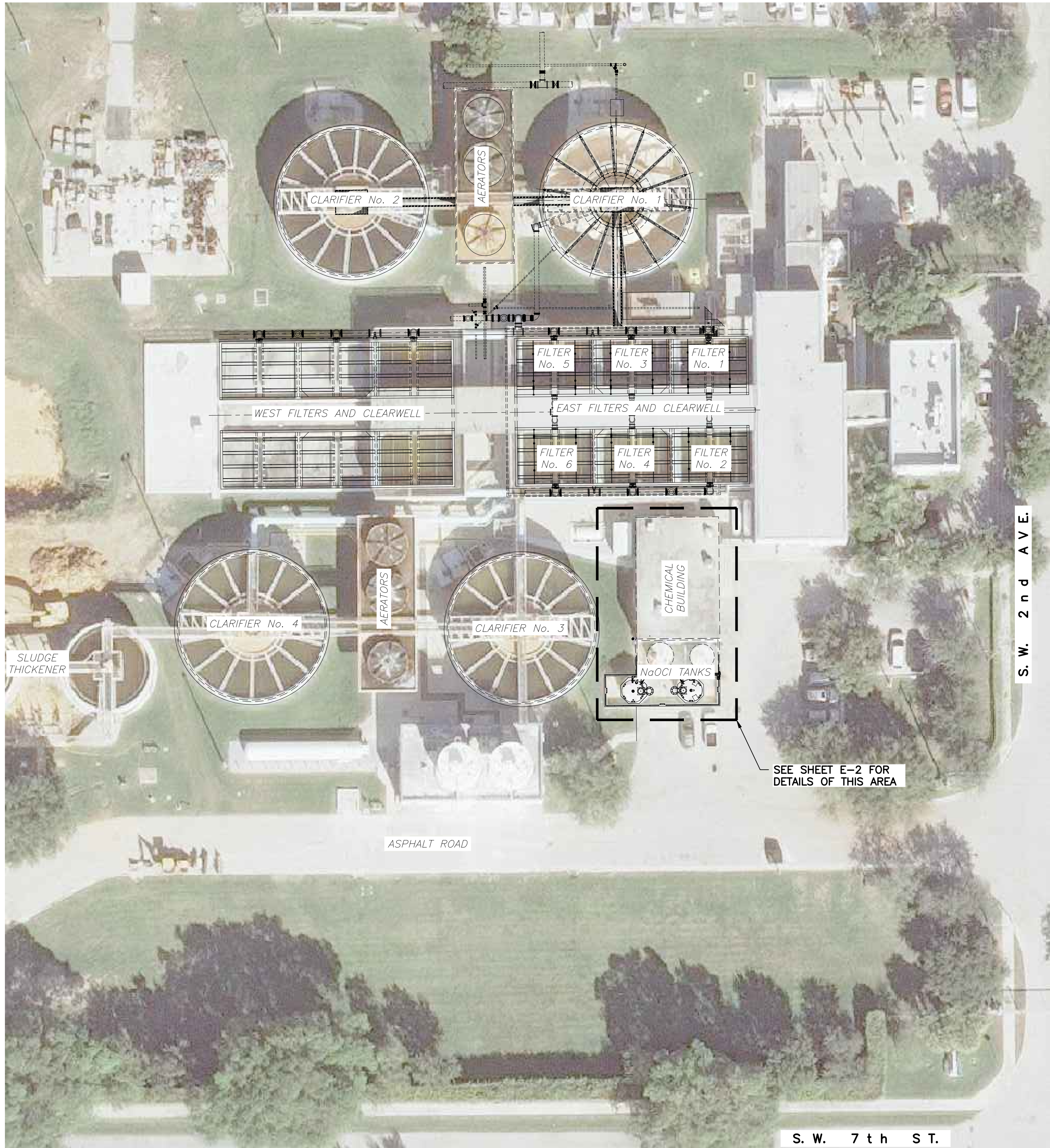
DRAWING NO.

D-1

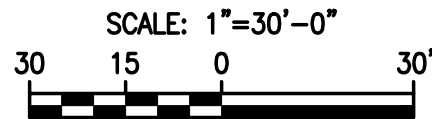
FILE ID. 161196C-P-DTLS

BID SET

W:\2_Active Projects\Mathews Consulting\Delray Beach\WTP Nypco Tank Replacement\2_Bid Set\dwgs\E-01 SITE.dwg
Date\Time : Fri, 04 May 2018 - 8:32am
User Name : Mikea
Acad Version : R20.0s (LMS Tech)
Path Name : W:\2_Active Projects\Mathews Consulting\Delray Beach\WTP Nypco Tank Replacement\2_Bid Set\dwgs\E-01 SITE.dwg
Layout Tab: 22 X 34
Current Plotstyle : ByColor
T: Tank Replacement\2_Bid Set\dwgs\E-01 SITE.dwg



ELECTRICAL SITE PLAN



LEGEND

SYMBOLS:

- CONDUIT CONCEALED UNDERGROUND.
- HOME RUN TO PANELBOARD. NUMBER OF ARROWS INDICATE NUMBER OF CIRCUITS. HASH MARKS INDICATE NUMBER OF #12 AWG. CONDUCTORS. NO HASH MARKS INDICATE 2 #12 CONDUCTORS OR AS NOTED.

- J** JUNCTION BOX
- LE** LEVEL ELEMENT
- LIT** LEVEL INDICATING TRANSMITTER

ABBREVIATIONS:

- | | | | |
|-----|-----------------------------|-----|--------------------------|
| A | AMPERES | MTD | MOUNTED |
| AFG | ABOVE FINISHED GRADE | NTS | NOT TO SCALE |
| BKR | BREAKER | NEC | NATIONAL ELECTRICAL CODE |
| CB | CIRCUIT BREAKER | P | POLE |
| CU | COPPER | PB | PULLBOX |
| FBC | FLORIDA BUILDING CODE | PC | PHOTOCELL |
| FPL | FLORIDA POWER & LIGHT | PNL | PANEL |
| GND | GROUND | SPD | SURGE PROTECTION DEVICE |
| HOA | HAND OFF AUTO | SS | STAINLESS STEEL |
| LA | LIGHTNING ARRESTOR | TC | TIME CLOCK |
| MB | MAIN BREAKER | TYP | TYPICAL |
| MIN | MINIMUM | V | VOLT |
| MSC | MANUFACTURER SUPPLIED CABLE | W | WIRE |
| | | WP | WEATHERPROOF |

GENERAL NOTES:

- CONTRACTOR SHALL SUPPLY AND INSTALL ALL NEW ELECTRICAL WORK INDICATED.
- CONTRACTOR SHALL VISIT JOB SITE AND FAMILIARIZE HIMSELF/HERSELF WITH ALL CONDITIONS AFFECTING THE ELECTRICAL INSTALLATION AND MAKE PROVISIONS AS TO THE COST THEREOF. EXISTING CONDITIONS OF ELECTRICAL EQUIPMENT, ETC... THAT ARE PART OF THE FINAL SYSTEM SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO SUBMITTING HIS/HER BID.
- ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE, FLORIDA BUILDING CODE, CURRENT EDITION, AND SHALL COMPLY WITH ALL LOCAL ORDINANCES.
- IT IS NOT THE INTENT OF THESE PLANS TO SHOW EVERY MINOR DETAIL OF CONSTRUCTION. THE CONTRACTOR IS EXPECTED TO FURNISH AND INSTALL ALL ITEMS FOR A COMPLETE ELECTRICAL SYSTEM AND PROVIDE ALL REQUIREMENTS NECESSARY FOR THE EQUIPMENT TO BE PLACED IN PROPER WORKING ORDER.
- ALL MATERIALS SHALL BE NEW AND BEAR UNDERWRITERS' LABELS.
- ALL WORK SHALL BE PERFORMED BY A LICENSED ELECTRICAL CONTRACTOR IN A FIRST CLASS WORKMANLIKE MANNER. THE COMPLETED SYSTEM SHALL BE FULLY OPERATIVE AND ACCEPTED BY ENGINEER. LICENSED JOURNEYMAN SHALL BE PRESENT AT THE SITE DURING ALL ELECTRICAL WORK.
- CORRECTION OF ANY DEFECTS SHALL BE COMPLETED WITHOUT ADDITIONAL CHARGE AND SHALL INCLUDE REPLACEMENT OR REPAIR OF ANY OTHER PHASE OF THE INSTALLATION WHICH MAY HAVE BEEN DAMAGED.
- CONTRACTOR SHALL GUARANTEE ALL MATERIALS AND WORKMANSHIP FREE FROM DEFECTS FOR A PERIOD OF NOT LESS THAN ONE YEAR FROM DATE OF ACCEPTANCE OF THE COMPLETED PROJECT BY THE CITY.
- NO OPEN TRENCHES WILL BE ALLOWED TO REMAIN OPEN OVER NIGHT, UNLESS CIRCUMSTANCES REQUIRE IT AND PERMISSION IS GRANTED BY THE CITY. TRENCHING SHALL BE AS PER THE FLORIDA TRENCH SAFETY ACT.
- CONTRACTOR IS RESPONSIBLE FOR CONTACTING THE CITY FOR ALL REQUIRED INSPECTIONS.
- SLANTED AND SHADED TEXT* DENOTES EXISTING EQUIPMENT OR STRUCTURES. NON-SHADED TEXT DENOTES NEW EQUIPMENT, STRUCTURES, & WORK.
- CONTRACTOR TO STAKE OUT ALL EQUIPMENT LOCATIONS AND OBTAIN APPROVAL FROM ENGINEER PRIOR TO INSTALLATION.
- MINIMUM WIRE SIZE SHALL BE #12 A.W.G. STRANDED, EXCLUDING CONTROL WIRING.
- CONTRACTOR SHALL VERIFY TYPE AND LOCATION OF EXISTING UNDERGROUND UTILITIES, INCLUDING IRRIGATION, GAS, TELEPHONE, DOMESTIC WATER & SEWER, ELECTRIC, ETC., PRIOR TO BEGINNING WORK. CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING THESE UTILITIES. UTILITY DAMAGE BY THE CONTRACTOR SHALL BE REPAIRED BY THE CONTRACTOR AT THE CONTRACTORS EXPENSE.
- THE DRAWINGS ARE NOT INTENDED TO SHOW THE EXACT LOCATION OF CONDUIT RUNS. TRENCHING SHALL BE COORDINATED WITH THE OTHER TRADES SUCH AS LANDSCAPING AND OTHER UNDERGROUND UTILITIES, SO THAT CONFLICTS ARE AVOIDED PRIOR TO INSTALLATION. ADDITIONALLY, MAINTAIN ENOUGH DISTANCE FROM THE EXISTING TREES AND LANDSCAPE AREAS SUCH THAT MINIMUM DAMAGE IS DONE TO EXISTING ROOTS.
- ELECTRICAL CONTRACTOR SHALL LABEL ALL PANELS WITH TYPED WRITTEN DIRECTORIES (NEW AND EXISTING).

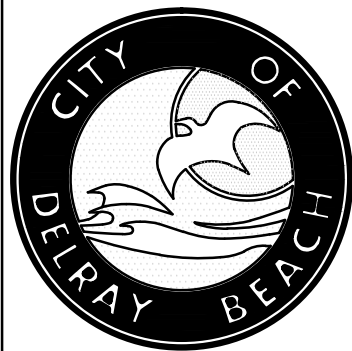


Electrical Design Associates

8401 LAKE WORTH ROAD, SUITE 221
LAKE WORTH, FLORIDA 33467
PHONE: (561) 819-5556
FAX: (561) 819-5557
C.O.A. No. 8079
LILLIAN M. REYES, P.E.
Florida P.E. No. 50780



BID SET



CITY of DELRAY BEACH
ENVIRONMENTAL SERVICES DEPARTMENT

434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444
Phone: (561) 243-7322 Fax: (561) 243-7314



a **BAXTER & WOODMAN** company

477 S. Rosemary Avenue, Suite 330, West Palm Beach, Florida 33401
Phone: 561-655-6175 • Fax: 561-655-6179
www.baxterwoodman.com EB-31795

ENGINEER'S SEAL

FOR THE
CITY OF DELRAY BEACH

DESIGNED BY LMR
DRAWN BY RRM
CHECKED BY LMR

DATE 05/18

REVISION	DATE	DESCRIPTION	BY

CITY OF DELRAY BEACH
WATER TREATMENT PLANT UPGRADES AND IMPROVEMENTS

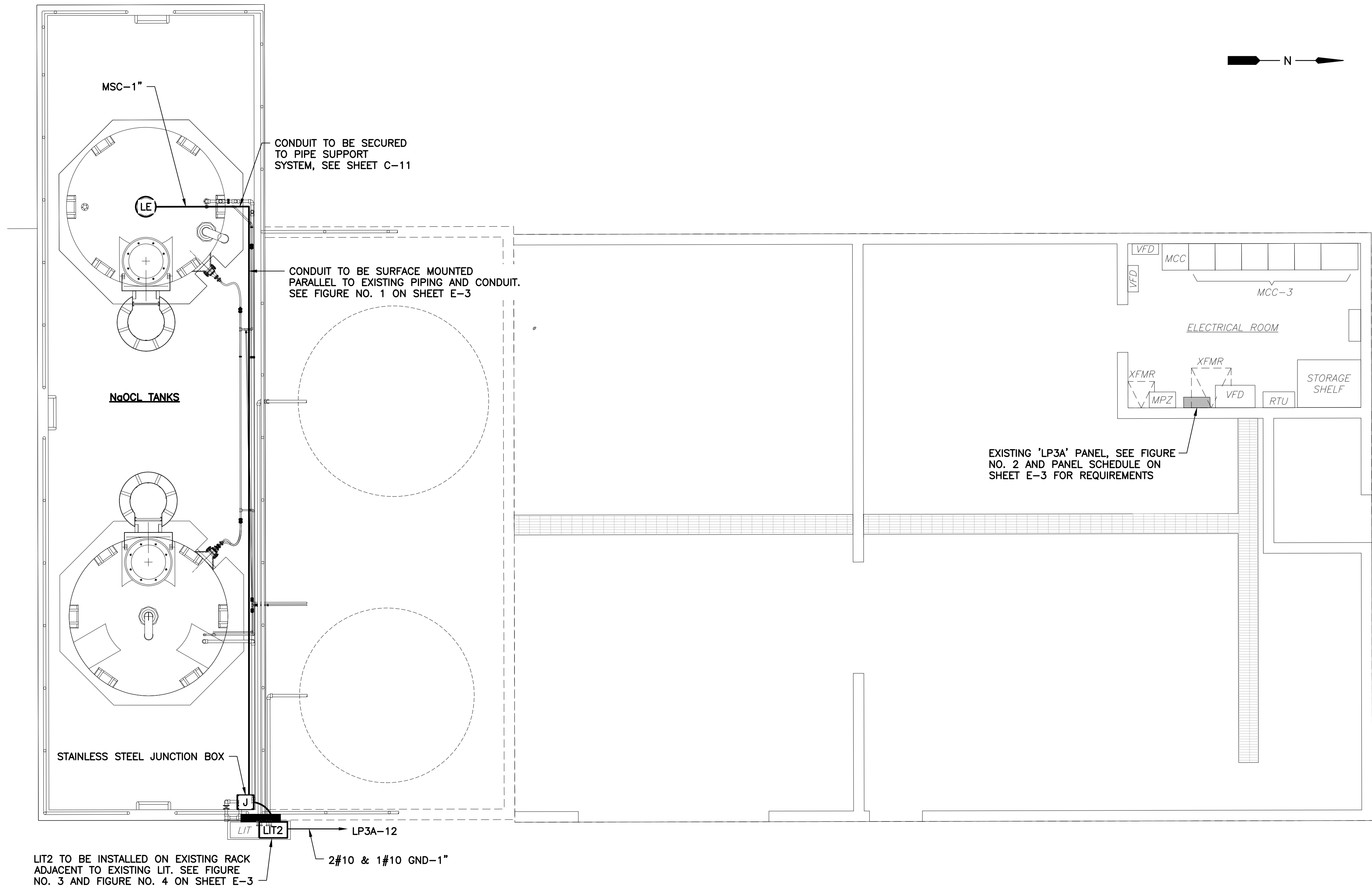
ELECTRICAL NOTES, SYMBOLS,
ABBREVIATIONS AND SITE PLAN

PROJECT NO.
170852

DRAWING NO.
E-1

FILE ID. E-01 SITE

Acad Version : R20.0s (LMS Tech)
User Name : Mikeeks
Date/Time : Fri, 04 May 2018 - 8:32am
Plot Name : W-2_Active Projects\Mathews Consulting\Delray Beach\WTP Hypo Tank Replacement\2_Bid Set\dwg\E-02 PLAN.dwg
Current Plotstyle : ByColor
Layout Tab: 22 X 34
W-2_Active Projects\Mathews Consulting\Delray Beach\WTP Hypo Tank Replacement\2_Bid Set\dwg\E-02 PLAN.dwg



ELECTRICAL PLAN

SCALE: 1/4"=1'-0"

1 0 1 2 3 7'



CITY of DELRAY BEACH
ENVIRONMENTAL SERVICES DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444
Phone: (561) 243-7322 Fax: (561) 243-7314

MATHEWS CONSULTING
a **BAXTER & WOODMAN** company

477 S. Rosemary Avenue, Suite 330, West Palm Beach, Florida 33401
Phone: 561-655-6175 • Fax: 561-655-6179
www.baxterwoodman.com EB-31795

ENGINEER'S SEAL

FOR THE
CITY OF DELRAY BEACH

DESIGNED BY	LMR				
DRAWN BY	RRM				
CHECKED BY	LMR				
DATE	05/18	REVISION	DATE	DESCRIPTION	BY

CITY OF DELRAY BEACH
WATER TREATMENT PLANT UPGRADES AND IMPROVEMENTS

ELECTRICAL PLAN

PROJECT NO.
170852

DRAWING NO.
E-2

FILE ID. E-02 PLAN



Electrical Design Associates
8401 LAKE WORTH ROAD, SUITE 221
LAKE WORTH, FLORIDA 33467
PHONE: (561) 819-5556
FAX: (561) 819-5557
C.O.A. No. 8079
LILLIAN M. REYES, P.E.
Florida P.E. No. 50780



BID SET

PANEL: 'LP3A'						BUS: 100 AMP						VOLT: 120/208-3φ-4W								
LOCATION: ELECTRICAL ROOM						MAINS: 100A, MB						REMARKS: SQUIRE D TYPE NQOD								
MOUNTING: SURFACE						POLES: 24						A.I.C. SYMM: 10,000								
AMPS	POLE	WIRE	GND.	COND.	LOAD SERVED	BUS KVA			BUS			BUS KVA			LOAD SERVED	WIRE	GND.	COND.	POLE	AMPS
						A	B	C	A	B	C	A	B	C						
20	1	—	—	—	E. WALL LEVEL MON.	0.20			1	●		2	0.18		GEN. LEAK PANEL	—	—	—	1	20
20	1	—	—	—	W. WALL LEVEL MON.		0.20		3	●		4		0.18	CONTAINMENT RECEIPT	—	—	—	1	20
20	1	—	—	—	CHLORIDE LEVEL METER			0.18	5	●	●	6			—	—	—	—	1	20
20	1	—	—	—	RTU	0.20			7	●		8	—		—	—	—	—	1	20
20	1	—	—	—	—				9	●		10		—	—	—	—	—	1	20
—	—	—	—	—	SPACE			—	11	●	●	12		0.10	LIT2	10	10	1"	1	20
—	—	—	—	—	SPACE	—			13	●		14	—		SPACE	—	—	—	—	—
—	—	—	—	—	SPACE		—		15	●		16		—	SPACE	—	—	—	—	—
—	—	—	—	—	SPACE			—	17	●	●	18		—	SPACE	—	—	—	—	—
—	—	—	—	—	SPACE	—			19	●		20	—		SPACE	—	—	—	—	—
—	—	—	—	—	SPACE		—		21	●	●	22		—	SPACE	—	—	—	—	—
—	—	—	—	—	SPACE			—	23	●		24		—	SPACE	—	—	—	—	—
TOTAL (PHASE):						0.40	0.20	0.18				0.18	0.18	0.10	NOTES: ① CONTRACTOR TO FURNISH AND INSTALL A 20A,1P BREAKER IN EXISTING SPACE.					
TOTAL KVA:									1.24											
TOTAL AMPS:									3.44											
TOTAL DEMAND AMPS:									3.44											



FIGURE NO. 1
SCALE: N.T.S.

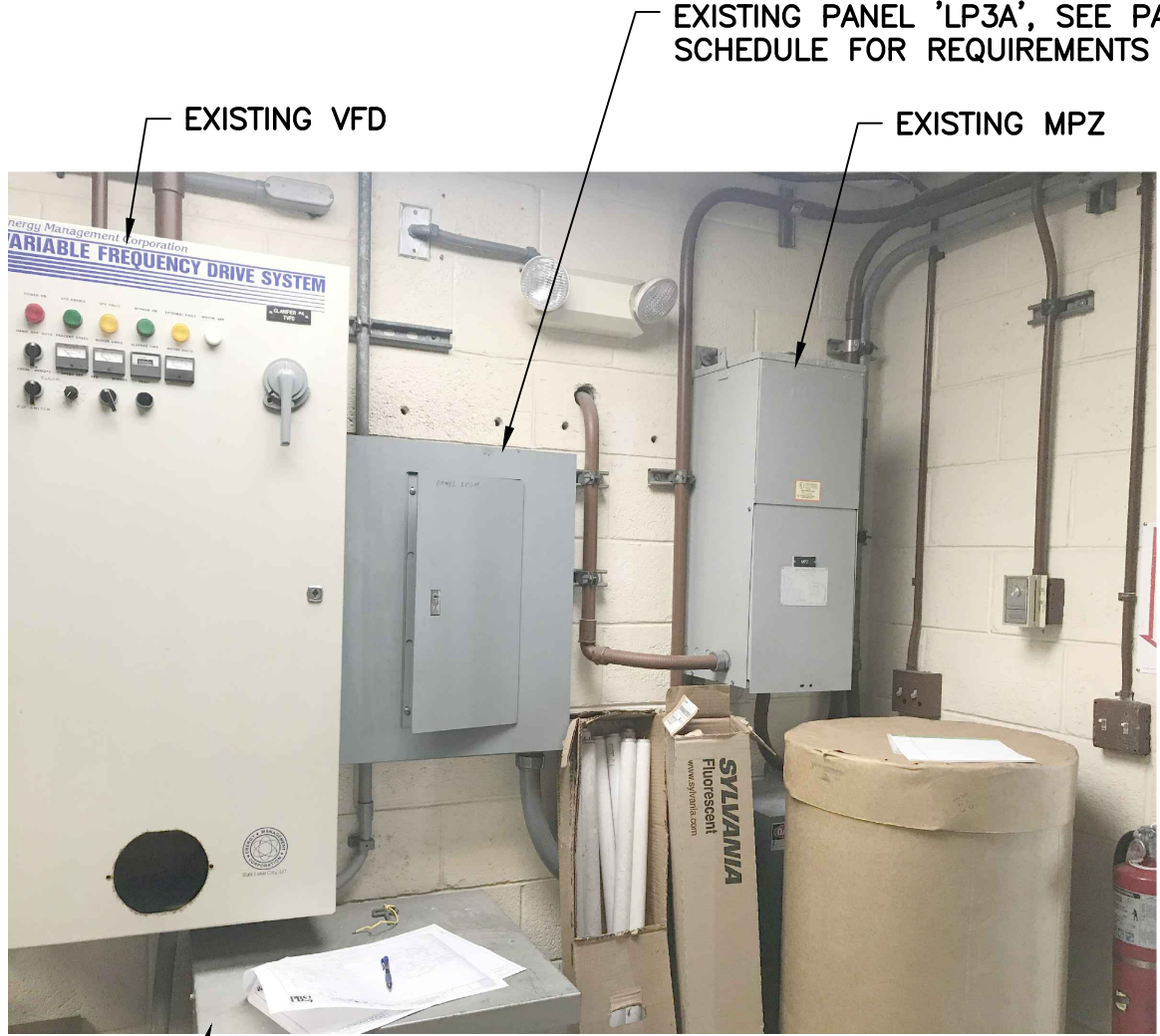
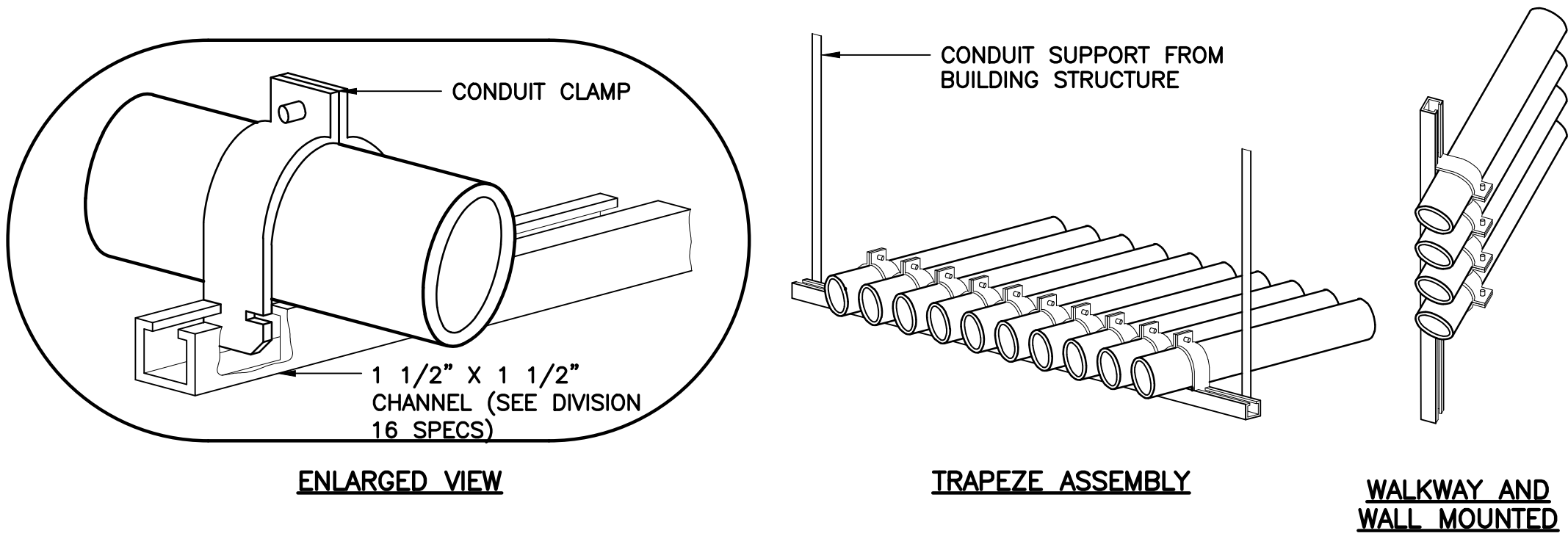


FIGURE NO. 2
SCALE: N.T.S.



CONDUIT PIPE STRAP MOUNTING DETAILS
SCALE: N.T.S.

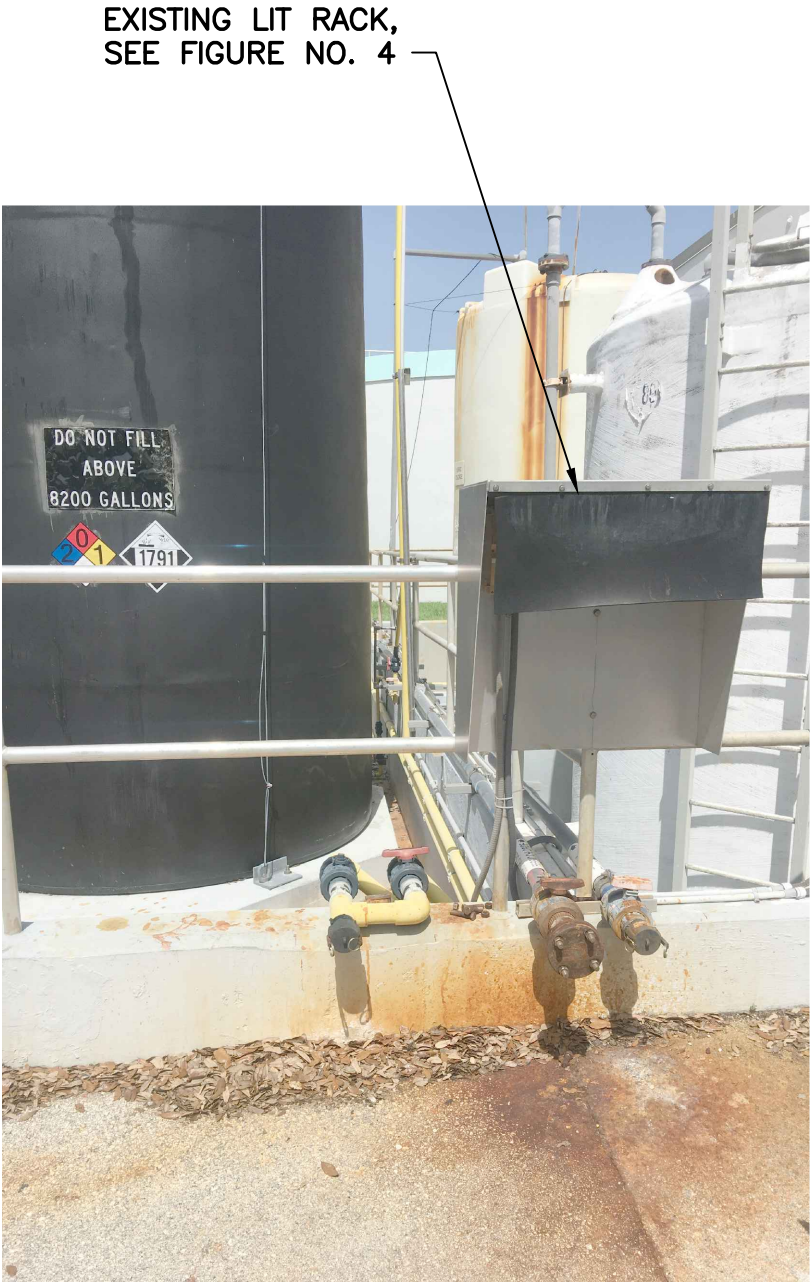


FIGURE NO. 3
SCALE: N.T.S.

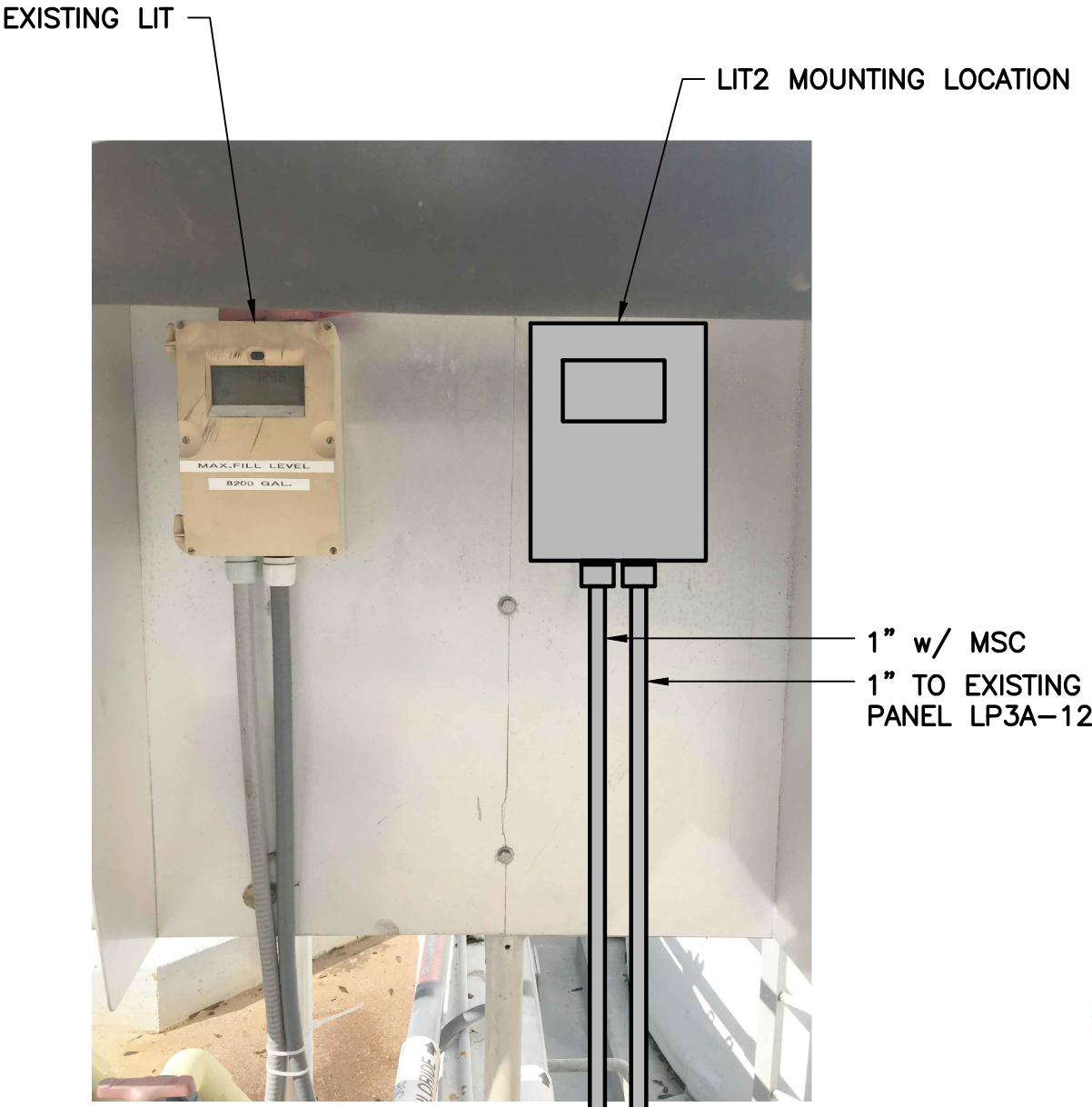


FIGURE NO. 4
SCALE: N.T.S.

EDA
Electrical Design Associates
8401 LAKE WORTH ROAD, SUITE 221
LAKE WORTH, FLORIDA 33467
PHONE: (561) 819-5556
FAX: (561) 819-5557
C.O.A. No. 8079
LILLIAN M. REYES, P.E.
Florida P.E. No. 50780



BID SET

Acad Version : R20.0s (LMS Tech)
User Name : Mikeeks
Date/Time : Fri, 04 May 2018 - 8:32am
Path Name : W:\2_Active Projects\Mathews Consulting\Delray Beach WTP Hypo Tank Replacement\2_Bid Set\Drawings\E-03 DTL.dwg
Current Plot Style : ByColor
Layout Tab: 22 X 34
W:\2_Active Projects\Mathews Consulting\Delray Beach WTP Hypo Tank Replacement\2_Bid Set\Drawings\E-03 DTL.dwg, 22 X 34, 84/2018 8:32:30 AM, RMikeeks



CITY of DELRAY BEACH
ENVIRONMENTAL SERVICES DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444
Phone: (561) 243-7322 Fax: (561) 243-7314

MATHEWS CONSULTING
a **BAXTER & WOODMAN** company
477 S. Rosemary Avenue, Suite 330, West Palm Beach, Florida 33401
Phone: 561-655-6175 • Fax: 561-655-6179
www.baxterwoodman.com EB-31795

ENGINEER'S SEAL

FOR THE
CITY OF DELRAY BEACH

DESIGNED BY	LMR				
DRAWN BY	RRM				
CHECKED BY	LMR				
DATE	05/18	REVISION	DATE	DESCRIPTION	BY

CITY OF DELRAY BEACH
WATER TREATMENT PLANT UPGRADES AND IMPROVEMENTS

ELECTRICAL DETAILS

PROJECT NO.
170852
DRAWING NO.
E-3
FILE ID: E-03 DTLs