

**CITY OF EVERGLADES CITY
TASK AUTHORIZATION NO.5
CHOKOLOSKEE MASTER PUMP STATION
REHABILITATION**

PROJECT SPECIFICATIONS

VOLUME I

Prepared for:

**City of Everglades City
102 Copeland Ave N.
Everglades City FL, 34139**

Prepared by:

**CPH Consulting, LLC.
1992 SW 1st St.
Miami FL, 33135**

OCTOBER 2025

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City of Everglades City: Task Authorization No.5 Chokoloskee Master Pump Station Rehabilitation – ITB 25-3
Published on Collier County Clerk of Courts Legal Notices: November 9, 2025

www.cityofeverglades.org/public-notice

PUBLIC NOTICE is hereby given by the City of Everglades City, Florida, a municipal corporation existing under the laws of the State of Florida, invites interested, licensed and qualified firms to submit competitive sealed proposals in response to ITB 25-3, Chokoloskee Master Pump Rehabilitation as outlined in the bidding documents. The Work includes the rehabilitation of one existing master pump station. Bidding documents are available for download from the web site www.DemandStar.com under “Bids” and under the Government Agency: “City of Everglades City”. Sealed responses must be submitted to the web site www.DemandStar.com, no later than **December 16, 2025 at 2:00 P.M. Local Time**. All questions shall be submitted on DemandStarnetwork.demandstar.com, no later than **December 2, 2025 at 5:00 P.M. Local Time**. The bids shall be opened at the City Council meeting scheduled for **December 17, 2025 at 12:30 P.M. Local Time**. The lowest response bid will be determined at the subsequent City Council meeting.

All bidders are required to attend the mandatory pre-bid meeting, available on Microsoft Teams through the link below or in person at City Hall, 102 Copeland Ave. North, Everglades City, FL 34139 on November 19, 2025 at 2:00 P.M. local time.

[Pre-Bid Microsoft Teams Meeting Link](#)

Meeting ID: 278 709 090 339 6

Passcode: YN2wu3i5

M/WBEs are encouraged to participate in the bidding for this project. Bids will be opened at the Public Meeting on **December 17, 2025 at 12:30 P.M.** and read aloud at the City Council Chambers at 102 Copeland Ave. North, Everglades City, FL 34139 or through Teams via [Bid Opening Microsoft Teams Link](#) Meeting ID: 250 629 683 910 1, Passcode: 4TV2ZS3Q. NOTE: All prospective Bidders are hereby cautioned not to contact any member of the City of Everglades City staff or officials other than the specified contact person which is Dorothy Joiner, City Clerk. All Written questions shall be submitted on DemandStar network.demandstar.com. Questions must be received no later than **December 2, 2025 at 5:00 P.M. Local Time**.

All Bidders are advised that under Chapter 119, Florida Statutes, all responses are deemed a public record and open to the public as provided for in said statute.

The City welcomes your response to this ITB. Bids should be prepared in accordance with the Instructions to Bidder and will be evaluated by the City as stated herein. The City reserves the right to waive any formalities, to reject any or all bid submittals or to re-advertise for bid submittals for these commodities/services. The City may withdraw all or part of this ITB at any time to protect the interests of the City. All bidders are asked to be thorough yet concise in their response. Failure to provide the response in the manner prescribed herein may be grounds for disqualification. Thank you for your interest in doing business with the City of Everglades City, Florida.

Persons with disabilities needing assistance to participate in any of these proceedings should contact Dorothy Joiner, City Clerk at least 48 hours in advance of the meeting.

SECTION 00200

INSTRUCTIONS TO BIDDER

PART 1 GENERAL

1.01 Bidding Documents

- A. Bidding Documents include the Invitation for Bids, Instructions to Bidders, Project Manual, Drawings, Bid Form, other sample bidding and contract forms, and the proposed Contract Documents, including any Addenda issued prior to receipt of bids.
- B. Bidding Documents may be obtained in compliance with the Invitation for Bids. No partial sets of the Bidding Documents will be issued. Complete sets of Bidding Documents shall be used in preparing bids. Neither the Owner nor the Engineer will assume any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.
- C. It is hereby noted and understood that the terms Owner, City, Engineer or Architect used herein before and after shall be interpreted to mean City of Everglades City. The City of Everglades City reserves the right to designate an individual or firm to represent the City. If this or other designation occurs it will be accomplished by a specific addendum to the bid documents or to the resulting contract as appropriate.
- D. The IFB documents are available on-line at DemandStar Corporation (network.demandstar.com). Register as a vendor to download the solicitation documents. The City is not responsible for errors and omissions occurring in the transmission or downloading of any documents from these websites. In the event of any discrepancy between information on these websites and the hardcopy specifications, the terms of the hardcopy specifications shall prevail. For more information, call the City Clerk, Dottie Joiner, at (239) 695-4558. Important: The desire of the City to pursue bid submittals shall in no way obligate the City to compensate you for your efforts or to execute a contract with your firm.
- E. DemandStar Corporation has no affiliation with the City other than as a service that facilitates communication between the City and its vendors. DemandStar Corporation is an independent entity and is not an agent or representative of the City.
- F. The City of Everglades City Purchasing Division, and its service provider DemandStar Corporation (network.demandstar.com) are the only authorized sources of solicitation documents/forms. Solicitation documents/forms obtained from any other third-party source may be an incomplete set of documents. Bidders using solicitation documents/forms obtained from any other third-party source are advised to contact the City's Purchasing Division to provide a contact name, mailing address, phone number, fax number, and email address to obtain a complete set of solicitation documents and to enable notification of required

addenda. Reproduction of these documents without the express permission of the City is prohibited.

1.02 Bidder Questions

Any Bidder who is in doubt as to the true meaning of any part of the Bidding Documents, or finds a discrepancy or omission therein, is hereby directed to contact the Owner, in writing, at least nine (9) days prior to the bid opening date, for an interpretation or correction. Written questions shall be submitted on DemandStar network.demandstar.com. The person submitting the request shall be responsible for its delivery as indicated above. Only interpretation, instructions or correction(s) provided, in writing by the City Clerk will be binding. It is noted that interpretation, instructions or corrections will be provided only by Addendum.

1.03 Addenda

- A. Addenda will be made available for download from the City of Everglades City hosted solution at DemandStar (network.demandstar.com) to Registered Users of DemandStar. All Addenda issued during the time of bidding shall form a part of the Contract Documents, shall be covered in the Bid, and shall become a part of the Contract. Receipt of each Addendum shall be acknowledged on the Bid Form; failure to do so may subject the Bidder to disqualification.
- B. It shall be the Bidder's responsibility to ensure that it has downloaded all Addenda prior to bid. The City shall not be responsible for non-receipt of Addenda due to failure on the part of the Bidder to verify it has received all addenda or the Bidder's inability to download Addenda.
- C. Any prospective bidder who obtains the bid documents from any other source other than via registration and downloading from DemandStar will not automatically receive notifications regarding addenda. An omission involving addenda will be resolved against said bidder. Addenda will not otherwise be provided by email or fax.

1.04 Examination of Documents and Inspection of Site

- A. Before submitting a Bid, Bidders must thoroughly examine the Specifications and Contract Documents which include the Invitation to Bid, Instructions to Bidders, Bid Form, Construction Agreement Form, Form(s) of Bond(s), General Conditions, Supplementary Conditions, Specifications, drawings, any addenda, and fully inform themselves of all existing conditions and limitations, and include in the Proposal a sum to cover the cost of all items included in the Contract Documents. Bidders are required to inform themselves fully of the conditions relating to construction and labor under which the work will be or is now being performed, and the Contractor must employ, so far as possible, such methods and means in carrying out his work as will not cause any interruption or interference with any other construction the Owner has underway.
- B. Each bidder shall visit the site of the proposed work and fully acquaint themselves with conditions relating to construction and labor so that he may fully understand facilities, difficulties and restrictions attending the execution of work

under the Contract. The failure or omission of any bidder to receive or examine any form, instrument, addendum or other documents, or to visit the site and acquaint himself with conditions there existing shall in no way relieve any bidder from any obligation with respect to his bid or to the Contract. The submission of a bid shall be taken as prima facie evidence of compliance with this section.

- C. Each bidder shall attend the pre-bid, on-site workshop.
- D. In submitting a Bid, the Bidder represents that the Bidder does not consider that any further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this bid for the performance of the Work at the price(s) bid and within the times and in accordance with the other terms and conditions of the Bidding Documents.

1.05 Laws and Regulations

- A. Each Contractor and Subcontractor shall comply fully with all applicable federal, state and local laws and regulations concerning labor, work hours and labor conditions.
- B. The bidder's attention is directed to the fact that all applicable state laws, municipal ordinances and the rules and regulations of all authorities having jurisdiction over construction of the project shall apply to the contract throughout, and they will be deemed to be included in the contract the same as though herein written out in full.

1.06 Bidder's Interest in More Than One Bid

No person, firm, or corporation shall be allowed to make, file, or have an interest in more than one Bid for the same work, unless Alternates are called for. A person, firm, or corporation who has submitted a sub-bid to a Bidder or who has quoted prices on materials to a Bidder is not hereby disqualified from submitting a sub-bid or quoting prices to other Bidders.

1.07 Certificates and Licenses

Bidders must be properly licensed to perform the Contract Work. Proper licensing shall be as defined by Florida Statutes.

1.08 Public Entity Crimes - Denial or Revocation of Right to Transact Business With a Public Entity

Per Florida Statutes (FS) 287.133(2)(a), a person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a bid on a contract to provide any goods or services to a public entity, may not submit a bid on a contract with a public entity for the construction or repair of a public building or public work, may not submit bids on leases of real property to a public entity, may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with any public entity, and may not transact business with any public entity in excess of the threshold amount provided in FS 287.017 for CATEGORY TWO (\$35,000) for a period of 36 months from the date of being placed on the convicted vendor list.

1.09 Florida Trench Safety Act

Bidders must comply with the Florida Trench Safety Act (FS 553.60-553.64), by completing and submitting with the sealed bid the Trench Safety Form, a copy of which is included as part of these Contract Documents.

1.10 Discrimination

An entity or affiliate who has been placed on the discriminatory vendor list may not submit a bid on a contract to provide 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 award or perform work as a contractor, supplier, subcontractor, or consultant under contract with any public entity, and may not transact business with any public entity.

1.11 Debarred or Suspended Bidders

The Bidder certifies, by submission of its Proposal (Bid), that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in contracting with any federal department or agency. The City reserves the right to reject any bid from a debarred or suspended Bidder or from a Bidder whose principals are debarred or suspended.

1.12 Rejection of Bidders Under Litigation

The Owner reserves the right to reject the Bid of any Bidder who is behind, as determined by the Owner or Engineer, on the completion schedule for any existing contracts; who has failed to properly progress work on any construction contract with any governmental agency within the past five (5) years; who is currently under litigation with the Owner; who is in litigation with any governmental agency within the past five (5) years; who is involved in any dispute resolution procedure with any governmental agency within the past five (5) years; who has previously defaulted on a contract with any governmental agency within the past five (5) years; or who has previously failed to satisfy all requirements related to life safety including, but not limited to, the maintenance of traffic provisions on existing or previous agreements with any governmental agency within the past five (5) years.

1.13 Form of Bid

- A. All bids must be submitted on the Bid Form provided in the City's bid documents (in the Project Manual). In cases where the City provides an excel version of the Bid Schedule, it is permissible for the Bidder to fill in and then print the Bid Schedule for submittal as part of the overall Bid. Bids on Bidder's quotation forms shall not be accepted. The Bid Form also lists all required forms and information that are required to be submitted with the Bid.
- B. The Bidder is not permitted to make changes in the Bid Form provided. The Bidder shall fill in spaces on the Bid Form by typewriter, computer, or manually in ink. When a Bidder submits a Bid and fills in information, which is then changed, each change must be initialed by the person signing the Bid.

- C. The Bidder must fill in all unit prices, total prices and total amounts. Each Unit Price will be deemed to include an amount considered by the Contractor to be adequate to cover all costs, including manpower, labor, equipment materials, supplemental and administrative costs, and profit.
- D. Where so indicated by the makeup of the Bid Form, amounts shall be expressed in both words and figures, and in case of discrepancy between the two, the amount in words shall govern.
- E. The Bid Form shall be completely filled out including the Bidder information; acknowledgement of receipt of all Addenda; the Bid Amount including Unit Prices and Total Prices for all Items including all alternate items; the completed Bidder Submittal checklist; and the bid properly signed and dated by the person or persons legally authorized to bind the Bidder to a Contract. A Bid by a corporation shall further give the State of incorporation and have the corporate seal affixed. A Bid submitted by an agent shall have a current Power of Attorney attached certifying agent's authority to bind Bidder. A bid submitted by a partnership shall be signed in the name of the firm by one or more of the partners.
- F. No conditional Bids will be accepted. Alternate Bids will not be considered unless called for. Oral proposals or modifications will not be considered. Unsolicited alternates will become the property of the Owner and bestow no rights what so ever upon the Bidder who submitted the unsolicited alternates. The City reserves the right to reject a bid that is unbalanced.
- G. All submitted bid packages including alternate bid items become the property of the City.

1.14 Bid Security

- A. Provide a bid security in the form of a certified check or bid bond. Bid security shall be payable without condition to the Owner, as a guaranty that the Bidder, if awarded the Contract, will promptly execute the Agreement in accordance with the Bidding Documents, and will furnish all bonds and insurance as required. If Bid Bond is provided it shall be provided using the form included in section 00420 and shall be provided by a surety company authorized to do business in the State of Florida. The amount of the Bid Security shall be as follows:
 - 1. Construction Projects where the Maximum Bid Price is \$60,000 or greater: Bid Security shall be in an amount equal to at least 5% of the Maximum Bid Price (Base Bid Plus Alternates).
 - 2. Construction Projects where the Maximum Bid Price is less than \$60,000: Bid Security shall be in an amount equal to at least 10% of the Maximum Bid Price (Base Bid Plus Alternates).
- B. If the bidder provides bid security in the form of a certified check as indicated above, then Paragraphs 1.14.A and 1.20.A.3 will be strictly followed.

- C. If the bidder provides bid security in the form of a bid bond using the Bid Bond Form contained in section 00420, the requirement for an audited financial statement as indicated in Paragraphs 1.20.B.5 and 1.21.A.2 may be waived at the discretion of the City
- D. If for any reason the Bidder withdraws his Bid after Bid Opening or fails to execute an Agreement or to provide the specified bonds, insurance, and insurance certification, such Bidder shall be in default. The defaulting Bidder shall forfeit his/her bid bond to the City liquidated damages
- E. The Bid Security of all except the three (3) apparent lowest Bidders will be returned within 21 days after the canvass of Bids.

1.15 “Or-Equal” Materials and Equipment

Whenever Materials or Equipment are specified or described in the Drawings or Specifications by using the name of a proprietary item or the name(s) of a particular brand(s) and model(s) this naming of the item(s) is intended to establish the type, function and quality required of the item. However, if the name is followed by words indicating that no substitution is permitted or if specifically indicated approved brand(s) and model(s) are listed, the Bidder/Contractor shall base his bid on the approved items. Bids for unapproved items will not be accepted. Requests or proposals to add items of equipment or material to the “approved” list will not be accepted from anyone other than the Bidder/Contractor. Also, the Bidder/Contractor shall provide sufficient information with the request or proposal to enable the Engineer and the City to determine that the material or equipment proposed is equivalent to that named. It is noted that any requests or proposals to add items to the approved items list must be delivered to the City Purchasing Manager no later than twenty-one (21) calendar days prior to the date of the bid opening.

1.16 Submission of Bids

- A. Submit two duplicate originals of the Bid, Bid Security, and all other documents required to be submitted with the Bid. Enclose in a single sealed opaque envelope, addressed to the party receiving the Bids. Label on the outside of the envelope the Project name, project number (if applicable), and the Bidder's name and address. If the Bid is sent by mail, the sealed envelope shall be enclosed in a separate mailing envelope with the notation "Bid Enclosed" on the face thereof.
- B. Bids shall be delivered to the designated location prior to the time and date for receipt of Bids indicated in the Invitation for Bids or any extension thereof made by Addendum. Bids received after the time and date for receipt of Bids will be returned unopened to the person or firm submitting the Bid.
- C. The Bidder shall assume full responsibility for timely delivery of his Bid to the designated location.

1.17 Modification and Withdrawal of Bids

- A. Bids may be modified or withdrawn after submittal, but, prior to the Bid Opening time and date.

- B. Withdrawal requests shall be made in writing and must be received by the Owner before the time and date stated or as "addended" for the Bid Opening. Properly withdrawn Bids will be returned unopened to the person or firm submitting the Bid. The date and time stamp which documents when the bid was received by the City will be annotated as void.
- C. A Bidder who withdraws his Bid may submit a new Bid in the same manner as specified under "Submission of Bids." It is noted that the new bid must be time and date stamped when received by the City as a new submission.
- D. If an award, intent to award is made, or, when appropriate, negotiations undertaken do not occur as provided by the bid submission document which specifies the time period that the bid must be held firm, the Bidder may withdraw his Bid. It is noted that if both the Bidder and the City agree, an award may be made at a later date if it is in the City's best interests to do so.
- E. The obligations of the City as relevant to any award as a result of this solicitation are contingent upon the availability of appropriated funds for this project. Also, it is hereby provided that the City of Everglades City reserves the right, in the event that the lowest responsive bid is in excess of the funding reserved for the goods and/or services described herein, to negotiate with the lowest responsive and responsible bidder in an effort to establish a contract for the procurement of said goods and/or services.

1.18 Basis of Award

- A. The Owner reserves the right to accept or reject any or all bids in whole or in part with or without cause, to waive technicalities, or to accept the bid(s) which, in its judgment, best serves the interest of the Owner.
- B. Except in cases where the Owner exercises the right to reject all Bids, the Contract will be awarded by the Owner, as soon as practicable after Opening of Bids, to the responsive, responsible Bidder who has submitted the lower individual or combination Bid.
- C. The lowest Bid will be determined by comparison of the "Total Base Bid" stipulated on the Bid Form, plus any combination of Additive or Deductive Alternate Bid Items of the Owner's choosing. If the stated "Total Base Bid" conflicts with the sum of the Total Prices on the Bid Schedule, then the sum of the Total Prices prevails. The Total Price for each item is the stated unit price times the quantity.

1.19 Responsiveness Requirements

- A. All Bidders are required to be responsive. Failure to meet any of the responsiveness requirements set forth herein may result in the Bidder being judged non-responsive.
- B. To be judged responsive, the Bidder shall execute, and return the following forms and required information with the Bid:

Section	Form / Information
00410	Proposal (Bid Form) Including Acknowledgment of All Issued Addenda
---	Acknowledge of Receipt of Addendum (Form Issued by the City with each issued Addendum)
---	Bid Security in Accordance with the Instructions to Bidder
---	Bidder Completed W-9 Form
---	Bidder Officer Signatory Authorization Information
00430	Trench Safety Form
00432	Non Collusion Affidavit
00434	Conflict of Interest Affidavit
00436	Florida Statutes on Public Entity Crimes Affidavit
00438	Compliance With the Public Records Law Affidavit
00440	Bidder Information and Affidavit
00450	Certification Of Non-Segregated Facilities Form
00452	Disputes Disclosure Form
00454	Drug Free Workplace Form
00456	Unauthorized (Illegal) Alien Workers Affidavit
00458	E-Verify Compliance Form
00460	Americans With Disabilities Act Affidavit
00464	Schedule Of Proposed Subcontractors
00525	Criminal Background Check Requirements and Affidavit
00622	City of Everglades City Insurance Requirements and Affidavit
---	MBE/WBE documentation required under Article 17 of the FDEP Supplementary Conditions
---	Certification of Compliance with 41 CFR 60-1.7 (Appendix G, FDEP Supplementary Conditions)
---	Certification of Nonsegregated Facilities (Appendix H, FDEP Supplementary Conditions)
---	Copies of Licenses Issued by the State of Florida Dept. of Business and Professional Regulation Construction Industry Licensing Board

- C. If the Invitation to Bids requires attendance at a mandatory Pre-Bid meeting, then Bids submitted from Bidders who do not attend the mandatory Pre-Bid meeting will be judged non-responsive; unless providentially hindered as to such required attendance due to provable circumstances beyond the control of the Bidder whereupon mandatory attendance may be waived at the sole discretion of the Owner.

1.20 Responsibility Requirements

- A. All Bidders are required to be responsible. Failure to meet any of the responsibility requirements set forth herein may result in the Bidder being judged non-responsible. Bids from non-responsible bidders may be accepted or rejected at the discretion of the Owner.
- B. To be judged responsible, the Bidder shall meet the following standards:

1. The Bidder shall be properly licensed and shall have a satisfactory record of integrity, judgment, and performance as a corporation (including its shareholders and officers), partnership, or as a sole proprietorship, including in particular, any prior performance upon contracts from the State and the Owner.
 2. The Bidder shall have at least three (3) years of experience as a prime contractor.
 3. The Bidder shall have performed as a prime contractor on at least three (3) projects of similar type and size as the proposed contract work.
 4. The Bidder shall be able to comply with the required completion schedule for the project.
 5. The Bidder shall have adequate financial resources to perform the work, and shall have an adequate financial management system and audit procedure which provides efficient and effective accountability and control of all property, funds, and assets. The Bidder shall be able to demonstrate this by being able to provide a current (within the last 12 months) audited financial statement prepared in accordance with generally accepted accounting procedures.
 6. The Bidder shall conform with the civil rights, equal employment opportunity and labor law requirements of the Bid Documents.
- C. The City reserves the right to conduct any investigation and consider any evidence relevant to the qualifications and capabilities of the bidder to perform the work contemplated. The investigation may include, but is not limited to, a detailed review of references, current and previous entities for whom similar work has been performed, an inspection of the Offeror's facility(ies), equipment, personnel and any other evidence including financial, technical and other qualifications and abilities of the proposer.

1.21 Bidder Evaluation Submittal Requirements

- A. It is the intention of the Owner to award this contract to a Bidder competent to perform and complete the Work in a satisfactory manner. Accordingly, within 7 calendar days after being notified of being the apparent lowest, responsive Bidder, the Bidder shall submit the following information to the Owner for evaluation to determine compliance with the responsibility requirements. The following information may also be required to be submitted by the second and third low bidders within 7 calendar days, if notified by the Owner.
1. Resumes of key personnel, especially those personnel proposed for work on this Project.
 2. Provide a current (within the last 12 months) audited financial statement prepared in accordance with generally accepted accounting procedures. The financial statement shall include, as a minimum, an income statement, a statement of changes and related footnotes, a balance sheet, and certification that the financial status of the company has not materially changed since the audit.
 3. Provide a list of equipment and quantities currently owned or under lease to the Bidder and available for the work.
 4. List of personnel, by name and title, contemplated to perform the work. Note: All delivery personnel shall have a Florida Driver's License.

5. If required by the City, submit fully executed copies of the following forms:
 - a) Financial Information Form - Section 00462
 - b) Criminal Background Check Requirements - Section 00525
- C. The determination on whether a Bidder is responsible or not shall be at the sole discretion of the City. Although the City may request information on a minimum number of contracts similar to the requirements of this solicitation with certain minimum dimensions, quantities, dollar values, etcetera; the City's determination of a Bidder's responsibility shall not solely be based on the number of similar procurements the Bidder provides but the entirety of the Bidder's qualifications.
- D. Upon request, the Bidder shall provide proof of the above minimum qualification by furnishing copies of letters, certificates, etcetera (as applicable); which clearly document said qualifications. Failure to provide said documentation may be cause for deeming the Bidder unresponsive and removing it from further consideration. This is a non-negotiable item.

1.22 Award of Contract

If the contract is to be awarded, the Owner or its agent will deliver to the successful low bidder a Notice of Award and Agreement form within ninety (90) days after the day of the bid opening. The successful low bidder shall sign and return the Agreement and required bonds and insurance within fourteen (14) days of receipt of the Notice of Award.

1.23 Bonds and Insurance

- A. Upon award of the contract, the Bidder, simultaneously with the execution of the Agreement, shall furnish certificates of insurance, insurance certification, performance bond, and payment bond. The forms of the bonds and insurance certification, including bonding amounts and duration and insurance coverage required are included in the Bidding Documents.
- B. The successful Bidder shall, before commencing the work, record said Payment and Performance Bond in the public records of the County where the improvement is located in accordance with FS 255.05.

1.24 Waiver

Each Bidder agrees to waive any claims it has or may have against the Owner, Engineer, and their respective officers, employees, agents, designees, successors, legal representatives or assigns, arising out of or in connection with the administration, evaluation, recommendation, rejection or award of any bid.

1.25 City of Everglades City Quality, Professional Standards, and Security Requirements

In accordance with the provisions of Section 00520, the Contractor and all subcontractors shall comply with the professional quality, employee identification, and security screening requirements for all workers who will be at the project site.

1.26 City of Everglades City Tax Recovery

- A. Bidder is hereby informed the City of Everglades City is tax exempt and may elect to exercise its right to purchase directly, via its purchase orders, various construction materials, supplies and equipment that may be part of this contract. By signing its bid submission, the Bidder hereby acknowledges that the City has the right to exercise this option and that Bidder will cooperate fully to enable the City to achieve the tax recovery savings applicable to the materials, supplies and equipment so designated by the City.
- B. As applicable to the purchase of identified equipment, material and supplies, the Contractor shall assist the City in the preparation of purchase orders. The City may direct the Contractor to prepare the Purchase order on the City's form and make ready for verification and execution by the City. The materials shall be purchased from the vendor/suppliers originally selected by the Contractor, for the price originally negotiated by the Contractor including special terms and conditions agreed upon by the contractor.
- C. The Contractor shall, within twenty-one (21) calendar days from the date of the Notice to Proceed, prepare a complete list of materials, supplies and equipment applicable to the project. The list must include the cost of each item, delivery from supplier ARO and delivery schedule required to maintain timely scheduling of the project. The City will advise the Contractor within ten (10) days which items from the list the Owner wishes to purchase directly.
- D. At the time the direct order is placed, the Purchase Order to the General Contractor shall be reduced by the net, undiscounted amount of the purchase order, plus all sales tax, six percent plus 1 percent surcharge on the first \$5,000. Issuance of the purchase orders by the City does not change any of the Contractor's responsibilities regarding material purchases, or installations, with the exception of the payments for the materials purchased. The Contractor remains responsible for coordination, correct quantities order, submittals, protection, storage, shipping tickets and invoices, installation, cleaning, all applicable warranties and that all materials purchased meet the requirements of the Contract Documents. The Contractor shall certify all invoices as accurate and acceptable and forward the certified invoices to the City for payment.
- E. In the event that materials, supplies, or equipment purchased under this option are defective, nonconforming or rejected for any reason whatsoever, and it becomes necessary to initiate action against the responsible party, the Contractor shall be responsible to take appropriate action.

1.27 Protests

- A. Protests, if any shall be filed in compliance and subject to City of Everglades City, Purchasing Policy.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 00410
PROPOSAL (BID FORM)

PART 1 GENERAL**1.01 Description**

The following Bid, for the (1) Chokoloskee Master Pump Station Rehabilitation, is hereby made to (2) the City of Everglades City, hereafter called the Owner. This Bid is submitted by (3) _____

(1) Name of Project as shown in the Invitation for Bids

(2) Owner

(3) Name, address, and telephone number of Bidder

1.02 The Undersigned:**A. Acknowledges receipt of:**

1. Project Manual and Drawings identified within the Project Manual.
2. Addenda: Number _____ Dated _____
 Number _____ Dated _____
 Number _____ Dated _____
 Number _____ Dated _____
 Number _____ Dated _____
 Number _____ Dated _____

B. Has examined the site and all Bidding Documents and understands that in submitting his Bid, he waives all right to plead any misunderstanding regarding the same.**C. Agrees:**

1. To hold this Bid open for 90 calendar days after the bid opening date.
2. To accept the provisions of the Instructions to Bidders regarding disposition of Bid Security.
3. To enter into and execute a contract with the Owner, if awarded on the basis of this Bid, and to furnish a Performance Bond and a Labor and Material Payment Bond in accordance with the Instructions to Bidders.
4. To accomplish the Work in accordance with the Contract Documents.

5. To begin Work after the issuance of a Notice to Proceed, unless otherwise provided, and substantially complete the Work within _____ calendar days of the date of the Notice to Proceed.
 6. To accept the provisions of the Agreement as to liquidated damages in the event of failure to complete the Work on time.
- D. Certifies that by affixing its signature below, neither the bidder nor the principals of the bidding entity are presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in contracting with any federal, state or local department or agency. The City reserves the right to reject any bid from a debarred or suspended bidder and/or from an entity whose principals are so debarred or suspended.

1.03 Bid Schedule

The Bidder hereby agrees to perform all Work as required by the Contract Documents for the following Unit Prices. All Work required to be performed by the Contract Documents is to be included within the following Pay Items, inclusive of furnishing all manpower, equipment, materials and performance of all operations relative to construction of the Project. Work for which there is not a Pay Item will be considered incidental to the Contract and no additional compensation will be allowed.

ITEM NO.	DESCRIPTION	UNITS	QUANTITY	UNIT PRICE	TOTAL PRICE
1	Mobilization/Demobilization	LS	1	\$	\$
2	General Requirements	LS	1	\$	\$
3	Maintenance of Traffic	LS	1	\$	\$
4	Site Work	LS	1	\$	\$
5	Demolition	LS	1	\$	\$
6	Bypass Pumping	LS	1	\$	\$
7	Vacuum & Clean Wet Well	LS	1	\$	\$
8	Wet Well Rehabilitation	LS	1	\$	\$
9	Wet Well Structural Work	LS	1	\$	\$
10	Mechanical Piping, Valving, and Coring	LS	1	\$	\$
11	Submersible Pump Assembly	LS	1	\$	\$
12	Concrete Slab	LS	1	\$	\$
13	Electrical Work	LS	1	\$	\$
14	Site Restoration	LS	1	\$	\$
15	Start Up and Testing	LS	1	\$	\$
TOTAL BASE BID					\$

1.04 Miscellaneous Requirements and Affirmations

- A. Proposals (Bids) must be on the Bid Form.
- B. The Bidder acknowledges the receipt, execution, and return of the following forms and required information with the Bid (the Bidder is to fill out the far right column in the below Table):

Section	Form / Information	Submitted by Bidder with Bid (Y/N)
00410	Proposal (Bid Form) Including Acknowledgment of All Issued Addenda	
---	Acknowledge of Receipt of Addendum (Form Issued by the City with each issued Addendum)	
---	Bid Security in Accordance with the Instructions to Bidder	
---	Bidder Completed W-9 Form	
---	Bidder Officer Signatory Authorization Information	
00430	Trench Safety Form	
00432	Non Collusion Affidavit	
00434	Conflict of Interest Affidavit	
00436	Florida Statutes on Public Entity Crimes Affidavit	
00438	Compliance With the Public Records Law Affidavit	
00440	Bidder Information and Affidavit	
00450	Certification Of Non-Segregated Facilities Form	
00452	Disputes Disclosure Form	
00454	Drug Free Workplace Form	
00455	Certification Regarding Non-Scrutinized Companies	
00456	Unauthorized (Illegal) Alien Workers Affidavit	
00458	E-Verify Compliance Form	
00460	Americans With Disabilities Act Affidavit	
00464	Schedule Of Proposed Subcontractors	
00525	Criminal Background Check Requirements and Affidavit	
00622	City of Everglades Insurance Requirements and Affidavit	
---	MBE/WBE documentation required under Article 17 of the FDEP Supplementary Conditions	
---	Certification of Compliance with 41 CFR 60-1.7 (Appendix G, FDEP Supplementary Conditions)	

Section	Form / Information	Submitted by Bidder with Bid (Y/N)
---	Certification of Nonsegregated Facilities (Appendix H, FDEP Supplementary Conditions)	
---	Copies of Licenses Issued by the State of Florida Dept. of Business and Professional Regulation Construction Industry Licensing Board	

1.05 RESPECTFULLY SUBMITTED, signed and sealed this _____ day of _____, _____.

Name of Bidder

By (Signature) Date

Printed Name and Title

Business Address

City State Zip Code

(CORPORATE SEAL)

Telephone No. Facsimile No.

E-Mail Address

ATTEST:

By (Signature) Date

Printed Name and Title

END OF SECTION

SECTION 00420

BID BOND FORM

KNOW ALL MEN BY THESE PRESENT, that we, the undersigned, (1) _____, as Principal, and (2) _____, as Surety, are hereby and firmly bound unto (3) The City of Everglades City, as Owner, in the penal sum of (4) _____ Dollars (\$_____) for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors, and assigns.

The condition of the above obligation is such that whereas the Principal has submitted to (3) The City of Everglades City a certain Bid for (5) Chokoloskee Master Pump Station Rehabilitation, attached hereto and hereby made a part hereof.

- 1) *Bidder*
- 2) *Surety*
- 3) *Owner*
- 4) *Amount of Bond as Required in the Instructions to Bidders*
- 5) *Name of Project as Shown in Invitation for Bids*

NOW, THEREFORE,

- A. If said Bidder shall be in rejected, or in the alternate,
- B. If said Bid shall be accepted and the Principal shall execute and deliver the Agreement (properly completed in accordance with the Bidding Documents), and shall furnish a bond for his faithful performance of said contract, and for the payment of all persons performing labor or furnishing materials in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said Bid, then this obligation shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

The Surety, for value received, hereby stipulates and agrees that the obligations of said Surety and its bond shall be in no way impaired or affected by any extension of the time within which the Owner may accept such Bid; and said Surety does hereby give waive notice of any such extension.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers.

Signed and sealed this _____ day of _____, _____.

ATTEST:

Principal

By (Principal Officer)

By (Signature of Officer)

Typed Name and Title

Typed Name and Title

(CORPORATE SEAL)

Address

City, State, Zip

Surety

By

By: _____
Attorney-in-Fact

Typed Name and Title

Typed Name and Title

(SEAL)

Address

City, State, Zip

Telephone No. Facsimile No.

END OF SECTION

SECTION 00430**TRENCH SAFETY FORM**

Bidder acknowledges that included in the various items of the proposal contained on the Bid Form are costs for complying with the Florida Trench Safety Act (FS 553.60-553.64). The Bidder further identifies the cost of compliance with the applicable trench safety standards for the project as follows (Bidder to attach additional sheets as necessary to identify all costs):

	Trench Safety Measure (Description)	Units of Measure (LF, SF, SY)	Unit Quantity	Unit Cost	Extended Cost
A					
B					
C					
D					
E					
F					
TOTAL					\$

The total cost shown herein is already included in the various items on the Bid Form and is not additional to the pricing shown on the Bid Form.

Bidder, by signature below, assures that the contractor performing trench excavating will comply with the applicable Trench Safety Standards.

Submitted, signed and sealed this _____ day of _____, _____.

Bidder

Signature

Printed Name and Title

ATTEST:

Signature

Date

(SEAL)

END OF SECTION

SECTION 00432

NON-COLLUSION AFFIDAVIT

The undersigned, by signing this document hereby certifies that the company named below hereby is or does:

1. States that the entity named below and the individual signing this document has submitted the attached bid or proposal:
2. He is fully informed respecting the preparation and contents of the attached proposal and of all pertinent circumstances respecting such proposal;
3. Said bid or proposal is genuine and is not a collusive or sham bid or proposal;
4. Neither the said bidder or proposer 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, proposer, firm or person to submit a collusive or sham bid or proposal in connection with the Contract for which the attached bid or proposal has been submitted or to refrain from bidding or proposing in connection with such Contract, or has in any manner, directly or indirectly, sought by agreement or collusion or communications or conference with any other bidder, proposer, firm or person to fix the price or prices in the attached bid or proposal or of any other bidder or proposer, or to fix any overhead, profit or cost element of the bid or proposal price or the bid or proposal price of any other bidder or proposer, or to secure through any collusion, conspiracy, connivance or unlawful agreement any advantage against the Owner or any person interested in the proposed Contract.
5. The price or prices quoted in the attached bid or proposal are fair and proper and are not tainted by any collusion, conspiracy, connivance or unlawful agreement on the part of the bidder or proposer or any of its agents, representatives, owners, employees, or parties in interest, including the individual signing this document.

Bidder

Signature of Authorized Representative (Affiant)

Date

Printed or Typed Name and Title of Authorized Representative (Affiant)

STATE OF FLORIDA

COUNTY OF _____

The foregoing instrument was acknowledged before me by means of ____ physical presence or ____ online notarization, this _____ day of _____, _____, by _____ as _____ for _____, whose name is subscribed to this instrument, who personally swore or affirmed that he/she is authorized to execute this document and thereby bind the Corporation / LLC.

(In the last three blanks fill in the name of the Officer acknowledging this document, title of Officer / Manager, and name of the Corporation or LLC)

Signature of Notary Public - State of Florida

Print, Type, or Stamp Commissioned Name of Notary Public

Personally Known _____ OR Produced Identification _____

Type of Identification Produced: _____

END OF SECTION

SECTION 00434

CONFLICT OF INTEREST AFFIDAVIT

Project Name: Chokoloskee Master Pump Station Rehabilitation

Bid No.: _____

The Affiant identified below deposes and states that:

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

Bidder

Signature of Authorized Representative (Affiant)

Date

Printed or Typed Name and Title of Authorized Representative (Affiant)

STATE OF FLORIDA

COUNTY OF _____

The foregoing instrument was acknowledged before me by means of ____ physical presence or ____ online notarization, this _____ day of _____, _____, by _____ as _____ for _____, whose name is subscribed to this instrument, who personally swore or affirmed that he/she is authorized to execute this document and thereby bind the Corporation / LLC.

(In the last three blanks fill in the name of the Officer acknowledging this document, title of Officer / Manager, and name of the Corporation or LLC)

Signature of Notary Public - State of Florida

Print, Type, or Stamp Commissioned Name of Notary Public

Personally Known _____ OR Produced Identification _____

Type of Identification Produced: _____

END OF SECTION

SECTION 00436**FLORIDA STATUTES ON PUBLIC ENTITY CRIMES AFFIDAVIT**

Project Name: _____

Bid No.: _____

The Affiant identified below attests to the following:

1. I understand that a “public entity crime” as defined in Section 287.133(1)(g), Florida Statutes, means a violation of any State or Federal law by a person with respect to and directly related to the transaction of business with any public entity or with an agency or political subdivision of any other state or with the United States, including, but not limited to, any bid or contract for goods or services to be provided to any public entity or an agency or political subdivision of any other state or of the United States and involving antitrust, fraud, theft, bribery, collusion, racketeering, conspiracy, or material misrepresentation.
2. I understand that “convicted” or “conviction” as defined in Paragraph 287.133(1)(b), Florida Statutes, means a finding of guilt or a conviction of a public entity crimes, with or without an adjudication of guilt, in any Federal or state trial court of record relating to charges brought by indictment or information after July 1, 1989, as a result of a jury verdict, non-jury trial, or entry of a plea of guilty or nolo contendere.
3. I understand that an “affiliate” as defined in Section 287.133(1)(a), Florida Statutes, means: A predecessor or successor of a person convicted of a public entity crime: or an entity under the control of any natural person who is active in the management of the entity and how has been convicted of a public entity crime. The term “affiliate” includes those officers, directors, executives, partners, shareholders, employees, members, and agents who are active in the management of an affiliate. The ownership by one (1) person of shares constituting a controlling interest in another person, or a pooling of equipment or income among persons when not for fair market value under an arm’s length agreement, shall be a prima facie case that one person controls another person. A person who knowingly enters into a joint venture with a person who has been convicted of a public entity crime in Florida during the preceding thirty-six (36) months shall be considered an affiliate.
4. I understand that a “person” as defined in Section 287.133(1)(e), Florida Statutes, means any natural person or entity organized under the laws of any state or of the United States with the legal power to enter into a binding contract and which bids or applies to bid on contracts for the provision of goods or services let by a public entity, or which otherwise transacts or applies to transact business with a public entity. The term “person” includes those officers, directors, executives, partners, shareholders, employees, members, and agents who are active in management of an entity.
5. Based on information and belief, the statement which I have marked below is true in relation to the entity submitting this sworn statement. (Note: indicate which of the below statements apply)

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

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

_____ The entity submitting this sworn statement, or one or more of the officers, directors, executives, partners, shareholders, employees, members or agents who are active in management of the entity, or an affiliate of the entity, has been charged with and convicted of a public entity crime subsequent to July 1, 1989. However, there has been a subsequent proceeding before an Administrative Law Jury of the State of Florida, Division of Administrative Hearings and the Final Order entered by the Administrative Law Jury determined that it was not in the public interest to place the entity submitting this sworn statement on the convicted vendor list. (You must attach a copy of the final order.)

I understand that the submission of this form to the City of Everglades City is for the City only and, that this form is valid through December 31, of the calendar year in which it is filed. I also understand that i am required to inform the City prior to entering in to a contract in excess of the threshold amount provided in section 287.017, Florida Statutes, for category two of any change in the information contained in this form.

Bidder FEIN No.

Signature of Authorized Representative (Affiant) Date

Printed or Typed Name and Title of Authorized Representative (Affiant)

STATE OF FLORIDA

COUNTY OF _____

The foregoing instrument was acknowledged before me by means of ____ physical presence or ____ online notarization, this _____ day of _____, _____, by _____ as _____ for _____

_____, whose name is subscribed to this instrument, who personally swore or affirmed that he/she is authorized to execute this document and thereby bind the Corporation / LLC.

(In the last three blanks fill in the name of the Officer acknowledging this document, title of Officer / Manager, and name of the Corporation or LLC)

Signature of Notary Public - State of Florida Print, Type, or Stamp Commissioned Name of Notary Public

Personally Known _____ OR Produced Identification _____

Type of Identification Produced: _____

END OF SECTION

SECTION 00438**COMPLIANCE WITH THE PUBLIC RECORDS LAW AFFIDAVIT**

Upon award recommendation or 30 days after opening, it is understood that all submittals shall become "public records" and shall be subject to public disclosure consistent with Chapter 119, Florida Statutes, and Section 24(a), Article 1 of the Constitution of the State of Florida, and other controlling law (collectively the "Public Records Laws"). If the City of Everglades rejects all replies submitted in response to a competitive solicitation and provides notice of its intent to reissue the solicitation, the replies remain exempt from disclosure until the City provides a notice of intent to award or withdraws the reissued solicitation. If no award is made, responses are not exempt for longer than 12 months after the initial notice rejecting all responses.

Proposers/Bidders must invoke the exemptions to disclosure provided by law as applicable to the response to the solicitation, must identify the data or other materials to be protected, and must state the reasons why such exclusion from public disclosure is necessary. The submission of a proposal authorizes release of your firm's credit data to the City.

If a Proposer/Bidder submits information exempt from public disclosure, the Proposer/Bidder must specifically and in detail identify with specificity which pages/paragraphs of their bid/proposal package are exempt from the Public Records Laws, identifying the specific exemption under the Public Records Laws that applies to each. The protected information must be submitted to the City in a separate envelope marked accordingly.

By submitting a response to this solicitation, the Proposer/Bidder agrees to defend, indemnify and hold the City harmless in the event the City litigates the public records status of the Proposer's/Bidder's documents. This provision obligates the Proposer/Bidder to pay the full legal costs of the City including, but not limited to, attorneys fees, court costs, and any and all other charges, regardless of what level of trial or appeal.

Proposer/Bidder

Signature of Authorized Representative (Affiant)

Date

Printed or Typed Name and Title of Authorized Representative (Affiant)

STATE OF FLORIDA

COUNTY OF _____

The foregoing instrument was acknowledged before me by means of ____ physical presence or ____ online notarization, this _____ day of _____, _____, by _____ as _____ for _____, whose name is subscribed to this instrument, who personally swore or affirmed that he/she is authorized to execute this document and thereby bind the Corporation / LLC.

(In the last three blanks fill in the name of the Officer acknowledging this document, title of Officer / Manager, and name of the Corporation or LLC).

Signature of Notary Public - State of Florida

Print, Type, or Stamp Commissioned Name of Notary Public

Personally Known _____ OR Produced Identification _____

Type of Identification Produced: _____

END OF SECTION

SECTION 00440**BIDDER INFORMATION AND AFFIDAVIT**

State the true, exact, correct and complete name of the company, partnership, corporation, trade or fictitious name under which the Bidder does business and the address of the place of business.

Name of Bidder

Address of Bidder

Phone No. of Bidder

Fax No. of Bidder

Bidder E-Mail Address

The Bidder is (check one of the following):

- () An Individual
() A Partnership
() A Corporation

Principal Office Address:

1. Officer Information and Key Personnel: Each Bidder must ensure that the officer information provided below is in accordance with the Bidder's corporate registration supplied to the Secretary of State. The Bidder must provide with its bid submittal the necessary information to verify the individual signing the bid and or any contract document has been authorized to bind the corporation. For example, provide either: A copy of the Articles of Incorporation listing the approved signatories of the corporation; A letter from the President listing the members of staff that are authorized signatories for the company; or A copy of a corporate resolution listing the members of staff as authorized signatories for the company.

President's Name:

Address:

Phone No.:

E-Mail Address:

Vice President's Name: _____

Address: _____

Phone No.: _____

E-Mail Address: _____

Secretary's Name: _____

Address: _____

Phone No.: _____

E-Mail Address: _____

Treasurer's Name: _____

Address: _____

Phone No.: _____

E-Mail Address: _____

Project Manager's
Name: _____

Address: _____

Phone No.: _____

E-Mail Address: _____

Project Superintendent's
Name:

Address:

Phone No.:

E-Mail Address:

2. How many years has the Bidder been in business as a Contractor under its present name?

3. Under what other former names has the Bidder operated?

4. How many years of experience in construction work has the Bidder had as a Prime Contractor?

5. List below information concerning projects the Bidder has completed in the last five (5) years as a Prime Contractor for the type of Work required for this project (attach additional sheets as necessary). It is noted that the experience claimed here must be associated with the Bidder named above. The Owner reserves the right to require additional information and to conduct any investigation deemed necessary to evaluate the Bidder.

Name of Project Chokoloskee Master Pump Station Rehabilitation

Name of Owner City of Everglades City

Owner Reference Contact
Name _____

E-Mail Address and Phone No. _____

Start and Completion Dates _____

Construction Contract Amount _____

Major Construction Items Such as Pipeline Length and Diameters and Type (Water Main, Storm Sewer, etc.); Lift Station Size (No. of Pumps and Hp):
Pump Station Rehabilitation including backfill of one existing wetwell and both existing vaults, rehab and extension of another wet well, and creation of new valve and piping gallery above ground.

Name of Project Chokoloskee Master Pump Station Rehabilitation

Name of Owner City of Everglades City

Owner Reference Contact
Name _____

E-Mail Address and Phone No. _____

Start and Completion Dates _____

Construction Contract Amount _____

Major Construction Items Such as Pipeline Length and Diameters and Type (Water Main, Storm Sewer, etc.); Lift Station Size (No. of Pumps and Hp):

Name of Project _____

Name of Owner _____

Owner Reference Contact
Name _____

E-Mail Address and Phone No. _____

Start and Completion Dates _____

Construction Contract Amount _____

Major Construction Items Such as Pipeline Length and Diameters and Type (Water Main, Storm

Sewer, etc.); Lift Station Size (No. of Pumps and Hp):

Name of Project

Name of Owner

Owner Reference Contact
Name

E-Mail Address and Phone No.

Start and Completion Dates

Construction Contract Amount

Major Construction Items Such as Pipeline Length and Diameters and Type (Water Main, Storm
Sewer, etc.); Lift Station Size (No. of Pumps and Hp):

Name of Project

Name of Owner

Owner Reference Contact
Name

E-Mail Address and Phone No.

Start and Completion Dates

Construction Contract Amount

Major Construction Items Such as Pipeline Length and Diameters and Type (Water Main, Storm
Sewer, etc.); Lift Station Size (No. of Pumps and Hp):

6. Has the Bidder ever failed to complete any work awarded to it? If so, state when, where and why (attach additional sheets as necessary).
7. Has any officer or partner of your organization ever been an officer or partner of some other organization that failed to complete a construction contract? If so, state name of individual, name of other organization, and reason therefore (attach additional sheets as necessary).
8. State the names, addresses and the type of business of all firms that are partially or wholly owned by the Bidder (attach additional sheets as necessary):
9. What is the Bidder's bonding capacity?
10. What amount of the Bidder's bonding capacity has been used as of the date of this bid?
11. State the name of the Surety Company which will be providing the Performance and Payment Bond, and name and address of the Agent:
12. Has the Bidder been in disputes or litigations in the last five (5) years over construction projects which are completed or still pending for completion? If so, describe the nature of the disputes or litigations and state the Owner's Name, Address, Telephone, and amount of disputes or litigations (attach additional sheets as necessary).

The Bidder acknowledges and understands that the information contained in response to this qualifications form shall be relied upon by the Owner in awarding the contract and such information is warranted by Bidder to be true. The discovery of any omission or misstatement that materially affects the Bidder's qualifications to perform under the contract shall cause the Owner to reject the bid or proposal, and if after the award to cancel and terminate the award and/or contract.

Provided along with this document is completed IRS form W-9 and information on authorized signatories for the Bidder.

Name of Bidder

Signature of Authorized Representative (Affiant)

Date

Printed or Typed Name and Title of Authorized Representative (Affiant)

STATE OF FLORIDA

COUNTY OF _____

The foregoing instrument was acknowledged before me by means of ____ physical presence or ____ online notarization, this _____ day of _____, _____, by _____ as _____ for _____, whose name is subscribed to this instrument, who personally swore or affirmed that he/she is authorized to execute this document and thereby bind the Corporation / LLC.

(In the last three blanks fill in the name of the Officer acknowledging this document, title of Officer / Manager, and name of the Corporation or LLC)

Signature of Notary Public - State of Florida

Print, Type, or Stamp Commissioned Name of Notary Public

Personally Known _____ OR Produced Identification _____

Type of Identification Produced: _____

END OF SECTION

SECTION 00450

CERTIFICATION OF NON-SEGREGATED FACILITIES FORM

The Bidder certifies that no segregated facilities are maintained and will not be maintained during the execution of this contract at any of its establishments.

The Bidder further certifies that none of its employees are permitted to perform their services at any location under the Bidder's control during the life of this contract where segregated facilities are maintained.

The Bidder certifies further that it will not maintain or provide for its employees any segregated facilities at any of its establishments, and that he will not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained.

As used in this certification, the term "segregated facilities" means any waiting rooms, work area, rest rooms and wash rooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, creed, color or national origin, because of habit, local custom, or otherwise.

The Bidder agrees that (except where it has obtained identical certification from proposed subcontractors for specific time periods) it will obtain identical certifications from proposed subcontractors prior to the award of subcontract exceeding \$10,000 and that it will retain such certifications in its files.

Name of Bidder

Signature of Authorized Representative

Date

Printed or Typed Name and Title of Authorized Representative

END OF SECTION

SECTION 00452

DISPUTES DISCLOSURE FORM

Answer the following questions by answering "YES" or "NO". If you answer "YES", please explain in the space provided, please add a page(s) if additional space is needed.

1. Has your firm, or any of its officers, received a reprimand of any nature or been suspended by the Department of Professional Regulation or any other regulatory agency or professional association within the last five (5) years? _____ (Y/N)

2. Has your firm, or any member of your firm, been declared in default, terminated or removed from a contract or job related to the services your firm provides in the regular course of business within the last five (5) years? _____ (Y/N)

3. Has your firm had filed against it or filed any requests for equitable adjustment, contract claims or litigation in the past five (5) years that is related to the services your firm provides in the regular course of business? _____ (Y/N) Note: If yes, the explanation must state the nature of the request for equitable adjustment, contract claim or litigation, a brief description of the case, the outcome or status of suit and the monetary amounts or extended contract time involved.

I hereby certify that all statements made are true and agree and understand that any misstatement or misrepresentation or falsification of facts shall be cause for forfeiture of rights for further consideration of the project identified.

Firm

Signature of Authorized Representative

Date

Printed or Typed Name and Title of Authorized Representative

END OF SECTION

SECTION 00454

DRUG FREE WORKPLACE FORM

The undersigned, in accordance with Florida Statute 287.087 hereby certifies that the company named below does:

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

Bidder / Contractor

Signature of Authorized Representative

Date

Printed or Typed Name and Title of Authorized Representative

END OF SECTION

SECTION 00455**CERTIFICATION REGARDING NON-SCRUTINIZED COMPANIES**

A company is ineligible to, and may not, bid on, submit a proposal for, or enter into or renew a contract with an agency or local governmental entity for goods or services of any amount if, at the time of bidding on, submitting a proposal for, or entering into or renewing such contract, the company is on the Scrutinized Companies that Boycott Israel List, created pursuant to Section 215.4725, Florida Statutes, or is engaged in a boycott of Israel.

Section 287.135, Florida Statutes, prohibits local governments from contracting with companies, for goods or services of One Million and 00/100 Dollars (\$1,000,000.00) or more that are on the Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, created pursuant to s. 215.473; or is engaged in business operations in Cuba or Syria.

As the person authorized to sign on behalf of the Bidder, I hereby certify that the company identified below in the section entitled "Bidder/Contractor Name" is not listed on the Scrutinized Companies that Boycott Israel List, is not engaged in any boycott of Israel, is not listed on the Scrutinized Companies with Activities in Sudan List, is not listed on the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, and is not engaged in business operations in Cuba or Syria. I understand that pursuant to section 287.135, Florida Statutes, the submission of a false certification may subject the successful Bidder to termination of the awarded Agreement, civil penalties, attorney's fees, and/or costs.

By the signature(s) below, I/we, the undersigned, as authorized signatory to commit the firm, certify that the information as provided in this certification, is truthful and correct at the time of submission.

Name of Bidder / Contractor Name FEIN

Mailing Address

Phone No. Fax No. E-Mail Address

Signature of Authorized Representative Date

Printed or Typed Name and Title of Authorized Representative

END OF SECTION

SECTION 00456**UNAUTHORIZED (ILLEGAL) ALIEN WORKERS AFFIDAVIT**

The City of Everglades City will not intentionally award publicly-funded contracts to any Contractor who knowingly employs unauthorized alien workers, constituting a violation of the employment provisions contained in 8 U.S.C. Section 1324a(e) Section 274A(e) of the Immigration and Nationality Act (INA). The City of Everglades City shall consider the employment by the Contractor of unauthorized aliens, a violation of Section 274A(e) of the INA. Such violation by the Contractor of the employment provisions contained in Section 274A(e) of the INA shall be grounds for immediate termination of this Agreement by the City of Everglades City.

The Affiant identified below deposes and states that:

1. The below identified Contractor does not and will not during the performance of any contract resulting from the solicitation identified below employ illegal alien workers or otherwise violate the provisions of the federal Immigration Reform and Control Act of 1986.
2. Upon request of the City, it will provide copies of Immigration Form I-9 for each person associated with the above named company who has been or is present at the designated jobsite associated with any work or project resulting from this solicitation.

Bidder

Signature of Authorized Representative (Affiant)

Date

Printed or Typed Name and Title of Authorized Representative (Affiant)

STATE OF FLORIDA

COUNTY OF _____

The foregoing instrument was acknowledged before me by means of ____ physical presence or ____ online notarization, this _____ day of _____, _____, by _____ as _____ for _____, whose name is subscribed to this instrument, who personally swore or affirmed that he/she is authorized to execute this document and thereby bind the Corporation / LLC.

(In the last three blanks fill in the name of the Officer acknowledging this document, title of Officer / Manager, and name of the Corporation or LLC)

Signature of Notary Public - State of Florida

Print, Type, or Stamp Commissioned Name of Notary Public

Personally Known _____ OR Produced Identification _____

Type of Identification Produced: _____

END OF SECTION

SECTION 00458

E-VERIFY COMPLIANCE AFFIDAVIT

The Affiant identified below attests and agrees to the following:

1. That the Bidder / Contractor is currently in compliance with and throughout the term of the above identified project and will remain in compliance with all controlling law requiring the use of the Department of Homeland Security's Status Verification ("E-Verify") System to ensure that all employees of the Bidder / Contractor and the Bidder / Contractor's subcontractors performing work under the above-listed Contract are legally permitted to work in the United States.
2. Each Contractor that performs work under the Project referenced above shall provide the City of Everglades City, Florida, a copy of the "Edit Company Profile" screen and any other information required by the City proving, to the satisfaction of the City, enrollment in the E-Verify Program and compliance with controlling law.
3. The Contractor will register and participate in the work status verification for all newly hired employees of the Contractor and for all subcontractors performing work on the above-named Contract.
4. The Bidder / Contractor agrees to maintain records of its compliance with the verification requirements as outlined in this Affidavit and, upon request of the any authority having jurisdiction over the Project, including, but not limited to, the United States government and the State of Florida, as well as any and all law enforcement agencies of whatever jurisdiction, type of nature, and to provide a copy of each such verification to that authority as well as the City.
5. That all persons assigned by the Contractor or its subcontractors to perform work under the above identified Project will meet the employment eligibility requirements as established by the Federal Government and the government of the State of Florida.
6. That the Bidder / Contractor understands and agrees that its failure to comply with the verification requirements as set forth herein or its failure to ensure that all employees and subcontracts performing work under the above-identified Project are legally authorized to work in the United States and the State of Florida constitute a breach of contract for which the City may immediately terminate the Contract with the City without notice and without penalty. The Bidder / Contractor further understands and agrees that in the event of such termination, the Contractor shall be liable to the City for any and all costs incurred by the City, in any context whatsoever, as a result of the Contractor's breach.
7. The Contractor shall obtain and maintain current affidavits providing proof, to the satisfaction of the City, that each subcontractor has complied with the requirements set forth herein and all controlling law.
8. Specifically, with regard to employment eligibility, the Bidder recognizes and agrees that, upon entering a Contract with the City (to include, but not be limited to, the provision of goods or services under a City purchase order or work order), that the Contractor is obligated to comply with the provisions of Section 448.095, *Florida Statutes*, entitled

"Employment Eligibility", which obligation includes, but is not limited to, utilization of the E-Verify System to verify the work authorization status of all newly hired employees, and requiring all subcontractors to provide an affidavit attesting that the subcontractor does not employ, contract with, or subcontract with, an unauthorized alien. Failure of the Contractor to comply will lead to termination of the Contract with the City, or if a subcontractor knowingly violates the statute, the Contractor must immediately terminate their subcontract with the subcontractor. Any challenge to termination under this provision must be filed in the Circuit Court no later than 20 calendar days after the date of termination. If the Contract with the City is terminated for a violation of the statute by the Contractor, the Contractor may not be awarded a public contract for a period of 1 year after the date of termination and the City will advise any person desiring to be advised of such termination and make such termination a public record available under controlling law for inspection and copying and otherwise available as the City determines in its sole discretion.

9. That for the purposes of this Affidavit, the following definitions apply:

"Employee" – Any person who is hired to perform work in the State of Florida.

"Status Verification System" – The procedures developed under the Illegal Immigration Reform and Immigration Responsibility Act of 1996, as amended, implemented by the United States Department of Homeland Security, or its successor or associated agency, and known as the "E-Verify Program", or any successor electronic verification system that may replace the E-Verify Program.

"Subcontractor" – Any person or entity, whether a subvendor / subcontractor / subconsultant, by whatever name or type or description, assisting the Contractor in the performance of the Contract with the City.

10. The obligations set forth herein are continuing in nature, type, effect and scope.

(This area left blank intentionally)

11. The undersigned signatory, under penalty of perjury, affirms that she/he has the plenary authority to bind the Bidder / Contractor to the provisions hereof.

Bidder / Contractor

Signature of Authorized Representative (Affiant)

Date

Printed or Typed Name and Title of Authorized Representative (Affiant)

STATE OF FLORIDA

COUNTY OF _____

The foregoing instrument was acknowledged before me by means of ____ physical presence or ____ online notarization, this _____ day of _____, _____, by _____ as _____ for _____, whose name is subscribed to this instrument, who personally swore or affirmed that he/she is authorized to execute this document and thereby bind the Corporation / LLC.

(In the last three blanks fill in the name of the Officer acknowledging this document, title of Officer / Manager, and name of the Corporation or LLC)

Signature of Notary Public - State of Florida

Print, Type, or Stamp Commissioned Name of Notary Public

Personally Known _____ OR Produced Identification _____

Type of Identification Produced: _____

END OF SECTION

SECTION 00460**AMERICANS WITH DISABILITIES ACT AFFIDAVIT**

By executing this Certification, the undersigned Bidder certifies that the information herein contained is true and correct and that none of the information supplied was for the purpose of defrauding the City of Everglades City.

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

Bidder

Signature of Authorized Representative (Affiant)

Date

Printed or Typed Name and Title of Authorized Representative (Affiant)

STATE OF FLORIDA

COUNTY OF _____

The foregoing instrument was acknowledged before me by means of ____ physical presence or ____ online notarization, this _____ day of _____, _____, by _____ as _____ for _____, whose name is subscribed to this instrument, who personally swore or affirmed that he/she is authorized to execute this document and thereby bind the Corporation / LLC.

(In the last three blanks fill in the name of the Officer acknowledging this document, title of Officer / Manager, and name of the Corporation or LLC)

Signature of Notary Public - State of Florida

Print, Type, or Stamp Commissioned Name of Notary Public

Personally Known _____ OR Produced Identification _____

Type of Identification Produced: _____

END OF SECTION

SECTION 00462**FINANCIAL INFORMATION FORM**

If requested by the City of Everglades City, the following information is to be provided by the Bidder as part of the City's evaluation of the Bidder after Bids have been received by the City:

1. Bank References:

Name of Bank	Bank Address	Contact Name and Title	Contact Phone No.

2. Attach a financial statement including Bidder's latest balance sheet and income statement showing the following items:

- A. Current Assets (e.g., cash, joint venture accounts, accounts receivable, notes receivable, accrued income, deposits, materials, real estate, stocks and bonds, equipment, furniture and fixtures, inventory and prepaid expenses).
- B. Net Fixed Assets
- C. Other Assets
- D. Current Liabilities (e.g., accounts payable, notes payable, accrued expenses, provision for income taxes, accrued salaries, real estate encumbrances and accrued payroll taxes)
- E. Other Liabilities (e.g., capital, capital stock, authorized and outstanding shares par values, earned surplus, and retained earnings)
- F. State the name of the firm preparing the financial statement and date thereof:

- G. This financial statement must be for the identical organization named on page one. If not, explain the relationship and financial responsibility of the organization whose financial statement is provided (e.g., parent, subsidiary). Please note, that the City of Everglades City reserves the right to reject financial statement(s) submitted by other than the organization named on page one.
3. State the names and addresses of all businesses and/or individuals who own an interest of more than five percent (5%) of the Bidder's business and indicate the percentage owned of each such business and/or individual:

Name	Address	Percentage Owned

Bidder

Signature of Authorized Representative

Date

Printed or Typed Name and Title of Authorized Representative

END OF SECTION

SECTION 00464

SCHEDULE OF PROPOSED SUBCONTRACTORS

Project Name: _____

Bid No.: _____

Does the Bidder propose to use Subcontractors on the above identified Project (Y/N): _____

If the Bidder proposes to use Subcontractors, provide information on each Subcontractor (attach additional sheets as necessary):

Subcontractor Name _____

Subcontractor Address _____

Subcontractor Contact Name _____

Contact Phone No. _____

Contact E-Mail Address _____

Proposed Subcontract Work _____

Approximate Dollar Value of Work _____

Is Subcontractor MBE/WBE (Y/N)? _____

Subcontractor Name _____

Subcontractor Address _____

Subcontractor Contact Name _____

Contact Phone No. _____

Contact E-Mail Address _____

Proposed Subcontract Work _____

Approximate Dollar Value of Work _____

Is Subcontractor MBE/WBE (Y/N)? _____

Subcontractor Name _____

Subcontractor Address _____

Subcontractor Contact Name _____

Contact Phone No. _____

Contact E-Mail Address _____

Proposed Subcontract Work _____

Approximate Dollar Value of Work _____

Is Subcontractor MBE/WBE (Y/N)? _____

Subcontractor Name _____

Subcontractor Address _____

Subcontractor Contact Name _____

Contact Phone No. _____

Contact E-Mail Address _____

Proposed Subcontract Work _____

Approximate Dollar Value of Work _____

Is Subcontractor MBE/WBE (Y/N)? _____

Subcontractor Name _____

Subcontractor Address _____

Subcontractor Contact Name _____

Contact Phone No. _____

Contact E-Mail Address _____

Proposed Subcontract Work _____

Approximate Dollar Value of Work _____

Is Subcontractor MBE/WBE (Y/N)? _____

Subcontractor Name _____

Subcontractor Address _____

Subcontractor Contact Name _____

Contact Phone No. _____

Contact E-Mail Address _____

Proposed Subcontract Work _____

Approximate Dollar Value of Work _____

Is Subcontractor MBE/WBE (Y/N)? _____

Name of Bidder

Address City State Zip Code

Authorized Signature

Printed Name and Title

END OF SECTION

SECTION 00510

NOTICE OF AWARD FORM

To:

Project Name and Bid No.: _____

The OWNER has considered the BID submitted by you, dated _____ for the above described WORK in response to the Invitation for Bids and Bidding Documents.

You are hereby notified that your BID has been accepted for BID items in the amount of \$_____.

You are required by the Instructions to Bidder to execute the Agreement and furnish the required CONTRACTOR's Performance Bond, Payment Bond, and certificates of insurance within fourteen (14) calendar days from the date of this Notice to you. If you fail to execute said Agreement and to furnish said Bonds and insurance within fourteen (14) calendar days from receipt of this Notice, said OWNER will be entitled to consider all your rights arising out of the OWNER's acceptance of your BID as abandoned and as a forfeiture of your BID BOND. The OWNER will be entitled to such other rights as may be granted by law.

You are required to return an acknowledged copy of this NOTICE OF AWARD to the OWNER.

Dated this _____ day of _____, _____.

OWNER:

(Name of OWNER)

By (Signature)

(Printed Name and Title)

ACCEPTANCE OF NOTICE

Receipt and acceptance of the above NOTICE OF AWARD is hereby acknowledged by _____
_____ this _____ day of _____.

By

Printed Name and Title

END OF SECTION

SECTION 00520**AGREEMENT FORM****PART 1 GENERAL**

1.01 THIS AGREEMENT, made and entered into the _____ day of _____, _____ by and between the City of Everglades City, Florida, 102 Copeland Avenue North, Everglades City, FL 34139, a Florida municipality, holding tax exempt status, hereinafter referred to as the "CITY" (also referred to as "OWNER") and _____, whose principal and local address is _____, hereinafter referred to as to as the "CONTRACTOR". The CITY and the CONTRACTOR are collectively referred to herein as the Parties.

1.02 The Owner and Contractor Agree as Follows:

A. The Contract Documents include the Agreement, Addenda (which pertain to the Contract Documents), Contractor's Bid, Notice to Proceed, the Bonds, the General Conditions, the Supplementary Conditions, the Specifications listed in the Index to the Project Manual, any technical specifications as incorporated by the Project Manual; the Drawings as listed in the Project Manual, all Written Amendments, Change Orders, Work Change Directives, Field Orders, Engineer's written interpretations and clarifications issued on or after the Effective Date of this Agreement, and all documents which are fully a part of the Contract with the City are identified by title and number as set forth below and are available for review at and downloading from the City's Web site (site in full) and all documents are agreed to be incorporated into the Contract as if physically attached to the Contract and are, further, agreed to be incorporated into the Contract as if fully set forth therein verbatim. The Contract Documents include:

1. Executed, Section 00520 - Agreement Form.
2. The Project Manual. Note the Index (starting on page number 00010-1 of the Project Manual) includes all instructions, terms, general and supplemental conditions, bid documents, plans, prints and specifications pertaining to the Project.
3. Addenda Applicable to the Bid
4. Contractor's Bid, 00410.
5. Performance Bond, 00605.
6. Payment Bond, 00610
7. Material and Workmanship Bond, 00615.
8. Trench Safety (Executed Form), 00430
9. Non Collusion Affidavit, 00432
10. Conflict of Interest Affidavit, 00434
11. Public Entities Crime Affidavit, 00436
12. Compliance With the Public Records Law Affidavit, 00438
13. Bidder Information and Affidavit, 00440
14. Receipt of Exempt Public Records and Agreement to Safeguard (If Required for Project by City), 00442
15. Certification Of Non-Segregated Facilities (Executed Form), 00450

16. Disputes Disclosure (Executed Form), 00452
17. Drug Free Workplace (Executed Form), 00454
18. Unauthorized (Illegal) Alien Workers Affidavit, 00456
19. E-Verify Compliance Affidavit, 00458
20. Americans With Disabilities Act Affidavit, 00460
21. Financial Information (Executed Form) (If Required by City), 00462
22. Insurance Certificate(s)
23. Notice of Award, 00510
24. Criminal Background Check Requirements (If Required for Project by City), 00525
25. Notice to Proceed, 00530.
26. Consent of Surety to Final Payment (Executed Form), 00617.
27. Contractor's Application for Payment (Executed Forms), 00625.
28. Certificate of Substantial Completion, 00626.
29. Certificate of Final Completion, 00627.
30. Contractor's Partial Release of Lien (Executed Forms), 00640.
31. Subcontractor's Final Release of Lien (Executed Form), 00641.
32. Subcontractor's Partial Release of Lien (Executed Forms), 00644.
33. Contractor's Release of Lien (Executed Form), 00645.
34. Project Field Order (Executed Form), 00940.
35. Work Directive Change (Executed Form), 00945.
36. Change Order (Executed), 00950.
37. Additional document(s) that are not specifically listed in Paragraph 1.02.A.1 through 1.02.A.36, but which are included in the Project Manual and any additional documents agreed upon by the Parties shall be included as a part of the Contract.

These documents form the Contract and all are as fully a part of the Contract as if attached to this Agreement or repeated herein. As the documents indicated above are executed, the date of final execution and initials of the individual who received the executed document(s) is to be added to the blank next to the listed document(s) when processed and made a part of the City's official set of Contract Documents.

B. Scope of Work

The Contractor shall perform all Work required by the Contract Documents for the construction of the Everglades City Chokoloskee Master Pump Station Rehabilitation.

C. Contract Time

The Contractor shall begin Work after the issuance of a written Notice to Proceed from Owner and shall substantially complete the Work within the Contract Time identified in Paragraphs 1.02.C.5 of the Bid Form, which is 240 calendar days. The Work shall be finally complete, ready for Final Payment in accordance with the General Conditions, within 30 calendar days from the actual date of substantial completion.

D. Liquidated Damages

OWNER and CONTRACTOR recognize that time is of the essence of this Agreement and that OWNER will suffer financial loss if the Work is not substantially complete within the time specified in Paragraph C above, plus any extensions thereof allowed in accordance with the General Conditions. They also recognize the delays, expense and difficulties involved in proving in a legal arbitration proceeding the actual loss suffered by OWNER if the Work is not substantially complete on time. Accordingly, instead of requiring any such proof, OWNER and CONTRACTOR agree that as liquidated damages for delay (but not as a penalty) CONTRACTOR shall pay OWNER \$_____ for each calendar day that expires after the time specified in Paragraph C for substantial completion until the Work is substantially complete. It is agreed that if this Work is not Finally completed in accordance with the Contract Documents, the CONTRACTOR shall pay the OWNER as liquidated damages for delay, and not as penalty, one-fourth (1/4) of the rate set forth above.

E. Contract Price

Unit Price Contract

The Owner will pay the Contractor in current funds for the performance of the Work, subject to additions and deductions by Change Order and subject to the Measurement and Payment Provisions, and subject to actual constructed quantities; the Total Contract Price of _____ Dollars (\$_____). Payments will be made to the Contractor on the basis of the Schedule of Unit Prices included as a part of his Bid, which shall be as fully a part of the Contract as if attached or repeated herein. In no event, shall Owner be required to make payment more than monthly

F. City of Everglades City City Tax Recovery

1. Except for expenditures required to immediately address an emergency, CONTRACTOR shall comply with and fully implement the Tax Recovery, Owner Direct Purchase Program with respect to this Agreement, as set forth below.
2. Notwithstanding anything herein to the contrary, because OWNER is exempt from sales tax and wishes to generate and benefit from sales tax savings for this Agreement, OWNER reserves the right to make direct purchases of expenditures required by this Agreement as permitted by the Florida Department of Revenue ("FDOR") regulations on Owner Direct Purchases for Public Works Contracts.
3. CONTRACTOR shall pay, and OWNER shall reimburse, all sales, consumer, use, and other similar taxes associated with this Agreement or portions hereof, which are not purchased through Owner Direct Purchase Program during the performance of this Agreement.
4. CONTRACTOR shall use its reasonable efforts to cooperate with OWNER in implementing this Owner Direct Purchase Program in order to maximize cost savings for this Agreement. Any expenditures made under this Agreement may be made through the Owner Direct Purchase Program, at OWNER's sole option.

5. If CONTRACTOR does not use its reasonable efforts or fails to implement this Owner Direct Purchase Program for expenditures for reasons outside of CONTRACTOR's reasonable control, CONTRACTOR shall reimburse OWNER the sales tax costs incurred as a result of failing to implement this Owner Direct Purchase Program as well as any markup thereon.
6. CONTRACTOR or its subcontractor/vendors shall prepare a Request for Purchase Order Package directly to the OWNER for execution of a Purchase Order. OWNER shall then execute and issue a copy of the purchase order and Certificate of Entitlement to CONTRACTOR and its subcontractors/vendors for their retention. CONTRACTOR shall allow fifteen (15) business days for execution of all such purchase orders by OWNER, unless City Council approval is required, in which case, OWNER shall have until the next regularly scheduled City Council meeting.
7. With respect to all direct purchases by OWNER, OWNER shall remain responsible for submittals, coordinating, ordering, scheduling delivery, inspecting, accepting delivery, insuring, storing, handling, installing, warranting and quality control for all direct purchases. The administrative procedures for this sales tax savings program are more specifically outlined in section 12A-1.094, Florida Administrative Code.
8. CONTRACTOR will charge to the OWNER an Administrative Fee on expenditures to cover our costs of sourcing and procurement efforts, and any other additional storing, handling, installing, warranting and quality control of the Owner's Direct Purchases. CONTRACTOR will submit a proposal of our expected Administrative Fee for approval by OWNER. OWNER retains the option to bid or otherwise procure and manage the expenditures work in-house.
9. Notwithstanding any other provisions of this Agreement, OWNER shall be liable for any tax, penalty, and/or interest determined to be due by the FDOR for any tangible personal property purchased through the Owner Direct Purchase Program pursuant to a Certificate of Entitlement issued by the OWNER that is determined by the FDOR to not meet the requirements of the sales tax exemption under section 212.08(6), Florida Statutes. Nothing contained in this Agreement shall be interpreted as a transfer of this liability to the CONTRACTOR or its subcontractors/vendors.
10. The Parties agree that they will abide by any new FDOR regulations, statutes or other rules or regulations governing the Owner Direct Purchase Program that apply to this Agreement.

G. Payment Procedures

1. Application for Payment: CONTRACTOR shall submit Applications for Payment in accordance with Article 14.02 of Section 00700 - General Conditions, Section 00800 - Supplementary Conditions 14.02.A.1 and 14.02.A.2, and Section 00625 - Application for Payment.

2. Final Payment: Upon Final Inspection and Final Completion and acceptance of the Work in accordance with Articles 14.06 and 14.07 of Section 00700 - General Conditions, CITY shall pay the remainder of the contract price as provided in the General Conditions.

H. Retainage

Retainage for this Project is 5%.

I. Engineer

The Project has been designed by CPH Consulting, LLC., referred to in the documents as the Engineer.

J. Additional Terms and Conditions

1. The CONTRACTOR hereby warrants and represents to the CITY that it is competent and otherwise able to provide professional and high quality goods and/or services to the CITY by means of employees who are neat in appearance and of polite demeanor.
2. All submissions submitted by the CONTRACTOR in the proposals/bid submitted to the CITY are hereby incorporated herein to the extent not inconsistent with the terms and conditions as set forth herein.
3. The CONTRACTOR acknowledges that the CITY may retain other goods and/or service providers to provide the same goods and/or services for CITY projects. The CONTRACTOR acknowledges that the CITY, at the CITY's option, may request proposals from the CONTRACTOR and the other goods and/or service providers for CITY projects. The CITY reserves the right to select which goods and/or services provider shall provide goods and/or services for the CITY's projects.
4. The CONTRACTOR agrees to provide and ensure coordination between goods/services providers.
5. Each party hereto represents to the other that it has undertaken all necessary actions to execute this Agreement, and that it has the legal authority to enter into this Agreement and to undertake all obligations imposed on it. The person(s) executing this Agreement for the CONTRACTOR certify that he/she/they is/are authorized to bind the CONTRACTOR fully to the terms of this Agreement.
6. The CONTRACTOR hereby guarantees the CITY that all materials, supplies, services and equipment as listed on a Purchase Order meet the requirements, specifications and standards as provided for under the *Federal Occupations Safety and Health Act of 1970*, from time to time amended and in force on the date hereof.
7. It is agreed that nothing herein contained is intended or should be construed as in any manner creating or establishing a relationship of co-

partners between the parties, or as constituting the CONTRACTOR (including, but not limited to, its officers, employees, and agents) the agent, representative, or employee of the CITY for any purpose, or in any manner, whatsoever. The CONTRACTOR is to be and shall remain forever an independent contractor with respect to all services performed under this Agreement.

8. Persons employed by the CONTRACTOR in the provision and performance of the goods and/or services and functions pursuant to this Agreement shall have no claim to pension, workers' compensation, unemployment compensation, civil service or other employee rights or privileges granted to the CITY's officers and employees either by operation of law or by the CITY.
9. No claim for goods and/or services furnished by the CONTRACTOR not specifically provided for herein shall be honored by the CITY.
10. Execution of this Agreement by the CONTRACTOR is a representation that the CONTRACTOR is familiar with the goods and/or services to be provided and/or performed and with local conditions. The CONTRACTOR shall make no claim for additional time or money based upon its failure to comply with this Agreement. The CONTRACTOR has informed the CITY, and hereby represents to the CITY, that it has extensive experience in performing and providing the services and/or goods described in this Agreement and that it is well acquainted with the components that are properly and customarily included within such projects and the requirements of laws, ordinance, rules, regulations or orders of any public authority or licensing entity having jurisdiction over the CITY's Projects.
11. Quality, Professional Standards, and Security Requirements
 - a. Under this paragraph 11, the term "CONTRACTOR'S employees" shall include CONTRACTOR'S agents, employees and SUBCONTRACTORS extending to SUBCONTRACTORS agents and employees.
 - b. The CONTRACTOR shall be responsible for the professional quality, accepted standards, technical accuracy, neatness of appearance of employees, employee conduct, safety, and the coordination of all services furnished by the CONTRACTOR under any Agreement resulting from this solicitation. The City reserves the right to require all CONTRACTOR employees, when on City property or Work sites, to wear identification badges at all times which, at a minimum, provides the name of the employee and the CONTRACTOR.
 - c. The CITY reserves the right to require the CONTRACTOR to provide to the CITY a list of employees working on the project. Also, the list shall include employee working days, times and assignments within forty-eight (48) hours of the CITY's written

- request for such information. This information will be reviewed, screened and verified by the CITY, prior to the employees of the CONTRACTOR entering the CITY's premises and/or work sites.
- d. The CONTRACTOR shall comply with Section 00525 concerning criminal background check requirements of the employees of the Contractor and Subcontractors.
 - e. In the event employees of the Contractor and Subcontractor do not qualify to Work on the Project due to A) Failure to have the required criminal background check reports submitted to the City by the FDLE; or B) Unsatisfactory background check reports on employees; then those employees will be disqualified by the City, and those disqualified employees will not be allowed to Work on the Project. Disqualification of employees to Work on the Project is a non-excusable delay to the Contract for which the City will not grant a Contract Time extension.
 - f. Additionally, the CITY may request and the CONTRACTOR shall provide the name, address and social security number and licenses (driver's, commercial drivers license or CDL, or other operator's license) for employees of the CONTRACTOR and/or SUBCONTRACTORS that may work on the CITY's premises in positions found by the City to be critical to the security and/or public safety of the CITY by reason of access to any publicly owned or operated facility. The CONTRACTOR shall release such information upon approval of the affected employees. If an employee refuses to authorize the release of their address, social security number and/or licenses they shall not be allowed to work or continue to work in such critical positions.
 - e. The CONTRACTOR shall work closely with the CITY on all aspects of the provision of the goods and/or services. With respect to services, the CONTRACTOR shall be responsible for the professional quality, technical accuracy, competence, methodology, accuracy and the coordination of all of the following which are listed for illustration purposes and not as a limitation: documents, analysis, reports, data, plans, plats, maps, surveys, specifications, and any and all other services of whatever type or nature furnished by the CONTRACTOR under this Agreement. The CONTRACTOR shall, without additional compensation, correct or revise any errors or deficiencies in his/her/its plans, analysis, data, reports, designs, drawings, specifications, and any and all other services of whatever type or nature. The CONTRACTOR's submissions in response to the subject bid or procurement processes are incorporated herein by this reference thereto.
12. Neither the CITY's review, approval or acceptance of, nor payment for, any of the goods and/or services required shall be construed to operate as a waiver of any rights under this Agreement or of any cause of action

arising out of the performance of this Agreement and the CONTRACTOR shall be and remain liable to the CITY in accordance with applicable law for all damages to the CITY caused by the CONTRACTOR negligent or improper performance or failure to perform any of the goods and/or services furnished under this Agreement.

13. The rights and remedies of the CITY, provided for under this Agreement, are in addition to any other rights and remedies provided by law.
14. Time is of the essence in the performance of all goods and/or services provided by the CONTRACTOR under the terms of this Agreement.
15. Invoices, which are in an acceptable form to the CITY and without disputable items, which are received by the CITY, will be processed for payment within thirty (30) days of receipt by the CITY.
16. The CONTRACTOR will be notified of any disputable items contained in invoices submitted by the CONTRACTOR within fifteen (15) days of receipt by the CITY with an explanation of the deficiencies.
17. The CITY and the CONTRACTOR will make every effort to resolve all disputable items contained in the CONTRACTOR's invoices.
18. Each invoice shall reference this Agreement, the appropriate billing period.
19. The *Florida Prompt Payment Act* shall apply when applicable. A billing period represents the dates in which the CONTRACTOR completed goods and/or services referenced in an invoice.
20. Invoices are to be forwarded directly the City's designated CEI representative, as identified at the preconstruction meeting, for review and processing.
21. CITY designates the City Manager or his/her designated representative, to represent the CITY in all matters pertaining to and arising from the Work and the performance of this Agreement.
22. The City Manager, or his/her designated representative, shall have the following responsibilities:
 - a. Examination of all Work and rendering, in writing, decisions indicating the CITY's approval or disapproval within a reasonable time so as not to materially delay the Work of the CONTRACTOR;
 - b. Transmission of instructions, receipt of information, and interpretation and definition of CITY's policies and decisions with respect to design, materials, and other matters pertinent to the Work covered by this Agreement;
 - c. Giving prompt written notice to the CONTRACTOR whenever the CITY official representative knows of a defect or change necessary in the Project; and

- d. Coordinating and managing the CONTRACTOR's preparation of any necessary applications to governmental bodies, to arrange for submission of such applications.
- 23. CITY may terminate this Agreement for convenience at any time or for any one (1) or more of the reasons as follows:
 - a. If, in the CITY's opinion, adequate progress is not being made by the CONTRACTOR due to the CONTRACTOR 's failure to perform; or
 - b. If, in the CITY's opinion, the quality of the goods and/or services provided by the CONTRACTOR is/are not in conformance with commonly accepted professional standards, standards of the CITY, and the requirements of Federal and/or State regulatory agencies, and the CONTRACTOR has not corrected such deficiencies in a timely manner as reasonably determined by the CITY; or
 - c. The CONTRACTOR, or any employee or agent of the CONTRACTOR, is indicted or has a direct charge issued against him for any crime arising out of or in conjunction with any Work that has been performed by the CONTRACTOR; or
 - d. The CONTRACTOR becomes involved in either voluntary or involuntary bankruptcy proceedings, or makes an assignment for the benefit of creditors; or
 - e. The CONTRACTOR violates the Standards of Conduct provisions herein or any provision of Federal, State or local law or any provision of the CITY's Code of Conduct.
- 24. In the event of any of the causes of termination, the CITY's designated representative may send a certified letter to the CONTRACTOR requesting that the CONTRACTOR show cause why the Agreement should not be terminated. If assurance satisfactory to the CITY of corrective measures to be made within a reasonable time is not given to the CITY within seven (7) calendar days of the date of the letter, the CITY may consider the CONTRACTOR to be in default, and may then immediately terminate this Agreement.
- 25. In the event that this Agreement is terminated for cause and it is later determined that the cause does not exist, then this Agreement or the Purchase/Work Order shall be deemed terminated for convenience by the CITY and the CITY shall have the right to so terminate this Agreement without any recourse by the CONTRACTOR.
- 26. The CONTRACTOR may terminate this Agreement only if the CITY fails to pay the CONTRACTOR in accordance with this Agreement.
- 27. Notwithstanding any other provision of this Agreement, the CITY shall have the right at any time to terminate this Agreement in its entirety without cause, if such termination is deemed by the CITY to be in the public interest, in writing of deficiencies or default in the performance of its duties under the Agreement and the CONTRACTOR shall have ten

- (10) days to correct same or to request, in writing, a hearing. Failure of the CONTRACTOR to remedy said specified items of deficiency or default in the notice by either the CITY's designated representative within ten (10) days of receipt of such notice of such decisions, shall result in the termination of the Agreement, and the CITY shall be relieved of any and all responsibilities and liabilities under the terms and provisions of the Agreement.
28. The CITY shall have the right to terminate this Agreement without cause with a sixty (60) day written notice to the other party. The CITY reserves the right to terminate any Agreement for cause with a five (5) day written notice to the CONTRACTOR. Notice shall be served to the parties as specified in the Agreement.
29. In the event that this Agreement is terminated, the CITY shall identify any specific Work to be continued to completion pursuant to the provisions of this Agreement.
30. In the event that after the CITY termination for cause for failure of the CONTRACTOR to fulfill its obligations under this Agreement it is found that the CONTRACTOR has not so failed, the termination shall be deemed to have been for convenience and without cause.
31. In the event this Agreement is terminated or canceled prior to final completion without cause, payment for the unpaid portion of the services provided by the CONTRACTOR to the date of termination and any additional services shall be paid to the CONTRACTOR.
32. Upon receipt of notice of termination, given by either party, the terminated party shall promptly discontinue the provision of all goods and/or services, unless the notice provides otherwise.
33. The performance or provision of the CONTRACTOR's goods and/or services under this Agreement may be suspended by the CITY at any time.
34. In the event the CITY suspends the performance or provision of the CONTRACTOR services hereunder, the CITY shall so notify the CONTRACTOR in writing, such suspension becoming effective within seven (7) days from the date of mailing, and the CITY shall pay to the CONTRACTOR within thirty (30) days all compensation which has become due to and payable to the CONTRACTOR to the effective date of such suspension. The CITY shall thereafter have no further obligation for payment to the CONTRACTOR for the suspended provision of goods and/or services unless and until the CITY's designated representative notifies the CONTRACTOR in writing that the provision of the goods and/or services of the CONTRACTOR called for hereunder are to be resumed by the CONTRACTOR.

35. Upon receipt of written notice from the CITY that the CONTRACTOR's provision of goods and/or services hereunder are to be resumed, the CONTRACTOR shall continue to provide the services to the CITY.
36. The CONTRACTOR agrees that it will not discriminate against any employee or applicant for employment for Work under this Agreement because of race, color, religion, sex, age, national origin or disability and will take affirmative steps to ensure that applicants are employed and employees are treated during employment without regard to race, color, religion, sex, age, national origin or disability. This provision shall include, but not be limited to, the following: employment, upgrading, demotion or transfer; recruitment advertising; layoff or termination; rates of pay or their forms or compensation; and selection for training, including apprenticeship. The CONTRACTOR, moreover, shall comply with all the requirements as imposed by the *Americans with Disability Act*, the regulations of the Federal government issued thereunder, and any and all requirements of Federal or State law related thereto.
37. Indemnity and Insurance
 - a. To the fullest extent permitted by law, the CONTRACTOR shall indemnify, hold harmless and defend the CITY, its agents, servants, officers, officials and employees, or any of them, from and against any and all claims, damages, losses, and expenses including, but not limited to, attorney's fees and other legal costs such as those for paralegal, investigative, and legal support services, and the actual costs incurred for expert witness testimony, arising out of or resulting from the performance or provision of services required under this Agreement, provided that same is caused in whole or in part by the error, omission, negligent act, failure to act, breach of contract obligation, malfeasance, officers, officials, employees, or subCONTRACTORS. Additionally, the CONTRACTOR accepts responsibility for all damages resulting in any way related to the performance of Work. In no event, shall either party be responsible or liable to the other for any incidental, consequential, or indirect damages, whether arising by contract or tort.
 - b. In accordance with Section 725.06, Florida Statutes, adequate consideration has been provided to the CONTRACTOR for this obligation, the receipt and sufficiency of which is hereby specifically acknowledged.
 - c. Nothing herein shall be deemed to affect the rights, privileges, and immunities of the CITY as set forth in Section 768.28, Florida Statutes.
 - d. In claims against any person or entity, indemnification under this Section by an employee of the CONTRACTOR or its agents or subCONTRACTORS, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, the

indemnification obligation under this Section shall not be limited by a limitation on amount or type of damages, compensation, or benefits payable by or for the CONTRACTOR or its agents or subCONTRACTORS, under Workers Compensation acts, disability benefits acts, or other employee benefit acts.

- e. The execution of this Agreement by the CONTRACTOR shall obligate the CONTRACTOR to comply with the indemnification provision of this Agreement; provided, however, that the CONTRACTOR must also comply with the provisions of this Agreement relating to insurance coverage.
 - f. The CONTRACTOR shall submit a report to the CITY within twenty-four (24) hours of the date of any incident resulting in damage or which is reasonably likely to result in a claim of damage.
- 38. The CONTRACTOR shall obtain or possess and continuously maintain the insurance coverage as set forth and required in the bid documents.
 - 39. All insurance other than Workers Compensation and Professional Liability that must be maintained by the CONTRACTOR shall specifically include the CITY as an additional insured.
 - 40. The CONTRACTOR shall provide Certificates of Insurance to the CITY evidencing that all such insurance is in effect prior to the issuance of the first Purchase/Work Order under this Agreement from the CITY. These Certificates of Insurance shall become part of this Agreement. Neither approval by the CITY nor failure to disapprove the insurance furnished by a CONTRACTOR shall relieve the CONTRACTOR of the CONTRACTOR's full responsibility for performance of any obligation including the CONTRACTOR's indemnification of the CITY under this Agreement. If, during the period which an insurance company is providing the insurance coverage required by this Agreement, an insurance company shall: (1) lose its Certificate of Authority, (2) no longer comply with Section 440.57, *Florida Statutes*, or (3) fail to maintain the requisite Best's Rating and Financial Size Category, the CONTRACTOR shall, as soon as the CONTRACTOR has knowledge of any such circumstance, immediately notify the CITY and immediately replace the insurance coverage provided by the insurance company with a different insurance company meeting the requirements of this Agreement. Until such time as the CONTRACTOR has replaced the unacceptable insurer with insurance acceptable to the CITY, the CONTRACTOR shall be deemed to be in default of this Agreement.
 - 41. The insurance coverage shall contain a provision that requires that prior to any changes in the coverage, except increases in aggregate coverage, thirty (30) days prior notice will be given to the CITY by submission of a new Certificate of Insurance.

42. The CONTRACTOR shall furnish Certificates of Insurance directly to the CITY's Designated Representative. The certificates shall clearly indicate that the CONTRACTOR has obtained insurance of the type, amount and classification required by this Agreement.
43. Nothing in this Agreement or any action relating to this Agreement shall be construed as the CITY's waiver of sovereign immunity beyond the limits set forth in Section 768.28, *Florida Statutes*.
44. The CITY shall not be obligated or liable under the terms of this Agreement to any party other than the CONTRACTOR. There are no third party beneficiaries to this Agreement.
45. The CONTRACTOR is an independent contractor and not an agent, representative, or employee of the CITY. The CITY shall have no liability except as specifically provided in this Agreement.
46. All insurance shall be primary to, and not contribute with, any insurance or self-insurance maintained by the CITY.
47. The CONTRACTOR warrants that it has not employed or retained any company or person, other than a *bona fide* employee working solely for the CONTRACTOR, to solicit or secure this Agreement and that the CONTRACTOR has not paid or agreed to pay any person, company, corporation, individual or firm other than a *bona fide* employee working solely for the CONTRACTOR, any fee, commission, percentage, gift, or any other consideration, contingent upon or resulting from the award of making this Agreement.
48. The CONTRACTOR shall not discriminate on the grounds of race, color, religion, sex, or national origin in the performance of Work under this Agreement or violate any laws pertaining to civil rights, equal protection or discrimination.
49. The CONTRACTOR hereby certifies that no undisclosed (in writing) conflict of interest exists with respect to the Agreement, including, but not limited to, any conflicts that may be due to representation of other clients, customers or vendees, other contractual relationships of the CONTRACTOR, or any interest in property that the CONTRACTOR may have. The CONTRACTOR further certifies that any conflict of interest that arises during the term of this Agreement shall be immediately disclosed in writing to the CITY. Violation of this Section shall be considered as justification for immediate termination of this Agreement.
50. The CONTRACTOR shall ensure that all taxes due from the CONTRACTOR are paid in a timely and complete manner including, but not limited to, occupational license tax.
51. If the CITY determines that any employee or representative of the CONTRACTOR is not satisfactorily performing his/her assigned duties or is demonstrating improper conduct pursuant to any assignment or Work

- performed under this Agreement, the CITY shall so notify the CONTRACTOR, in writing. The CONTRACTOR shall immediately remove such employee or representative of the CONTRACTOR from such assignment.
52. The CONTRACTOR shall not publish any documents or release information regarding this Agreement to the media without prior approval of the CITY.
 53. The CONTRACTOR shall certify, upon request by the CITY, that the CONTRACTOR maintains a drug free workplace policy in accordance with Section 287.0878, *Florida Statutes*. Failure to submit this certification may result in termination.
 54. If the CONTRACTOR or an affiliate is placed on the convicted vendor list following a conviction for a public entity crime, such action may result in termination by the CITY. The CONTRACTOR shall provide a certification of compliance regarding the public crime requirements set forth in State law upon request by the CITY.
 55. The CITY reserves the right to unilaterally terminate this Agreement if the CONTRACTOR refuses to allow public access to all documents, papers, letters, or other materials subject to provisions of *Chapter 119, Florida Statutes*, and other applicable law, and made or received by the CONTRACTOR in conjunction, in any way, with this Agreement.
 56. The CONTRACTOR shall comply with the requirements of the *Americans with Disabilities Act* (ADA), and any and all related Federal or State laws which prohibits discrimination by public and private entities on the basis of disability.
 57. The CITY will not intentionally award publicly-funded contracts to any contractor who knowingly employs unauthorized alien workers, constituting a violation of the employment provisions contained in 8 U.S.C. Section 1324a(e) Section 274A(e) of the *Immigration and Nationally Act (INA)*. The CITY shall consider the employment by the CONTRACTOR of unauthorized aliens, a violation of Section 274A(e) of the *INA*. Such violation by the CONTRACTOR of the employment provisions contained in Section 274A(e) of the *INA* shall be grounds for immediate termination of this Agreement by the CITY.
 58. The CONTRACTOR agrees to comply with Federal, State, and local environmental, health, and safety laws and regulations applicable to the goods and/or services provided to the CITY. The CONTRACTOR agrees that any program or initiative involving the Work that could adversely affect any personnel involved, citizens, residents, users, neighbors or the surrounding environment will ensure compliance with any and all employment safety, environmental and health laws.
 59. The CONTRACTOR shall ensure that all goods and/or services are provided to the CITY after the CONTRACTOR has obtained, at its sole

and exclusive expense, any and all permits, licenses, permissions, approvals or similar consents.

60. If applicable, in accordance with Section 216.347, *Florida Statutes*, the CONTRACTOR shall not use funds provided by this Agreement for the purpose of lobbying the Legislature, the judicial branch or State agency.
61. The CONTRACTOR shall advise the CITY in writing of it who has been placed on a discriminatory vendor list, may not submit a bid on a contract to provide goods or services to a public entity, or may not transact business with any public entity.
62. The CONTRACTOR shall not engage in any action that would create a conflict of interest in the performance of that actions of any CITY employee or other person during the course of performance of, or otherwise related to, this Agreement or which would violate or cause others to violate the provisions of Part III, Chapter 112, *Florida Statutes*, relating to ethics in government.
63. The CONTRACTOR shall maintain books, records, documents, time and costs accounts and other evidence directly related to its provision or performance of services under this Agreement. All time records and cost data shall be maintained in accordance with generally accepted accounting principles.
64. The CONTRACTOR shall maintain and allow access to the records required under this Section for a minimum period of five (5) years after the completion of the provision or performance goods and/or services under this Agreement and date of final payment for said goods and/or services, or date of termination of this Agreement.
65. The CITY may perform, or cause to have performed, an audit of the records of the CONTRACTOR before or after final payment to support final payment under any Purchase/Work Order issued hereunder. This audit shall be performed at a time mutually agreeable to the CONTRACTOR and the CITY subsequent to the close of the final fiscal period in which goods and/or services are provided or performed. Total compensation to the CONTRACTOR may be determined subsequent to an audit as provided for in this Section, and the total compensation so determined shall be used to calculate final payment to the CONTRACTOR. Conduct of this audit shall not delay final payment as required by this Section.
66. In addition to the above, if Federal, State, County, or other entity funds are used for any goods and/or services under this Agreement, the Comptroller General of the United States or the Chief Financial Officer of the State of Florida, or the County of Collier, or any representatives, shall have access to any books, documents, papers, and records of the CONTRACTOR which are directly pertinent to goods and/or services provided or performed under this Agreement for purposes of making audit, examination, excerpts, and transcriptions.

67. In the event of any audit or inspection conducted reveals any overpayment by the CITY under the terms of the Agreement, the CONTRACTOR shall refund such overpayment to the CITY within thirty (30) days of notice by the CITY of the request for the refund.
68. The CONTRACTOR agrees to fully comply with all State laws relating to public records.
69. The CONTRACTOR agrees that if any litigation, claim, or audit is started before the expiration of the record retention period established above, the records shall be retained until all litigation, claims or audit findings involving the records have been resolved and final action taken.
70. The CONTRACTOR shall not sublet, assign or transfer any interest in this Agreement, or claims for the money due or to become due out of this Agreement to a bank, trust company, or other financial institution without written CITY approval. When approved by the CITY, written notice of such assignment or transfer shall be furnished promptly to the CITY.
71. Any CONTRACTOR proposed subcontractors shall be submitted to the CITY for written approval prior to the CONTRACTOR entering into a subcontract. Subcontractor information shall include, but not be limited to, State registrations, business address, occupational license tax proof of payment, and insurance certifications.
72. The CONTRACTOR shall coordinate the provision of goods and/or services and Work product of any CITY approved subcontractors, and remain fully responsible for such goods and/or services and Work under the terms of this Agreement.
73. Any subcontract shall be in writing and shall incorporate this Agreement and require the subcontractor to assume performance of the CONTRACTOR's duties commensurately with the CONTRACTOR's duties to the CITY under this Agreement, it being understood that nothing herein shall in any way relieve the CONTRACTOR from any of its duties under this Agreement. The CONTRACTOR shall provide the CITY with executed copies of all subcontracts.
74. The CONTRACTOR shall reasonably cooperate at all times with the CITY and other CITY contractors and professionals.
75. This Agreement is to be governed by the laws of the State of Florida.
76. Venue for any legal proceeding related to this Agreement shall be in the Eighteenth Judicial Circuit Court in and for Collier County, Florida.
77. This Agreement is the result of *bona fide* arms length negotiations between the CITY and the CONTRACTOR and all parties have contributed substantially and materially to the preparation of the Contract.

Accordingly, this Agreement shall not be construed or interpreted more strictly against any one party than against any other party.

78. Neither party shall be considered in default in performance of its obligations hereunder to the extent that performance of such obligations, or any of them, is delayed or prevented by *Force Majeure*. *Force Majeure* shall include, but not be limited to, hostility, terrorism, revolution, civil commotion, strike, epidemic, fire, flood, wind, earthquake, explosion, any law, proclamation, regulation, or ordinance or other act of government, or any act of God or any cause whether of the same or different nature, existing or future; provided that the cause whether or not enumerated in this Section is beyond the control and without the fault or negligence of the party seeking relief under this Section.
79. This Agreement, together with the exhibit(s), if any, constitutes the entire integrated Agreement between the CITY and the CONTRACTOR and supersedes all prior written or oral understandings in connection therewith. This Agreement, and all the terms and provisions contained herein, including without limitation the exhibits hereto, constitute the full and complete agreement between the parties hereto to the date hereof, and supersedes and controls over any and all prior agreements, understandings, representations, correspondence and statements whether written or oral.
80. This Agreement may only be amended, supplemented or modified by a formal written amendment.
81. Any alterations, amendments, deletions, or waivers of the provisions of this Agreement shall be valid only when expressed in writing and duly signed by the parties.
82. Written notice requirements of this Agreement shall be strictly construed and such requirements are a condition precedent to pursuing any rights or remedies hereunder. The CONTRACTOR agrees not to claim any waiver by CITY of such notice requirements based upon CITY having actual knowledge, implied, verbal or constructive notice, lack of prejudice or any other grounds as a substitute for the failure of the CONTRACTOR to comply with the express written notice requirements herein. Computer notification (e-mails and message boards) shall not constitute proper written notice under the terms of the Agreement.
83. The failure of the CITY to insist in any instance upon the strict performance of any provision of this Agreement, or to exercise any right or privilege granted to the CITY hereunder shall not constitute or be construed as a waiver of any such provision or right and the same shall continue in force.
84. In no event shall any obligation of the CITY under this Agreement be or constitute a general obligation or indebtedness of the CITY, a pledge of the *ad valorem* taxing power of the CITY or a general obligation or indebtedness of the CITY within the meaning of the *Constitution of the*

State of Florida or any other applicable laws, but shall be payable solely from legally available revenues and funds.

85. The CONTRACTOR shall not have the right to compel the exercise of the *ad valorem* taxing power of the CITY.
86. Each exhibit referred to and attached to this Agreement is an essential part of this Agreement. The exhibits and any amendments or revisions thereto, even if not physically attached hereto, shall be treated as if they are part of this Agreement.
87. The Section headings and captions of this Agreement are for convenience and reference only and in no way define, limit, describe the scope or intent of this Agreement or any part thereof, or in any way affect this Agreement or construe any provision of this Agreement.
88. If any term, provision or condition contained in this Agreement shall, to any extent, be held invalid or unenforceable, the remainder of this Agreement, or the application of such term, provision or condition to persons or circumstances other than those in respect of which it is invalid or unenforceable, shall not be affected thereby, and each term, provision and condition of this Agreement shall be valid and enforceable to the fullest extent permitted by law when consistent with equity and the public interest.
89. All provisions of this Agreement shall be read and applied in *para materia* with all other provisions hereof.
90. In the event of a dispute related to any performance or payment obligation arising under this Agreement, the parties agree to exhaust any alternative dispute resolution procedures reasonably imposed by the CITY prior to filing suit or otherwise pursuing legal remedies.
91. The CONTRACTOR agrees that it will file no suit or otherwise pursue legal remedies based on facts or evidentiary materials that were not presented for consideration to the CITY in alternative dispute resolution procedures or which the CONTRACTOR had knowledge and failed to present during the CITY procedures.
92. In the event that CITY procedures are exhausted and a suit is filed or legal remedies are otherwise pursued, the parties shall exercise best efforts to resolve disputes through voluntary mediation. Mediator selection and the procedures to be employed in voluntary mediation shall be mutually acceptable to the parties. Costs of voluntary mediation shall be shared equally among the parties participating in the mediation.
93. This Agreement may be executed in any number of counterparts, each of which shall be deemed an original, but all of which, taken together, shall constitute one and the same document.

K. Mandatory Compliance with Chapter 119, Florida Statutes, and Public Records Requests. In order to comply with Section 119.0701, Florida Statutes, public records laws, the CONTRACTOR must:

1. Keep and maintain public records that ordinarily and necessarily would be required by the CITY in order to perform the service.
2. Provide the public with access to public records on the same terms and conditions that the CITY would provide the records and at a cost that does not exceed the cost provided in Chapter 119, Florida Statutes, or as otherwise provided by law.
3. Ensure that public records that are exempt or confidential and exempt from public records disclosure requirements are not disclosed except as authorized by law.
4. Meet all requirements for retaining public records and transfer, at no cost, to the CITY all public records in possession of the CONTRACTOR upon termination of the contract and destroy any duplicate public records that are exempt or confidential and exempt from public records disclosure requirements. All records stored electronically must be provided to the CITY in a format that is compatible with the information technology systems of the CITY.
5. If the CONTRACTOR does not comply with a public records request, the CITY shall enforce the contract provisions in accordance with this Agreement.
6. Failure by the CONTRACTOR to grant such public access and comply with public records requests shall be grounds for immediate unilateral cancellation of this Agreement by the CITY. the CONTRACTOR shall promptly provide the CITY with a copy of any request to inspect or copy public records in possession of the CONTRACTOR and shall promptly provide the CITY with a copy of the CONTRACTOR's response to each such request.
7. The CONTRACTOR shall note the following:

IF THE CONTRACTOR/VENDOR HAS QUESTIONS REGARDING THE APPLICATION OF CHAPTER 119, FLORIDA STATUTES, TO THE CONTRACTOR'S (VENDOR'S) DUTY TO PROVIDE PUBLIC RECORDS RELATING TO THIS CONTRACT, CONTACT THE CUSTODIAN OF PUBLIC RECORDS AT CONTACT THE CUSTODIAN OF PUBLIC RECORDS DOROTHY JOINER AT (239) 695-4558, DSMALLWOOD@CITYOFEVERGLADES.ORG, P.O. BOX

**110, EVERGLADES INSTITUTION, FLORIDA
34139.**

IN WITNESS WHEREOF, the parties hereto have executed this Agreement the day and year first above written.

CONTRACTOR:

Name of Firm

By (Signature)

Date

(SEAL)

Printed Name and Title

ATTEST:

By (Signature)

Date

Printed Name and Title

OWNER:

City of Everglades City City

Name of Owner

By (Signature)

Date

(SEAL)

_____, Mayor

Printed Name and Title

ATTEST:

By (Signature)

Date

_____, City Clerk

Printed Name and Title

Approved as to form and legal sufficiency.

City Attorney

Date

END OF SECTION

SECTION 00530**NOTICE TO PROCEED FORM****To:****Notice to Proceed Date:** _____**Project Name:** _____**Bid No.:** _____

You are hereby notified to commence Work in accordance with the Agreement dated _____. This Notice authorizes the Contractor to commence construction on the above Notice to Proceed Date and, in accordance with the Agreement, all Work shall be substantially complete within _____ calendar days of the date of this Notice to Proceed. Therefore, the Date of Substantial Completion is _____. Per the Agreement, all Work shall be finally substantially complete within _____ calendar days of the date of substantial completion. Therefore, the Date of Final completion is _____.

ISSUED BY:_____
(Name of Owner)_____
By (Signature)_____
(Printed Name and Title)**ACCEPTANCE OF NOTICE**

Receipt and acceptance of the above Notice To Proceed is hereby acknowledged by _____
_____ this _____ day of _____, _____.

By_____
Printed Name and Title**END OF SECTION**

SECTION 00605**PERFORMANCE BOND**
(100% of Contract Price)**Project Name:** Chokoloskee Master Pump Station Rehabilitation**City Contract No.:** IFB No.**Contractor****Surety**

Name: _____

Address: _____

Phone No.: _____

Owner

Name: City of Everglades City

Address: P.O. Box 110
Everglades City, FL 34139

Phone No.: (239) 695 - 4558

KNOW ALL MEN BY THESE PRESENTS that

The above named Contractor, as Principal, and the above named Surety, as SURETY, are held and firmly bound unto the Owner, the City of Everglades City, a Political Subdivision of the State of Florida, in the full and just sum of \$_____, lawful money of the United States of America, to the payment of which sum, well and truly to be made, the Contractor and SURETY bind themselves, their representatives, and each of their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

The Project is located at: _____

General description of the Work: _____

WHEREAS, the Contractor has by written Agreement dated _____, 20____
_____, entered into a Contract with the Owner for IFB No. _____, for the project entitled _____
_____, with conditions and provisions
as are further described in the aforementioned Agreement, which Agreement is by reference made a
part hereof for the purpose of explaining this bond.

NOW, THEREFORE, the condition of this obligation is such that if Principal:

Promptly and faithfully performs its duties, all the covenants, terms, conditions, and agreements
of said Contract including, but not limited to the insurance provisions, guaranty period and the
warranty provisions, in the time and manner prescribed in the Contract, and

Pays Owner all, losses, damages, delay damages (liquidated or actual), expenses, costs and attorneys' fees, including costs and attorney's fees on appeal that Owner sustains resulting directly or indirectly from any breach or default by Principal under the Contract, then this bond is void; otherwise it shall remain in full force and effect.

1. Whenever Contractor shall be, and declared by Owner to be in default under the Contract, the Owner having performed Owner's obligations thereunder, the SURETY shall promptly remedy the default or shall promptly:
 - A. Complete the Contract in accordance with its terms and conditions; or
 - B. Expeditiously obtain a bid or bids for completing the Contract in accordance with its terms and conditions, and upon determination by SURETY of the lowest responsible qualified bidder, award a contract; or, if the Owner elects, upon determination by the Owner and the SURETY jointly of the lowest responsible bidder, to have the SURETY arrange for a contract between such bidder and Owner, and for the SURETY to make available as Work progresses sufficient funds to pay the cost of completion less the balance of the Contract price (even though there should be a default or a succession of defaults under the contract or contracts of completion arranged under this paragraph). The term "balance of the Contract price," as used in this Bond, shall mean the total amount payable by Owner to Contractor under the Contract and any approved change orders thereto, less the amount properly paid by Owner to Contractor. The SURETY shall pay Owner all remaining losses, delay and disruption damages, expenses, costs, and statutory attorney's fees, including appellate proceedings, that Owner sustains because of a default by Contractor under the Contract.
2. Any changes in or under the Contract Documents (which include the Plans, Drawings, and Specifications) and compliance or noncompliance with any formalities connected with the Contract or the changes therein shall not affect SURETY's obligations under this Bond and SURETY hereby waives notice of any such changes.
3. The SURETY's monetary obligations to the Owner shall not be reduced by legal fees and costs incurred by the SURETY arising out of Contractor's default.
4. The SURETY, for value received, hereby stipulates and agrees that its obligations hereunder shall be direct and immediate and not conditional or contingent upon Owner's pursuit of its remedies against Principal, shall remain in full force and effect notwithstanding (i) amendments or modifications to the Contract entered into by Owner and Principal without the SURETY's knowledge or consent (ii) waivers of compliance with terms of the Contract granted by Owner to Principal without the SURETY's knowledge or consent, or (iii) the discharge of Principal from its obligations under the Contract as a result of any proceeding initiated under the Bankruptcy Code of 1978, as the same may be amended, or any similar state or federal law, or any limitation of the liability of Principal or its estate as a result of any such proceeding.
5. The Surety shall indemnify and hold the Owner harmless from any and all claims and damages, arising from the Contractor's default under the Contract including, but not limited to, contractual damages, expenses, costs, injury, negligent default, or intentional default, patent infringement and actual damages in accordance with the Contract.

6. In the event that the SURETY fails to fulfill its obligations under this Performance Bond, then the SURETY shall indemnify and hold the Owner harmless from any and all loss, damage, cost and expense, including reasonable attorneys' fees and costs for all trial and appellate proceedings, resulting from the SURETY's failure to fulfill its obligations hereunder. This paragraph shall survive the termination or cancellation of this Performance Bond.
7. The Contractor shall save the Owner harmless from any and all damages, expenses and costs which may arise by virtue of any defects in said work or materials within a period of two (2) years from the date of Final Completion of the Project.
8. This Performance Bond is intended to comply with the requirements of Section 255.05, Florida Statutes, as amended, and additionally, to provide contract rights more expansive than as required by statute.

IN WITNESS WHEREOF, this instrument is executed this _____ day of _____, 20____.

ATTEST:

PRINCIPAL/CONTRACTOR

PRINCIPAL / CONTRACTOR

By: Secretary

By: CONTRACTOR Signatory Authority

Typed Name of Secretary

Typed Name and Title

(CORPORATE SEAL)

Address

(Witness to CONTRACTOR)

City, State, Zip

Typed Name

Telephone No. Facsimile No.

(Witness to CONTRACTOR)

Typed Name

ATTEST:

SURETY

(SURETY) Secretary

SURETY

By: _____

Typed or Printed Name

Typed or Printed Name

Title

Witness as to SURETY

Typed or Printed Name

Address

Witness as to SURETY

City, State, Zip

Typed or Printed Name

Telephone No. Facsimile No.

NOTE: Date of this Performance Bond must not be prior to date of the Agreement. If CONTRACTOR is a joint venture, all ventures shall execute this Performance Bond. If CONTRACTOR is a Partnership, all partners shall execute this Performance Bond.

IMPORTANT: Surety companies executing bonds must appear on the Treasury Department's most current list (Circular 570, as amended) and be authorized to transact business in the State of Florida, unless otherwise specifically approved in writing by Owner.

All bonds shall be originals and issued or countersigned by a local producing agent who is authorized to operate in the State of Florida. Attorneys-in-fact who sign Bid Bonds or Performance/Payment Bonds must file with such bond a certified copy of their Power of Attorney to sign such Bond. **Agents of surety companies must list their name, address, and telephone number on all Bonds.**

END OF SECTION

SECTION 00610**PAYMENT BOND**

(100% of Contract Price)

Project Name: _____**City Contract No.:** IFB No. _____

	Contractor	Surety
Name:	_____	_____
Address:	_____	_____
	_____	_____
Phone No.:	_____	_____

Owner

Name: City of Everglades City
Address: P.O. Box 110
Everglades City, FL 34139
Phone No.: (239) 695 – 4558

KNOW ALL MEN BY THESE PRESENTS that

The above named Contractor, as Principal, and the above named Surety, as SURETY, are held and firmly bound unto the Owner, the City of Everglades City, a Florida municipality, in the full and just sum of \$_____, lawful money of the United States of America, to the payment of which sum, well and truly to be made, the Contractor and SURETY bind themselves, their representatives, and each of their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

The Project is located at:

General description of the Work: _____

WHEREAS, the Contractor has by written Agreement dated _____, 20____
_____, entered into a Contract with the Owner for IFB No. _____, for the project entitled _____
_____, with conditions and provisions
as are further described in the aforementioned Agreement, which Agreement is by reference made a
part hereof for the purpose of explaining this bond.

NOW, THEREFORE, the condition of this obligation is such that if Principal shall promptly make
payments to all claimants as defined in Section 255.05(1), Florida Statutes, supplying Principal

with labor, Materials, or supplies, used directly or indirectly by Principal in the prosecution of the Work provided for in the Agreement, then this obligation shall be void; otherwise, it shall remain in full force and effect subject, however, to the following conditions:

1. This Payment Bond is furnished for the purpose of complying with the requirements of Section 255.05, Florida Statutes, as same may be amended.
2. Any action instituted by a claimant under this Bond for payment must be in accordance with the notice and time limitation provisions in Sections 255.05(2) and 255.05(10), Florida Statutes.
3. This Payment Bond is conditioned that Contractor shall promptly make payments to all persons defined in Section 713.01, Florida Statutes, whose claims derive from the prosecution of the Work provided for in the Contract.
4. Pursuant to Section 255.05, Florida Statutes, a claimant, except a laborer, who is not in privity with the Contractor shall, before commencing or not later than forty-five (45) days after commencing to furnish labor, services, or materials for the prosecution of the Work, serve the contractor with a written notice that he or she intends to look to the Bond for protection. A claimant who is not in privity with the Contractor and who has not received payment for furnishing his or her labor, services, or materials shall serve a written notice of nonpayment on the Contractor and on the SURETY. The notice of nonpayment shall be under oath and served during the progress of the Work or thereafter but may not be served earlier than forty-five (45) days after the first furnishing of labor, services, or materials by the claimant or later than ninety (90) days after the final furnishing of the labor, services, or materials by the claimant or, with respect to rental equipment, later than ninety (90) days after the date that the rental equipment was last on the job site available for use.
5. The time periods for service of a notice of nonpayment or for bringing an action against a Contractor or a Surety shall be measured from the last day of furnishing labor, services, or materials by the claimant and may not be measured by other standards, such as the issuance of a certificate of occupancy or the issuance of a certificate of substantial completion.
6. An action, except an action for recovery of retainage, must be instituted against the Contractor or the SURETY on the payment bond within one (1) year after the performance of the labor or completion of delivery of the materials or supplies. An action for recovery of retainage must be instituted against the Contractor or the SURETY within one (1) year after the performance of the labor or completion of delivery of the materials or supplies.
7. The claimant shall have a cause of action against the Contractor and SURETY for the amount due him or her, including unpaid finance charges due under the claimant's contract. Such action may not involve the Owner in any expense.
8. Any changes in or under the Contract or Contract Documents and compliance or non-compliance with any formalities connected with the Contract or the changes therein shall not affect SURETY's obligations under this Payment Bond and SURETY hereby waives notice of any such changes. Further, Principal and SURETY acknowledge that the sum of this Payment Bond shall increase or decrease in accordance with the Change Orders (unilateral or directive change orders and bilateral change orders) or other modifications

to the Contract or Contract Documents. This Payment Bond shall not cover any components or materials directly purchased and paid for by the Owner.

9. The Performance Bond and this Payment Bond and the covered amounts of each are separate and distinct from each other. This Payment Bond shall be construed as a statutory Payment Bond under Section 255.05, Florida Statutes, and not as a common law bond.

IN WITNESS WHEREOF, this instrument is executed this _____ day of _____, 20_____.

ATTEST:

PRINCIPAL/CONTRACTOR

PRINCIPAL / CONTRACTOR

By: Secretary

By: CONTRACTOR Signatory Authority

Typed Name of Secretary

Typed Name and Title

(CORPORATE SEAL)

Address

(Witness to CONTRACTOR)

City, State, Zip

Typed Name

Telephone No. Facsimile No.

(Witness to CONTRACTOR)

Typed Name

ATTEST:

SURETY

(SURETY) Secretary

SURETY

Typed or Printed NameBy:

Typed or Printed Name

Title

Witness as to SURETY

Typed or Printed Name

Address

Witness as to SURETY

City, State, Zip

Typed or Printed Name

Telephone No. Facsimile No.

NOTE: Date of this Payment Bond must not be prior to date of the Agreement. If CONTRACTOR is a joint venture, all ventures shall execute this Payment Bond. If CONTRACTOR is a Partnership, all partners shall execute this Payment Bond.

IMPORTANT: Surety companies executing bonds must appear on the Treasury Department's most current list (Circular 570, as amended) and be authorized to transact business in the State of Florida, unless otherwise specifically approved in writing by Owner.

All bonds shall be originals and issued or countersigned by a local producing agent who is authorized to operate in the State of Florida. Attorneys-in-fact who sign Bid Bonds or Performance/Payment Bonds must file with such bond a certified copy of their Power of Attorney to sign such Bond. **Agents of surety companies must list their name, address, and telephone number on all Bonds.**

END OF SECTION

SECTION 00615

MATERIAL AND WORKMANSHIP BOND
(10% of Contract Price)

KNOW ALL MEN BY THESE PRESENTS that:

(Name of CONTRACTOR)

(Address of CONTRACTOR)

CONTRACTOR's Telephone Number: _____

a _____
(Corporation, Partnership, or Individual)

hereinafter called "Principal", and _____
(Name of Surety)

(Address of Surety)

Surety's Telephone Number: _____

hereinafter called "Surety", are held and firmly bound unto the OWNER _____

_____, hereinafter called "OWNER", in the sum of ten percent (10%) of the Contract Price as adjusted under the Contract Documents. The Final Contract Price is \$_____, therefore Principal and Surety are held and firmly bound unto OWNER the sum of _____ DOLLARS (\$_____) in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal entered into a certain Agreement with OWNER, dated the _____ day of _____, 20____, a copy of which is hereto attached and made a part hereof for the construction of: _____.

Principal is obligated to protect the OWNER against any defects resulting from faulty Materials or Workmanship of said improvements for a period of two (2) years from the date of Final Completion under the Contract Documents, which is _____.

The conditions of this obligation are such that if Principal shall promptly and faithfully protect the OWNER against any Defects resulting from faulty Materials and Workmanship of the aforesaid improvements for a period of two (2) years from the date of Final Completion, then this obligation shall be null and void, otherwise it shall remain in full force and effect.

The OWNER shall notify the Principal in writing of any Defect for which the Principal is responsible and shall specify in said notice a reasonable period of time within which Principal shall have to correct said Defect.

The Surety unconditionally covenants and agrees that if the Principal fails to perform, within the time specified, the Surety, upon thirty (30) days written notice from OWNER, or its authorized agent or officer, of the failure to perform will correct such Defect or Defects and pay the cost thereof, including, but not limited to engineering, legal and contingent cost. Should the Surety fail or refuse to correct said Defects, the OWNER, in view of the public interest, health, safety, welfare and factors involved, shall have the right to resort to any and all legal remedies against the Principal and Surety and either, both at law and in equity, including specifically, specific performance to which the Principal and Surety unconditionally agree.

The Principal and Surety further jointly and severally agree that the OWNER at its option, shall have the right to correct said Defects resulting from faulty Materials or Workmanship, or, pursuant to public advertisement and receipt of Bids, cause to be corrected any Defects or said Defects in case the Principal shall fail or refuse to do so, and in the event the OWNER should exercise and give effect to such right, the Principal and the Surety shall jointly and severally hereunder reimburse the OWNER the total cost thereof, including, but not limited to, engineering, legal and contingent cost, together with any damages either direct or consequent which may be sustained on account of the failure of the Principal to correct said defects.

(Signature Pages Follow)

IN WITNESS WHEREOF, this instrument is executed this _____ day of _____, 20_____.

ATTEST:

PRINCIPAL/CONTRACTOR

PRINCIPAL / CONTRACTOR

By: Secretary

By: CONTRACTOR Signatory Authority

Typed Name of Secretary

Typed Name and Title

(CORPORATE SEAL)

Address

(Witness to CONTRACTOR)

City, State, Zip

Typed Name

Telephone No. Facsimile No.

(Witness to CONTRACTOR)

Typed Name

(Surety Signature Page Follows)

ATTEST:

SURETY

(SURETY) Secretary

SURETY

Typed or Printed NameBy:

Typed or Printed Name

Title

Witness as to SURETY

Typed or Printed Name

Address

Witness as to SURETY

City, State, Zip

Typed or Printed Name

Telephone No. Facsimile No.

NOTE: Date of the Bond must not be prior to date of Agreement. If CONTRACTOR is a joint venture, all ventures shall execute the Bond. If CONTRACTOR is a Partnership, all partners shall execute the Bond.

IMPORTANT: Surety companies executing Bonds must appear on the Treasury Department's most current list (Circular 570, as amended) and be authorized to transact business in the State of Florida, unless otherwise specifically approved in writing by OWNER.

All bonds shall be originals and issued or countersigned by a local producing agent who is authorized to operate in the State of Florida. Attorneys-in-fact who sign Bid Bonds or Performance/Payment Bonds must file with such bond a certified copy of their Power of Attorney to sign such Bond. **Agents of Surety companies must list their name, address, and telephone number on all Bonds.**

END OF SECTION

SECTION 00617**CONSENT OF SURETY TO FINAL PAYMENT**

WE, _____, having heretofore executed Performance and Payment Bonds No. _____ for the Project known as Chokoloskee Master Pump Station Rehabilitation, in the amount of \$ _____* hereby agree that City of Everglades City, hereinafter referred to as OWNER may make full payment of the final estimate, including the retained percentage, to the CONTRACTOR, _____. The Surety concurs that full payment to the CONTRACTOR is appropriate and the Surety expressly releases the OWNER from all liability to Surety resulting from full payment to CONTRACTOR. It is fully understood that the granting of the right to the OWNER to make payment of the final estimate to said CONTRACTOR and/or his assigns, shall in no way relieve this surety company of its obligations under its bond, as set forth in the specifications, contract and bond pertaining to the above project.

* = Dollar Value of Issued Performance and Payment Bonds

IN WITNESS WHEREOF, the _____ has caused this instrument to be executed on its behalf by its _____ and its duly authorized attorney in fact, and its corporate seal to be hereunto affixed, all on this _____ day of _____, _____.

Surety

Attorney-in-Fact

(Power of Attorney must be attached if executed by Attorney in Fact)

STATE OF FLORIDA

COUNTY OF _____

The foregoing instrument was acknowledged before me by means of ____ physical presence or ____ online notarization, this _____ day of _____, _____, by _____ as _____ for _____, whose name is subscribed to this instrument, who personally swore or affirmed that he/she is authorized to execute this document and thereby bind the Corporation / LLC.

(In the last three blanks fill in the name of the Officer acknowledging this document, title of Officer / Manager, and name of the Corporation or LLC)

Signature of Notary Public - State of Florida

Print, Type, or Stamp Commissioned Name of Notary Public

Personally Known _____ OR Produced Identification _____

Type of Identification Produced: _____

END OF SECTION

SECTION 00622**City of Everglades City INSURANCE REQUIREMENTS AND AFFIDAVIT**

The following insurance requirements are required to be met, in addition to requirements defined in Sections 00700 (General Conditions) and 00800 (Supplementary Conditions). Any conflict between the requirements contained in this section and any other section, it is hereby noted that the requirements of this section as amended shall prevail.

1. Insurance requirements are as follows:

- A. For construction projects where the total construction cost is \$500,000 or higher; or the Contract Time exceeds 180 days; or unusual hazards exist:

Coverage Required	Minimum Policy Limits
Workers' Compensation *Certificates of exemption are not acceptable in lieu of workers compensation insurance	Employers Liability \$1,000,000.00 Each Accident \$1,000,000.00 Disease \$1,000,000.00
Commercial General Liability shall include- Bodily Injured Liability and Advertising Injuring Liability Coverages shall include: Premises / Operations; Products/Completed Operations; Contractual Liability; Independent Contractors, Explosion; Collapse; Underground. When required by the City, coverage must be provided for Sexual Harassment, Abuse and Molestation.	\$3,000,000.00 Per Occurrence \$3,000,000.00 General Aggregate
Comprehensive Auto Liability, CSL, shall include "any auto" or shall include all of the following: owned, leased, hired, non-owned autos, and scheduled autos.	\$1,000,000.00 Combined Single Limit \$1,000,000.00 General Aggregate
Professional Liability (when required)	\$1,000,000.00 Minimum
Builder's Risk** shall include theft, sinkholes, off site storage, transit, installation and equipment breakdown. Permission to occupy shall be included and the policy shall be endorsed to cover the interest of all parties, including the City of Everglades City, all contractors and subcontractors. **When Work includes construction of and/or additions to above ground buildings or structures (including retaining walls, light poles, electrical panels, signs, inlets, manholes), Builder's Risk coverage must be provided. Additionally, Builder's Risk Coverage shall include stored materials paid for by the City and stored onsite or offsite until the project is complete.	100% of completed value of additions and structures

- B. For construction projects where the total construction cost is less than \$500,000; and the Contract Time is less than 180 days; and no unusual hazards exist:

Coverage Required	Minimum Policy Limits
Workers' Compensation *Certificates of exemption are not acceptable in lieu of workers compensation insurance	Employers Liability \$500,000.00 Each Accident \$500,000.00 Disease \$500,000.00
Commercial General Liability shall include- Bodily Injured Liability and Advertising Injuring Liability Coverages shall include: Premises / Operations; Products/Completed Operations; Contractual Liability; Independent Contractors, Explosion; Collapse; Underground. When required by the City, coverage must be provided for Sexual Harassment, Abuse and Molestation.	\$1,000,000.00 Per Occurrence \$1,000,000.00 General Aggregate
Comprehensive Auto Liability, CSL, shall include "any auto" or shall include all of the following: owned, leased, hired, non-owned autos, and scheduled autos.	\$1,000,000.00 Combined Single Limit \$1,000,000.00 General Aggregate
Professional Liability (when required)	\$1,000,000.00 Minimum
Builder's Risk** shall include theft, sinkholes, off site storage, transit, installation and equipment breakdown. Permission to occupy shall be included and the policy shall be endorsed to cover the interest of all parties, including the City of Everglades City, all contractors and subcontractors. **When Work includes construction of and/or additions to above ground buildings or structures (including retaining walls, light poles, electrical panels, signs, inlets, manholes), Builder's Risk coverage must be provided. Additionally, Builder's Risk Coverage shall include stored materials paid for by the City and stored onsite or offsite until the project is complete.	100% of completed value of additions and structures

2. It is noted that Professional Liability is not required unless applicable conditions exist. Builder's Risk insurance is required as indicated above. If clarification is needed the Bidder must request clarification from the City of Everglades City, submitted as a Bidder Question in accordance with the requirements of the Instructions to Bidder (Section 00200).
3. The successful bidder will be required to provide, to the City of Everglades City and all Additional Insureds, prior to commencing any work, a Certificate of Insurance which verifies coverage in compliance with the requirements outlined above. Under the "Description Of Operations / Locations / Vehicles" section of the Certificate of Insurance, include the Project Name and IFB No. Any Work initiated without completion of this requirement shall be unauthorized and the City will not be responsible.
4. The City reserves the right, as conditions warrant, to modify or increase insurance requirements outlined below as may be determined by the project, conditions and exposure.
5. The insurance limits indicated above and otherwise referenced are minimum limits acceptable to the City. Such policies shall be endorsed to provide primary and non-

- contributory coverage to the City and all of the Additional Insureds in relation to any and all other liability insurance and shall not contain co-insurance provisions.
6. All policies are to provide a Waiver of Subrogation endorsement in favor of the City and all of the Additional Insureds.
 7. All policies, except for professional liability policies and workers compensation policies are to be endorsed to include the City of Everglades City and all of the Additional Insureds.
 8. Professional Liability Coverage, when applicable, will be defined on a case by case basis.
 9. In the event that the insurance coverage expires prior to the completion of the project, a renewal certificate shall be issued 30 days prior to said expiration date.
 10. All limits are per occurrence and must include Bodily Injury and Property Damage.
 11. All policies must be written on occurrence form, not on claims made form, except for Professional Liability.
 12. Self insured retentions shall not be allowed on any liability coverage.
 13. In the notification of cancellation: All Additional Insureds shall be endorsed onto the policy as a cancellation notice recipient. Should any of the above described policies be cancelled before the expiration date thereof, notice shall be delivered to the Additional Insureds in accordance with the policy provisions.
 14. All insurers must have an A.M. Best rating of at least A-VII.
 15. It is the responsibility of the Contractor to ensure that all Subcontractors retained by the Prime Contractor shall provide coverage as defined herein before and after and are the responsibility of said Prime Contractor in all respects.
 16. Any changes to the coverage requirements indicated above shall be approved by the City of Everglades City Risk Manager.
 17. Insured shall name the following entities, including their Directors, officers, agents and employees as Additional Insureds:

City of Everglades City
P.O. Box 110
Everglades City, Florida 34139
Phone: (239) 695-4558; Fax: (239) 695-3020

CPH, Inc.
500 West Fulton Street
Sanford, Florida 32771
Ph: 407-322-6841
 18. All certificates of insurance, notices, etc. must be provided to the above addresses.

19. Certification:

- A. It is noted that the City has a contractual relationship with the named vendor, contractor or provider (collectively referred hereinafter as Contractor) applicable to a purchase order, work order, contract or other form of commitment by the City of Everglades City, whether in writing or not and has no such contractual relationship with the Contractor's insurance carrier. Therefore, the onus is on the Contractor to ensure that they have the insurance coverage specified by the City to meet all contractual obligations and expectations of the City. Further, as the Contractor's insurance coverage is a matter between the Contractor and its insurance carrier, the City will turn to the Contractor for relief as a result of any damages or alleged damages for which the Contractor is responsible to indemnify and hold the City harmless. It is understood that the Contractor may satisfy relief to the City for such damages either directly or through its insurance coverage; exclusions by the insurance carrier notwithstanding, the City will expect relief from the Contractor.
- B. The Undersigned accepts and agrees to meet all of the insurance coverage requirements, terms, conditions and certification(s) stated herein before and after and further agrees to maintain and provide the designated coverage during the life of the identified document. Also, when the coverage requirements stated herein before and after are specifically referenced by applicable solicitation, purchase order or contract document, those terms, conditions and coverage requirements are incorporated into that document as if fully set forth in verbatim.

Certified By:

Name of Bidder

Address

City

State

Zip Code

Signature

Printed Name and Title

STATE OF FLORIDA

COUNTY OF _____

The foregoing instrument was acknowledged before me by means of ____ physical presence or ____ online notarization, this _____ day of _____, _____, by _____ as _____ for _____, whose name is subscribed to this instrument, who personally swore or affirmed that he/she is authorized to execute this document and thereby bind the Corporation / LLC.

(In the last three blanks fill in the name of the Officer acknowledging this document, title of Officer / Manager, and name of the Corporation or LLC)

Signature of Notary Public - State of Florida

Print, Type, or Stamp Commissioned Name of Notary Public

Personally Known _____ OR Produced Identification _____

Type of Identification Produced: _____

END OF SECTION

SECTION 00625**APPLICATION FOR PAYMENT****Project Name:** _____**Bid No.:** _____**Contractor:** _____**Payment Request No.:** _____**Period Ending Date:** _____**STATEMENT OF WORK**

1.	Original Contract Price	
2.	Net Change Order	
3.	Current Contract Price	
4.	Total Completed and Stored to Date	
5.	Amount Retained	
6.	Total Earned Less Retainage (Line 4 Minus Line 5)	
7.	Previous Payments Approved	
8.	Amount Due This Payment (Line 6 Minus Line 7)	
9.	Balance to Finish, Less Retainage (Line 3 Minus Line 4)	

CONTRACTOR'S AFFIDAVIT

The undersigned Contractor hereby swears under penalty of perjury that (1) all previous progress payments received from the Owner on account of Work performed under the Agreement referred to above have been applied by the Contractor to discharge in full all obligations of the Contractor incurred in connection with Work covered by prior Application for Payment under said Agreement, being Applications for Payment numbered 1 through _____ inclusive; and, (2) all Work, materials and equipment incorporated in said Project or otherwise listed in or covered by this Application for Payment are free and clear of all liens, claims, security interests and encumbrances; (3) all previous progress payments have been applied by the Contractor to pay in full (less retainage) all amounts owed to its Subcontractors, Suppliers, Materialmen and Equipment Suppliers; and (4) all items and amounts shown for payment and all information provided on the Subcontractor and Supplier Listing which is included in this Application for Payment are true and correct; and (5) all Work has been completed in full accordance with the terms and conditions of the Agreement between the Owner and Contractor dated _____ and the Work is not defective.

CONTRACTOR:_____

(SEAL)

By _____
(Signature of Authorized Representative)_____
Date_____
Printed Name and Title

STATE OF FLORIDA

COUNTY OF _____

The foregoing instrument was acknowledged before me by means of ____ physical presence or ____ online notarization, this _____ day of _____, _____, by _____ as _____ for _____, whose name is subscribed to this instrument, who personally swore or affirmed that he/she is authorized to execute this document and thereby bind the Corporation / LLC.

(In the last three blanks fill in the name of the Officer acknowledging this document, title of Officer / Manager, and name of the Corporation or LLC)

Signature of Notary Public - State of Florida

Print, Type, or Stamp Commissioned Name of Notary Public

Personally Known _____ OR Produced Identification _____

Type of Identification Produced: _____

SUBCONTRACTOR AND SUPPLIER LISTING

The following is a list of Subcontractors and Suppliers who have performed Work or provided Materials, Supplies, or Equipment during time period represented by this Application and the dollar amount of the work applied for (add to the table as necessary to provide a complete list).

NAME	ADDRESS	AMOUNT

PAYMENT OF THE AMOUNT REQUESTED ABOVE IS RECOMMENDED FOR APPROVAL:

By _____

Date _____

By _____

Date _____

REQUIRED ATTACHMENTS

Monthly Application For Payment:

1. Updated Project Schedule
2. Contractor's Partial Release of Lien
3. All applicable Subcontractor/ Supplier Waivers of Lien (Partial)
4. All submittals required for Davis Bacon prevailing wage documentation

Final Application For Payment (Submitted With or Prior to the Final Application for Payment):

1. Contractor's Release of Lien (Final and Complete)
2. All applicable Subcontractor/Supplier Waivers of Lien (Final and Complete)
3. Consent of Surety to Final Payment
4. Completed Material and Workmanship Bond
5. Certificate of Final Completion
6. Manufacturer operation and maintenance instructions
7. Manufacturers' guarantees, warranties, bonds, and letters of coverage extending beyond the time limitations of the Contractor's guarantee
8. All required Record Drawings
9. All required directional bore logs
10. Stormwater NPDES Notice of Termination (If Required)

END OF SECTION

SECTION 00626

CERTIFICATE OF SUBSTANTIAL COMPLETION

Project Name: _____

Bid No.: _____

Owner: _____

Contractor: _____

Agreement Date: _____

This Certificate of Substantial Completion applies to all work under the Contract Documents or the following specified parts thereof if construction is phased by contract: _____

ISSUED TO:

Contractor:

The work to which this Certificate applies has been inspected by authorized representatives of Contractor, Engineer, and Owner and that Work is hereby declared to be substantially completed in accordance with the Contract Documents on:

Date of Substantial Completion

A list of items to be completed or corrected is attached hereto. This list may not be all-inclusive, and the failure to include an item in it does not alter the responsibility of Contractor to complete and warrant all the Work in accordance with the Contract Documents. All items on the list shall be completed or corrected by Contractor within ____ days of the above date of Substantial Completion.

This Certificate does not constitute an acceptance of Work not in accordance with the Contract Documents nor is it a release of Contractor's obligations to complete the Work in accordance with the Contract Documents.

Executed by Engineer on _____
Date

Engineer: CPH Consulting, LLC.

By: _____
(Signature)

(Printed Name and Title)

Executed by Owner on _____
Date

Owner: _____

By: _____
(Signature)

(Printed Name and Title)

Contractor accepts this Certificate of Substantial Completion on _____
Date

Contractor: _____

By: _____
(Signature)

(Printed Name and Title)

END OF SECTION

SECTION 00627

CERTIFICATE OF FINAL COMPLETION

Project Name: _____

Bid No.: _____

Owner: _____

Contractor: _____

Agreement Date: _____

This Certificate of Final Completion applies to all work under the Contract Documents or the following specified parts thereof if construction is phased by contract: _____

ISSUED TO:

Contractor:

The work to which this Certificate applies has been inspected by authorized representatives of Contractor, Engineer, and Owner and that Work is hereby declared to be finally complete in accordance with the Contract Documents on:

Date of Final Completion

This Certificate constitutes an acceptance of Work except any and all latent defects, warranty work, maintenance, and other post Final Completion obligations of the Contractor under the Contract Documents.

Executed by Engineer on

Date

Engineer: CPH Consulting. LLC.

By:

(Signature)

(Printed Name and Title)

Contractor accepts this Certificate of Final Completion on _____

Date

Contractor: _____

By: _____
(Signature)

(Printed Name and Title)

Accepted by Owner on _____
Date

Owner: City of Everglades City

By: _____
(Signature)

(Printed Name and Title)

END OF SECTION

SECTION 00640**CONTRACTOR'S WAIVER AND RELEASE OF LIEN UPON PROGRESS PAYMENT**

The undersigned Lienor, in consideration of the sum of \$ _____, hereby waives and releases its lien and right to claim a lien for labor, services or materials furnished through _____ to the _____ for the Project known as the Everglades City Chokoloskee Master Pump Station Rehabilitation. The labor, services or materials furnished relate to improvements to the following property:

This waiver and release does not cover any retention or labor, services, or materials furnished after the date specified.

DATED on _____, 20 _____

Lienor: _____

Address: _____

By: _____
Signature

Printed Name and Title

STATE OF FLORIDA
COUNTY OF _____

The foregoing instrument was acknowledged before me by means of ____ physical presence or ____ online notarization, this _____ day of _____, _____, by _____ as _____ for _____, whose name is subscribed to this instrument, who personally swore or affirmed that he/she is authorized to execute this document and thereby bind the Corporation / LLC.

(In the last three blanks fill in the name of the Officer acknowledging this document, title of Officer / Manager, and name of the Corporation or LLC)

Signature of Notary Public - State of Florida Print, Type, or Stamp Commissioned Name of Notary Public

Personally Known _____ OR Produced Identification _____

Type of Identification Produced: _____

END OF SECTION

SECTION 00642**SUBCONTRACTOR'S / SUPPLIER'S WAIVER AND RELEASE OF LIEN UPON PROGRESS PAYMENT**

The undersigned Lienor, in consideration of the sum of \$ _____, hereby waives and releases its lien and right to claim a lien for labor, services or materials furnished through _____ to _____ (the Contractor) for the Project known as the Everglades City Chokoloskee Master Pump Station Rehabilitation whose Owner is the City of Everglades City. The labor, services or materials furnished relate to improvements to the following property:

This waiver and release does not cover any retention or labor, services, or materials furnished after the date specified.

DATED on _____, 20 _____

Lienor: _____

Address: _____

By: _____
Signature

Printed Name and Title

STATE OF FLORIDA

COUNTY OF _____

The foregoing instrument was acknowledged before me by means of ____ physical presence or ____ online notarization, this _____ day of _____, _____, by _____ as _____ for _____, whose name is subscribed to this instrument, who personally swore or affirmed that he/she is authorized to execute this document and thereby bind the Corporation / LLC.

(In the last three blanks fill in the name of the Officer acknowledging this document, title of Officer / Manager, and name of the Corporation or LLC).

Signature of Notary Public - State of Florida

Print, Type, or Stamp Commissioned Name of Notary Public

Personally Known _____ OR Produced Identification _____

Type of Identification Produced: _____

END OF SECTION

SECTION 00644

CONTRACTOR'S WAIVER AND RELEASE OF LIEN UPON FINAL PAYMENT

The undersigned Lienor, in consideration of Final Payment in the amount of \$_____,
_____, hereby waives and releases its lien and right to claim a lien for
labor, services or materials furnished through _____ to the _____
_____ for the Project known as the Everglades City Chokoloskee Master Pump Station
Rehabilitation. The labor, services or materials furnished relate to improvements to the
following property:

DATED on _____, 20 _____

Lienor: _____

Address: _____

By: _____
Signature

Printed Name and Title

STATE OF FLORIDA

COUNTY OF _____

The foregoing instrument was acknowledged before me by means of ____ physical presence or ____ online
notarization, this _____ day of _____, _____, by _____
_____ as _____ for _____
_____, whose name is subscribed to this instrument, who personally swore or affirmed
that he/she is authorized to execute this document and thereby bind the Corporation / LLC.

(In the last three blanks fill in the name of the Officer acknowledging this document, title of Officer / Manager, and name of the Corporation or LLC)

Signature of Notary Public - State of Florida

Print, Type, or Stamp Commissioned Name of Notary Public

Personally Known _____ OR Produced Identification _____

Type of Identification Produced: _____

END OF SECTION

SECTION 00646**SUBCONTRACTOR'S / SUPPLIER'S WAIVER AND RELEASE OF LIEN UPON FINAL PAYMENT**

The undersigned Lienor, in consideration of Final Payment in the amount of \$_____,
_____, hereby waives and releases its lien and right to claim a lien for
labor, services or materials furnished to _____
(the Contractor) for the Project known as the Everglades City Chokoloskee Master Pump
Station Rehabilitation whose Owner is City of Everglades City. The labor, services
or materials furnished relate to improvements to the following property:

DATED on _____, 20 _____

Lienor: _____

Address: _____

By: _____

Signature

Printed Name and Title

STATE OF FLORIDA

COUNTY OF _____

The foregoing instrument was acknowledged before me by means of ____ physical presence or ____ online
notarization, this _____ day of _____, _____, by _____
_____ as _____ for _____
_____, whose name is subscribed to this instrument, who personally swore or affirmed
that he/she is authorized to execute this document and thereby bind the Corporation / LLC.

(In the last three blanks fill in the name of the Officer acknowledging this document, title of Officer / Manager, and name of the Corporation or LLC)

Signature of Notary Public - State of Florida

Print, Type, or Stamp Commissioned Name of Notary Public

Personally Known _____ OR Produced Identification _____

Type of Identification Produced: _____

END OF SECTION

SECTION 00800**SUPPLEMENTARY CONDITIONS**

These Supplementary Conditions amend or supplement the "Standard General Conditions of the Construction Contract", prepared by Engineers Joint Contract Documents Committee (EJCDC), Copyright © 2002. All provisions of the General Conditions, which are not so amended or supplemented in these Supplementary Conditions remain in full force and effect.

SC-1.01.A.9 *Defined Terms*

Delete the definition "Change Order" in its entirety and replace it with the following:

9. Change Order - A document recommended by Engineer which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, issued on or after the Effective Date of the Agreement, and which represents a full accord and satisfaction of all costs of whatever nature, direct or indirect, arising from or related to the addition, deletion, or revision, including, without limitation, its impact on unchanged base contract work.

SC-1.01.A.37 *Defined Terms*

Delete the definition "Resident Project Representative" in its entirety and replace it with the following:

37. Resident Project Representative - The authorized representative of the Owner or Engineer who is assigned to the site or any part thereof.

SC-1.02.G *Terminology*

Add the following terminology clarification to Paragraph 1.02 of the General Conditions:

G. The word "Plans" when used in the Contract Documents shall have the same meaning and be used interchangeably with the word "Drawings".

SC-1.02.H *Terminology*

Add the following terminology clarification to Paragraph 1.02 of the General Conditions:

H. The words "Subcontractor" and "Supplier" are sometimes used interchangeably in the Contract Documents and when used shall mean either Subcontractor or Supplier as defined herein or both Subcontractor and Supplier as defined herein.

SC-2.02.A *Copies of Documents*

In the first sentence of Paragraph 2.02.A of the General Conditions, delete the word "ten" (10) and add the word "five" (5) copies.

SC-2.03.A *Commencement of Contract Times: Notice to Proceed*

Delete Paragraph 2.03.A of the General Conditions in its entirety and replace it with the following:

A. At the Owner's discretion, a Notice to Proceed may be given at any time within thirty days after the effective date of the Agreement. The Contract Time will commence at the time specified in such notice provided that the Notice to Proceed may not specify a time of commencement later than sixty days after the effective date of the Agreement.

SC-2.07.A.1 *Initial Acceptance of Schedules*

Add the following to the end of Paragraph 2.07.A.1 of the General Conditions:

Under no circumstances whatsoever shall Contractor be entitled to compensation based upon a right to finish early prior to the Contract Time.

SC-3.01.D *Contract Documents, Intent*

Add the following to Paragraph 3.01 of the General Conditions:

D. The various contract documents shall be given precedence, in case of conflict, error or discrepancy, as follows: Change Order, Agreement, approved Schedule of Values, addenda, Supplementary Conditions, General Conditions, the Project Manual, FDOT Specifications, Contract Drawings, and Contractor's Bid. An addendum issued prior to bid, may modify any of the contract documents in existence at that time. The addendum takes precedence over the previous issue of the contract document being modified. In case of conflict between the Contract Documents, the Contract Document first listed shall have priority over any Contract Document later in the list.

SC-3.03.A.1 *Before Starting Construction*

Add the following sentence to the end of Paragraph 3.03.A.1 of the General Conditions:

By commencing work, the Contractor shall be deemed to have accepted the condition of the site as being in suitable, satisfactory and acceptable condition to perform its work on the Project.

SC-3.06.B *Electronic Data*

Change the acceptance period for detecting and correcting data in paragraph 3.06.B of the General Conditions from 60 days to 30 days.

SC-3.06.D *Electronic Data*

Add the following to Paragraph 3.06 of the General Conditions:

D. Transfer of electronic data to a third party by the receiving party is prohibited.

SC-4.02.A-B *Subsurface and Physical Conditions*

Relating to Paragraphs 4.02.A.1, 4.02.A.2, 4.02.B, 4.02.B.1, 4.02.B.2, and 4.02.B.3 of the General Conditions:

Section 00320, "Site Investigation Data", of the Project Manual identifies the reports and drawings referred to in Paragraphs 4.02.A.1, 4.02.A.2, 4.02.B, 4.02.B.1, 4.02.B.2, and 4.02.B.3 of the General Conditions. If Section 00320 does not identify specific reports or drawings, then the Engineer may have relied only on local county USDA/SCS soils surveys or other information that is not site specific. Contractor reliance on soil surveys is subject to the same limitations as defined in SC-4.02.B.4.

SC-4.02.B.4 *Subsurface and Physical Conditions*

Add the following to Paragraph 4.02.B of the General Conditions:

4. The Contractor acknowledges that he has satisfied himself as to the character, quality and quantity of surface and subsurface materials or obstacles to be encountered, including all exploratory work done on behalf of the Owner on the site or any contiguous site, as well as from information presented by the Drawings and Specifications made a part of this Contract, or any other information made available to him prior to receipt of Bids. Any failure by the Contractor to acquaint himself with the available information will not relieve him from responsibility for estimating properly the difficulty or cost of successfully performing the Work. The Owner assumes no responsibility for any conclusions or interpretations made by the Contractor on the basis of the information made available by the Owner.

SC-4.03.A.4 *Differing Subsurface or Physical Conditions*

Delete Paragraph 4.03.A.4 of the General Conditions in its entirety and replace it with the following:

4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, within seven (7) days after becoming aware thereof and before further disturbing the subsurface or physical conditions or

performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so. Written notice is a precondition to Contractor's rights under Paragraph 4.03.C.

SC-4.05.B*Reference Points*

Add the following to Paragraph 4.05 of the General Conditions:

B. The Owner and Engineer reserve the right to periodically check certain layout and grades of the work of the Contractor; however, they are not obligated to do so. The Contractor shall not rely on any such measurements made by the Owner or Engineer. The Contractor is solely responsible to layout and construct to the required grades all work in accordance with the Contract Documents, and any layout and grade work not in conformance with these Documents shall be classified as "Defective Work".

SC-4.06.J*Hazardous Environmental Conditions at Site*

Add the following to Paragraph 4.06 of the General Conditions:

J. The Contractor shall be responsible for the legal disposal of any asbestos, PCB's, petroleum, hazardous waste or radioactive material brought to the site by the Contractor, Sub-Contractors, Suppliers, or anyone else for whom the Contractor is responsible.

SC-5.03.A*Certificates of Insurance*

The additional insured are as identified in Section 00620, "Insurance Certification".

SC-5.04.C.1-3*Contractor's Liability Insurance*

Add the following to Paragraph 5.04 of the General Conditions:

C. The insurance limits indicated below and otherwise referenced are minimum limits acceptable to the Owner. Such policies shall be endorsed to provide primary and non-contributory coverage to the all of the additional insureds in relation to any and all other liability insurance. All policies are to be provide a Waiver of Subrogation endorsement in favor of all of the additional insureds. The limits of liability for the Contractor provided insurance shall provide coverage for not less than the following amounts or greater where required by Laws and Regulations:

1. Workers' Compensation
 - a. State: Statutory
 - b. Applicable Federal: Statutory

- c. Employer's Liability Coverage B: \$250,000 each accident for bodily injury by accident; \$250,000 each employee for bodily injury by disease; \$500,000 policy limit for bodily injury by disease.
- 2. Commercial General Liability (ISO Form CG 00 01)
 - a. Bodily Injury (including completed operations and products liability:
 - 1) \$2,000,000 Each Occurrence
 - 2) \$2,000,000 Annual Aggregate
 - b. Property Damage:
 - 1) \$2,000,000 Each Occurrence
 - 2) \$2,000,000 Annual Aggregate, or
 - 3) a combined single limit of \$2,000,000
 - c. Property Damage liability insurance will provide Explosion, Collapse and Underground coverage where applicable.
 - d. Personal Injury, with employment exclusion deleted: \$2,000,000 Annual Aggregate
- 3. Comprehensive Automobile Liability:
 - a. Bodily Injury:
 - 1) \$2,000,000 Each Person
 - 2) \$2,000,000 Each Occurrence
 - b. Property Damage:
 - 1) \$2,000,000 Each Occurrence, or
 - 2) a combined single limit of \$2,000,000.

SC-5.05.A *Owner's Liability Insurance*

Delete paragraph 5.05.A of the General Conditions in its entirety.

SC-5.06.A *Property Insurance*

Delete paragraph 5.06.A of the General Conditions and replace it with the following (subparagraphs A.1 through A.7 shall remain):

A. Unless otherwise provided in these Supplementary Conditions, Contractor shall purchase and maintain property insurance upon the Work at the site to the full insurable value thereof (subject to such deductible amounts as may be provided in these Supplementary Conditions or required by law). This insurance shall include the interests of Owner, Contractor and Subcontractors in the Work, shall insure against perils of fire and extended coverage, shall include 'all risk' insurance for physical loss and damage including theft, vandalism and malicious mischief, collapse and water damage, and such other perils as may be provided in these Supplementary Conditions, and shall include damages, losses and expenses arising out of or resulting from any insured loss or incurred in the repair or replacement of any insured property (including fees and charges of engineers, architects, attorneys and other professionals). If not covered under the 'all risk' insurance or otherwise

provided in these Supplementary Conditions, Contractor shall purchase and maintain similar property insurance on portions of the Work stored on and off the site or in transit when such portions of the Work are to be included in an Application for Payment. The policies of insurance required to be purchased and maintained by Contractor in accordance with Paragraphs 5.6 and 5.7 shall contain a provision that the coverage afforded will not be canceled or materially changed until at least thirty days' prior written notice has been given to the Owner. The Contractor shall maintain such policies of insurance continuously from the date specified in the Notice to Proceed until the Initiation of Operation. This insurance shall:

SC-5.06.B *Property Insurance*

Delete Paragraph 5.06.B of the General Conditions in its entirety and replace it with the following:

B. Contractor shall purchase and maintain such boiler and machinery insurance or additional property insurance as required which will include the interests of Owner, Contractor, subcontractors, Engineer, and Engineer's consultants in the Work, all of whom shall be listed as insured or additional insured parties.

SC-5.06.C *Property Insurance*

Delete Paragraph 5.06.C of the General Conditions in its entirety and replace it with the following:

C. The form of policy for the property insurance provided by the Contractor shall be completed value. If the Owner is damaged by the failure of the Contractor to maintain such insurance, then the Contractor shall bear all reasonable costs properly attributable thereto.

SC-5.06.E *Property Insurance*

Delete Paragraph 5.06.E of the General Conditions in its entirety.

SC-6.02.B *Labor; Working Hours*

Add the following new sentence to the end of Paragraph 6.02.B of the General Conditions:

Regular Working Hours are defined as 7:00 a.m. to 4:00 p.m., Monday through Friday. Work requiring inspection by the Owner or Utility is to be scheduled for 9:00 a.m. to 4:00 p.m., Monday through Thursday and 9:00 a.m. to 12:00 noon on Fridays upon a minimum of forty-eight (48) hours advance notice for inspections.

SC-6.02.C *Labor; Working Hours*

Add the following to Paragraph 6.02 of the General Conditions:

C. Requests to work during other than normal working hours must be submitted to the Engineer at least 48 hours in advance of the period proposed for such overtime work and shall set forth the proposed schedule for overtime work to give Engineer ample time to arrange for his personnel to be at the site of the work.

SC-6.03.A.1*Services, Materials and Equipment*

Add the following to Paragraph 6.03.A of the General Conditions:

1. All water for testing, flushing, and construction shall be furnished by the Contractor. It may be available by connecting to the Owner's (or Utility's) water system at a point approved by the Owner and Utility. The Owner (or Utility) shall charge the Contractor for water used in performing the above functions in accordance with the Owner's (or Utility's) established rate schedule. There shall be installed in each and every connection to the Owner's (or Utility's) potable water supply a reduced pressure zone backflow preventer meeting the requirements of AWWA C511. Contractor shall be required to meter all water used.

SC-6.03.D*Services, Materials and Equipment*

Add the following to Paragraph 6.03 of the General Conditions:

D. Provisions of the Contract Documents relating to all materials and equipment and how they are to be applied, installed, connected, erected, used, cleaned, and conditioned does not assign the Engineer, or any of the Engineer's consultants, agents, or employees, any duty or authority to supervise or direct the furnishing or Performance of Work or any duty or responsibility contrary to the provisions of Paragraph 9.09.

SC-6.04.A.3*Progress Schedule*

Add the following to Paragraph 6.04.A of the General Conditions:

3. The Contractor is required to promptly take appropriate action to recover schedule whenever A) the Engineer anticipates significant slippage beyond the Contract Time, and orders schedule recovery in writing; or B) any Contractor progress schedule activity is shown as slipping, due to acts or omissions within the control of the Contractor, by 15 (fifteen) or more days beyond the Contract Time. Under no circumstances whatsoever is Contractor entitled to inefficiencies arising from or related to overtime, second shift, or premium work. Contractor is solely responsible for costs incurred to recover schedule delays resulting from Contractor's acts or omissions.

SC-6.05.A.2.d.5)*Substitutes and "Or Equals"*

Add the following to Paragraph 6.05.A.2.d of the General Conditions:

5) The application will also contain an itemized estimate of all delays or schedule impacts that will result directly or indirectly from reviews, acceptance and provision of such substitute. In reviewing such substitutes, the Engineer shall consult with Owner and attach items of particular importance to operation, maintenance, repair and part stocking and placement considerations including standardization with similar materials or equipment, existing or planned, within Owner's existing system or facilities.

SC-6.05.B*Substitutes and "Or Equals"*

Add the following to the end of Paragraph 6.05.B of the General Conditions:

Contractor's application for use of substitute materials, equipment, or specific means, methods, technique, or procedure of construction, including reasonable time for Engineer and his Consultant to review the substitution and redesign, if required, shall not be considered as an acceptable basis for Contractor not meeting the substantial completion date, nor as a basis for a time extension of the Contract Time.

SC-6.06.B*Concerning Subcontractors, Suppliers and Others*

Relating to Paragraph 6.06.B of the General Conditions, the Contractor shall note the following:

Subcontractors, Suppliers, or other persons or organizations (including those who are to furnish the principal items of materials and equipment for the project) are to be identified for evaluation after bid opening, submitted in accordance with the Instructions To Bidder.

SC-6.07.B*Patent Fees and Royalties*

Add the following to the end Paragraph 6.07.B of the General Conditions:

The Contractor shall defend all such claims in connection with any alleged infringement of such rights.

SC-6.08.B*Permits*

Add the following to Paragraph 6.08 of the General Conditions:

B. Owner shall obtain and pay for construction permits for the project as identified in the Bidding Documents. All such Owner furnished permits and approvals are either contained in the Bidding Documents or are available for inspection upon request. A copy will be furnished to the successful Bidder after the effective date of the Agreement upon his request, and Contractor will follow all conditions and provisions of these permits, applications, regulations and approvals as a part of this project work as much as if they were wholly repeated herein. It is the

Contractor's responsibility to apply to the local jurisdiction for any other required permits.

SC-6.11.A.4 *Limitation on Use of Site and Other Areas*

Add the following to Paragraph 6.11.A of the General Conditions:

4. Where the Contractor hauls Materials or Equipment to the Project over roads and bridges on the state park road system, state highway system, county road system, or city street system and such use causes damage, he shall immediately, at his expense, repair such road or bridge to as good a condition as before the hauling began.

SC-6.12.A *Record Documents*

Delete the last sentence of Paragraph 6.12.A of the General Conditions, and replace it with:

Upon completion of the Work, Contractor shall provide all such Samples to Owner, and copies of all such record documents and Shop Drawings shall be delivered to Engineer for Owner to the extent not previously provided.

SC-6.13.D *Safety and Protection*

Delete Paragraph 6.13.D of the General Conditions in its entirety and replace it with the following:

D. The Contractor's duties and responsibilities for safety and protection of the Work shall continue until such time as all the Work is completed and the certificate of final completion has been executed by the Owner, Engineer, and Contractor.

SC-6.13.E *Safety and Protection*

Add the following to Paragraph 6.13 of the General Conditions:

E. The Contractor shall implement traffic control in accordance with Temporary Traffic Control notes and details on the plans, in the technical specifications, and in accordance with FDOT and MUTCD requirements. The Contractor shall maintain traffic within the limits of the project for the duration of the construction period, including any temporary suspensions of work. It shall include the construction and maintenance of any necessary detour facilities; the providing of necessary facilities for access to residences and businesses along the project; the furnishing, installation and maintenance of traffic control and safety devices during construction; daily inspections of the traffic control devices (including nighttime inspections); replacement of all equipment and devices found not to be conforming with approved standards during the inspection; the control of dust, and any other special requirements for safe and expeditious movement of traffic as may be called for on the plans. The term

“Temporary Traffic Control” (also referred to as “Maintenance of Traffic”) shall include all such facilities, devices, and their operation as are required for the safety and convenience of the public as well as for minimizing public nuisance. This work shall also consist of the removal of existing pavement markings necessary in order to implement traffic control, temporary signs, and the removal or relocation of existing signs in order to implement traffic control. This work shall include any adjustments necessary to the traffic control devices under emergency conditions.

SC-6.17.D.2 *Shop Drawings and Samples*

Add the following after the first sentence Paragraph 6.17.D.2 of the General Conditions:

Engineer's approval shall also not extend to verification of actual field conditions.

SC-6.19.A *Contractor's General Warranty and Guarantee*

Delete Paragraph 6.19.A of the General Conditions in its entirety and replace it with the following:

A. The Contractor warrants and guarantees to the Owner and the Engineer that all work, labor, materials, equipment and services furnished and performed will be done in a good and workmanlike manner and will be of the highest quality, free from defects and in accordance with the Contract Documents. Each application for payment submitted by the Contractor to the Owner shall be deemed to constitute a confirmation, restatement, and reaffirmation by the Contractor of the foregoing warranty and guarantee, with respect to all work, labor materials, equipment and services performed and furnished for the Project through the date of such application. All defective work, whether or not in place, may be rejected, corrected, or accepted as provided in Paragraph 13. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:

SC-6.19.D *Contractor's General Warranty and Guarantee*

Add the following to Paragraph 6.19 of the General Conditions

D. Contractor warrants and guarantees all computer controlled components incorporated into the Work accurately process date and time data (including but not limited to, calculating, comparing, and sequencing) and leap year calculations. This includes the proper exchange of date and time data with other such components.

SC-6.21.B *Delegation of Professional Design Services*

Delete paragraph 6.21.B of the General Conditions in its entirety and replace it with the following:

B. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. As a minimum, the design shall comply with all federal, state, and local laws, regulations, ordinances, and codes. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.

SC-6.21.C *Delegation of Professional Design Services*

Delete paragraph 6.21.C of the General Conditions in its entirety and replace it with the following:

C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications or approvals performed by such design professionals.

SC-9.01.A *Owner's Representative*

Add the following to Paragraph 9.01.A of the General Conditions:

If they choose to do so, the Owner or the Engineer may provide a Resident Project Representative who will function as the Resident Project Representative during the construction period thereby giving the Owner additional representation during the construction phase in addition to the periodic visits and certain other designated limited services to be provided by the Engineer during construction.

SC-9.03.A *Project Representative*

Delete paragraph 9.03.A of the General Conditions in its entirety and replace it with the following:

A. If a Resident Project Representative is furnished by either the Owner or Engineer to assist Engineer in observing the performance of the Work, then the following Duties, Responsibilities, and Limitations of the authority of the Resident Project Representative and assistants are as shown herein:

1. The Resident Project Representative (RPR), assistants and other field staff will assist Engineer in observing performance of the work of Contractor. The RPR and assistants may be employees of the Engineer or they may be employees of the

Owner, depending on assignment based on availability, timing and scheduling.

2. The RPR, his assistants or other field staff, are not planned nor budgeted to be present full time at all work sites at all times while Contractor is working. Therefore there will be Contractor work that will not be observed. However, through more extensive periodic visits and onsite observations of the work in progress than provided through the Administration of Construction Work and by field check of materials and equipment by the RPR and assistants, Engineer shall endeavor to provide further protection for Owner against defects and deficiencies in the work of Contractor; but, the furnishing of such services will not make Engineer responsible for or give Engineer control over construction means, methods, techniques, sequences or procedures or for safety precautions or programs, or responsibility for Contractor's failure to perform the Work in accordance with the Contract Documents.

3. The duties and responsibilities of the RPR are limited to those of Engineer in Engineer's agreement with the Owner and in the construction Contract Documents, and are further limited and described as follows:

a. RPR is Engineer's representative at the site, will act as directed by and under the supervision of Engineer, and will confer with Engineer regarding RPR's actions. RPR's dealings in matters pertaining to the onsite work shall in general be with Engineer and Contractor keeping Owner advised as necessary. RPR's dealings with subcontractors shall only be through or with the full knowledge and approval of Contractor. RPR shall generally communicate with Owner with the knowledge of and under the direction of Engineer.

b. SCHEDULES: Review the progress schedule, schedule of Shop Drawing submittals and schedule of values prepared by Contractor and consult with Engineer concerning acceptability.

c. CONFERENCES AND MEETINGS: Attend meetings with Contractor, such as preconstruction conferences, progress meetings, job conferences and other project related meetings, and prepare and circulate copies of minutes thereof.

d. LIAISON:

1) Serve as Engineer's liaison with Contractor, working principally through Contractor's superintendent and assist in understanding the intent of the Contract Documents; and assist Engineer in serving as Owner's liaison with Contractor when Contractor's operations affect Owner's on-site operations.

2) Assists in obtaining from Owner additional details or information, when required for proper execution of the Work.

e. SHOP DRAWINGS AND SAMPLES:

1) Record date of receipt of Shop Drawings and samples.

2) Receive samples that are furnished at the site by Contractor, and notify Engineer of availability of samples for examination.

3) Advise Engineer and Contractor of the commencement of any Work requiring a Shop Drawing or sample if the submittal has not been approved by Engineer.

f. REVIEW OF WORK, REJECTION OF DEFECTIVE WORK, INSPECTIONS AND TESTS:

1) Conduct on-site observations of the Work in progress to assist Engineer in determining if the Work is in general proceeding in accordance with the Contract Documents.

2) Report to Engineer whenever RPR believes that any Work is unsatisfactory, faulty or defective or does not conform to the Contract Documents, or has been damaged, or does not meet the requirements of any inspection, test or approval required to be made; and advise Engineer of Work that RPR believes should be corrected or rejected or should be uncovered for observation, or requires special testing, inspection or approval.

3) Verify that tests, equipment and systems startups and operating and maintenance training are conducted in the presence of appropriate personnel, and that Contractor maintains adequate records thereof; and observe, record and report to Engineer appropriate details relative to the test procedures and startups.

4) Accompany visiting inspectors representing public or other agencies having jurisdiction over the Project, record the results of these inspections and report to Engineer.

g. INTERPRETATION OF CONTRACT DOCUMENTS: Report to Engineer when clarifications and interpretations of the Contract Documents are needed and transmit to Contractor clarifications and interpretations as issued by the Engineer.

h. RECORDS:

1) Maintain at the job site or other suitable location orderly files for correspondence, reports of job conferences, Shop Drawings and samples, reproductions of original Contract Documents including all Addenda, Change Orders, Field Orders, additional Drawings issued subsequent to the execution of the Contract, Engineer's clarifications and interpretations of the Contract

Documents, progress reports, and other Project related documents.

2) Prepare or obtain a diary or log book or marked up plans or sketches, photographs or videos, recording Contractor hours on the job site, weather conditions, data relative to questions of Change Orders or changed field conditions, changes in the Construction from the Contract Documents, list of job site visitors, daily activities, decisions, observations in general and specific observations in more detail as in the case of observing test procedures; and maintain records and send appropriate copies to Engineer.

3) Record names, addresses, and telephone numbers of all Contractors, subcontractors and major suppliers of materials and equipment.

i. REPORTS:

1) Furnish Engineer periodic reports as required of progress of the Work and of Contractor's compliance with the progress schedule and schedule of Shop Drawing and sample submittals.

2) Consult with Engineer in advance of scheduled major tests, inspections or start of important phases of the Work.

3) Draft proposed Change Orders, obtaining backup material from Contractor and recommend to Engineer Change Orders, and Field Orders.

4) Report immediately to Engineer and Owner upon the occurrence of any accident.

j. PAYMENT REQUESTS: Review applications for payment with Contractor for compliance with the established procedure for their submission and forward with recommendations to Engineer, noting particularly the relationship of the payment requests to the schedule of values, work completed, and materials and equipment delivered at the site but not incorporated in the Work.

k. CERTIFICATES, MAINTENANCE AND OPERATION MANUALS: During the course of the Work, verify that certificates, maintenance and operation manuals and other data required to be assembled and furnished by Contractor are applicable to the items actually installed and in accordance with the Contract Documents, and have this material delivered to Engineer for review and forwarding to Owner prior to final payment for the Work.

l. COMPLETION:

1) Before Engineer issues a Certificate of Substantial Completion, submit to Contractor a list of observed items requiring completion or correction.

2) Conduct final inspection in the company of Engineer, Owner and Contractor and prepare a final list of items to be completed or corrected.

- 3) Observe that all items on final list have been completed or corrected and make recommendations to Engineer concerning acceptance.
4. Limitations of Authority
 - a. Resident Project Representative
 - 1) Shall not authorize any deviation from the Contract Documents or substitution of materials or equipment, unless authorized by Engineer.
 - 2) Shall not exceed limitations of Engineer's authority as set forth in the Agreement or the Contract Documents.
 - 3) Shall not undertake any of the responsibilities of Contractor, subcontractors or Contractor's superintendent.
 - 4) Shall not advise on, issue directions relative to or assume control over any aspect of the means, methods, techniques, sequences or procedures of construction unless such advice or directions are specifically required by the Contract Documents.
 - 5) Shall not advise on, issue directions regarding or assume control over safety precautions and programs in connection with the Work.
 - 6) Shall not accept Shop Drawings or sample submittals from anyone other than Contractor.
 - 7) Shall not authorize Owner to occupy the Project in whole or in part.
 - 8) Shall not participate in specialized field or laboratory tests or inspections conducted by others except as specifically authorized by Engineer.

SC-9.09.F-G*Limitations on Engineer's Authority and Responsibilities*

Add the following to Paragraph 9.09

F. Whenever in the Contract Documents the terms "as ordered", "as directed", "as required", "as allowed", "as approved", or terms of like effect or import are used, or the adjectives "reasonable", "suitable", "acceptable", "proper", or "satisfactory" or adjectives of like effect or import are used to describe a requirement, direction, review, or judgment of the Engineer as to the Work, it is intended that such requirement, direction, review or judgment will be solely to evaluate the Work for compliance with the Contract Documents unless there is a specific statement indicating otherwise. The use of any such term or adjective shall not be effective to assign to the Engineer any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of Paragraph 9.09.

G. Engineer's recommendation for any payment, including final payment, shall not mean that Engineer is responsible for Contractor's means, methods, techniques, sequences or procedures of construction,

or the safety precautions and programs incident hereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the furnishing or performance of Work, or for any failure of Contractor to perform or furnish work in accordance with the Contract Documents.

SC-10.03.A.4 *Execution of Change Orders*

Add the following to Paragraph 10.03.A of the General Conditions:

4. Change Orders shall constitute a full accord and satisfaction of all costs of whatever nature, direct or indirect, arising from or related to the change, including, without limitation, impact on unchanged base contract work.

SC-10.05.B *Claims and Disputes*

In Paragraph 10.05.B of the General Conditions, change the time frame in which the opposing party must submit its response to the Engineer regarding the claimant's request from 30 days to 14 days, unless the Engineer allows additional time.

SC-10.05.F *Claims*

Add the following to the end of Paragraph 10.05.F of the General Conditions:

"including, without limitation, written notice requirements."

SC-10.05.G *Claims*

Add the following to Paragraph 10.05 of the General Conditions:

G. No action, either at law or at equity, shall be brought in connection with any such claim, dispute or other matter later than thirty days after the date on which Engineer has rendered such written decision in respect thereof. Failure to bring an action within said thirty days' period shall result in Engineer's decision being final and binding upon Owner and Contractor. In no event may any such action be brought after the time at which instituting such proceedings would be otherwise barred by the applicable statute of limitations.

SC-11.01.A.4 *Cost of the Work*

Delete "attorneys" from the list of special consultants in Paragraph 11.01.A.4 of the General Conditions

SC-11.03.D *Unit Price Work*

Delete Paragraph 11.03.D, including subparagraphs 11.03.D.1, 11.03.D.2, and 11.03.D.3 of the General Conditions in their entirety and replace them with the following:

D. The Owner reserves the right to alter the Drawings, modify incidental work as may be necessary, and increase or decrease quantities of work to be performed to accord with such changes, including deduction or cancellation of any one or more of the Pay Items. Changes in the work shall not be considered as a waiver of any conditions of the Contract nor invalidate any provisions thereof. When changes result in changes in quantities of Work to be performed, the Contractor will accept payment according to Contract Unit Prices that appear in the original Contract. Owner or Contractor may make a Claim for an adjustment in the Contract Price in accordance with paragraph 10.05 if:

1. If the total cost of a particular item of Unit Price Work amounts to 10% or more of the Contract Price and the variation in the quantity of that particular item of Unit Price Work performed by Contractor differs by more than 25% from the estimated quantity of such item indicated in the Proposal or Agreement; and
2. If there is no corresponding adjustment with respect to any other item of Work; and
3. If Contractor believes that it has incurred additional expense as a result thereof; or
4. If Owner believes that the quantity variation entitles it to an adjustment in the unit price, either Owner or Contractor may make a claim for an adjustment in the Contract Price in accordance with Article 12 if the parties are unable to agree as to the effect of any such variations in the quantity of Unit Price Work performed.

SC-12.02.C-E*Change of Contract Times*

Add the following to Paragraph 12.02 of the General Conditions:

C. The Contractor agrees that said work shall be prosecuted regularly, diligently and without interruption at such rate of progress as will insure full completion thereof within the time specified. It is expressly understood and agreed, by and between the Contractor and the Owner that the time for the completion of the work described herein is a reasonable time for the completion of the same. If the Contractor shall neglect, fail or refuse to complete the work within the time herein specified, or any proper extension thereof granted by the Owner, then the Contractor does hereby agree as a part consideration for the awarding of this contract to pay to the Owner the amount specified elsewhere in these documents, not as a penalty, but as liquidated damages for each and every calendar day that the Contractor shall be in default after the time stipulated in the Contract for completing the work.

D. It is further agreed that time is of the essence of each and every portion of this contract and of the specifications wherein a definite and certain length of time is fixed for performance of any act whatsoever; and

where under the contract an additional time allowed for the completion of any work, the new time limit fixed by such extension shall be of the essence of this contract. Provided that the Contractor shall not be charged with liquidated damages or any excess cost when the Owner determines that the Contractor is without fault and the Contractor's reasons for the time extension are acceptable to the Owner.

E. The submission of the Bid shall be an indication that the Contractor has considered normal local weather conditions (daily and monthly variations) for the previous ten years from the date of the Bid as compiled by a national, state, or regional weather station which is within 25 miles of the project location. Contractor should consider and include the impact of normal local weather conditions on construction scheduling and sequencing when preparing the Bid. No claim shall be allowed based upon the schedule impact of normal local weather conditions.

SC-12.03.B*Delays*

Add the following to the end of Paragraph 12.03.B of the General Conditions:

Contractor's entitlement to an equitable adjustment of its Contract Price hereunder shall be for its direct, jobsite costs only. In no event shall it be entitled to recovery of indirect, offsite, or home office costs allegedly arising from or related to delays under this Paragraph 12.03.B.

SC-12.03.C*Delays*

Add the following to the end of Paragraph 12.03.C of the General Conditions:

In no event shall Contractor be entitled to an adjustment in Contract Price for delays described in this Paragraph 12.03.C.

SC-12.03.F*Delays*

Add the following to Paragraph 12.03 of the General Conditions:

F. Neither Engineer or Owner are liable to Contractor or its surety, or any of Contractor's Subcontractors or Suppliers for damages caused by delays within the control of or reasonably anticipatable by Contractor or delays beyond control of Owner or Contractor such as fire, flood, epidemic, abnormal weather conditions, acts of God, acts or failures to act of utility owners not under the control of Owner.

SC-13.03.B*Tests and Inspections*

Delete Paragraph 13.03.B, including subparagraphs 13.03.B.1, 13.03.B.2, and 13.03.B.3 of the General Conditions in their entirety and replace them with the following:

B. The Contractor shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents except when otherwise specified by the Contract Documents.

SC-13.03.G *Tests and Inspections*

Add the following to Paragraph 13.03 of the General Conditions:

G. Neither observations by the Engineer nor inspections, tests, or approvals by others shall relieve the Contractor from the Contractor's obligations to perform the Work in accordance with the Contract Documents.

SC-13.04.C *Uncovering Work*

Delete the first parenthetical grouping in paragraph 13.04.C of the General Conditions that states, "(including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs)" and replace the deleted text with the following:

"(including but not limited to all fees and charges of engineers, architects and other non-legal professionals)"

SC-13.06.A *Correction or Removal of Defective Work*

Delete the first parenthetical grouping in paragraph 13.06.A of the General Conditions that states, "(including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs)" and replace the deleted text with the following:

"(including but not limited to all fees and charges of engineers, architects and other non-legal professionals)"

SC-13.08.A *Acceptance of Defective Work*

Delete the second parenthetical grouping in paragraph 13.08.A of the General Conditions that states, "(including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs)" and replace the deleted text with the following:

"(including but not limited to all fees and charges of engineers, architects and other non-legal professionals)"

SC-13.09.C *Owner May Correct Defective Work*

Delete the first parenthetical grouping in paragraph 13.09.C of the General Conditions that states, "(including but not limited to all fees and

charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs)” and replace the deleted text with the following:

“(including but not limited to all fees and charges of engineers, architects and other non-legal professionals)”

SC-14.02.A.2 *Application for Payments*

Delete Paragraph 14.02.A.2 of the General Conditions in its entirety and replace it with the following:

2. Each Application for Payment shall include an affidavit of Contractor, in the form of the “Partial Release of Lien”, stating that the Contractor releases a part of its lien, and quit claims all liens, lien rights, claims or demands of every kind to the Owner on the part released. The amount released shall be for the amount of Work completed through previous applications for payment.

SC-14.02.B.5.e-j *Review of Applications*

Add the following paragraphs to Paragraph 14.02.B.5 of the General Conditions:

e. The Work for which payment is requested cannot be verified,

f. Claims or Liens have been filed or there is reasonable evidence indicating the probable filing thereof,

g. Of unsatisfactory prosecution of the Work, including failure to clean up as required by the Contract Documents;

h. Of persistent failure to cooperate with other contractors on the Project and persistent failure to carry out the Work in accordance with the Contract Documents;

i. Of liquidated damages payable by the Contractor; or

j. Of any other violation of, or failure to comply with, the provisions of the Contract Documents.

SC-14.02.C.1 *Payment Becomes Due*

Delete Paragraph 14.02.C.1 of the General Conditions in its entirety and replace it with the following:

1. Upon receipt of the Application for Payment to Owner with Engineer’s recommendation, the amount recommended will (subject to the provisions of paragraph 14.02.D) become due, and when due will be paid by Owner to Contractor. Owner will endeavor to make payment to

Contractor within 30 days upon receipt of the Application for Payment from Engineer.

SC-14.09.B*Waiver of Claims*

Add the following to Paragraph 14.09 of the General Conditions:

B. The Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. Neither recommendation of any progress or final payment by the Engineer, nor the issuance of a certificate of Substantial Completion, nor any payment by the Owner to the Contractor under the Contract Documents, nor any use or occupancy of the Work or any part thereof by the Owner, nor any act of acceptance by the Owner nor any failure to do so, nor any review and approval of a Shop Drawing or sample submission, nor the issuance of a notice of acceptability by the Engineer pursuant to Paragraph 14.07.B, nor any correction of defective work by the Owner will constitute an acceptance of Work not in accordance with the Contract Documents or a release of the Contractor's obligation to perform the Work in accordance with the Contract Documents.

SC-15.02.A.5-8*Owner May Terminate for Cause*

Add the following to Paragraph 15.02.A of the General Conditions:

5. If the Contractor commences a voluntary case under any chapter of the Bankruptcy Code (Title 11, United States Code), as now or hereafter in effect, or if the Contractor takes any equivalent or similar action by filing a petition or otherwise under any federal or state law in effect at such time relating to bankruptcy or insolvency;

6. If a petition is filed against the Contractor under any chapter of the Bankruptcy Code as now or hereafter in effect at the time of filing, or if a petition is filed seeking any such equivalent or similar relief against the Contractor under any other federal or state law in effect at the time relating to bankruptcy or insolvency

7. If the Contractor makes a general assignment for the benefit of creditors;

8. If a trustee, receiver, custodian or agent of the Contractor is appointed under applicable law or under contract, whose appointment or authority to take charge of property of the Contractor is for the purpose of enforcing a Lien against such property or for the purpose of general administration of such property for the benefit of the Contractor's creditors.

SC-15.02.C*Owner May Terminate for Cause*

Delete the parenthetical grouping in paragraph 15.02.C of the General Conditions that states, "(including but not limited to all fees and charges

of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs)” and replace the deleted text with the following:

“(including but not limited to all fees and charges of engineers, architects and other non-legal professionals)”

SC-15.02.G*Owner May Terminate for Cause*

Add the following to Paragraph 15.02 of the General Conditions:

G. If after notice of termination as provided for in this Paragraph 15.02, it is determined by a court of competent jurisdiction for any reason that Contractor was not in default or that its default was excusable or that Owner was not entitled to exercise its default remedies, the termination shall be deemed to be a termination for convenience pursuant to Paragraph 15.03 and Contractor’s remedies shall be the same as and shall be limited to those afforded by Paragraph 15.03.

SC-15.03.A*Owner May Terminate for Convenience*

Delete Paragraph 15.03.A of the General Conditions in its entirety, including subparagraphs 15.03.A.1, 15.03.A.2, 15.03.A.3, and 15.03.A.4, and replace it with the following:

A. The Owner may terminate this Contract in whole or in part for its convenience, without cause, provided that the Contractor is given not less than seven (7) calendar days written notice and an opportunity for consultation with the Owner prior to termination.

1. When the Contract is terminated for the Owner’s convenience, the Contract Price shall be reduced in the proportion to which the canceled or incomplete Work relates to all the Work to be done by Contractor upon the Project. In such event, Contractor shall and hereby does release and discharge the Owner and Engineer from any and all claims arising out of, or as a result of such cessation or cancellation and termination; provided, however, that in any and all such events, Contractor shall be entitled to receive payment from the Owner based on applicable unit prices for contract work already done and performed in accordance with the Contract Documents and not yet paid for, with reimbursement for any actual and provable loss incurred by Contractor with respect to materials, equipment and subcontractors (e.g. reasonable cancellation charges, if any, payable to subcontractors and suppliers and demobilization costs.)

SC-15.05.A-C*Owner May Stop Work*

Add the following new paragraphs 15.05.A-C to Article 15 of the General Conditions:

15.05 Owner May Stop Work

A. The Owner may, but is not obligated to, stop work if any one or more of the following occur:

1. Contractor fails to perform the Work in compliance with the required Temporary Traffic Control provisions.
2. Contractor does not provide the required competent resident superintendent at all times during the progress of the Work.
3. Contractor fails to furnish or perform the Work in such a way that the completed Work will conform to the Contract Documents.
4. Contractor fails to obtain, maintain, or renew insurance in conformance with the Contract Documents, or if any insurance company Contractor has obtained insurance with has declared bankruptcy or is declared bankrupt.
5. Contractor fails to prosecute the Work without endangering persons or property.

B. If one or more of the events identified in paragraph 15.05.A occur, Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated. Any stop of Work order issued by Owner does not give control or responsibility over supervision of the Work, construction means, methods, techniques, sequences or procedures or for safety precautions or programs to Owner or Engineer. During the stoppage of the Work, the Contractor is fully responsible for maintaining all safety and protection requirements in accordance with the General and Supplementary Conditions. If Owner does not stop Work, whether at its discretion or because it is unaware of an occurrence that could cause it to issue a stop Work order, continuation of the Work without stoppage does not make the Owner or Engineer responsible for the safety and protection of the Work.

C. Contractor shall bear all direct costs (including but not limited to fees and charges of engineers, architects and other non-legal professionals, any additional expenses incurred by Owner due to delay of others performing Work under a separate contract) of any stoppage of Work order issued by Owner in accordance with paragraphs 15.05.A and 15.05.B. Contractor shall further bear the responsibility for maintaining the Progress Schedule and shall not be entitled to any extension of Contract Time or increase in Contract Price.

SC-16.01.A-F

Methods and Procedures (Dispute Resolution)

Delete Paragraph 16.01 of the General Conditions in its entirety, including subparagraphs 16.01.A, 16.01.B, 16.01.C, 16.01.C.1, 16.01.C.2, and 16.01.C.3, and replace them with the following new Paragraphs:

A. The chosen method for dispute resolution for this project is mediation. Mediation pursuant to this Paragraph shall be treated as compromise and settlement negotiations for purposes of the Florida Rules and Evidence.

B. As provided above, the parties shall endeavor to settle the dispute by mediation. The proceeding will be conducted in accordance with the then current Center For Public Resources (“CPR”) Model Procedure for Mediation of Business Disputes, with the following exceptions:

1. If the parties have not agreed within ten (10) days of the request for mediation on the selection of a mediator willing to serve, the CPR, upon the request of either party, shall appoint a member of the CPR Panels of Neutrals as the mediator, and

2. Efforts to reach a settlement will continue until the conclusion of the proceeding, which is deemed to occur when: (a) a written settlement is reached, or (b) the mediator concludes and informs the parties in writing that further efforts would not be useful, or (c) the parties agree in writing that an impasse has been reached. Neither party may withdraw before the conclusion of the proceeding.

C. The parties regard the aforesaid obligation to mediate as essential provision of this Agreement and one that is legally binding on them. In case of a violation of such obligation by either party, the other may bring an action to seek enforcement of such obligation in any court of law having jurisdiction thereof.

D. The parties shall share the mediator’s fee and any filing fees equally. The mediation shall be held in the place where the project is located, unless another location is mutually agreed upon.

E. If the dispute has not been resolved by mediation as provided herein within one hundred twenty (120) days of the initiation of such mediation procedure, either party may initiate litigation upon ten (10) days’ written notice to the other party.

F. All applicable statutes of limitation and defenses based upon the passage of time shall be tolled while the procedures specified in this Section are pending. The parties will take such action, if any, required to effectuate such tolling.

SC-16.02

Methods and Procedures (Dispute Resolution)

Add the following new paragraph 16.02.A to Article 16 of the General Conditions:

16.02 *Methods and Procedures (Dispute Resolution)*

A. Litigation arising out of or related to this contract shall be governed by the laws of Florida and adjudicated in the courts of the County within which the project is located.

SC-17.01.A.3

Giving Notice

Add the following to Paragraph 17.01.A of the General Conditions:

3. The parties' obligation to provide written notice under this Agreement may not be waived. Electronic or computerized mail is not an acceptable form of delivery of notices required by this Contract. The parties expressly and unequivocally waive any claim against the other based upon actual, verbal, or constructive notices. All written notice requirements are to be strictly construed and are a non-waivable condition precedent to pursuing any claims, rights, or remedies by under this Agreement.

SC-17.07.A

Mutual Waiver of Consequential Damages

Add the following new Paragraph 17.07.A to Article 17 of the General Conditions:

17.07 Mutual Waiver of Consequential Damages

A. Except to the extent of liquidated damages payable by Contractor under this Agreement and the express third party claim indemnification obligations of the parties hereunder, in no event shall either Owner or Contractor be liable to the other party under any legal theory whatsoever for consequential, incidental, punitive or exemplary damages of any nature whatsoever.

SC-17.08.A

Waiver of Jury Trial

Add the following new Paragraph 17.08.A to Article 17 of the General Conditions:

17.08 Waiver of Jury Trial

A. The parties hereby expressly agree that all disputes, claims, and counterclaims relating to this Agreement and the project shall be litigated, adjudicated, or otherwise resolved without a jury. The parties expressly, voluntarily, and unequivocally waive any right they may have to a jury trial in connection with all disputes, claims, and counterclaims relating to this Agreement and the project.

END OF SECTION

SECTION 00930

CONSTRUCTION PHASE REQUEST FOR INFORMATION

RFI No.: _____

Date Submitted: _____

Name of Project: _____

Owner: _____

Contractor: _____

RFI From: _____

Description of Request:

Response to Request:

Response By:

Date of Response:

END OF SECTION

SECTION 00940

PROJECT FIELD ORDER FORM

Field Order No.: _____

Name of Project: _____

Effective Date: _____

Owner: _____

Contractor: _____

Description of Field Order:

Reason for Field Order:

This Field Order has been issued to clarify, interpret or to order minor changes to the Project which do not affect the Contract Price or Contract Time.

Recommended By:

CPH Consulting, LLC.

Date

Executed By:

Owner's Authorized Representative

Date

Contractor's Authorized Representative

Date

END OF SECTION

SECTION 00945

WORK CHANGE DIRECTIVE FORM

Work Directive No.: _____

Name of Project: _____

City P.O. No.: _____

Agreement Date: _____

Owner: City of Everglades City

Contractor: _____

Description of Change:

Reason for Change:

If a claim is made that the above change(s) have affected Contract Price or Contract Time, any claim for a Change Order based thereon will involve one of the following methods of determining the effect of the change(s).

Method of Determining the Change in Contract Price

_____ Time and Materials
_____ Unit Prices
_____ Cost Plus Fixed Fee
_____ Other

Estimated change in Contract Price = \$_____. If the change involves an additional increase, estimated amount is not to be exceeded without further authorization.

Method of Determining the Change in Contract Time

____ Contractor's Records
____ Engineer's Records
____ As Specified Below
____ Other

Estimated change in Contract Time = _____ days. If the change involves an additional increase, estimated time is not to be exceeded without further authorization.

Recommended By:

CPH Consulting, LLC.

Date

Executed By:

Owner's Authorized Representative

Date

Contractor's Authorized Representative

Date

END OF SECTION

SECTION 00950**CHANGE ORDER FORM****Change Order No.** _____**Project Name:** _____**Bid No.:** _____ **IFB No.** _____**City P.O. No.:** _____**Owner:** _____ City of Everglades City**Contractor:** _____**Agreement Date:** _____

This Change Order is necessary to cover changes in the Work to be performed under the Agreement. The Agreement, General Conditions, Supplementary Conditions, and Technical Specifications contained in the Project Manual apply to and govern all Work under this Change Order.

THE FOLLOWING CHANGES ARE MADE TO THE CONTRACT DOCUMENTS:

1. Original Contract Price	\$	_____
2. Current Contract Price (Adjusted by Previous Change Orders)	\$	_____
3. Total Proposed Change in Contract Price	\$	_____
4. New Contract Price (Item 2 + Item 3)	\$	_____
5. Original Contract Time (Notice to Proceed to Substantial Completion)	Days	_____
6. Current Contract Time (Adjusted by Previous Change Orders)	Days	_____
7. Current Subst. Completion Date (Adjusted by Previous Change Orders)		_____
8. Total Proposed Change in Contract Time	Days	_____
9. New Contract Time (Item 6 + Item 8)	Days	_____
10. New Contract Substantial Completion Date (Item 7 + Item 8)		_____
11. Current Final Completion Date (Adjusted by Previous Change Orders)		_____
12. Current Contract Time From Substantial Completion to Final Completion	Days	_____
13. Total Proposed Change in Contract Time Subst. to Final Completion	Days	_____
14. New Contract Time to Subst. Final Completion (Item 12 + Item 13)	Days	_____
15. New Contract Final Completion Date (Item 10 + Item 14)		_____

CHANGES ORDERED

ITEM 1

Description of Change:

Reason for Change:

Change in Contract Price: \$

Change in Contract Time: Days

ITEM 2

Description of Change:

Reason for Change:

Change in Contract Price: \$

Change in Contract Time: Days

ITEM 3

Description of Change:

Reason for Change:

Change in Contract Price: \$

Change in Contract Time: Days

ITEM 4

Description of Change:

Reason for Change:

Change in Contract Price: \$

Change in Contract Time: Days

ITEM 5

Description of Change:

Reason for Change:

Change in Contract Price: \$

Change in Contract Time: Days

ITEM 6

Description of Change:

Reason for Change:

Change in Contract Price: \$

Change in Contract Time: Days

CHANGE ORDER SUMMARY			
No.	Description	Change in Contract Price	Change in Contract Time
TOTAL		\$	Days

WAIVER This Change Order constitutes full and mutual accord and satisfaction for the adjustment of the Contract Price and Contract Time as a result of increases or decreases in cost and time of performance caused directly and indirectly from the change. Acceptance of this Waiver constitutes an agreement between OWNER and CONTRACTOR that the Change Order represents an equitable adjustment to the Agreement and that CONTRACTOR shall waive all rights to file a Contract Claim or claim of any nature on this Change Order. Execution of this Change Order shall constitute CONTRACTOR's complete acceptance and satisfaction that it is entitled to no more costs or time (direct, indirect, impact, etc.) pursuant to this Change Order.

APPROVAL AND CHANGE ORDER AUTHORIZATION

ACKNOWLEDGMENTS

The aforementioned change, and work affected thereby, is subject to all provisions of the original Agreement and specifically changed by this Change Order; and

It is expressly understood and agreed that the approval of the Change Order shall have no effect on the original Agreement other than matters expressly provided herein.

WITNESS to CONTRACTOR:

Contractor

Printed Name and Title of Officer

Date

By (Signature)

Date

(Corporate Seal)

ATTEST:

Owner

(Signature)

Printed Name and Title

Date

By (Signature)

(Seal)

Date

END OF SECTION

**SECTION 01001
GENERAL WORK REQUIREMENTS**

PART 1 - GENERAL

1.01 Description

- A. The Contractor shall perform the Work complete, in place, and ready for continuous service, and shall include repairs, testing, permits, clean up, replacements, and restoration required as a result of damages caused during this construction.
- B. The Contractor shall comply with all City, County, State, Federal, and other codes, which are applicable to the proposed Work.
- C. All newly constructed Work shall be carefully protected from injury in any way. No wheeling, walking, or placing of heavy loads other than those that the equipment is intended to accommodate on it shall be allowed and all portions damaged shall be replaced or reconstructed by the Contractor at their own expense.
- D. Scope of Work: See Section 01010 "Summary of Work" and the Bid Schedule for details.

1.02 Drawings and Project Manual

- A. The Work shall be performed in accordance with the Drawings and Specifications prepared by the City/Professional. All work and materials shall conform to the City of Everglades Engineering Standards Manual, latest edition or as indicated in these Specifications or Drawings.
- B. The Contractor shall verify all dimensions, quantities and details shown on the Drawings, Supplementary Drawings, Schedules, Specifications or other data received from the City/Professional, and shall notify same, in writing, of all errors, omissions, conflicts and discrepancies found therein. Failure to discover or correct errors, conflicts or discrepancies shall not relieve the Contractor of full responsibility for unsatisfactory Work, faulty construction or improper operation resulting there from, nor from rectifying such conditions at his own expense.
- C. All schedules are given for the convenience of the City and the Contractor and are not guaranteed to be complete. The Contractor shall assume all responsibility for the making of estimates of the size, kind, and quantity of materials and equipment included in the Work to be done under this Contract.
- D. Intent:

1. All Work called for in the Specifications applicable to this Contract, but not shown on the Drawings in their present form, or vice versa, shall be of like effect as if shown or mentioned in both. Work not specified either in the Drawings or in the Specifications, but involved in carrying out their intent or in the complete and proper execution of the Work, is required and shall be performed by the Contractor as though it were specifically delineated or described.
2. Items of material, equipment, machinery, and the like may be specified on the Drawings and not in the Specifications. Such items shall be provided by the Contractor in accordance with the specification on the Drawings.
3. The apparent silence of the Specifications as to any detail, or the apparent omission from them of a detailed description concerning any Work to be done and materials to be furnished, shall be regarded as meaning that only the best general practice is to prevail and that only material and workmanship of the best quality is to be used, and interpretation of these Specifications shall be made upon that basis.

E. Refer to the Contract for the order of precedence of items and documents.

1.03 Protection and Restoration

A. The Contractor shall be responsible for the preservation of all public and private property, and shall use every means of protection necessary to prevent damage thereto. If any direct or indirect damage is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the Work on the part of the Contractor, such property shall be restored by the Contractor, at their expense, to a condition similar or equal to that existing before the damage was done, or the Contractor shall make good the damage in other manner acceptable to the City/Professional.

B. Protection of Trees and Shrubs

1. Protect with boxes or other barricades.
2. Do not place excavated material so as to injure trees or shrubs.
3. Install pipelines in short tunnels between and under root systems.
4. Support trees to prevent root disturbance during nearby excavation.

C. Tree and Limb Removal

1. Tree limbs, which interfere with equipment operation and are approved for pruning, shall be neatly trimmed and the tree cut coated with tree paint.

2. The City may order the Contractor, for the convenience of the City, to remove trees along the line or trench excavation. The Contractor shall obtain any permits required for removal of trees. Ordered tree removal shall be paid for under the appropriate Contract Items.
- D. Trees or shrubs destroyed by negligence of the Contractor or his employees shall be replaced by the Contractor with new stock of similar size and age, at the proper season and at the sole expense of the Contractor.
- E. Lawn Areas: All lawn areas disturbed by construction shall be replaced with like kind to a condition similar or equal to that existing before construction. Where sod is to be removed, it shall be carefully removed, and the same re-sodded, or the area where sod has been removed shall be restored with new sod in the manner described in the applicable section.
- F. Where fencing, walls, shrubbery, grass strips or area must be removed or damaged incident to the construction operation, the Contractor shall, after completion of the work, replace or restore to the original condition.
- G. The cost of all labor, materials, equipment, and work for restoration shall be deemed included in the appropriate Contract Item or items, or if no specific item is provided therefore, as part of the overhead cost of the Work, and no additional payment will be made therefore.

1.04 Public Nuisance

- A. The Contractor shall not create a public nuisance including, but not limited to, encroachment on adjacent lands, flooding of adjacent lands, or excessive noise.
- B. Sound levels measured by the City/Professional shall not exceed 45 dBA from 8 p.m. to 8 a.m. or 55 dBA 8 a.m. to 8 p.m. This sound level shall be measured at the exterior of the nearest exterior wall of the nearest residence or business. Levels at the equipment shall not exceed 85 dBA at any time. Sound levels in excess of these values are sufficient cause to have the Work halted until equipment can be quieted to these levels. Work stoppage by the City/Professional for excessive noise shall not relieve the Contractor of the other portions of this specification including, but not limited to, completion dates and bid amounts.
- C. No extra charge may be made for time lost due to work stoppage resulting from the creation of a public nuisance.

1.05 Contractor's Payments to City for Overtime Work

- A. City Inspector Work Hours: Normal work hours for the City's inspector(s) are defined as any 8-hour period between the hours of 7:00 a.m. and 3:30 p.m. on the weekdays of Monday through Friday. Any City Inspector(s) work beyond the aforementioned normal work hours shall be requested in writing 48-hours in advance. All overtime, any City

holidays or weekend work compensation for the City's Inspector(s) to work beyond the normal working hours are considered overtime compensation and shall be paid for by the Contractor.

1.06 Maintenance of Service

- A. Unless noted otherwise on the plans, the operation of the park lift stations shall be maintained in service at all times. The Contractor shall, prior to interrupting any in the system, for the purpose of making cut-ins to the existing lines or for any other purposes, contact the City and make arrangements for the interruption which will be satisfactory to the City.
- B. Utility lines that are damaged during construction shall be repaired by the Contractor and service restored within 4-hours of the breakage. The City retains the option of repairing any damage to utility pipes in order to expedite placing the line back into service. The Contractor will remain responsible for all costs associated with the repair.

1.07 Transfer of Service

- A. When the City has accepted a proposed facility and placed it into operation, the transfer of service is complete. The Contractor may begin the work of removing the existing or temporary facilities.

1.08 Labor

- A. Supervision: The Contractor shall supervise and direct the Work efficiently and with his best skills and attention. The Contractor shall have a competent, English speaking superintendent or representative, who shall be on the site of the Project at all working hours, and who shall have full authority by the Contractor to direct the performance of the Work and make arrangements for all necessary materials, equipment, and labor without delay.
- B. Jurisdictional Disputes: It shall be the responsibility of the Contractor to pay all costs that may be required to perform any of the Work shown on the Drawings or specified herein to avoid any work stoppages due to jurisdictional disputes. The basis for subletting work in question, if any, shall conform to precedent agreements and decisions on record with the Building and Construction Trades Department, AFL-CIO, dated June, 1973, including any amendments thereto.
- C. Apprenticeship: The Contractor shall comply with all of the requirements of Section 446, Florida Statutes, for all contracts in excess of \$25,000 excluding roadway, highway or bridge contracts and the Contractor agrees to insert in any subcontract under this Contract the requirements of this Article.

1.09 Materials and Equipment

A. Manufacturer

1. All transactions with the manufacturers or Subcontractors shall be through the Contractor, unless the Contractor and the City/Professional request that the manufacturer or Subcontractor communicate directly with the City/Professional. Any such transactions shall not in any way release the Contractor from his full responsibility under this Contract.
2. All workmanship and materials shall be of the highest quality. The equipment shall be the product of manufacturers who are experienced and skilled in the field with an established record of research and development. No equipment will be considered unless the manufacturer has designed and manufactured equipment of comparable type and size and have demonstrated sufficient experience in such design and manufacture.
3. No material shall be delivered to the Site without prior approval of the City/Professional.
4. All apparatus, mechanisms, equipment, machinery, and manufactured articles for incorporation into the Project shall be new (and the most current production at time of bid) and unused standard products of recognized reputable manufacturers.
5. Manufactured and fabricated products:
 - a. Design, fabricate and assemble in accord with the best engineering and shop practices.
 - b. Manufacture like parts of duplicate units to standard sizes and gauges, to be interchangeable.
 - c. Any two or more pieces of material or equipment of the same kind, type or classification, and being used for identical types of service, shall be made by the same manufacturer.
 - d. Products shall be suitable for service conditions as specified and as stated by manufacturer.
 - e. Equipment capacities, sizes and dimensions shown or specified shall be adhered to unless variations are specifically approved in writing.
 - f. Do not use material or equipment for any purpose other than that for which it is designed or is specified.

1.10 Manufacturer's Service

- A. Where service by the manufacturer is specified to be furnished as part of the cost of the item of equipment, the Work shall be at the Contractor's expense.
- B. The services provided shall be by a qualified manufacturer's service representative to check and verify the completed installation, place the equipment in operation, and instruct the City's operators in the operation and maintenance procedures. Such services are to be for period of time and for the number of trips specified. A working day is

defined as a normal 8-hour working day on the job and does not include travel time.

- C. The services shall further demonstrate to the City/Professional's complete satisfaction that the equipment will satisfactorily perform the functions for which it has been installed.

1.11 Inspection and Testing

A. General

1. The City Engineer (or other appropriate official) shall carry out inspection and testing of all improvements during construction and following the completion of each stage of construction to ensure compliance with the approved plat or plan. Representatives of the City shall visit the project site to make a visual inspection of the progress of the work and methods of construction. If it is determined that it was not done in accordance with the approved construction documents, the City will notify the Contractor and the Developer/Owner and request that the necessary corrections be made or tests performed to assure compliance with the approved construction documents. The City Engineer or the Inspection Supervisor may issue stop work orders if corrections are not made as instructed.
2. The City of Everglades uses an automated inspection scheduling system "Prompt" and online services to schedule inspections. "Prompt" is accessed by calling (407)-246-4444. To schedule online go to www.cityofeverglades.org/permits. To schedule an inspection the system requires your permit number and an inspection code found in the Prompt instruction brochure. For more information or a copy of the "Prompt" brochure call (407) 246-2271. Failure by the Contractor to schedule inspections will delay the project and can result in non-acceptance by the City of the work in place. All required inspections on City-owned projects shall be scheduled with the appropriate Capital Improvements Construction Manager or Field Representative. Contractor/Owner/Developer will be responsible to uncover any work not inspected and approved prior to burial.
3. Except as noted in the permit conditions, all inspections at the site shall be performed during normal working hours. Normal working hours are between 7:30 a.m. and 3:30 p.m., exclusive of weekends and holidays. The Contractor may schedule inspections other than the normal working hours only after giving written notice to Permitting Services 48 hours prior to the work requiring inspection.
4. All materials and equipment furnished by the Contractor shall be subject to the inspection, review and acceptance of the City and meet the requirements as outlined in the City of Everglades Engineering Standards Manual. If in the testing of any material or equipment it is ascertained by the City/Professional that the material or equipment does not comply with the Contract, the Contractor shall be notified thereof, and the Contractor will be directed to refrain from delivering said material or equipment, or to remove it promptly from the Site or from the Work and not accepted by the City shall be replaced with acceptable material, without cost to the City.

5. Tests of electrical and mechanical equipment and appliances shall be conducted in accordance with recognized test codes of the ANSI, ASME, or the IEE, except as may otherwise be stated herein.
6. The Contractor shall give notice in writing to the City sufficiently in advance of his intention to commence the manufacture or preparation of materials especially manufactured or prepared for use in or as part of the permanent construction. Such notice shall contain a request for inspection, the date of commencement and the expected date of completion of the manufacture or preparation of materials. Upon receipt of such notice, the City shall arrange to have a representative present at such times during the manufacture as may be necessary to inspect the materials; or the City will notify the Contractor that the inspection will be made at a point other than the point of manufacture; or the City will notify the Contractor that inspection will be waived.
7. When inspection is waived or when the City/Professional so requires, the Contractor shall furnish to the City authoritative evidence in the form of Certificates of Manufacture that the materials to be used in the Work have been manufactured and tested in conformity with the Contract Documents. These certificates shall be notarized and shall include five (5) copies of the results of physical tests and chemical analysis, where necessary, that have been made directly on the product or on similar products of the manufacturer.
8. The Contractor must comply with these provisions before shipping any material. Such inspections by the City shall not release the Contractor from the responsibility for furnishing materials meeting the requirements of the Contract Documents.

B. Cost

1. Contractor shall employ and pay for the services of an independent testing laboratory to perform testing indicated on the Contract Documents, or at the City's discretion to ensure conformity with the Contract Documents.
2. The cost of field leakage and pressure tests and shop tests of materials and equipment specifically called for in the Contract Documents shall be borne by the Contractor. Such costs shall be deemed to be included in the Contract price.
3. The Contractor shall pay for all work required to uncover, remove, replace, retest, etc., any work for testing or retesting due to failed tests. The Contractor shall also provide compensation for the City/Professional's personnel for required re-testing due to failed or rescheduled testing.

C. Shop Testing

1. Each piece of equipment for which pressure, duty, capacity, rating, efficiency, performance, function or special requirements are specified shall be tested in the shop of the manufacturer in a manner which shall conclusively prove that its characteristics comply fully with the requirements of the Contract Documents. No such equipment shall be shipped to the worksite until the City/Professional notifies the Contractor, in writing, that the results of such tests are acceptable.
 2. The manufacturing company shall provide five (5) copies of the manufacturer's actual shop test data and interpreted results signed by a responsible official of the manufacturing company and notarized, showing conformity with the Contract Documents as a prerequisite for the acceptance of any equipment. The cost of shop tests (excluding cost of City's representative) and of furnishing manufacturer's preliminary and shop test data of operating equipment shall be borne by the Contractor and shall be included in the Contract price.
- D. Demonstration Tests: Upon completion of the Work and prior to final payment, all equipment and piping installed under this Contract shall be subjected to acceptance or demonstration tests as specified or required to provide compliance with the Contract Documents. The Contractor shall furnish all labor, fuel, energy, water and all other equipment necessary for the demonstration tests at no additional cost to the City.
- E. Final Inspection: Prior to preparation of the final payment application, a final inspection will be performed by the City to determine if the Work is properly and satisfactorily constructed in accordance with the requirements of the Contract Documents.
- F. Inspection by Other Agencies: The Florida Department of Environmental Protection, and other authorized governmental agencies shall have free access to the site for inspecting materials and work, and the Contractor shall afford them all necessary facilities and assistance for doing so. Any instructions to the Contractor resulting from these inspections shall be given through the City. These rights of inspections shall not be construed to create any contractual relationship between the Contractor and these agencies.

1.12 Project Site and Access

A. Right-Of-Way and Easements

1. The use of public streets and alleys shall be such as to provide a minimum of inconvenience to the public and to other traffic. Any earth or other excavated material shall be removed by the Contractor and the streets cleaned to the satisfaction of the City.
2. The Contractor shall not enter or occupy private land outside of easements, except by written permission of the property owner.
3. The Contractor shall sequence and schedule their work so as to not to interfere with the progress of work in other areas of the Project.

B. Access

1. Neither the material or equipment that has been removed nor the materials or equipment to be used in the construction of the Work shall be so placed as to prevent free access to park/city personnel to the active systems at the facility as well as all fire hydrants, valves or manholes.
2. Contractor agrees that representatives of the City and any governmental agents will have access to the Work wherever it is in preparation or progress and that the Contractor shall provide facilities for such access and inspection.

1.13 Utilities

A. Utility Construction

1. Public utility installations and structures shall be understood to include all poles, tracks, pipes, wires, conduits, house service connections, vaults, manholes and all other appurtenances and facilities pertaining thereto, whether owned or controlled by governmental bodies or privately owned by individuals, firms or corporations, used to serve the public with transportation, traffic control, gas, electricity, telephone, sewerage, drainage or water. Other public or private property, which may be affected by the Work, shall be deemed included hereunder.
2. All open excavations shall be adequately safeguarded by providing temporary barricades, caution signs, lights and other means. The Contractor shall, at his own expense, provide suitable and safe bridges and other crossings for accommodating travel by pedestrians and workmen. Bridges provided for access to private property during construction shall be removed when no longer required.
3. The length of open trench will be controlled by the particular surrounding conditions, but shall always be confined to the limits described by the City. If any excavation becomes a hazard, or if it excessively restricts traffic at any point, the City may require special construction procedures. As a minimum, the Contractor shall conform to the following restoration procedures:
 - a. Interim Restoration: All excavations shall be backfilled and compacted as specified by the end of each working day. For excavations within existing paved areas; limerock base or soil cement base (match existing) shall be spread and compacted to provide a relatively smooth surface free of loose aggregate material. At the end of each workweek, the S-I asphaltic surface course shall be completed and opened to traffic. Contractor shall coordinate his construction activity including density tests and inspections to allow sufficient time to achieve this requirement. All driveway cuts shall be backfilled, compacted, and limerock base spread and compacted immediately after installation. Contractor shall coordinate with the individual property owners prior to removing the driveway section. Any utility crossing an existing roadway, parking lot or other paved area shall be patched by the end of the working day.

- b. All pipe and fittings shall be neatly stored in a location, which will cause the least disturbance to the park personnel or the public. All debris shall be removed and properly disposed of by the end of each working day.
- c. Final Restoration: After completing all installations, and after testing of the pipe and equipment, all final restoration work shall be performed. In no event shall final restoration begin after substantial completion. Any additional restoration required after testing shall be repaired in a timely manner at no additional cost to the City.
- d. Maintenance of all restored facilities shall be the Contractor's responsibility. This maintenance shall be performed on an on-going basis during the course of construction. The Contractor's Progress Schedule shall reflect the above restoration requirements.

B. Existing Utilities

- 1. The locations of all existing underground piping, structures and other facilities are shown based on information received from the respective owner. The locations are shown without express or implied representation, assurance, or guarantee that they are complete or correct or that they represent a true picture of underground piping, conduit and cables to be encountered. It is the Contractor's responsibility to verify all existing underground piping, structures and other facilities.
- 2. The Contractor shall, at all times, employ acceptable methods and exercise reasonable care and skill so as to avoid unnecessary delay, injury, damage or destruction of existing utility installations and structures; and shall, at all times in the performance of the Work, avoid unnecessary interference with, or interruption of, utility services; and shall cooperate fully with the owners thereof to that end.
- 3. When existing facilities are found to be in conflict with the Work, the City reserves the right to modify alignments to avoid interference with existing facilities.
- 4. All utilities, which do not interfere with the work, shall be carefully protected against damage. Any existing utilities damaged in any way by the Contractor shall be restored or replaced by the Contractor at their expense as directed by the City. Any existing facilities, which require operation to facilitate repairs, shall be operated only by the owner of the respective utility.
- 5. It is the responsibility of the Contractor to ensure that all utility and/or poles, the stability of which may be endangered by the proximity of excavation, be temporarily stayed and/or shored in position while work proceeds in the vicinity of the pole and that the utility or other companies concerned be given reasonable advance notice of any such excavation.

C. Notices

1. All governmental utility departments and other owners of public utilities, which may be affected by the Work, will be informed in writing by the Contractor two (2) weeks after the execution of the Contract or Contracts covering the Work. Such notice will be sent out in general and directed to the attention of the governmental utility departments and other owners of public utilities for such installations and structures as may be affected by the Work.
2. The Contractor shall comply with Florida Statute 553.851 regarding protection of underground gas pipelines. Evidence of notification to the gas pipeline owner shall be furnished to the City within two (2) weeks after the execution of the Contract.
3. It shall be the Contractor's responsibility to contact utility companies at least 72-hours in advance of breaking ground in any area or on any unit of the work so maintenance personnel can locate and protect facilities, if required by the utility company.
4. The Contractor shall give a minimum five (5) working day notice to utility personnel prior to interrupting a utility service (water, sewer, etc.).

D. Exploratory Excavations

1. Exploratory excavations shall be conducted by the Contractor for the purpose of locating underground pipelines or structures in advance of the construction. Test pits shall be excavated in areas of potential conflicts between existing and proposed facilities and at piping connections to existing facilities a minimum of 48-hours or 1,000-feet in advance of work. If there is a potential conflict, the Contractor shall notify the City/Professional immediately. Information on the obstruction to be furnished by the Contractor shall include: Location, Elevation, Utility Type, Material and Size. Test pits shall be backfilled immediately after their purpose has been satisfied and the surface restored and maintained in a manner satisfactory to the City.

E. Utility Crossings

1. It is intended that wherever existing utilities must be crossed, deflection of the pipe within specified limits and cover shall be used to satisfactorily clear the obstruction unless otherwise indicated on the Drawings. However, when in the opinion of the City this procedure is not feasible, the City may direct the use of fittings for a utility crossing or conflict transition as detailed on the Drawings.

F. Relocations

1. Relocations shown on the Drawings: Public utility installations or structures, including but not limited to poles, signs, fences, piping, conduits and drains that interfere with the positioning of the work which are shown on the Drawings to be removed, relocated, replaced or rebuilt by the Contractor shall be considered as part of the general cost of doing the Work and shall be included in the prices bid for the various contract items. No separate payment shall be made therefore.

2. Relocations not shown on the Drawings

- a. Where public utility installations or structures are encountered during the course of the work, and are not indicated on the Drawings or in the Specifications, and when, in the opinion of the City, removal, relocation, replacement or rebuilding is necessary to complete the Work, such work shall be accomplished by the utility having jurisdiction, or such work may be ordered, in writing by the City, for the Contractor to accomplish.
 - b. If such work is accomplished by the utility having jurisdiction, it will be carried out expeditiously and the Contractor shall give full cooperation to permit the utility to complete the removal, relocation, replacement or rebuilding as required.
 - c. If such work is accomplished by the Contractor, it will be paid for as a Change Order.
3. All existing castings, including valve boxes, junction boxes, manholes, hand holes, pull boxes, inlets and similar structures in the areas of construction that are to remain in service and in areas of trench restoration and pavement replacement, shall be adjusted by the Contractor to bring them flush with the surface of the finished work.
4. All existing utility systems which conflict with the construction of the work herein, which can be temporarily removed and replaced, shall be accomplished at the expense of the Contractor. Work shall be done by the utility unless the utility approves in writing that the Work may be done by the Contractor.

G. Barrier and Lights

1. The Contractor shall exercise extreme care in the conduct of the Work to protect health and safety of the City park personnel, workmen and the public. The Contractor shall provide all protective measures and devices necessary, in conformance with applicable local, state and federal regulations. Protective measures shall include but are not limited to barricades, warning lights/flashers and safety ropes.
2. All equipment and vehicles operating within 10-feet of roadways shall have flashing strobe lights attached.

H. Dewatering and Flotation

1. The Contractor, with their own equipment, shall do all pumping necessary to dewater any part of the work area during construction operations to insure dry working conditions. The Contractor shall take the necessary steps to protect on-site and off-site structures. Damage to any structures due to dewatering shall be repaired or the structures replaced at the Contractor's expense.

2. The Contractor shall be completely responsible for any tanks, wetwells or similar structures that may become buoyant during the construction and modification operations due to the ground water or floods and before the structure is put into operation. The proposed final structures have been designed to account for buoyancy; however, the Contractor may employ methods, means and techniques during construction which may affect the buoyancy of structures. The Contractor shall take the necessary steps to protect structures. Damage to any structures due to floating or flooding shall be repaired, or the structures replaced at the Contractor's expense.
3. Contractor shall be responsible for any required permits for the discharge of ground water.

I. Dust and Erosion Control

1. The Contractor shall prevent dust nuisance from their operations or from traffic.
2. Contractor is responsible for providing effective temporary erosion and sediment control measures during construction or until final controls become effective.
3. Temporary erosion controls include, but are not limited to, grassing, mulching, netting, watering and reseeding on-site surfaces and soil and borrow area surfaces and providing interceptor ditches at ends of berms and at those locations which will ensure that erosion during construction will be either eliminated or maintained within acceptable limits as established by the City, FDEP and any other agency having jurisdiction.
4. Temporary sedimentation controls include, but are not limited to; silt dams, traps, barriers, and appurtenances at the foot of sloped surfaces which will ensure that sedimentation pollution will be either eliminated or maintained within acceptable limits as established by the City, FDEP and any other agency having jurisdiction.
5. The construction of temporary erosion and sedimentation control facilities shall be in accordance with the technical provision of Section 104 "Prevention, Control, and Abatement of Erosion and Water Pollution" of the FDOT Standard Specifications for Road and Bridge Construction, latest edition.

J. Lines and Grades

1. All Work under this Contract shall be constructed in accordance with the lines and grades shown on the Drawings, or as given by the City/Professional.

2. When the location of the Work is dimensioned on the Drawings, it shall be installed in that location; when the location of the Work is shown on a scaled drawing, without dimensions, the Work shall be installed in the scaled location unless the City approves an alternate location for the piping. Where fittings are noted on the Drawings, such notation is for the Contractor's convenience and does not relieve the Contractor from laying and jointing different or additional items where required. The City/Professional may require detailed pipe laying drawings and schedules for project control.
3. The Contractor shall, at their own expense, establish all working or construction lines and grades as required from the project control points set by the City, and shall be solely responsible for the accuracy thereof.

K. Temporary Construction

1. Temporary fences: If, required during the course of the Work, it is necessary to remove or disturb any fencing, the Contractor shall at their own expense, provide a suitable temporary fence which shall be maintained until the permanent fence is replaced.
2. Responsibility for Temporary Structures: In accepting the Contract, the Contractor assumes full responsibility for the sufficiency and safety of all temporary structures or work and for any damage which may result from their failure or their improper construction, maintenance or operation.

L. Daily Reports

1. The Contractor shall submit to the City's Representative daily reports of construction activities including non-work days. The reports shall be complete in detail and shall include the following information:
 - a. Days from Notice to Proceed; Days remaining to substantial and final completion.
 - b. Weather information
 - c. Work activities with reference to the Critical Path Method (CPM) schedule activity numbers (including manpower, equipment and daily production quantities for each individual activity).
 - d. Major deliveries
 - e. Visitors to site
 - f. Test records
 - g. New problems, and
 - h. Other pertinent information
2. A similar report shall be submitted for/by each Subcontractor.
3. The report(s) shall be submitted to the City Representative within 2 days of the respective report date. Each report shall be signed by the Contractor's Superintendent or Project Manager. Pay request will not be processed unless daily reports are current.

4. If a report is incomplete, in error, or contains misinformation, a copy of the report shall be returned by the City Representative to the Contractor's Superintendent or Project Manager with corrections noted. When chronic errors or omissions occur, the Contractor shall correct the procedures by which the reports are produced.

M. Cleaning

1. During Construction

- a. During construction of the Work, the Contractor shall, at all times, keep the Site free from material, debris and rubbish as practicable and shall remove the same from any portion of the Site if, in the opinion of the City, such material, debris, or rubbish constitutes a nuisance or is objectionable.
- b. Provide on-site containers for the collection of waste materials, debris and rubbish and remove such from the Site periodically by disposal at a legal disposal area away from the Site.
- c. Clean interior spaces prior to the start of finish painting and continue cleaning on an as-needed basis until painting is finished. Use cleaning materials which will not create hazards to health or property, will not react with chlorine gas or liquid and which will not damage surfaces. Use only those cleaning materials and methods recommended by the manufacturer of the surface material. Schedule operations so that dust and other contaminants resulting from cleaning process will not fall on wet or newly coated surfaces.
- d. The Contractor shall remove from the site all surplus materials and temporary structures when no longer necessary to the Work at the direction of the City.

2. Final Cleaning

- a. At the conclusion of the Work, all equipment, tools, temporary structures and materials belonging to the Contractor shall be promptly taken away, and the Contractor shall remove and promptly dispose of all water, dirt, rubbish or any other foreign substances. Employ skilled workmen for final cleaning. Thoroughly clean all installed equipment and materials to a bright, clean, polished and new appearing condition. Remove grease, mastic, adhesives, dust, dirt, stains, fingerprints, labels, and other foreign materials from sight-exposed interior and exterior surfaces. Broom clean exterior paved surfaces; rake clean other surfaces of the grounds.
- b. The Work shall be left in a condition as shown on the Drawings and the remainder of the site shall be restored to a condition equal or better than what existed before the Work.
- c. Prior to final completion, or City occupancy, Contractor shall conduct an inspection of interior and exterior surfaces, and all work areas to verify that the entire Work is clean. The City will determine if the final cleaning is acceptable.

1.14 Construction Not Permitted

A. Use of Explosives

1. No blasting shall be done except as approved by the City and the governmental agency or political subdivision having jurisdiction

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

**SECTION 01010
SUMMARY OF WORK**

PART 1 - GENERAL

1.01 Section Includes

- A. Summary of work, other contracts, work sequence, working hours, operation of existing facilities, use of premises, OWNER furnished products, coordination, cutting and patching.

1.02 Summary of Work

- A. The project consists of the full rehabilitation of one (1) lift station located in Chokoloskee Island off Smallwood Drive. The work includes, but is not limited to, repurposing the existing wet well, replacing internal pumps/fittings/valves/piping, replacing all electrical components, demolishing the outdated wet well and valve vaults, and site restoration as necessary with all associated work required for a complete project in accordance with the contract documents.
- B. All work activities shall be required to be in accordance with the permits issued by the respective agencies. All work performed will be required to be done while maintaining the functional operation of the existing Park.
- C. All materials, equipment, skills, tools, and labor which is reasonably and properly inferable and necessary for the proper completion of the Work and in compliance with the requirements stated or implied by these Specifications or Drawings shall be furnished and installed by the CONTRACTOR without additional compensation, whether specifically indicated in the Contract Documents or not.
- D. The City of Everglades City Engineering Standards Manual (Latest Edition) is incorporated by reference into these specifications. Contractor shall be aware that adherence to Standards in the Manual and as described herein shall be required. Should there be any conflicting information between these two documents, then the more stringent Standard shall be utilized.
- E. Repair, replace, or otherwise settle with the OWNER or OWNER'S Representative, if damage to property or existing facilities occurs, including damage to pavements, buildings, utilities, structures, etc.
- F. Construct the Project under a Lump Sum Contract.
- G. The CONTRACTOR shall perform the work complete, in place, and ready for continuous service, and shall include repairs, testing, permits, clean up, replacements, and restoration required as a result of disruptions caused during this construction.

1.03 Work Under Other Contracts- N/A

1.04 Work Sequence

- A. The CONTRACTOR's sequence of work may be of his choosing in order to complete the work in the allowed time frame provided that consideration is made to maintain functional operation of the lift station as necessary to provide service and stay in compliance with Permit requirements. The CONTRACTOR shall note that the replacement of the lift station will be done in phases to keep the system functioning. Therefore, the CONTRACTOR shall submit a schedule and work sequence to the OWNER following the Notice to Proceed and at least ten (10) days prior to the start of any work at the park. No work may begin until the sequence of work plan is approved by the City. If the work sequence of operations will require a shutdown of any existing system, the CONTRACTOR shall provide in writing a detailed shut down plan that will be reviewed by the City prior to the commencement of that work.

1.05 Operation of Existing Facilities

- A. The proposed work for this project involves a rehabilitated pump station and the connection to an existing sewer system. Work also requires close coordination with City personnel and local residents. The CONTRACTOR shall perform their work taking all proper precautions and safety measures to insure a safe work area. The work shall be so conducted to maintain existing utility systems in operation. All sewer operations that occupy or are adjacent to the subject construction site are to remain in operation. The CONTRACTOR shall coordinate all construction activities with the Project Manager and City's Resident Inspector(s).

1.06 Contractor Use of Premises

- A. Confine operations at the site to areas permitted by applicable laws, ordinances, permits, and by the Contract Documents. Do not unreasonably encumber the site with materials or equipment. The CONTRACTOR shall assume full responsibility for protection and safekeeping of products stored on the job site. The CONTRACTOR shall be required to coordinate with the City to identify the area(s) needed to store any and all materials as well as perform the work associated with the project.

1.07 Coordination

- A. The CONTRACTOR shall be fully responsible for the coordination of his work and the work of his employees, subcontractors, and suppliers and to assure compliance with schedules and all City safety requirements and procedures.
- B. The coordination requirements of this Section are in addition to the requirements of this Specification Document.
- C. It is the CONTRACTOR's responsibility to coordinate with the City and all other utilities as may be applicable, regarding locates, protection of existing facilities, testing, or relocations.

1.08 Cutting and Patching

- A. Cutting and patching for inspection and testing and the payment therefore shall be as specified in the General Conditions and Supplementary Conditions.
- B. The CONTRACTOR shall, at no additional expense to the OWNER, perform cutting and patching necessary for the completion of the Project. Perform cutting and patching in a manner to prevent damage to the facilities or previously completed work.
- C. Refinish surfaces as necessary to provide an even finish.

1.09 Drawings and Project Manual

- A. The Utility Work shall be performed in accordance with the Drawings and Specifications prepared by CPH Consulting, LLC., 1992 SW 1st Street Miami, FL 33135.
- B. The CONTRACTOR shall verify all dimensions, quantities and details shown on the Drawings, Supplementary Drawings, Schedules, Specifications or other data received from the ENGINEER, and shall notify the same, in writing, of all errors, omissions, conflicts and discrepancies found therein with adequate notice. Failure to discover or correct errors, conflicts or discrepancies shall not relieve the CONTRACTOR of full responsibility for unsatisfactory Work, faulty construction or improper operation resulting there from, nor from rectifying such conditions at their own expense.
- C. All schedules are given for the convenience of the ENGINEER and the CONTRACTOR and are not guaranteed to be complete. The CONTRACTOR shall assume all responsibility for the making of estimates of the size, kind, and quantity of materials and equipment included in the Work to be done under this Contract.
- D. Intent:
 - 1. All work called for in the Specifications applicable to this Contract, but not shown on the Drawings in their present form, or vice versa, shall be of like effect as if shown or mentioned in both. Work not specified in either the Drawings or in the Specifications, but involved in carrying out their implied intent, or in the complete and proper execution of the Work, is required and shall be performed by the CONTRACTOR as though it were specifically delineated or described.
 - 2. Items of material, equipment, machinery, and the like may be specified on the Drawings and not in the Specifications. Such items shall be provided by the CONTRACTOR in accordance with the specification on the Drawings.
 - 3. The apparent silence of the Specifications to any detail, or the apparent omission from them of a detailed description concerning any Work to be done and materials to be furnished, shall be regarded as meaning that only the best general practice is to prevail and that only material and workmanship of the best quality is to be used, and interpretation of these Specifications shall be made upon that basis.

1.10 Weather

- A. During inclement weather, all work which might be damaged or rendered inferior by such weather conditions shall be suspended. The orders and decisions of the OWNER/ENGINEER as to suspensions shall be final and binding. During suspension of the Work from any cause, the Work shall be suitably covered and protected so as to preserve it from injury by the weather or otherwise; and, if the OWNER/ENGINEER will so direct, the rubbish and surplus materials shall be removed.

1.11 Protection and Restoration

- A. The CONTRACTOR shall be responsible for the preservation of all public and private property, and shall use every means of protection necessary to prevent damage thereto. If any direct or indirect damage is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the Work on the part of the CONTRACTOR, such property shall be restored by the CONTRACTOR, at his expense, to a condition equal to or better than that existing before the damage was done, or he shall make good the damage in other manner acceptable to the ENGINEER.
- B. Protection of Trees and Shrubs
 - 1. Protect with boxes or other barricades.
 - 2. Do not place excavated material so as to injure trees or shrubs.
 - 3. Support trees to prevent root disturbances during nearby excavation.
- C. Tree and Limb Removal
 - 1. Tree limbs that interfere with equipment operation and are approved for pruning shall be neatly trimmed and the tree cut coated with tree paint. Trimming and removal of tree limbs shall be considered incidental. Portions of the project are in a wooded area and will require the removal of trees in order to install the new lift station. The CONTRACTOR shall be responsible for the removal and proper disposal of all trees within the reclaimed lift station easement area.
 - 2. The CONTRACTOR shall obtain any permits required for removal of trees. Tree removal shall be paid for under the appropriate Contract Items.
- D. Trees or shrubs destroyed by negligence of the CONTRACTOR or his employees shall be replaced by the CONTRACTOR with new stock of similar size and age, at the proper season and at the sole expense of the CONTRACTOR.
- E. Sodded Areas – All areas disturbed by construction shall be replaced with like kind to a condition similar or equal to that existing before construction. Where sod is to be removed, it shall be carefully removed, and the same re-sodded, or the area where sod has been removed shall be restored with new sod in the manner described in the applicable section. No seeding will be allowed.

- F. The CONTRACTOR shall be responsible for locating and protecting (supporting as needed) and/or relocating all utilities lines, including irrigation lines, in the areas of the construction activities. If any existing lines are broken or damaged as a result of construction activities, the CONTRACTOR shall be responsible for repairing the lines at no additional cost to the OWNER.

1.12 Delivery and Storage

A. General

1. The CONTRACTOR shall be responsible for all material, equipment and supplies sold and delivered to the OWNER under this Contract until final inspection of the Work and acceptance thereof by the OWNER.
2. All materials and equipment to be incorporated in the Work shall be handled and stored by the CONTRACTOR before, during and after shipment in a manner to prevent warping, twisting, bending, breaking, chipping, rusting, and any injury, theft or damage of any kind whatsoever to the material or equipment.
3. Any materials that, in the opinion of the ENGINEER, become damaged to a point where they are unfit for their intended or specified use shall be promptly removed from the site of the Work, and the CONTRACTOR shall receive no compensation for the damaged material or its removal.
4. In the event any such material, equipment or supplies are lost, stolen, damaged or destroyed prior to final inspection and acceptance, the CONTRACTOR shall replace the same without additional cost to the OWNER.

B. Delivery – The CONTRACTOR shall:

1. Deliver materials in ample quantities to ensure the most speedy and uninterrupted progress of the Work so as to complete the Work within the allotted time.
2. Coordinate deliveries in order to avoid delay in or impediment of, the progress of the Work of any related CONTRACTOR.
3. Schedule deliveries to the site between the hours of 7 am to 3:30 pm. Deliveries scheduled for outside the timeframe need to be discussed and approved by the OWNER.
4. Schedule deliveries to the site not more than one month prior to scheduled installation without written authorization from the OWNER.
5. Arrange deliveries of products in accordance with construction schedules coordinated to avoid conflict with work and conditions at the site.

6. Deliver products in undamaged condition, in manufacturer's original containers or packaging, with identifying labels intact and legible.
7. Immediately upon delivery, inspect shipments with the OWNER'S field representative to ensure compliance with requirements of Contract Documents and approved submittals, and that products are properly protected and undamaged.
8. Provide equipment and personnel to handle products by methods recommended by the manufacturer to prevent soiling or damage to products or packaging.
9. Submit operation and maintenance data to the ENGINEER for review prior to shipment of equipment.

C. Storage

1. The CONTRACTOR shall be responsible for securing a location for on-site and off-site storage of all material and equipment necessary for completion of this project. There is limited space available at the site. A possible material laydown area has been shown on the plans.
2. All material delivered to the job site shall be protected from dirt, dust, dampness, water and any other condition detrimental to the life of the material from the date of delivery to the time of installation of the material and acceptance by the OWNER.
3. Store products in accord with manufacturer's instructions, with seals and labels intact and legible.
4. When required or recommended by the manufacturer, the CONTRACTOR shall furnish a covered, weather protected storage structure providing a clean, dry, non-corrosive environment for all mechanical equipment, valves, architectural items, electrical and instrumentation equipment, and special equipment to be incorporated into this project.
5. The CONTRACTOR shall arrange the storage area in a manner to provide easy access for inspection. Periodic inspections of stored products shall be done to assure that products are maintained under specified conditions and free from damage or deterioration.
6. The CONTRACTOR shall carefully review and comply with the manufacturer's storage instructions. These instructions shall be carefully followed and a written record of this kept by the CONTRACTOR.
7. Moving parts shall be rotated a minimum of once weekly to ensure proper lubrication and to avoid metal-to-metal "welding".

8. Mechanical equipment to be used in the Work, if stored for longer than ninety (90) days, shall have the bearings cleaned, flushed and lubricated prior to testing and start-up, at no extra cost to the OWNER.

D. Specific Material Storage Requirements

1. Loose Granular Materials: Store in a well-drained area on solid surfaces to prevent mixing with foreign matter.
2. Cement, Sand and Lime: Stored under a roof and off the ground and kept completely dry at all times.
3. Brick, Block and Similar Masonry Products: Handle and store in a manner to reduce breakage, chipping, cracking and spilling to a minimum.
4. All structural and miscellaneous steel and reinforcing steel: Store off the ground or otherwise to prevent accumulations of dirt or grease, and in a position to prevent accumulations of standing water and to minimize rusting.
5. Should the CONTRACTOR fail to take proper action on storage and handling of equipment supplied under this Contract, within seven days after written notice to do so has been given to correct the deficiencies, the OWNER retains the right to correct all deficiencies noted in previously transmitted written notice and deduct the cost associated with these corrections from the CONTRACTOR's Contract. These costs may be comprised of expenditures for labor, equipment usage, administrative, clerical, and Engineering and any other costs associated with making the necessary corrections. In any event, equipment and materials not properly stored will not be included in a payment estimate. Any materials not suitable for use will be removed from the site and replaced with new materials.

1.13 Manufacturer's Instruction for Installation

- A. Comply with manufacturer's published instructions, obtain and distribute copies of such instructions to all parties involved in the installation, including two copies for the ENGINEER's use. Maintain one set of complete instructions at the job site during installation and until completion. Copies of all instructions shall also be included in the Operation and Maintenance Manuals, which are provided to the OWNER at the close of the contract.
- B. Handle, install, connect, clean, condition and adjust products in strict accord with such instructions and in conformity with specified requirements. Should job conditions or specified requirements conflict with the manufacturer's instructions, consult with the ENGINEER for further instructions. Do not proceed with Work without clear instructions.
- C. Perform Work in strict accordance with manufacturer's instructions. Do not omit any

preparatory step or installation procedure unless specifically modified or exempted by Contract Documents.

- D. The CONTRACTOR shall have on hand sufficient proper equipment and machinery of ample capacity to facilitate the installation of the Work and to handle all emergencies normally encountered in Work of this character.
- E. Equipment shall be installed in a neat and workmanlike manner on the foundations at the locations and elevations shown on the Plans, unless directed otherwise in writing by the ENGINEER during installation.
- F. All equipment shall be correctly aligned, leveled and adjusted for satisfactory operation and shall be installed so that proper and necessary connections can be made readily between the various units.
- G. The CONTRACTOR shall furnish, install and protect all necessary anchor and attachment bolts and all other appurtenances needed for the installation of the devices included in the equipment specified. Anchor bolts shall be as approved by the ENGINEER and made of ample size and strength for the purposes intended. The manufacturer shall furnish substantial templates and working drawings for installation.

1.14 Construction Field Engineering

- A. Registered Land Surveyor: The CONTRACTOR shall retain the services of a registered land surveyor licensed in the State of Florida for the following specific services as applicable to the Work:
 - 1. Identify existing rights-of-ways and property lines along or adjacent to the Work;
 - 2. Locate all existing utilities and structures as may be affected by the Work;
 - 3. Locate control points prior to starting the Work;
 - 4. Replace control points or reference points which may be lost or destroyed.
 - 5. CONTRACTOR is to provide a preliminary set of Record Drawings that reflect any changes to the alignment, placement or connections to existing facilities. This As-built information is to be provided to the City prior to placing the equipment into service.
 - 6. Prepare a certified survey of the actually constructed facilities based on information concurrent with the construction progress.
- B. CONTRACTOR shall protect control points prior to starting the Work and shall preserve all permanent reference points during construction. Report to the OWNER when any reference point is lost or destroyed, or requires relocation because of necessary changes in grades or locations.

- C. The CONTRACTOR shall bear the cost of re-establishing project control points if disturbed, and bear the entire expense of rectifying Work improperly installed due to not maintaining or protecting or to removing without authorization such established points, stakes, and marks.
- D. Submittals
 - 1. Certificate signed by a Registered Surveyor certifying that elevations and locations of improvements are in conformance, or non-conformance, with Contract Documents.
 - 2. Certified, signed and sealed drawings, including pdf files of the signed drawings, showing locations of all equipment, structures, piping, conduits and other improvements. These drawings are referenced as the Project Record Drawings and shall be included with the Project Record Documents.
 - 3. Documentation to verify accuracy of field engineering work when requested by the ENGINEER.
 - 4. Electronic version of record drawing survey in the latest version of AutoCAD.

1.15 Utilities

A. Utility Construction

- 1. Public utility installations and structures shall be understood to include all poles, tracks, pipes, wires, conduits, service connections, vaults, manholes and all other appurtenances and facilities pertaining thereto, whether owned or controlled by governmental bodies or privately owned by individuals, firms or corporations, used to serve the public with transportation, traffic control, gas, electricity, telephone, sewerage, drainage or water. Other public or private property, which may be affected by the work shall be deemed included hereunder.
- 2. All open excavations shall be adequately safeguarded by providing temporary barricades, caution signs, lights and other means to prevent accidents to persons, and damage to property. The CONTRACTOR shall, at their own expense, provide suitable and safe bridges and other crossings for accommodating travel by pedestrians and workmen. Bridges provided for access to private property during construction shall be removed when no longer required.
- 3. The length of open trench will be controlled by the particular surrounding conditions, but shall always be no more than 300 feet. If the excavation becomes a hazard, or if it excessively restricts traffic at any point, the OWNER may require special construction procedures. As a minimum, the CONTRACTOR shall conform to the following restoration procedures:

- a. Interim Restoration: All excavations shall be backfilled and compacted as specified by the end of each working day. For excavations within existing paved areas, concrete base or soil cement base shall be spread and compacted to provide a relatively smooth surface free of loose aggregate material. All pipe and fittings shall be stored in a location inside the easement area, which will cause the least disturbance to the public. All debris shall be removed and properly disposed of by the end of each working day.
- b. Maintenance of all restored facilities shall be the CONTRACTOR's responsibility. This maintenance shall be performed on an on-going basis during the course of construction.

The CONTRACTOR's Progress Schedule shall reflect the above restoration requirements.

B. Existing Utilities

1. The locations of all existing underground piping, structures and utilities have been taken from information received from the respective OWNER. The locations are shown without express or implied representation, assurance, or guarantee that they are complete or correct or that they represent a true picture of underground piping to be encountered.
2. The CONTRACTOR shall, at all times in performance of the Work, employ approved methods and exercise reasonable care and skill so as to avoid unnecessary delay, injury, damage or destruction of existing public utility installations and structures; and shall, at all times in the performance of the Work, avoid unnecessary interference with, or interruption of, public utility services; and shall cooperate fully with the Owners thereof to that end.
3. Pipelines shall be located substantially as indicated on the Drawings, but the OWNER reserves the right to make such modifications in locations as may be found desirable to avoid interference with existing structures or for other reasons. When the location of piping is dimensioned on the Drawings, it shall be installed in that location; when the location of piping is shown on a scaled drawing, without dimensions, the piping shall be installed in the scaled location unless the OWNER approves an alternate location for the piping. Where fittings are noted on the Drawings, such notation is for the CONTRACTOR's convenience and does not relieve him from laying and jointing different or additional items where required. The ENGINEER may require detailed pipe laying drawings and schedules for project control.
4. The CONTRACTOR shall exercise care in any excavation to locate all existing piping and utilities. All utilities, which do not interfere with the completed work shall be carefully protected against damage. Any existing utilities damaged in any way by the CONTRACTOR shall be restored or replaced by the CONTRACTOR at his expense as directed by the OWNER. Any existing facilities that require operation to facilitate repairs shall be performed only by the OWNER of the respective utility.

5. It is the responsibility of the CONTRACTOR to ensure that all utility or other poles, the stability of which may be endangered by the proximity of excavation, be temporarily stayed and/or shored in position while Work proceeds in the vicinity of the pole and that the utility or other companies concerned be given reasonable advance notice of any such excavation by the CONTRACTOR.

C. Lines and Grades

1. All Work under this Contract shall be constructed in accordance with the line and grades shown on the Drawings, or as given by the ENGINEER. The full responsibility for keeping alignment and grade shall rest upon the CONTRACTOR.
2. The CONTRACTOR shall, at his own expense, establish all working or construction lines and grades as required from the project control points set by the OWNER, and shall be solely responsible for the accuracy thereof.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

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**SECTION 01050
SURVEYING AND FIELD ENGINEERING**

PART 1 - GENERAL

1.01 Scope of Work

A. Provide surveying and field engineering services for the Project:

1. Professional surveying and mapping work required for execution of the contract, including verification of existing survey data, construction layout, and production of the As-Built Survey.
2. Civil, structural or other professional engineering services required by the Contract Documents or as required in order to execute the CONTRACTOR'S construction methods.

B. Survey Services

1. CONTRACTOR shall retain the services of a registered Professional Surveyor and Mapper, who is licensed in the State of Florida and approved by the CITY SURVEYOR, to provide professional surveying and mapping services to maintain survey control, layout and stake the Work and perform the As-Built Survey during construction.

C. Field Engineering Services

1. Design for construction drawings (such as design of shoring, protection of existing structures and bracing for formwork) shall be designed, signed and sealed by a professional engineer licensed in the State of Florida.
2. When requested by the City's Representative or as specified in the Contract Documents, inspections or tests shall be performed under the supervision of a licensed professional engineer. The licensed professional engineer shall sign and seal these inspections or tests.

1.02 Implementation

A. Qualifications of Surveyor and Mapper or Engineer

1. The Florida Licensed Professional Engineer(s) or Florida Registered Surveyor and Mapper(s), who are proposed by the CONTRACTOR to provide services for the Project, are subject to the approval of the ENGINEER and the CITY SURVEYOR. Prior to any services being performed, the CONTRACTOR shall submit the name and address of any proposed registered professional and a written acknowledgement from the Surveyor and Mapper stating that he has the hardware, software and adequate scope of services in his agreement with the CONTRACTOR to fully comply with the requirements of this specification. These submittals shall be provided to the CONSTRUCTION MANAGER prior to Notice to Proceed. It is recommended that the Surveyor and Mapper attend the Preconstruction meeting. It is mandatory that any Surveyor and Mapper who has not previously performed work for the City in the past attend the Preconstruction meeting.
2. The Florida Licensed Professional Engineer shall be qualified in the discipline required for the specific services required for the Project.

B. Project Survey Requirements

1. Locate, reference and preserve existing horizontal and vertical control points and property corners shown on the Drawings prior to starting any construction Work. If the Surveyor and Mapper performing the Work discovers any discrepancies that will affect the Project, the CONTRACTOR must immediately report these findings to the City's Representative and the City's Surveyor. All survey work shall meet the requirements as defined in Florida Administrative Code 61G17-6. Reference and preserve all survey points during construction. If survey points are disturbed, it is the responsibility of the CONTRACTOR'S Surveyor and Mapper to reset the points at the CONTRACTOR'S expense. Copies of the Surveyor and Mapper's field notes and/or electronic files for point replacement shall be provided to the City's Surveyor through the City's Representative.
 - a. The Surveyor and Mapper shall locate all improvements for the Project As-Built Survey using State Plane Coordinates as the horizontal datum and the benchmark referenced on the Drawings as the vertical datum. The CITY will provide electronic files of the Drawings to be used by the Surveyor and Mapper in complying with these specifications.
 - b. The construction layout shall be established from the reference points shown or listed on the Drawings. The accuracy of any method of staking shall be the responsibility of the CONTRACTOR. All construction layout staking shall be done such as to provide for easy verification of the Work by the CITY. Maintain stakes and or markings on the ground identifying the stations for the construction baseline at minimum 100-foot intervals or as required by the City's Representative during construction.
2. Use survey control points to layout such work tasks as the following:
 - a. Clearing, grubbing, work limits, right-of-way lines and easements.

- b. Foundations, column locations and all work associated with structures.
 - c. Locations for pipelines and all associated structures and appurtenances.
 - 1) Ensure that all connections to the existing lift station are found via Ground Penetrating Radar (GPR) and reported to EOR for review and approval.
 - d. Road work:
 - 1) Stakes for grading, fill, curbs, radii, sidewalks and all other work requiring specific horizontal and or vertical alignment.
 - 2) Gravity utility pipe slope and invert elevations to assure precise location
 - e. Locations and elevations required for any other Project work.
 - f. A registered Surveyor and Mapper shall reference and replace any Project control points, boundary corners, benchmarks, section corners, and GIS monuments that may be lost or destroyed, at no additional cost to the CITY. Establish replacement points based on the original survey control or as directed by the City Surveyor. Copies of all reference field notes and/or electronic files for point replacement must be submitted to the City Surveyor through the City's Representative.
3. Accuracy of all constructed improvements shall be within 0.125 feet ($\pm 1.5''$) horizontally and 0.0417 feet ($\pm 1/2''$) vertically of the location depicted on the Drawings, unless a more stringent requirement is stated elsewhere in the Contract Documents, in which case the more stringent requirement shall take precedence. Notwithstanding the above, these construction tolerances do not change the requirement for the improvement's proper function or design intent. The tolerance for all slopes of Improvements specified in the Plans shall be within 10% of the proposed design slope, unless a more stringent requirement is stated elsewhere in the Contract Documents, in which case the more stringent requirement shall take precedence. The CONTRACTOR shall require the Surveyor and Mapper to include a statement on the As-Built Survey that all constructed improvements are within the specified tolerances unless specifically noted as not being within the construction tolerance. These variances shall be brought to the Owner's attention with an asterisk and note next to the as-built information shown on the As-Built Survey.
4. As-Built Survey Requirements
- a. The CONTRACTOR shall require the Surveyor and Mapper to locate all improvements for the Project As-Built Survey using State Plane Coordinates and the vertical datum referenced on the Drawings. The CONTRACTOR shall obtain an electronic copy of the Drawings from the CITY for use as a base for the As-Built Survey. The As-Built Survey shall clearly show the designed and constructed locations and elevations information for ease of comparison. This shall be

accomplished by adding the As-Built information on a separate CAD level or layer, while keeping all the design call-outs and construct requirements visible. The As-Built information shall be labeled as such and be shown with a bolder text weight in order to be easily identifiable. The As-Built Survey shall include all storm and sanitary sewers and structures, clean-outs, potable and reclaimed water mains, meters, valves, force mains, gas mains, irrigation lines (2-inch and larger), process piping, electric and communication duct banks, traffic and pedestrian signals, pull boxes, cabinets, transformers, structures, drainage conveyance systems, retention ponds, fences, pavement, curbs, sidewalks, driveways, relocated utilities, appurtenances and buildings. All planned improvements referenced by station and offset on the Plans, shall also be referenced on the As-Built Survey in the same manner. All constructed improvements that have location and/or elevation information called-out on the Plans, shall have the same information identified on the As-Built Survey. If a structure information table was provided on the Plans, then the As-Built information shall be shown in the table. Design call-outs shall have a thin strike line through the design call-out and all As-Built information must be labeled (or abbreviated “AB”) and be shown in a bolder text that is completely legible. Pavement and drainage flowline elevation shots shall be taken at minimum 25’ intervals and grade breaks. As-Built Survey shots shall be taken at the same locations as shown on the Plans for ease of comparison. Any variations from required material sizes or types shall also be noted.

- b. The CONTRACTOR shall submit a copy of the current monthly updated As-Built Survey (“**Progressive As-Built Survey**”) signed and sealed on each page and also submit identically matching electronic files in PDF format and the same CAD file format as the original design. The Progressive As-Built Survey shall be submitted to the City’s Representative with each Application for Payment and indicate the horizontal and vertical locations of all constructed improvements to date with sufficient information and notes to easily determine if the improvements were constructed in conformance with the Contract Documents. The Progressive As-Built Survey submittals shall include a cover sheet and include the surveyor’s statement regarding the constructed improvements being within the specified tolerances or if not indicating the variances, as described above in paragraph II.B.3. The CONTRACTOR’s submission of a Progressive As-Built Survey or Final As-Built Survey, as applicable, acceptable to the City’s Representative and City Surveyor, with its Application for Payment, is a condition precedent to the ENGINEER’s payment recommendation to the City pursuant to Article 14 of the General Conditions. If no construction has been performed during the period, the CONTRACTOR shall provide documentation of such in accordance with the requirements of the City’s Representative.
- c. The CONTRACTOR shall submit a minimum of three (3) signed and sealed sets of the final As-Built Survey incorporating all Work performed under the Contract Documents (“**Final As-Built Survey**”) with the Application for Final Payment, as well as identically matching electronic files in PDF format and the same CAD file format as the original design (latest AutoCAD format). Electronic file submittals that have more than one file or a file for each plan sheet shall have an index and/or a

logical filename containing a description of the file's contents. The final conformed Drawings shall be used as the basis for the As-Built Survey. The sets shall be in design plan format containing a complete set of all of the original plan sheets. The Surveyor and Mapper shall only sign and seal those sheets containing As-Built Survey information. Failure to provide accurate survey information in the proper format requested may result in the CITY determining the As-Built Survey is incomplete.

- d. At Final Completion of the Project, the CONTRACTOR shall submit field mark-up drawings showing all other constructed improvements not included in the As-Built Survey as required above. This includes improvements such as, but not limited to, irrigation lines smaller than 2-inch, sprinkler heads, miscellaneous wiring, site furnishings and traffic control loops, and only applies to variations from what is shown on the Drawings. These mark-up drawings shall be compiled on a clean set of the original Drawings.
- e. If unidentified utilities (not shown on the Drawings) are encountered during the installation of the Work, their horizontal and vertical location shall be included in the As-Built Survey. Provide the name and type of utility, the size and material type of pipe, conduit or structure and if known, the status (active or inactive) of the utility.
- f. The CONTRACTOR shall submit documentation to verify the accuracy of field surveying work at the request of the City's Representative or City Surveyor.
- g. The CONTRACTOR shall submit certificate(s), signed by a licensed Professional Engineer or Registered Surveyor and Mapper, certifying that elevations and locations of improvements are in conformance with the Contract Documents, or, if not in conformance, certify as to variances from the Contract Documents.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

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SECTION 01065
PERMITS AND FEES

PART 1 - GENERAL

1.01 REQUIREMENTS

A. General

1. Upon Notice of Award, obtain all appropriate and applicable permits and licenses as provided for in the General Conditions, except as otherwise provided herein.
2. Schedule all inspections and obtain all written approvals of the agencies required by the permits and licenses.
3. Strictly adhere to the specific requirements of the governmental unit(s) or agency(cies) having jurisdiction over the Work. Whenever there is a difference in the requirements of a jurisdictional body and the Contract Documents, the more stringent shall apply.
4. A copy of the permits obtained by the City are furnished in Appendix B "Permits" of these specifications.
5. Unless otherwise specified, the cost of work specified in the various sections of Division 1, will not be paid for separately but the cost therefore shall be considered incidental to and included in the bid prices of the various Contract items.

B. Building Permit (City of Everglades)

1. The City has applied for and paid the associated fees for the City of Everglades Building permit. The Contractor will be required to provide their license information and actually obtain the final permit.
2. The Contractor shall be responsible for obtaining any additional trade permits and any and all inspection fees for the City of Everglades Building Department providing inspections for this project. The Contractor shall be responsible to schedule and obtain final approval from the building inspectors.
3. The Contractor shall be responsible for scheduling all permit inspections and obtaining inspection approval from the City of Everglades, as required by the building and sub-discipline construction permits.

C. FDEP Permits

1. The City has applied for and paid the associated fees for the FDEP Notification/Application for Constructing a Domestic Wastewater Collection/Transmission System.

2. The Contractor shall be responsible for completing the necessary testing per the permit and submitting all required documentation to CPH for submittal of the clearance package prior to placing any new/modified component into service.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01150
MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.01 GENERAL

- A. Payment for all work done in compliance with the Contract Documents, inclusive of furnishing all manpower, equipment, materials, and performance of all operations relative to construction of this project, will be made under Pay Items. Work for which there is not a pay item will be considered incidental to the Contract and no additional compensation will be allowed.
- B. The Owner reserves the right to modify work as may be necessary and increase or decrease quantities of work to be performed, including deduction or cancellation of any one or more of the Pay Items. Changes in the work shall not be considered as a waiver of any conditions of the Contract nor invalidate any provisions thereof.
- C. The Contractor's attention is again called to the fact that the quotations for the various items of work are intended to establish a total price cost for completing the work in its entirety. Should the Contractor feel that the cost of any item of the work has not been established by the Bid Form, he shall include the cost for the work in some other applicable bid item, so that his proposal for the project does reflect his total price for completing the work in its entirety.
- D. The quantities for payment under this Contract shall be determined by actual measurement and payment of the completed items, in place, ready for service and accepted by the Owner, in accordance with the applicable method of measurement therefore contained herein. A representative of the Contractor shall witness all field measurements.
- E. Work performed by the Contractor outside the limits of construction shall be at the Contractor's expense.

2.01 MEASUREMENT

- A. The quantities for payment under this Contract shall be determined by actual measurement of the completed items, in place, ready for service and accepted by the Owner, in accordance with the applicable method of measurement therefore contained herein.

3.01 PAYMENT ITEMS

- A. Items are as enumerated on the bid form.
 - 1. Mobilization and Demobilization (Bid Item No. 1):
 - a. Measurement of various items for Mobilization and Demobilization will not be made for payment and all items shall be included in the lump sum price.
 - b. Payment for Mobilization and Demobilization will be made at the Contract lump sum price for the item, which price and payment shall be

full compensation for the preparatory work and operations in mobilizing for beginning Work on the project including, but not limited to, those operations necessary for the movement of personnel, equipment, supplies and incidentals to the project site, safety equipment and first aid supplies, sanitary and other facilities, as required by these Specifications, and State and local laws and regulations; and any other preconstruction expense necessary for the start of the Work; construction schedules, project sign for each location, shop drawings, temporary facilities, lay down storage area, construction aids, work associated with Contractor support during Owner/Engineer testing, reviews and inspection, re-inspection and any rework resulting from same, cleaning, survey, and operating and maintenance data. The Contractor shall submit invoices substantiating the cost of mobilization with each pay request. Payment will be made in accordance with Article 2.3.4 of the General Conditions. The cumulative total shall not exceed the Lump Sum Bid Pay Item Amount.

2. General Requirements (Bid Item Nos. 2):
 - a. Measurement for various items covered under General Requirements will not be made for payment, and all items shall be included in the lump sum price.
 - b. Payment for General Requirements shall include all Insurance requirements costs, the costs of all bonds, Indemnification, and all administrative costs associated with acquiring and maintaining the necessary coverage as described in the Contract Documents. The payment for General Requirements also includes the cost of all preconstruction videos, site layout and survey, permits, County coordination, and furnishing of record drawings. This item will be paid upon each payment request made by the Contractor as mutually agreed to by the contractor and City's Construction Manager. The Contractor shall attach with the payment request documentation to substantiate that appropriate insurance and bonds have been obtained by the Contractor. Payment will be based on percentage of work completed during the pay period at time of pay application to the nearest 10% complete, as mutually agreed to by the contractor and City's Construction Manager. The cumulative total shall not exceed the Lump Sum Bid Pay Item Amount.
 - c. Payment for As-Built Drawings will be made at the Contract lump sum price for the item, which price and payment shall be full compensation for City Surveyor approved progressive As- Built surveys during all phases of the work and Final City Surveyor approved As-Built drawings at completion to be submitted to the City for approval. Payment will be based on percent completion of the lump sum bid item as follows:
 - 1) Payment for progressive as-builts, approved by the City Surveyor, will be based on a maximum of 70% of the lump sum bid item multiplied by the percentage of the overall construction completion of the relevant lift station, as mutually agreed to by the Contractor and the City's Construction Manager.
 - 2) 30% payment when Final As-Builts of the relevant lift station have been submitted and approved by the City's

Construction Manager and City Surveyor. The cumulative total shall not exceed the Lump Sum Bid Pay Item Amount.

3. Maintenance of Traffic (Bid Item No. 3):
 - a. Measurement of various items for Maintenance of Traffic will not be made for payment, and all items shall be included in the lump sum price.
 - b. Payment for Maintenance of Traffic will be made at the Contract lump sum price for the item, which price and payment shall be full compensation for signed and sealed MOT Plans, pedestrian MOT plans, MOT permitting, construction, and maintenance of any necessary detour facilities; the providing of necessary facilities for access to residences, businesses, etc., along the project; the furnishing, installing and maintaining of traffic control, barricades, railings, message boards, warning lights, and other safety devices during construction, the control of dust, providing the services of uniformed off-duty police officers, and other special requirements for the safe and expeditious movements of traffic as called for in the Specifications and shown on the Drawings. Payment will be based on percentage of work completed during the pay period at time of pay application to the nearest 10% complete, as mutually agreed to by the Contractor and City's Construction Manager. The cumulative total shall not exceed the Lump Sum Bid Pay Item Amount.
4. Site Work (Bid Item No. 4):
 - a. Measurement of various items for Site Work will not be made for payment and all associated work items shall be included in the lump sum price.
 - b. Payment for Site Work will be made at the Contract lump sum price for the item, which price and payment shall be full compensation for all labor, materials, equipment as necessary to locate and verify existing utilities, clearing, dewatering, regrading, and clean each work site, install erosion and sediment control devices per SWPPP including but not limited to silt fence, tree protection, temporary fencing, the cost of field engineering, including disposal of cleared and grubbed material and debris and necessary repairs to disturbed brick roadway.
5. Demolition (Bid Item No. 5):
 - a. Measurement of various items for Demolition will not be made for payment and all items shall be included in the lump sum price.
 - b. Payment for Demolition will be made at the Contract lump sum price for the item, which price and payment shall be full compensation for the all labor, materials, equipment services, testing, backfill, compaction, removal of debris from site, transportation and appropriate legal disposal of all items including hazardous not retained by Owner which generally includes: control panels, electrical wiring and equipment, fuel tank and piping, antenna, piping, pumps, valves, fittings, appurtenances, water service backflow preventer, sanitary sewer piping, force main piping, landscaping, tree/stump removal, tree trimming and disposal, hose bibs, and any additional demolition shown on the Drawings but not mentioned herein including hazardous

materials. Payment will be based on percentage of work completed during the pay period at time of pay application to the nearest 10% complete, as mutually agreed to by the Contractor and City's Construction Manager. The cumulative total shall not exceed the Lump Sum Bid Pay Item Amount.

6. Bypass Pumping (Bid Item No. 6):
 - a. Measurement of various items for By-Pass Pumping will not be made for payment and all items shall be included in the lump sum price.
 - b. Payment of the applicable Contract lump sum price shall be full compensation for furnishing all labor, materials, equipment as necessary for by-pass operations and contingency plan as required to operate manned bypass pumping operations for 24 hrs/day (including weekends) with backup auto-dialer foreemergency situations, including pumps, piping, and hoses; pumper trucks; temporary by-pass and service piping; hauling and proper disposal of wastewater; plugging; gasoline/diesel fuel; protection of existing facilities, utilities, and property; traffic maintenance; signs and barriers; and all incidental work required to satisfactorily complete this item.
 - c. Payment will be based on percentage of work completed of bid item as follows:
 - 1) 50% payment will be based on successful setup and startup of bypass pumping system.
 - 2) Remainder of payments based on percentage equally divided over remaining duration of bypass pumping necessary for the lift station project. The cumulative total shall not exceed the Lump Sum Bid Pay Item Amount.
7. Vacuum & Clean Wet Well (Bid Item No. 7)
 - a. Measurement of various items for Vacuum and Clean will not be made for payment and all items shall be included in the lump sum price.
 - b. Payment of the applicable Contract lump sum price shall be full compensation for furnishing all labor, materials, equipment as necessary for suctioning all sewage, vacuum cleaning wet well and receiving manhole, debris removal and disposal, and all other work associated to this line item or as described in the Contract Documents. Payment will be based on percentage of work completed during the pay period at time of pay application to the nearest 10% complete, as mutually agreed to by the Contractor and City's Construction Manager. The cumulative total shall not exceed the Lump Sum Bid Pay Item Amount.
8. Wet Well Rehabilitation (Bid Item No. 8):
 - a. Measurement of various items for Wet Well Rehabilitation will not be made for payment and all items shall be included in the lump sum price.
 - b. Payment for Wet Well Rehabilitation will be made at the Contract lump sum price and shall be full compensation for all labor, materials, and equipment required for the installation of the wet well including hatches, groundwork, grout, leak repair, crack repair, installation of coating, and all other work necessary to rehabilitate the existing 6'

diameter wet well. Payment will be based on percentage of work completed during the pay period at time of pay application to the nearest 10% complete, as mutually agreed to by the Contractor and City's Construction Manager. The cumulative total shall not exceed the Lump Sum Bid Pay Item Amount.

9. Wet Well Structural Work (Bid Item No. 9):
 - a. Measurement for Wet Well Structural Work will not be made for payment and all items shall be included in the lump sum price.
 - b. Payment for Wet Well Structural Work will be made at the Contract lump sum price and shall be full compensation for all labor, materials, and equipment required for the structural rehabilitation of the existing wet well. This includes, but is not limited to: the 3-foot-high concrete extension of the 6-foot diameter wet well, installation of precast top sections, all aluminum and stainless steel handrailing, access hatches with safety grates, grout placement, crack and leak repair, application of protective coating, and all related concrete and structural work necessary to restore the wet well to a fully functional condition. Payment will be based on percentage of work completed during the pay period at time of pay application to the nearest 10% complete, as mutually agreed to by the Contractor and City's Construction Manager. The cumulative total shall not exceed the Lump Sum Bid Pay Item Amount.
10. Mechanical Piping, Valving, and Coring (Bid Item No. 10):
 - a. Measurement of various items for Mechanical Piping, Valving, and Coring will not be made for payment and all items shall be included in the lump sum price.
 - b. Payment for Mechanical Piping, Valving, and Coring will be made at the Contract lump sum price for this bid item successfully installed and tested as shown on the Contract Drawings and/or specified in the Contract Specifications, which price and payment shall be full compensation for piping, installation in locations indicated on the Construction Drawings which includes all piping within the wet well as well as above grade and below grade piping, bypass connections, excavation, pipe bedding, backfill and compaction, testing, joint restraints, pipe identification tape, insulated conducting wire, fittings, spools, pressure gauges, gate valves, plug valves, check valves, air release valves, ball valves, valve box, couplings, flange adaptor couplings, hardware, pipe supports, painting piping, and all equipment and all other work necessary to complete the installation in accordance with the Contract Documents. All cost to clean, repair new or existing piping and appurtenances will be included under the lump sum price. Payment will be based on percentage of work completed during the pay period at time of pay application to the nearest 10% complete, as mutually agreed to by the Contractor and City's Construction Manager. The cumulative total shall not exceed the Lump Sum Bid Pay Item Amount.

11. Submersible Pump Assembly (Bid Item No. 11):
 - a. Measurement of various items for Submersible Pump Assembly will not be made for payment and all items shall be included in the lump sum price.
 - b. Payment for Submersible Pump Assembly will be made at the Contract lump sum price, which shall be full compensation for all labor, material, start-up testing, and services required for the installation of the pumps including pumps, miscellaneous appurtenances, base pedestal, floats, brackets, guide rails, cable, cable holders, supports, training, and test and startup of the pumps. Payment will be based on percentage of work completed during the pay period at time of pay application to the nearest 10% complete, as mutually agreed to by the Contractor and City's Construction Manager. The cumulative total shall not exceed the Bid Pay Item Amount.

12. Concrete Slab (Bid Item No. 12):
 - a. Measurement of various items for Concrete Slab will not be made for payment and all items shall be included in the lump sum price.
 - b. Payment for the Valve Slab will be made at the Contract lump sum price and shall be full compensation for all labor, materials, and equipment required for the installation of the reinforced concrete slab, including formwork, subgrade preparation, reinforcement steel, placement and finishing of concrete, curing, and all associated work to provide a complete and functional foundation for valves, fittings, and associated piping as shown on the plans. Payment will be based on percentage of work completed during the pay period at time of pay application to the nearest 10% complete, as mutually agreed to by the Contractor and City's Construction Manager. The cumulative total shall not exceed the Lump Sum Bid Pay Item Amount.

13. Electrical Work (Bid Item No. 13):
 - a. Measurement of various items for Electrical Work pay item will not be made for payment and all items shall be included in the lump sum price.
 - b. Payment for the Electrical Work pay item will be made at the Contract lump sum price which shall be full compensation for all labor, material, and services required for the installation of all electrical components of this project, including but not limited to testing, coordination, training and work required to remove and replace the Control Panel, RTU, Antenna, Lightning Contractor Panel, Fiber Optic Panel, Meter Can, Main Breaker, wiring, conduit, switches, meters, connections, equipment services, provide new electrical service for the pump station, and all other work specified in the Construction Drawings and Contract Documents. Payment will be based on percentage of work completed during the pay period at time of pay application to the nearest 10% complete, as mutually agreed to by the Contractor and City's Construction Manager. The cumulative total shall not exceed the Lump Sum Bid Pay Item Amount.

14. Site Restoration (Bid Item No. 14):
 - a. Measurement of various items for Site Restoration will not be made for payment and all items shall be included in the lump sum price.
 - b. Payment for Site Restoration will be made at the Contract lump sum price for the item, which price shall constitute full compensation for restoring all areas disturbed by construction to equal or better conditions, subject to approval by the Engineer and Owner. Restoration includes, but is not limited to, full lane-width asphalt restoration, temporary asphalt restoration surface, sidewalks, driveways, curbs, and gutters, as well as sod, landscaping, irrigation systems, paver areas, and pavement markings. Any impacted fencing, mailboxes, signs, or other surface features shall be reset or replaced in kind. All work shall meet applicable City, County, or agency standards and must be completed to the satisfaction of the Engineer and Owner prior to final acceptance.
15. Start Up and Testing (Bid Item No. 15):
 - a. Measurement of various items for Start Up and Testing will not be made for payment and all items shall be included in the lump sum price.
 - b. Payment for the Start Up and Testing pay item will be made at the Contract lump sum price, which includes all labor, material, equipment necessary for a final start-up and testing of the total and completely rehabilitated lift station. Payment will be based on percentage of work completed during the pay period at time of pay application to the nearest 10% complete, as mutually agreed to by the contractor and the City Construction Manager. The cumulative total shall not exceed the Lump Sum Bid Pay Item Amount.

END OF SECTION

**SECTION 01200
PROJECT MEETINGS**

PART 1 - GENERAL

1.01 Scope of Work

- A. The City will schedule and administer a preconstruction conference, periodic project meetings, and any specially called meetings throughout the progress of the Work. The City will:
 - 1. Prepare and distribute Notification of meeting to attendees for meetings.
 - 2. Establish, prepare and distribute agenda with Notification.
 - 3. Make physical arrangements for meetings.
 - 4. Preside at meetings
 - 5. Prepare and distribute minutes of meetings.
- B. Representatives of CONTRACTOR, Subcontractors and suppliers attending meetings shall be qualified and authorized to act on behalf of the entity each represents.

1.02 Implementation

- A. Preconstruction Conference
 - 1. The preconstruction conference will be scheduled by the City.
 - 2. Location: A central site, convenient for all parties.
 - 3. Attendance (as applicable)
 - a. City's Project Manager and other City personnel as needed
 - b. Design Engineer representatives and their professional consultants.
 - c. Other agency representatives (DEP, EPA, City, County, etc.).
 - d. CONTRACTOR's representative and CONTRACTOR's professional consultants.
 - e. Contractors and Suppliers
 - f. Others as appropriate
- B. Project Meetings

1. The City will schedule regular meetings. The project meetings will be held as required by progress of the work with the first meeting to be determined at the preconstruction meeting. CPH will prepare and distribute the minutes of the meeting at least 24 hours prior to the next project meeting.
 2. Location of the meetings: A central site, convenient for all parties.
 3. Attendance:
 - a. City's Project Manager and other City personnel as needed.
 - b. CONTRACTOR and their consultants as needed.
 - c. Design Engineer and their Professional Consultants as needed.
 - d. Subcontractors as appropriate to the agenda.
 - e. Suppliers as appropriate to the agenda.
 - f. Others as appropriate
 - 1) CONTRACTOR's representative is to attend the project meetings and have the authority to act on behalf of the entity he represents on field related matters. CONTRACTOR's representative is to study previous meeting minutes and current agenda items, in order to be prepared to discuss pertinent topics such as minutes' correction, deliveries of materials and equipment, progress of the Work, etc.
 - 2) The CONTRACTOR is to provide a current submittal log at each progress meeting in accordance with the General Conditions.
 - 3) The CONTRACTOR is to provide a two-week schedule at each project meeting in accordance with the General Conditions.
- C. Special meetings as may be called by the City.
1. Agenda: As necessary.
 2. Attendance: As appropriate.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01300 SUBMITTALS

PART 1 - GENERAL

1.01 Description

- A. Work complete without approved Shop Drawings and/or samples shall be considered installed at the Contractor's risk.

1.02 Shop Drawings and Data

- A. Shop Drawings defined in the General Conditions, shall complement design and construction drawings, and shall contain sufficient detail to clearly define all aspect of the Construction. These Drawings shall be complete and detailed.
- B. Contractor and Supplier's catalog sheets, brochures, diagrams, illustrations and other standard descriptive data shall be clearly marked with specification title and numbers to identify pertinent materials, product or models. Delete information which is not applicable to the Work by striking or cross-hatching.
- C. If Shop Drawings show variations from Contract requirements because of standard shop practice or for other reasons, the Contractor shall describe such variations in the letter of transmittal. If acceptable, proper adjustment in the Contract shall be implemented where appropriate. If the Contractor fails to describe such variations, the Contractor shall not be relieved of the responsibility for executing the Work in accordance with the Contract, even though such Drawings have been reviewed.
- D. Data on materials and equipment shall include, without limitation, materials and equipment lists, catalog data sheets, cuts, performance curves, diagrams, verification of conformance with applicable standards or codes, materials of construction and similar descriptive material. Materials and equipment list shall, for each item, give the name and location of the Supplier or manufacturer, trade name, catalog reference, size, finish and all other pertinent data.
- E. For all equipment furnished, the Contractor shall provide a list including the equipment name and address and telephone number of the Supplier's representative and service company so that service and/or spare parts can be readily obtained
- F. The Contractor will obtain an installation list from suppliers and equipment suppliers who propose to furnish equipment or products for submittal to City/Professional along with the required Shop Drawings. The installation list shall include at least 5 installations where identical equipment has been installed and has been in operation for a period of at least 1-year.

1.03 Review of Shop Drawings and Samples

- A. The City /Professional's review of Shop Drawings, Data, and Samples as submitted by the Contractor will be to determine if the items(s) generally conform(s) to the information in the Contract Documents and is/are compatible with the design concept. The City/Professional's review and exceptions, if any, will not constitute an approval of dimensions, connections, quantities, and details of the material, equipment, device, or item shown.
- B. The review of drawings and schedules will be general, and shall not be construed:
 - 1. As permitting any departure from the Contract Documents
 - 2. As relieving the Contractor of responsibility for any errors, including details, dimensions, and materials
 - 3. As approving departures from details furnished by the City/Professional, except as otherwise provided herein
- C. If the drawings or schedules as submitted describe variations and show a departure from the Contract Documents which the City/Professional finds to be in the interest of the City and to be so minor as not to involve a change in Contract Price or Contract Time, the City/Professional may return the reviewed drawings without noting an exception.
- D. "Approved As Noted": Contractor shall incorporate City/Professional's comments into the submittal before release to manufacturer. The Contractor shall send a letter to the City/Professional acknowledging the comments and their incorporation into the Shop Drawing.
- E. "Amend and Resubmit": Contractor shall resubmit the Shop Drawing to the City/Professional. The resubmittal shall incorporate the City/Professional's comments highlighted on the Shop Drawing.
- F. "Rejected": Contractor shall correct, revise and resubmit Shop Drawing for review by City/Professional.
- G. Resubmittals will be handled in the same manner as first submittals. For resubmittals the Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, to revisions other than the corrections requested by City/Professional on previous submissions. The Contractor shall make any corrections required by the City/Professional.
- H. If the Contractor considers any correction indicated on the Drawings to constitute a change to the Drawings or Specifications, the Contractor shall give written notice thereof to the City/Professional.
- I. When the Shop Drawings have been completed to the satisfaction of the City/Professional, the Contractor shall carry out the Construction in accordance therewith and shall make no further changes therein except upon written instructions from the City/Professional.
- J. No partial submittals will be reviewed. Submittals not deemed complete will be stamped "Rejected" and returned to the Contractor for resubmittal. Unless otherwise specifically permitted by the City/Professional, make all submittals in groups containing all

associated items for:

1. Systems
 2. Processes
 3. As indicated in specific Specifications Sections
 4. All drawings, schematics, manufacturer's product data, certifications, and other Shop Drawing submittals required by a system specification shall be submitted at one time as a package to facilitate interfaces checking.
- K. Only the City/Professional shall utilize the color "red" in marking Shop Drawing submittals.
- L. Failure to comply with any of the above may result in the rejection of Shop Drawings.

1.04 Product Data

- A. Submit electronic copies. Mark each copy to identify applicable products, models, options and other data. Supplement manufacturers' standard data to provide information unique to the Work.

1.05 Manufacturers' Instructions

- A. When required in an individual Specification Section, submit manufacturer's printed instructions for delivery, storage, assembly, installation, start-up, adjusting and finishing, in quantities specified for product data.

1.06 Samples

- A. Submit full range of manufacturers' standard colors, textures and patterns for the City's selection. Submit samples for selection of finishes within 30-days after Award of Contract. All color and finish selections must be submitted by the Contractor in a single submission, properly labeled and identified.
- B. Submit samples to illustrate functional characteristics of the product, with integral parts and attachment devices. Coordinate submittal of different categories for interfacing work.
- C. Submit the number of samples specified in the respective Specification section, but no less than two (2). After review one (1) will be retained by the City. Reviewed samples that may be used in the Work are indicated in the Specification Section.
- D. Samples shall be delivered to the City as directed. The Contractor shall prepay shipping charges on samples. Materials or equipment for which samples are required shall not be used in the Work until approved by the City/Professional.
- E. Samples shall be of sufficient size to clearly illustrate:
1. Functional characteristics of the product, with integrally related parts and attachment devices

2. Full range of color, texture and pattern
3. Each sample shall have a label indicating:
 - a. Name of Project
 - b. Name of Contractor and Subcontractor
 - c. Material or equipment represented
 - d. Place of origin
 - e. Name of product and brand (if any)
 - f. Location in Project
 - g. Specification title and number
 - h. Submittal number
 - i. Note: Samples of finished materials shall have additional marking that will identify them under the finished schedules.
- F. The Contractor shall prepare a transmittal letter, in triplicate (3) for each shipment of samples containing the information required in paragraph herein. The Contractor shall enclose a copy of this letter with the shipment and send a copy of this letter to the City/Professional. Approval of a sample shall be only for the characteristics or use named in such approval and shall not be construed to change or modify any Contract requirements.
- G. Approved samples not destroyed in testing shall be sent to the City or stored at the site of the Work. Approved samples of the hardware in good condition may be incorporated in the Work if requested in writing by the Contractor and approved in writing by the City/Professional. Samples that failed testing or were not approved will be returned to the Contractor at the Contractor's expense, if so requested at time of submission.

1.07 Field Samples

- A. Provide field samples of finishes as required by individual Specifications sections. Install the sample completely and finished. Acceptable samples in place may be retained in completed Work.

1.08 Drawings, Product Data and Certificates

- A. Each letter of transmittal shall identify each and every item transmitted by title, drawing number, revision number and date.
- B. The City generally will not check dimensions, quantities or schedules, except in cases where the information is lacking in the Specifications.
- C. The following is applicable to submitted drawings, data and certificates:
 1. Show relation to adjacent structures or materials.
 2. Clearly identify field dimensions.
 3. Show required dimensions and clearances.

4. Performance characteristic and capabilities shall accompany original Shop Drawing submittals.
 5. Wiring diagrams and controls shall accompany original Shop Drawing submittals.
 6. Installation instructions shall accompany original Shop Drawing submittals.
 7. Each submittal shall identify applicable Standards, such as ASTM number or Federal Specification number.
 8. All information not pertinent shall be removed from the submittal, or shall be crossed out.
- D. When resubmission is required, the City/Professional will return only two (2) marked up copies. A third submission from the same manufacturer will not be accepted.

1.09 Substitutions

- A. The substitution requirements of this Section are in addition to the requirements of the General Conditions and Supplementary Conditions.
- B. When a particular product is specified or called for, it is intended and shall be understood that the proposal tendered by the Bidder includes those products in his Bid. Substitutions will only be considered in cases where original materials are unavailable or in an instance where substitute can be proven superior in its planned application
- C. The intent of these specifications is to provide the City with a quality facility without discouraging competitive bidding. For products specified only by reference standards, performance and descriptive methods, without naming manufacturer's products, the Contractor may provide the products of any manufacturer complying with the Contract Documents, subject to the review of product data by the City/Professional as specified herein.
- D. The City/Professional's approval is required for substitutions.
- E. The Contract is based on the materials, equipment and methods described in the Contract Documents.
- F. The City/Professional will consider proposals for substitution of materials equipment and methods only when such proposals are accompanied by full and complete technical data and all other information required by the City/Professional to evaluate the proposed substitution.
- G. Do not substitute materials, equipment or methods unless such substitution has been specifically approved for this Work by the City/Professional in writing. The Contractor must provide a submittal per this Section specifically requesting approval of the substitution. Failure to specifically identify the requested substitution may invalidate approval of a submittal.

1.10 Availability of Specified Items

- A. Verify prior to bidding that all specified items will be available in time for installation during Construction for orderly and timely progress of the Work.
- B. In the event that specified items will not be available, notify the City/Professional prior

to receipt of proposals.

1.11 Operating Manuals

- A. Submit all manuals in accordance with requirements of Divisions 2 through 16 of the Contract Specifications and Section 01730 "Operating and Maintenance Data."

1.12 Warranties, Guarantees and Bonds

- A. Provide as required by Technical Sections of the Specifications and Sections 01770 "Contract Closeout" and Section 01740 "Warranties and Bonds."

1.13 CADD Files

- A. The Professional's CADD files will be available on a limited basis to qualified firms at the City's prerogative. The procedure for requesting such files is noted elsewhere in these documents and there is a cost associated with handling and reproduction. Recipients are cautioned that these files may not accurately show actual conditions as constructed. Users are responsible to verify actual field conditions.
- B. The Professional's Drawings are to be used only for background information. If the Professional's Drawings are just reproduced and resubmitted (e.g. for pipe layout drawings) they will be rejected.
- C. Copies of data furnished by the City/Professional to Contractor or Contractor to City/Professional that may be relied upon are limited to the printed copies (also known as hard copies). Files in electronic media format of text, data, graphics, or other types are furnished only for the convenience of the receiving party. Any conclusion or information obtained or derived from such electronic files will be at the user's sole risk. If there is a discrepancy between the electronic files and the hard copies, the hard copies govern.
- D. Because data stored in electronic media format can deteriorate or be modified inadvertently or otherwise without authorization of the data's creator, the party receiving electronic files agrees that it will perform acceptance tests or procedures within 60-days, after which the receiving party shall be deemed to have accepted the data thus transferred. Any errors detected within the 60-day acceptance period will be corrected by the transferring party.
- E. When transferring documents in electronic media format, the transferring party makes no representations as to long-term compatibility, usability, or readability of documents resulting from the use of software application packages, operating systems, or computer hardware differing from those used by the data's creator.

1.14 As-Built Drawings

- A. The Contractor or developer shall require the Florida Licensed PSM to locate all improvements for the project as-built survey using Florida State Plane Coordinates, Zone Florida East, North American Datum of 1983, for horizontal datum and North

American Vertical Datum of 1988 for vertical datum as referenced on the construction plans, unless another datum is Engineering Standards Manual 57 5th Edition specified on said plans. This includes referencing the control points to the specified datum or datums upon which they are based.

- B. The Contractor or developer shall obtain an electronic copy of the construction plan drawing files for use as a base for the as-built survey for the PSM.
- C. Design call-outs shall have a thin strike line through the design call-out and all as-built information must be labeled (or abbreviated “AB”) and be shown in a bolder text that is completely legible.
- D. The Contractor shall submit a copy of the current monthly updated as-built survey (“Progressive As-built Survey”), signed and sealed on each page and also submit identically matching electronic files in PDF format and in the same CAD file format as the original design. The as-built survey may also be certified with a signature and seal on the cover, only if the certification includes the entire asbuilt survey and then denotes the pages upon which the certification covers. The “Progressive As-built Survey” shall be submitted to the Construction Manager with each application for payment and indicate the horizontal and vertical locations of all constructed improvements to date.
- E. The Contractor shall submit a minimum of three (3) signed and sealed sets of the final as-built survey incorporating all work performed under the Contract Documents (“Final As-Built Survey”) with the application for final payment, as well as identically matching electronic files in PDF format and in the same CAD file format as the original design (Microstation or AutoCAD Civil3d).

1.15 Progress Photographs

- A. Photographs and digital pictures shall be in color. Provide 1 copy of each digital picture on each of three (3) thumbdrives.
- B. Photographs shall be from locations to illustrate the condition of Construction and state of progress adequately.
- C. Provide up to 12 digital photographs of views randomly selected by the City, taken prior to any construction and prior to each scheduled Application for Payment.
- D. Deliver electronic images, prints, and negatives to the City.
- E. Any photographic print shall be on single weight paper with glossy finish and the overall dimension shall be 7-1/2-inch x 10-inches (19.05 x 25.4 cm). The print shall be clear, sharp and free of distortion after the enlargement from the negative.
- F. Provide loose-leaf albums for each set of photographs to hold prints with a maximum of 50-leaves per binder.
- G. Each print shall be protected by flexible, transparent acetate or plastic sheet protector leaves with metal reinforced holes. Two (2) extra leaves shall be provided in each binder.

- H. The Contractor shall provide before and after photographs of each portion of the site. The below ground facilities shall include all equipment, walls, floor, piping, supports and entrance. At major locations, photographs shall include before, during, and after prints and all prints shall be placed in binders in ascending date order to show the Work as it progresses.
- I. Descriptive Information:
 - 1. Each photograph shall have a permanent title block on the back and shall contain the typed information and arrangement as follows:
 - a. Chokoloskee, FLORIDA
 - b. (ENTER PROJECT NAME)
 - c. BID No. (Enter Bid Number)
 - d. CONTRACTOR: (Name of Contractor)
 - e. DATE: (When photo was taken)
 - f. PHOTO NO.: (Consecutive Numbers)
 - g. PHOTO BY: (Firm Name of Photographer)
 - h. LOCATION: (Description of Location and View)
 - 2. The Contractor shall provide the Professional with a written description of each photograph. This description shall be included in the binders and a copy shall be submitted with the thumb drives.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 Submittal Procedures

- A. Preliminary Shop Drawing Data: Within 20-days after the Award of the Contract or before the Pre-Construction Meeting, the Contractor shall submit to the City/Professional a complete listing of manufacturers for all items for which Shop Drawings are to be submitted.
- B. Shop Drawing Submittal Schedule: Within 30-days after the Notice to Proceed, the Contractor shall submit to the City/Professional a complete schedule of Shop Drawings submittals with the respective dates for submission, the beginning of manufacture, testing and installation of materials, supplies and equipment, noting those submittals critical to the progress schedule.
- C. Submittal Log: An accurate updated log of submittals will be maintained by the Contractor and subject to review by the City/Professional at each scheduled progress meeting.
- D. If the Contractor considers any correction indicated on the Drawings to constitute a change to the Contract Drawings or specifications, the Contractor shall give written notice thereof to the City/Professional. This does not constitute a change order until accepted by the City.

- E. Shop Drawing and submittal data shall be reviewed by the City/Professional for each original submittal and first resubmittal; thereafter review time for subsequent resubmittals shall be charged to the Contractor. The Contractor shall reimburse the City for services rendered by the City/Professional at the rate multiplied by the City's Professional multiplier based on the fee schedule provided to the City for this Project. If a City Engineer is performing any portion of the review, this fee is based upon the hourly rate of the Engineer times the City's multiplier for overhead, benefits, and expenses. The Contractor agrees that the City shall deduct such charges from the Contract Amount by a deductive Change Order.
- F. Contractor Shop Drawing and Sample submittals shall be submitted electronically in addition to any other copies that the Contractor wants returned.
- G. Identify Project, Project Number, date, dates of previous submittals, Contractor, Sub-Contractors, suppliers with their addresses, pertinent Drawings by sheet and detail number, and Specification Section number, as appropriate. Identify all deviations from the Contract Documents. Provide space for Contractor and Professional review stamps.
- H. Contractor's delivery of Shop Drawings for review shall follow a reasonable sequence, as is necessary to support the dates on the Progress Schedule and avoid an overload of Shop Drawings awaiting review at any one time. Coordinate submittal of related items.
- I. Submit Shop Drawings per the schedule of Shop Drawing submittals. Cross out any items on sheets which constitute information not pertaining to equipment specified. Clearly mark all components that are provided as "optional" by manufacturer. Shop Drawings shall be approved by the Contractor prior to submittal to the City/Professional. Shop Drawings will be reviewed by the City/Professional. After City/Professional approval, reproduce and distribute in accordance with requirements herein.
- J. All submissions of Shop Drawings, brochures and catalog cuts shall be accompanied by a transmittal letter listing the Drawings submitted by number and title.
- K. When engineering calculations and/or professional certification of performance criteria of materials, systems, and/or equipment are required, the City is entitled to rely upon the accuracy and completeness of such calculations and certifications submitted by the Contractor. Calculations, when required, shall be submitted in a neat, clear and in an easy to follow format. Such calculations and/or certifications shall be signed and sealed by a Professional Engineer registered in the State of Florida.
- L. Distribute copies of reviewed submittals to concerned parties. Instruct recipients to promptly report any inability to comply with provisions.
- M. Prior to submission of Shop Drawings and samples, the Contractor shall stamp and sign the submittals. Any submission which, upon examination by the City, shows evidence of not having been thoroughly checked, or is not in compliance with the provisions of this Section will be returned to the Contractor for completion before it will be considered for review.
- N. Notify the City of the need for making any changes in the arrangement of piping, connections, wiring, manner of installation, etc., which may be required by the material

or equipment Contactor proposes to supply.

- O. On resubmittals, direct specific attention in writing or on the revised Drawings or sample to revisions other than the corrections required by City on previous submissions.
- P. All drawings, schematics, manufacturer’s product data, certifications and other drawing submittals required for a system specification shall be submitted at one time as a package to facilitate interface checking.
- Q. The City will distribute Shop Drawings as follows for the indicated action taken:

SHOP DRAWING SUBMITTAL DISTRIBUTION

Representative Party	No Exception Taken or Make Correction Noted			Rejected or Revise & Resubmit		
	Submittal Transmittal	Shop Drawing	Review Comment Sheet	Submittal Transmittal	Shop Drawing	Review Comment Sheet
Engineer	Electronic	Electronic	Electronic	Original	File Copy	1 Copy
Contractor (see Note 1)	2 Copies	1 Copy Each Submittal	1 Copy	1 Copy	All Copies Except Engineers	1 Copy
City	Electronic	Electronic	Electronic	1 Copy	None	1 Copy
Inspector	Electronic	Electronic	Electronic	1 Copy	None	1 Copy
Project Record Data (see Note 2)	1 Copy	1 Copy Each Submittal	1 Copy	1 Copy	None	1 Copy

NOTES:

- 1. Contractor shall distribute additional copies to Subcontractors as required.
- 2. Stored by Contractor to be furnished to City upon closeout.

- R. All Shop Drawings shall be accompanied with a transmittal letter providing the following information:
 - 1. Project Title and Contract Number
 - 2. Date
 - 3. Contractor’s name and address
 - 4. The number of each Shop Drawing, project data, and sample required
 - 5. Notification of Deviations from Contract Documents
 - 6. Submittal Log Number conforming to specification section numbers
 - a. Submit each specification section separately.
 - b. Identify each Shop Drawing item required under respective specification section.
 - c. Identify resubmittal using specification section followed by A (first resubmittal), B (second resubmittal) ...etc.

3.02 Contractor’s Review

- A. Contractor’s Responsibility for Coordination: Where the dimension, size, shape,

location, capacity or other characteristic affects another item, and where the Contractor selects, fabricates or installs related or adjacent products to be used, the Contractor shall be responsible for coordination of related items. The Contractor shall insure that a proper exchange of information takes place prior to or during preparation of each submittal and that submittals reflect such coordination. The notation "verify" or "coordinate" on the Drawings indicates the necessity for Contractor coordination in the particular instances used.

- B. Contractor's Checking: When checking submittals from Subcontractors and suppliers, the Contractor shall mark all sets, indicating his corrections and comments in blue or green. Copies marked in red may be returned for revision.
- C. The Contractor is responsible to deliver and pick-up all submittals in a timely manner at the City/Professional's designated office. The Contractor is responsible for all related costs and expenses for the transmittal of such submittals.

3.03 City's/Professional's Review

- A. Corrections or comments made on Shop Drawings during review do not relieve the Contractor from compliance with the requirements of Drawings and Specifications. This check is only for review of general conformance with the design concept of this Project and general compliance with information given in Contract Documents. Any substitutions or changes shall be properly noted.
- B. No action will be taken on "rough-in" Shop Drawings for plumbing and electrical connections when the items of equipment are not included in the same submittal.
- C. Review Time:
 - 1. On a normal basis, each submittal will be returned to the Contractor within 15 working days of the date it is received. Some submittals may require additional time.
 - 2. If, for any reason, the above schedule cannot be met, the Contractor will be so informed within a reasonable period and the Schedule of Submittals revised. If the specific submittal affects the critical path, the Contractor shall immediately notify the City/Professional in writing. In the event of separate submittals of individual components of a system, these submittals may be held until all components of the system are submitted, and the Contractor will be so notified

END OF SECTION

SECTION 01310 PROJECT SCHEDULING

PART 1 - GENERAL

1.01 Scope of Work

- A. This work shall consist of developing, maintaining and providing a detailed time-scaled, computer generated Progress Schedule using the Critical Path Method, which demonstrates complete fulfillment of all work shown in the Contract Documents. The Contractor shall regularly revise and update the Progress Schedule, using it in planning, coordinating, and performing all work. Schedule activities shall accurately depict the entire scope of Work to be performed to complete the project including, but not limited to, all activities of the Contractor, Subcontractors, consultants, the City, and others, as required. The accepted Project Schedule shall be called the Baseline Schedule.
- B. The Baseline Schedule shall be used by the Contractor and the City to coordinate ongoing work activities and track schedule impacts resulting from unknown or unforeseen conditions, including but not limited to activities of the Subcontractors, fabricators, the City, and other involved State agencies, authorities, and other entities such as utilities and municipalities.
- C. The Contractor shall prepare, furnish and maintain a computer-generated Baseline Schedule using the Critical Path Method (CPM), using software produced by the manufacturers of Primavera, Microsoft, or other City-approved commercial scheduling software program, capable of performing in accordance with all of the details in this specification.

1.02 Definitions

Activity – An element of work performed during the course of a project. An activity normally has an expected duration, and may have expected resource requirements. Each Activity shall have its own identifying number, and linked Activities shall be numbered in a manner as to provide consistency for the string of Activities. Activities are also referred to as tasks.

Actual Start date – The Actual Start date represents the point in time that meaningful work actually started on an activity.

Actual Finish date – At the activity level, the Actual Finish date represents the point in time that work actually ended on an activity. At the project level, the Actual Finish date represents the point in time that the Contractor completes all work on the project and it is accepted by the Engineer. This is also known as Substantial Completion.

Bid Date – The date the bids for the Project are opened by the City.

Constraint – A scheduling restriction imposed on the start or finish of an activity. Only contractual/owner- designated constraints are allowed unless specifically authorized by this specification or the Engineer.

Construction Schedule Delay – A construction schedule delay is defined as an event, action or factor that impacts the critical path of the construction schedule and extends the time needed for completion of the Project.

Critical Path – In the Project Schedule, the critical path activities shall be defined as those activities being on the longest path, containing the least amount of total float. The critical path will generally change from time to time as activities are completed ahead of, or behind schedule.

Critical Path Method (CPM) – A network analysis technique used to predict project duration by analyzing which sequence of activities (path) has the least amount of scheduling flexibility (least amount of float). A scheduling technique utilizing activities, durations, and interrelationships/dependencies (logic), such that all activities are interrelated with logic ties from the beginning of the Project to the completion of the Project.

Data Date – The date entered in the Project Details which is used as the starting point to calculate the applicable schedule. For the Baseline Schedule, the Data Date shall be the Contract Award Date; for Monthly Progress Schedule update submissions, the Data Date shall be the date up to which the Contractor is reporting progress (generally the last working day for the corresponding contract payment period).

Duration – Activity durations shall be entered as the number of working days (not including holidays or non-working periods) to complete the selected activity; for certain activities such as concrete curing, or others approved by the Engineer, durations may reflect actual calendar days.

Final As Planned At Award Baseline Schedule – The original plan against which the Contractor's progress is measured. The Final As Planned at Award Baseline Schedule (Baseline Schedule) represents the original plan at the award of the contract, of what is expected to happen. Once the Baseline Schedule is accepted by the Engineer, it is saved and used as a basis to compare against Progress Schedule Updates.

Float Suppression – Utilization of zero free float constraints which allows an activity to start as late as possible by using its' available free float. This technique allows activities to appear more critical than if the activity's total float was based on early dates. Examples of float suppression techniques include preferential sequencing (arranging the critical path through activities more susceptible to City-caused delay), extending activities durations, incorporating several activities that actually require a half day or less effort with Finish to Start relationships but showing each as full day durations where one activity would be appropriate, manipulating calendars, or any other such methodology.

Free Float – The amount an activity can slip without delaying the immediate successor activities. Free float is the property of an activity and not the network path.

Hammock Activity – Activities grouped by a single activity, usually for the purpose of determining overall length of activity string.

Initial Baseline Progress Schedule – The Contractor's schedule prior to submittal to the Engineer of the Final As Planned at Award Baseline Progress Schedule, reflecting the Contractor's

plan to proceed with Work during the time period while the final baseline schedule is still in the development, review, and acceptance process.

Late Dates – The latest an activity can start or finish without delaying the day of completion. Also known as “Drop dead dates”.

Milestone – A significant event, usually the beginning or end of a major stage or deliverable.

Notice of Award – The official written notice from the City to the Contractor notifying the Contractor that it has been awarded the Contract.

Notice to Proceed – The official written notice from the City to the Contractor notifying the Contractor of the date that it may begin Work. Contract Time is measured from this date.

Predecessor – An activity(s) that is required for the start of a given activity. Every activity must have a predecessor except for the first activity in the schedule.

Progress Schedule Update – Schedule that reflects the status of activities that have commenced or have been completed, including the following items: (a) actual activity start date and or completion date as appropriate; (b) actual remaining duration for activities commenced and not complete; (c) actual physical percent complete for activities commenced and not complete; and (d) actual activity suspend or resume dates for activities commenced and not complete.

Recovery Schedule – A schedule depicting the plan for recovery of significant time lost on the Project. This separate CPM schedule submission shall provide the resolution and include appropriate changes in network logic, calendar adjustments, or resource assignments.

Relationships Between Activities

Finish to Start – The successor activity can begin only when the current activity completes. **Finish to Finish** – The finish of the successor activity depends on the finish of the current activity. **Start to Start** – The start of the successor activity depends on the start of the current activity.

Start to Finish – The successor activity cannot finish until the current activity starts.

Schedule Revision – Revisions to the Baseline Schedule to ensure it accurately reflects the current means and methods of how the Project is anticipated to progress, including modifications made to activities in the current Baseline Schedule in any of the following items: (a) activity duration; (b) changes in logic connections between activities; (c) changes in constraints; (d) changes to activity descriptions; (e) activity additions or deletions; (f) changes in activity code assignments; (g) changes in activity resource assignments; and (h) changes in calendar assignments.

Substantial Completion - That date when (a) the **Work** (or a specified part thereof) is complete in accordance with the **Contract Documents**, with the exception of the minor items identified during the inspection described in the Contract General Conditions, and (b) the **Work** can be utilized for the purposes for which it is intended, as may be evidenced by successful completion of all specified pre-operational start-up and demonstration tests and receipt of a Certificate of Occupancy, if applicable to this **Project**. The terms "substantially complete" and "substantially completed" as applied to any **Work** refer to **Substantial Completion** thereof.

Successor - An activity(s) that follows a given activity. Every activity must have a predecessor except for the last activity in the schedule.

Total Float – The amount of time an activity (or chain of activities) can be delayed from its early start without delaying the Contract completion date. Float is a mathematical calculation and can change as the Project progresses and changes are made to the Project plan. Total Float is calculated and reported for each activity in a network, however, Total Float is an attribute of a network path and not associated with any one specific activity along that path.

Working Day – A working day is a calendar day scheduled for active prosecution of the Work.

1.03 Intent, Responsibility, and Time

- A. The Contractor shall schedule the Work using such procedures and staging/phasing in accordance with the Contract Documents. Work designated as part of separate stages may be performed simultaneously where provided in the Contract Documents or where approved.
- B. The purpose of the Baseline Schedule shall be to: ensure adequate planning and staffing during execution of the Work by the parties to the contract; ensure communication and coordination of activities among all affected parties; assist the Contractor and the City in monitoring the progress of the Work, and evaluating proposed changes to the contract and/or entitlement to additional time for Project completion; establish a standard methodology for time adjustment analysis based on the principles of the Critical Path Method of scheduling, for use in time-related dispute resolution; and determine appropriate extensions or reductions of Contract Time.
- C. The scheduling of activities is the responsibility of the Contractor. Therefore, it is the Contractor's responsibility to determine the most feasible order of Work commensurate with the Contractor's abilities and the requirements of the Contract Documents.
- D. The intent of the review of the Baseline Schedule by the Engineer is for apparent compliance with the contract requirements for time and phasing. Review of the Baseline Schedule by the Engineer is not intended to consider the reasonableness of the Contractor's plan. If, after the Baseline Schedule has been accepted by the Engineer, either the Contractor or the Engineer discover that any aspect of the schedule has an error or omission, the Contractor must correct it on the next Progress Schedule submission and note the changes in the Narrative Report.
- E. Acceptance of the Baseline Schedule by the Engineer shall not be construed to imply approval of any particular construction methods or sequence of construction or to relieve the Contractor from its responsibility to provide sufficient materials, equipment, and labor to guarantee the completion of the contract in accordance with the contract documents.
- F. Acceptance of the Baseline Schedule by the Engineer does not attest to the validity of assumptions, activities, relationships, sequences, resource allocations, or any other aspect of the progress schedule. Within the contractual constraints, the Contractor is

solely responsible for the planning and execution of the work.

- G. Acceptance of the Baseline Schedule by the Engineer shall not be construed to modify or amend the Contract Documents or the date of Substantial Completion.
- H. Failure of the Contractor to include any element of the Work required by the Contract in the accepted Baseline Schedule does not relieve the Contractor from its responsibility to perform such work. Errors and omissions on schedules shall not relieve the Contractor from finishing all Work within the time limit specified for completion of the Contract.
- I. The Progress Schedule shall include all Work contained in the Contract Documents and all Work directed in writing by the Engineer, and not be limited to Work on the initial critical path. The Progress Schedule shall reflect the actual dates that Work activities started and completed in the field. If a Work activity is suspended in the field and restarted at a later date, and the break between when the Work was suspended to when it was resumed is significant compared to the original activity duration, then the activity should be broken into multiple activities to reflect this discontinuity of the Work.
- J. The Contractor shall ensure that Progress Schedules prepared by the Contractor for submission to the Engineer are in general compliance with the Contract Documents and requirements of this specification. Schedule submissions and accompanying narratives shall be timely, complete, accurate, and in compliance with the Contract.

1.04 Implementation

- A. The Baseline Schedule shall be prepared in the following stages:
 - 1. Initial Schedule: The Contractor is encouraged, but not required, to submit an Initial Baseline Schedule that demonstrates a sample of how the Contractor's proposed format and structure will conform to the detailed requirements of this section. The review and comment by the Engineer of the sample schedule should assist the Contractor in assuring the first submittal of the Baseline Schedule will be in general conformance with the requirements of the specification and other contract requirements, and that major rework of the Baseline Schedule will not be required. This submission shall reflect the Contractor's anticipated plan to complete the Work in accordance with the Contract Documents, as envisioned by the Contractor at the time of the bid. This submittal may be made any time following notice to the Contractor that he/she is the anticipated low bidder for the Contract. Critical items for this submittal should include, but are not limited to: anticipated start dates, major milestones, activity descriptions, activity durations, activity relationships, summary activities, submittal times, etc. The Initial Baseline Schedule will not be considered part of the Baseline Schedule submittal.
- B. Schedules submitted after the first Application for Payment shall be in accordance with all provisions of the General Conditions and the requirements contained in this Section. No work other than installation of the Engineer's Field Office, mobilization, procurement and administrative activities, installation of construction signs, installation of erosion control and pollution protection, clearing and grubbing, field measurements, and survey and stakeout will be permitted to start until the Baseline Schedule has been submitted to the Engineer, and the Engineer determines there are no deficiencies consistent with those defined in paragraph E.1

C. Baseline Schedule: (As Planned at Award Baseline Schedule)

1. The Contractor shall ensure the schedule accurately reflects the proposed approach to accomplish the Work outlined in the Contract Documents and conforms to all requirements of this specification. The schedule shall define a complete logical plan that can realistically be accomplished to execute the Work in the Contract.
 - a. The schedule shall comply with the Work constraints and milestones defined in the Contract as well as other contractual terms and conditions. The schedule shall meet all interim milestone dates and shall not extend beyond the Substantial Completion date. The submission shall reflect the Contractor's plan at the time of Contract Award, and prior to the start of any work. Negative float is not allowed in the Baseline Schedule.
 - b. During the course of contract execution, Total Float generated due to the efficiencies of either party (City or Contractor) will generally be considered Project Float and is not for the sole use of the party generating the float; rather it is a shared commodity to be reasonably used by either party. Any party assigned activity responsibility within the schedule has the full use of the Project Float until it is depleted.
 - c. However, if the Contractor submits a request for an Early Completion that includes a revised Progress Schedule supplemented with resource allocations for each task activity and time-scaled resource histograms that is accepted by the Engineer, then Total Float actually resulting from additional Contractor resources, additional work shifts, longer work weeks or adoption of more aggressive scheduling and construction management practices of the Contractor's work activities may be considered Contractor Owned Float for the exclusive use of the Contractor.
 - d. Likewise, the City may accrue City Owned Float by generating Total Float through different means. This includes: change(s) to the Contract that relaxes restrictions on the Contractor or removes Contract Work; early completion of utility company activities; and early completion of the shop drawing reviews. City Owned Float is considered a resource for the exclusive use by the City. The Engineer documents City Owned Float by directing the Contractor to update the City Owned Float activity on the next Monthly Progress Schedule submission. The Engineer may use the City Owned Float to mitigate past, present, or future City delays by offsetting potential time extensions for contract change orders.

- e. For either the City or the Contractor to reserve Total Float as City Owned Float or Contractor Owned Float, the party must document within the schedule submission narrative in advance of generating the Total Float the additional resources or measures that will be taken to shorten the Critical Path, and then document within the schedule submission narrative that immediately followed, when the Total Float was actually generated the City or Contractor Owned Float, based on entry of Actual Start and Actual Finish dates and percentage of work completed, and this must be agreed to by both parties in the next Progress Meeting. Without this timely documentation, any Total Float generated will be considered Project Float.

1.05 Supplementary Requirements

- A. The Contractor shall ensure the Baseline Schedule accurately reflects the proposed approach to accomplish the Work outlined in the Contract Documents and conforms to all requirements of this specification. The Baseline Schedule shall be submitted in the original scheduling software file format. Pdf format or scanned electronic submissions are not acceptable.
- B. The Baseline Schedule shall define a complete logical plan that can realistically be accomplished, to execute the Work defined in the Contract.
- C. The schedule shall comply with the Work constraints and milestones defined in the Contract as well as all other contractual terms and conditions. The schedule shall meet all interim milestone dates and shall not extend beyond the Substantial Completion date. The Baseline Schedule submission shall reflect the Contractor's plan at the time of contract award, and prior to start of any work. No negative float is allowed in the Baseline Schedule submission.
- D. Detailed Schedule Requirements – As a minimum, the Contractor shall address the following in the Baseline Schedule:
 1. Sufficient activities shall be included to assure that there is adequate planning for the entire Project. The appropriate number of activities will largely depend on the nature, size, and the complexity of the project. In addition to all of the site construction activities, network activities shall include: activities necessary to depict the procurement/submittal process including shop drawings and sample submittals, the fabrication and delivery of key and long-lead procurement elements; settlement or surcharge period activities; sampling and testing period activities; cure periods; burn-in periods; activities related to temporary structures or systems; activities assigned to Subcontractors, fabricators, or suppliers; activities assigned to the City and other involved State agencies and authorities, including final inspection; activities to perform punch list Work; and activities assigned to other entities such as utilities, municipalities, County government/agencies, and other adjacent contractors. The Baseline Schedule shall indicate intended submittal dates, and depict the review and approval periods as defined in the Contract Documents for Department review.
 2. Activity ID – Include a unique identification number for each activity. Activity ID numbers shall not be changed or reassigned.

3. Activity Name – Clearly and uniquely define each activity name with a description of the Work that is readily identifiable to inspection staff and the progress for each activity can be measured. Each activity shall have a narrative description consisting of a verb or work function (i.e. form, pour, excavate, grade, etc.), an object (i.e. slab, footing, wall, subgrade), and a location (i.e. station, bridge number, section, etc.). The Work related to each activity shall be limited to one Area of the contract, one stage of the contract, one phase of the contract, and one responsible party of the contract.
4. Milestone Activities – Include activities for all contract Milestones that define significant contractual events such as Contract Award, Notice to Proceed, Substantial Completion, Contract Completion, and coordination points with outside entities such as utilities, State and County agencies, Authorities, municipalities, Time-Related Contract Provisions, etc. All Milestone activities in that schedule shall be assigned a calendar that reflects work being allowed 365 days a year and 24 hours per day (i.e. curing calendar).
5. A “Contractor Start Work” start Milestone activity shall be included that has the actual date the Contractor started work authorized under the Contract.
6. Activity Durations – Define the Original Duration of each activity in units of whole Work days. Except submittal/procurement, curing, and burn-in activities, durations shall not exceed 30 work days unless approved by the Engineer. Durations for City submittal reviews shall meet requirements set forth in the Contract Documents. If requested by the Engineer, the Contractor shall justify the reasonableness of planned activity time durations.
7. Activity Relationships – Clearly assign predecessors and successors relationships to each activity, and assign appropriate logic ties between activities (Finish to Start, Start to Start, Finish to Finish, etc.) Do not have any open-ended activities, with the exception of the first and last activity in the schedule. An activity may only appear once as a predecessor or successor to another specific activity, but may be assigned as a predecessor or successor to many different activities. Do not include inappropriate logic ties with Milestone activities (i.e. a finish milestone activity and a predecessor assigned with a Finish to Start logic tie). Lag time may not exceed 10 days.
 - a. Activity Constraint Dates – The Contractor shall not have any constrained activities, except contractual dates, unless the Engineer accepts such constraints in writing.
 - b. Activity Dates – No Actual Start or Actual Finish dates shall be entered in the Baseline Schedule, except activities that were completed prior to the Contract Award.
 - c. Calendars – Use clearly defined calendars to account for contractually-defined, or anticipated shut-down periods (i.e. holidays, vacations, etc.). The Contractor shall identify the work days per week, holidays, number of shifts per day, and the number of hours per shift.

- d. Clearly define significant interaction points between the Contractor, the City, and other entities including, but not limited to: Federal, State, and local agencies/authorities; and utilities. All activities of the City, utility companies, adjacent contractors, and other entities that affect the progress and influence any contract required dates including durations shall be shown in the schedule. This includes dates related to all permits and agreements. The schedule shall give special consideration to sensitive areas such as road closures and work restrictions, and shall indicate any time frames when work is restricted, as outlined in permits issued by regulatory agencies, and provided in the Contract Documents.
- e. Activity Resources – Resource loading will be required. The City will assume when reviewing the Baseline Schedule that the Contractor's resources are unlimited, unless the Contractor either assigns equipment, labor and material resources to each activity in the Baseline Schedule (and performs resource leveling), or indicates in the Baseline Schedule narrative what resource limitations are present. If the Baseline Schedule is not resource loaded, it is the Contractor's responsibility to assure that the activity logic in the Baseline Schedule properly reflects any resource limitations. If the Contractor anticipates multiple crews for the same schedule activity, those resources shall be documented in the Baseline Schedule narrative. As an activity can have only one responsible party, no activity shall involve multiple crews comprised of the Contractor and a Subcontractor, or multiple subcontractors.
- f. Revenue Loading – The Contractor shall assign revenue amounts to all major activities, or groups of activities (i.e. pile driving by bent, embankment per area, etc.), so that the sum of the revenue amounts equals the Contract Value. This information will be used to produce a cash flow curve.
- g. Activity Codes – The Contractor shall include a well-defined activity coding structure that allows project activities to be sorted and filtered. Activity codes shall include, but not be limited to: Responsible Party; Stage; Area of Work; Type of Work; Phase; and additionally as required by the Engineer to meet the needs of the specific contract work to facilitate the use and analysis of the schedule.
- h. Activity Coding – For each activity, within the activity details the Contractor shall assign Activity Code values to identify the Responsible Party (i.e. Contractor, City, Utility, etc.) for the Work to be performed (only one responsible party shall be assigned to each activity), the Stage of the contract for the Work that will be performed, the Area where the Work will be performed, the Phase, and the Type of Work (i.e. procurement, embankment, paving, signage, etc.).
- i. Narrative – Include a narrative in Microsoft Word, Adobe Acrobat or other City-approved format, that describes:
 - 1) The Contractor's general approach to construct the Work outlined in the Baseline Schedule. Address the reasons for the sequencing of Work and describe any resource limitations, potential conflicts, and other salient items that may affect the Baseline Schedule and how they may be resolved.

- 2) A list of activities with durations exceeding thirty (30) calendar days and a description of the reason why a duration of thirty (30) days or shorter is not appropriate.
 - 3) A list of all lags used and the reason for each lag.
 - 4) A list of all constraints and the justification(s) for Contractor imposed activity constraints proposed in the Baseline Schedule.
 - 5) A list of calendars used in the Baseline Schedule and a description of the reason for use of each calendar.
 - 6) Describe the project critical path and challenges that may arise associated with the critical path.
 - 7) Anticipated coordination issues related to the Work activities by other entities that require additional information from or action by the Engineer
- E. Schedule Submission: Within fifteen (15) calendar days from Notice of Award, submit one hard copy and one electronic copy of the Baseline Schedule in a Critical Path Method (CPM) format for the Engineer's review and acceptance. The electronic copy of the Baseline Schedule shall be the original scheduling software file. Pdf format or scanned copies are not an acceptable electronic format.
1. The Engineer will review the Baseline Schedule and return it, accept it with comments, or reject it within fourteen (14) calendar days following the date of receipt of the Contractor's submission.
 2. If the Baseline Schedule is returned with comments, the Contractor shall address all comments and revise the schedule as necessary. The Contractor shall complete the Baseline Schedule and obtain the acceptance of the Engineer within forty-five (45) days from Notice of Award.
 3. The Baseline Schedule must be "accepted" or "accepted as noted" by the Engineer prior to the City evaluating any Contractor disputes associated with time impacts. This does not preclude the Contractor from submitting a dispute while the Baseline Schedule is being reviewed for acceptance.
- F. Monthly Progress Schedule Submissions – Following acceptance of the Baseline Schedule, the Contractor shall update the schedule using Actual Start and Actual Finish dates. The updated Baseline Schedule will be referred to as the Progress Schedule Update.
1. First Monthly Progress Schedule Submission – Within three days following acceptance of the Baseline Schedule or the closing date for the first month's contract payment period whichever is later, the Contractor shall perform a Progress Schedule Update to reflect the status of all activities where Work was performed in the time period between the start of work and acceptance of the Baseline Schedule. This shall include the actual dates entered in the Actual Start and Actual Finish columns, and percentage of Work complete for uncompleted activities, in addition the Contractor shall incorporate any Progress Schedule Revisions that reflect any changes in how future work activities are to be completed.

2. Subsequent Monthly Progress Schedule Update Submissions – On a monthly basis, the Contractor shall submit a copy of the current Progress Schedule Update that includes all Schedule Revisions and Progress Schedule Updates to reflect the actual and planned prosecution and progress of the Contract Work. Progress Schedule Updates shall reflect the status of activities that have commenced or have been completed, including the following items: (a) actual dates in activity Actual Start and Actual Finish columns as appropriate; (b) actual remaining duration for activities commenced and not complete; (c) actual physical percent complete for activities commenced and not complete; (d) actual activity suspend or resume dates for activities commenced and not complete; and (e.) Total Float for all activities. Schedule Revisions reflect modifications made to activities in the current project Baseline Schedule in any of the following items: (a) activity duration; (b) changes in logic connections between activities; (c) changes in constraints; (d) changes in activity descriptions; (e) activity additions or deletions; (f) changes in activity code assignments; (g) changes in activity resource assignments; (h) changes in calendar assignments; (i) changes in total float; (j) changes in critical path. When preparing a formal submission of the Progress Schedule Update, the Contractor shall make a copy of the current Progress Schedule and name it according to the file naming convention provided by the City.
- G. The Contractor shall submit a Revised Baseline Schedule for review and approval by the Engineer for any of the following reasons:
1. The Engineer directs a change that affects the date(s) specified in the Agreement, or alters the length of the Critical Path. This submittal shall be provided within 15 calendar days from the date the Engineer requests the revision. Progress Payments will not be made until the submittal is accepted by the Engineer.
 2. Contractor elects to change the sequencing so as to affect the length of the Critical Path in the accepted Progress Schedule.
 3. The Engineer directs the Contractor to provide a Recovery Schedule. This submittal shall be provided within 15 calendar days from the date the Engineer requests the revision. Progress Payments will not be made until the submittal is accepted by the Engineer.
- H. If, prior to agreement on an equitable adjustment to the Contract Time, ENGINEER requires revision to the Progress Schedule in order to evaluate planned progress, CONTRACTOR shall add activities showing the change effect(s) as directed.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01370

SCHEDULE OF VALUES

PART 1 - GENERAL

1.01 Scope of Work

- A. In accordance with the General Conditions and this Section, Contractor shall prepare and submit a Schedule of Values. The Schedule of Values shall be used only as the basis of CONTRACTOR'S Application for Payment.

1.02 Implementation

A. SUBMITTALS:

1. CONTRACTOR shall submit Schedule of Values on forms provided by CITY, or if none provided on 8-1/2 inch by 14 inch white paper. Identify the schedule with:
 - a. Contract Title and Project Name, if applicable.
 - b. Name and Address of CONTRACTOR.
 - c. Date of submission.

- B. The Schedule of Values shall list the installed value of the component parts of Lump Sum Work in sufficient detail to serve as a basis for computing values for Progress Payments during construction:

1. The division of lump sum items into component parts shall be chosen to accommodate measuring actual progress in the field, such that progress measurement can be objective and verifiable. Appropriate units shall be used for each line item. For example, use units such as:
 - a. backfill - per cubic yard; sidewalk installed - per square foot; cable pulled - per linear foot; foundation pilings - each; etc.
2. Identify each component part with the number and title of the respective major section of the Specifications. For each major component part list subcomponent values of major products, operations or work areas under the item.
3. For each of the various component parts of the Work, include a directly proportional amount of CONTRACTOR's overhead and profit. No separate line items shall be allowed for CONTRACTOR's field or home office overhead or profit.

- a. ENGINEER will review for approval and return Schedule of Values submittals in accordance with the General Conditions. If requested by ENGINEER, CONTRACTOR shall support amounts indicated on the Schedule of Values with data such as executed Sub-agreements, which will substantiate the correctness of the values, or revise values ENGINEER deems inappropriate.
4. CONTRACTOR shall revise and resubmit, and ENGINEER shall review for approval, the Schedule of Values to incorporate Change Orders executed by the CITY.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

**SECTION 01380
AUDIO-VISUAL DOCUMENTATION**

PART 1 - GENERAL

1.01 Scope of Work

- A. The purpose of the audio - visual documentation is to provide the City with regularly documented audio - visual records of the Construction process from the existing conditions through final completion.

1.02 Pre-Construction Video Requirements Included

- A. The Contractor shall employ a professional videographer to take a Pre-Construction video of the entire site including the areas of adjacent properties within 100-feet of the limits of Work and shall be made within 30-days of Work beginning. Special attention shall be made to show the existing buildings, equipment, paved roads, signs, and other existing features.
- B. The Contractor shall submit a quality audio-video recording documenting Pre-Construction field conditions for the entire project. When the Work includes construction of water, wastewater, reuse, or other lines in the vicinity of any street or road, the Contractor shall take digital audio-video recordings of existing conditions along both sides of the street or road. The Pre-Construction video shall be submitted to the City and accepted prior to commencing any Work or using any Contractor laydown areas.
- C. Electronic digital photography shall also be used as necessary to record and facilitate resolution of on-site issues through the transmission of electronic photographs by e-mail from the site to the Professional's and City's offices

PART 2 - PRODUCTS

2.01 Audio-Video Recording

- A. Each audio-video recording shall be saved on appropriate Thumb Drive media viewable on standard media players or computer.
- B. Each Thumb Drive shall contain the following information and arrangement at the beginning as a title screen:
 - Chokoloskee, Florida
 - PROJECT NAME
 - PROJECT NUMBER
 - CONTRACTOR: (Name of Contractor)
 - DATE: (When photo was taken)
 - VIDEO BY: (Firm Name of Videographer)
 - LOCATION: (Description of Location(s) and View(s))

- C. Each Thumb Drive recording section shall begin with an audio description of the City's name, Contract name and number, Contractor's name, date and location information such as street name, direction of travel, viewing side, etc.
- D. Information appearing on the video recording must be continuous and run simultaneously by computer generated transparent digital information. No editing or overlaying of information at a later date will be acceptable.
- E. Digital information to appear in the upper left corner shall be as follows:
 - 1. Name of Contractor
 - 2. Day, date and time
 - 3. Name of Project & Specification Number
- F. Time must be accurate and continuously displayed on the video record
- G. Written documentation must coincide with the information on the Thumb Drive so as to make easy retrieval of locations at a later date.
- H. The video system shall have the capability to transfer individual frames of video electronically into hard copy prints or photographic negatives.
- I. Audio shall be recorded at the same time as the video recording and shall have the same information as on the viewing screen. Special commentary shall be given for unusual conditions of buildings, sidewalks and curbing, foundations, trees and shrubbery, structures, equipment, pavement, etc.
- J. All Thumb Drives shall have labels or a test file with the following information:
 - 1. Thumb Drive Number
 - 2. City's Name
 - 3. Date of Recording
 - 4. Project Name and Number
 - 5. Location and Standing Limit of Video

2.02 Construction Photographs

- A. The Contractor shall employ a competent photographer to take construction record photographs periodically during the course of the Work. Digital photographs are required.
- B. If prints are made, the prints shall include: Date imprinted 8-inch x 10-inch high resolution glossy single weight color print paper; 5 sets, bound in 3-ring binders.

- C. Digital photographs to be provided to the City on a thumbdrive with each respective Application for Payment and distributed by the City as follows:
 - 1. City (2 sets)
 - 2. Engineer (1 set)
 - 3. Project Record Data (1 master set stored by Contractor to be furnished to City upon Closeout)

PART 3 - EXECUTION

3.01 Video Views Required

- A. Complete coverage shall include all surface features within 100-feet of the Work area to be used by the Contractor and shall be supported by appropriate audio description made simultaneously with video coverage. Such coverage shall include, but not be limited to, all buildings, equipment, existing driveways, sidewalks, curbs, ditches, roadways, landscaping, trees, culverts, headwalls, and retaining walls, equipment, structures, pavements, manholes, vaults, handrails, etc. located within the work zone. Video coverage shall extend to the maximum height of all structures within this zone.
- B. The video recorder shall take special efforts to point out and provide audio commentary on cracking, breakage, damage, and other defects in existing features.
- C. All video recording shall be done during times of good visibility. No video recording shall be done during periods of visible precipitation, or when more than 10% of the ground area is covered with standing water, unless otherwise authorized by City.
- D. Prior to commencement of audio-video recording, the Contractor shall notify the City in writing within 48-hours of the audio-video recording. The City may provide a designated representative to accompany and observe all video recording operations.

3.02 Audio-Video Requirements

- A. Major Locations:
 - 1. The Contractor shall provide color digital video of each major facility and structures and facilities adjacent to the Construction before construction starts.
 - 2. All videos shall be recorded with character generator operating with date, time, and location on screen. During video recording, the Contractor shall narrate video explaining what is being shown. All master videos shall be delivered to the City.

3. The audio and video portions of the recording shall maintain viewer orientation. To this end, overall establishing views of all visible house and business addresses shall be used. In areas where the proposed construction location will not be readily apparent to the video recording viewer, highly visible yellow flags shall be placed, by the Contractor, in such a fashion as to clearly indicate the proposed centerline of Construction. When conventional wheeled vehicles are used as conveyances for the recording system, the vertical distance between the camera lens and the ground shall not exceed 10-feet. The camera shall be firmly mounted such that transport of the camera during the recording process will not cause an unsteady picture.
4. All video recording shall be done during time of good visibility. No video recording shall be done during precipitation, mist or fog. The recording shall only be done when sufficient sunlight is present to properly illuminate the subjects of recording and to produce bright, sharp video recordings of those subjects.
5. The average rate of travel during a particular segment of coverage shall be directly proportional to the number, size and value of the surface features within that construction area's zone of influence. The rate of speed in the general direction of travel of the vehicle used during taping shall not exceed 44-feet per minute.

3.03 Photographs

- A. A minimum of 3 views (top, upstream, and downstream) each shall generally be taken prior to backfilling pipelines or structures. Photographs shall be provided for:
 1. Utility conflicts/relocations
 2. Manholes
 3. Pump stations
 4. Boring and jacking
 5. Directional drilling pipe entrance and exit
 6. Valve installation
 7. Air release valve installation
 8. Fire hydrant assembly
- B. Photo Identification
 1. Name of Project
 2. Name of Structure
 3. Orientation of View
 4. Date & Time of Exposure
 5. Film numbered identification of exposure

END OF SECTION

SECTION 01400 QUALITY CONTROL

PART 1 - GENERAL

1.01 Site Investigation and Control

- A. Contractor shall be required to verify all dimensions in the field and check field conditions continuously during construction. Contractor shall be solely responsible for any inaccuracies built into the Work due to Contractor's failure to comply with this requirement.
- B. Contractor shall inspect related and appurtenant Work and report in writing to City 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 at Contractor's sole cost and expense.

1.02 Inspection of the Work

- A. The Work shall be conducted under the general observation of representatives of the City acting on behalf of the City to ensure strict compliance with the requirements of the Contract Documents. Such inspection may include mill, plant, shop, or field inspection, as required. The City shall be permitted access to all parts of the Work, including plants where materials or equipment are manufactured or fabricated. Inspection by the City are in addition to any inspections required of Contractor by their QC Representatives.
- B. The presence of the City, however, shall not relieve the Contractor of the responsibility for the proper execution of the Work in accordance 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 City. Further, no requirement of this Contract may be waived or modified except by change order or formal (written) substitution approval.
- C. All materials and articles furnished by the Contractor shall be subject to rigid inspection, and no materials or articles shall be used in the Work until they have been inspected and accepted by the City. No Work shall be backfilled, buried, cast in concrete, hidden, or otherwise covered until it has been inspected. Any Work so covered in the absence of inspection shall be subject to uncovering. Where uninspected Work cannot be uncovered, such as in concrete cast over reinforcing steel, all such Work shall be subject to demolition, removal, and reconstruction under proper inspection and no additional payment will be allowed therefore.
- D. The Contractor is responsible for the Quality of their own work and shall designate a

qualified individual, to be approved by the City, who will ensure that all work is performed in strict accordance with the Contract Documents. This quality representative shall inspect the work for the Contractor and provide to the City and the Contractor a report outlining all work accomplished, all inspections, and all testing performed for all days when work is performed. The objective of this report is to provide "Objective Evidence of Compliance" by the Contractor with the requirements of the Contract.

1.03 Time of Inspection and Tests

- A. Samples and testing required under these Specifications shall be furnished and prepared in ample time for the completion of the necessary tests and analyses before said articles or materials are to be used. Except as otherwise provided in the Contract Documents, performance of the required tests will be by the Contractor and all costs therefore will be borne by the Contractor at no cost to the City. Whenever the Contractor is ready to backfill, bury, cast in concrete, hide, or otherwise cover any Work under this Contract, the City shall be notified not less than 24-hours in advance to request inspection before beginning any such Work of covering. Failure of the Contractor to notify the City at least 24-hours in advance of any such inspections shall be reasonable cause for the City to order a sufficient delay in the Contractor's schedule to allow time for such inspection, any remedial, or corrective work required, and all costs of such delays, including its impact on other portions of the Work, shall be borne by the Contractor.

1.04 Sampling and Testing

- A. When not otherwise specified, all sampling and testing shall be in accordance with the methods prescribed in the current standards of the ASTM, as applicable to the class and nature of the article or materials considered. However, the City reserves the right to use any generally accepted system of inspection which, in the opinion of the City, will ensure the City that the quality of the workmanship is in full accord with the Contract Documents.
- B. Any waiver 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 technical or qualitative requirements of the Contract Documents.
- C. Notwithstanding the existence of such waiver, the City shall reserve the right to make independent investigations and tests as specified in the following paragraph and, upon failure of any portion of the Work to meet any of the qualitative requirements of the Contract Documents, shall be reasonable cause for the City to require the removal or correction and reconstruction of any such Work.
- D. In addition to any other inspection or quality assurance provisions that may be specified, the City shall have the right to independently select, test, and analyze, at the expense of the City, additional test specimens of any or all of the materials to be used. Results of such tests and analyses shall be considered along with the tests or analyses made by the

Contractor to determine compliance with the applicable specifications for the materials so tested or analyzed provided that wherever any portion of the Work is discovered, as a result of such independent testing or investigation by the City which fails to meet the requirements of the Contract Documents, all costs of such independent inspection and investigation and all costs of removal, correction, reconstruction, or repair of any such Work shall be borne by the Contractor.

1.05 Rights of Rejection

- A. The City 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 City or inspector, through an oversight or otherwise, has accepted materials or Work which is defective or which is contrary to the Contract Documents, such material, no matter in what stage or condition of manufacture, delivery, or erection, may be rejected by City.
- B. Contractor shall promptly remove rejected articles or materials from the site of the Work after notification or rejection.
- C. All costs of removal and replacement of rejected articles or materials, as specified herein, shall be borne by the Contractor.
- D. If the Contractor fails to remove or replace defective work after notification to do so, the City may have the work removed and replaced by others and deduct all costs from the Contractor's pay requests.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

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**SECTION 01410
TESTING AND TESTING LABORATORY SERVICES**

PART 1 - GENERAL

1.01 Scope of Work

- A. The City will employ and pay for services of an independent testing laboratory to perform certain inspection and testing as required by the Contract Documents. This may include, but is not limited to, audio-visual surveillance of piping, testing of soil, concrete, or structural connections and other such tests which the CITY deems necessary.
- B. The Contractor shall cooperate with the laboratory to facilitate the execution of its required services.

1.02 Implementation

A. City Responsibility

- 1. The City will retain a testing laboratory for the on-site testing of soil, asphalt, concrete and any other material processes or activities deemed necessary, or as required, by the Contract Documents. CITY will be responsible to decide what off-site testing is required.
- 2. On-site testing laboratory services will be supplied by, and evaluated by, the City.

B. Laboratory Responsibility

- 1. Meet "Recommended Requirements for Independent Laboratory Qualifications" latest edition, published by American Council of Independent Laboratories and be authorized/certified to perform work in the state of Florida.
- 2. Cooperate with ENGINEER and CONTRACTOR; provide qualified personnel promptly on notice.
- 3. Perform specified inspections, sampling, cylinder breaks and testing of materials and methods of construction:
- 4. Comply with specific standards; ASTM, and other recognized authorities.
- 5. Ascertain compliance with requirements of Contract Documents.
- 6. Promptly notify ENGINEER and CONTRACTOR of irregularities or deficiencies of work which are observed during performance of services.

7. Promptly submit five copies of reports of inspections and tests to ENGINEER, including:
 - a. Date issued.
 - b. Project title and Engineer's job number.
 - c. Testing laboratory name and address.
 - d. Name and signature of inspector.
 - e. Date of inspection or sampling.
 - f. Record of temperature and weather.
 - g. Date of test.
 - h. Identification of product.
 - i. Location in project.
 - j. Type of inspection or test.
 - k. Observations regarding compliance with Contract Documents.
- C. Perform additional services as required by CITY.
- D. Laboratory will not be authorized to:
 1. Release, revoke, alter, or enlarge on requirements of Contract Documents.
 2. Approve or accept any portion of work.
 3. Perform any duties of the CONTRACTOR.

1.03 Contractor's Responsibilities

- A. Cooperate with laboratory personnel, provide access to work, and to Subcontractors' and Suppliers' operations.
- B. Secure and deliver to the laboratory adequate quantities of representational samples of materials proposed to be used and which require testing.
- C. Provide to the laboratory the preliminary design mix proposed to be used for concrete, and other materials mixes which require control by the testing laboratory.
- D. Materials and equipment used in the performance of work under this Contract are subject to inspection and testing at the point of manufacture or fabrication. Standard specifications for quality and workmanship are indicated in the Contract Documents. ENGINEER may require CONTRACTOR to provide statements or certificates from the manufacturers and fabricators that the materials and equipment provided by them are manufactured or fabricated in full compliance with the approved specifications for quality and workmanship. All costs of this testing and providing statements and certificates shall be a subsidiary obligation of the CONTRACTOR, and no extra charge to the CITY shall be allowed on account of such testing and certification.
- E. Furnish incidental labor and facilities:

1. To provide access to work to be tested.
 2. To obtain and handle samples at the project site or at the source of the product to be tested.
 3. To facilitate inspections and tests.
 4. For storage and curing of test samples.
- F. Notify laboratory and ENGINEER sufficiently in advance of operations to allow for laboratory assignment of personnel and scheduling of tests.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

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SECTION 01415 STORMWATER POLLUTION PREVENTION / NPDES REQUIREMENTS

PART 1 GENERAL

1.01 Section Includes

Stormwater Pollution Prevention Plan requirements and recommendations under the NPDES program for construction projects located in Florida.

1.02 Purpose

The purpose of this section is to outline minimum requirements for stormwater pollution prevention as required under the NPDES program. There may be more stringent local government or Owner requirements for Erosion and Sediment Control, which would be located in the Specifications or on the Drawings. The more stringent requirement governs.

1.03 Related Sections

- A. Section 01065 – Permits and Fees
- B. Section 02370 - Erosion and Sediment Control

1.04 Abbreviations

- A. NPDES - National Pollution Discharge Elimination System
- B. SWPPP - Stormwater Pollution Prevention Plan
- C. NOI - Notice of Intent
- D. NOT - Notice of Termination

1.05 Definitions

The term “NPDES Generic Permit” means the State of Florida Department of Environmental Protection (FDEP) Generic Permit For Stormwater Discharge from Large and Small Construction Activities. The NPDES Generic Permit is also known as the NPDES) Construction Generic Permit (CGP).

1.06 Construction Projects Requiring Compliance with NPDES Generic Permit

- A. All projects 1 or more acres in size that discharge to offsite areas.
- B. Smaller projects that are in the same construction corridor as larger construction projects where the larger project is 1 or more acre in size and is required to comply with the NPDES Generic Permit. In this case, even if the smaller project is less than 1 acre in size, the smaller project must comply with the NPDES Generic Permit.

1.07 General Requirements

- A. Construction of this project is required to comply with the requirements of the National Pollutant Discharge Elimination System (NPDES) Generic Permit for Stormwater Discharge from Small and Large Construction Activities.
- B. In order to meet NPDES requirements, the Contractor is responsible for preparing a Stormwater Pollution Prevention Plan (SWPPP), implementing, inspecting, maintaining, and reporting on all elements of the SWPPP, completing and submitting the required Notice of Intent (NOI) and Notice of Termination (NOT) forms as the Operator, and paying all associated fees. Copies of the NPDES Generic Permit, NOI, and NOT forms, and permit application fee information are available for download at dep.state.fl.us/water/stormwater/npdes/
- C. The SWPPP shall list all the contractors or subcontractors who will be conducting construction activities at the site, and identify the areas of the site in which they will be working. All contractors and subcontractors identified in the SWPPP must sign a copy of the certification statement contained at the end of this specification section before conducting any construction activities at the site. The certifications must have the name and title of the person signing the certification; the name, address, and telephone number of the contracting firm; and the signature date. These statements must be maintained in the SWPPP file on site.
- D. The SWPPP shall describe and ensure the implementation of best management practices which will be used to reduce the pollutants in stormwater discharge associated with construction activity and to assure compliance with the terms and conditions of the NPDES Generic Permit. The erosion and sediment control measures shown on these Drawings are the minimum required and are to be installed prior to construction. The Contractor is responsible for complying with all applicable rules, regulations and water quality standards and may need to install additional controls to meet these requirements.

1.08 SWPPP Implementation and Submittal Requirements

- A. The SWPPP shall be completed prior to submittal of the NOI and shall include the elements necessary to comply with the NPDES Generic Permit for construction activities administered by the FDEP and shall also include all local governing agency and Owner requirements. There may be more stringent local government or Owner requirements for Erosion and Sediment Control, which would be located in the Specifications or elsewhere on these Drawings.
- B. The SWPPP shall be approved by the City of Everglades prior to construction and shall be submitted to Permitting Services by the Contractor prior to construction.
- C. The Contractor must file the NOI with FDEP and the Owner at least two (2) business days prior to the start of construction. The Contractor shall also submit a copy of the NOI to the MS4 operator for all projects that discharge stormwater associated with construction activity to a municipal separate stormwater system (MS4). A copy of the NOI and a description of the project must be posted in a prominent place for public viewing at the construction site.

- D. The SWPPP must be implemented at the start of construction. A complete copy of the SWPPP, including copies of all inspection reports, plan revisions, etc., must be retained at the project site at all times during working hours and kept in the permanent project records for at least three years following submission of the NOT.
- E. Final Stabilization means that all soil disturbing activities at the site have been completed, and that a uniform perennial vegetative cover (evenly distributed, without large bare areas) with a density of at least 70% for all unpaved areas and areas not covered by permanent structures has been established or equivalent permanent stabilization measures (such as geotextiles) have been employed. Once construction is completed and final stabilization has been achieved, the Contractor must file the NOT to FDEP, the Owner, and the MS4 operator within 14 days.

1.09 Inspections

- A. It is the responsibility of the Contractor to assure the adequacy of site pollutant discharge controls. Between the time the SWPPP is implemented and final site stabilization is achieved, all disturbed areas and pollutant controls must be inspected at least once every seven calendar days and within 24 hours following a rainfall of 0.5 inches or greater. The inspections are to be conducted by the Contractor's qualified designated representative.
- B. All inspections shall be documented in an inspection report that summarizes the scope of the inspection, the names and qualifications of personnel making the inspection; the date of the inspection; rainfall data; major observations relating to the implementation of the SWPPP, and actions taken in order to ensure compliance with NPDES requirements and the SWPPP. Such reports shall identify any incidents of non-compliance and actions taken to bring the project into compliance. Where a report does not identify any incidents of non-compliance, the report shall contain a certification that the facility is in compliance with the NPDES requirements and the SWPPP. Each inspection report shall be signed and certified by each qualified inspector.

1.10 Updating and Modifying the SWPPP

- A. Based on inspection results, any modifications necessary to increase effectiveness of the SWPPP to an acceptable level must be made within seven calendar days of the inspection.
- B. The SWPPP must be updated each time there are significant modifications to the pollutant prevention system or a change of contractors working on the project who disturbs site soil. For construction activities where the operator changes, the new operator shall file an NOI for coverage under this permit at least two (2) days before assuming control of the project and the previous operator shall file an NOT to terminate permit coverage in accordance with the NPDES Generic Permit. Amendments to the plan shall be prepared, signed, dated, and kept as attachments to the original SWPPP.

1.11 Minimum SWPPP Provisions

- A. The following list contains the items that must be included in the SWPPP. The SWPPP must clearly identify the contractor(s) or subcontractor(s) that will implement each item.

1. Stormwater Team: Identify the personnel (by name or position) that are part of the stormwater team responsible for implementing the SWPPP, including the qualified inspector. List their individual responsibilities in developing or implementing the SWPPP.
2. Contractors /Subcontractors: List all the contractors or subcontractors who will be conducting construction activities at the site, and identify the areas of the site in which they will be working. All listed contractors and subcontractors must sign the certification contained at the end of this specification section.
3. Site/Construction Activities Description:
 - a. Describe the nature of the construction activity.
 - b. Describe the intended sequence and time table of major activities that will disturb soils.
 - c. Include the scheduled starting and ending date for each major activity such as land clearing, grubbing, grading, cut and fill, dewatering operations, installation of erosion and sediment controls, installation of stormwater management systems, paving, final or temporary stabilization of exposed soil, and removal of construction equipment and vehicles.
 - d. Estimate the total area of the site and the total area that is expected to be disturbed by excavation, grading, or other construction activity.
 - e. Include existing data on soil types and the quality of any existing discharge from the site.
4. For each proposed discharge point provide the following:
 - a. Latitude and Longitude
 - b. Drainage Area
 - c. Surface Waters or MS4
 - d. Estimate the amount of land that will be cleared during the construction activity for each drainage area.
5. Include a site map showing all of the following:
 - a. Boundaries of the property.
 - b. Entrance/Exit Points
 - c. Locations where construction activities will occur.
 - d. Locations where dewatering operation will occur.
 - e. Drainage patterns and approximate slopes and elevations anticipated after major grading activities.
 - f. Areas of soil disturbance.
 - g. Areas which will not be disturbed.
 - h. Location of major structural and nonstructural controls.
 - i. Location of areas where stabilization practices are expected to occur.
 - j. Location of surface waters and wetlands.
 - k. Location where stormwater is proposed to be discharged during construction to a surface water or MS4.
6. List all non-stormwater discharges covered under the CGP and the pollution prevention procedures that will be implemented. The following types of non-stormwater discharges, if they are listed in the SWPPP and the SWPPP includes appropriate pollution prevention procedures as to not cause or contribute to a

violation of water quality standards are to be considered to be covered (allowed) by the CGP:

- a. Discharges from firefighting activities.
- b. Fire hydrant flushings.
- c. Waters without detergents used to spray off loose solids from vehicles.
- d. Waters used to control dust.
- e. Potable water sources such as waterline flushings.
- f. Landscape irrigation water and drainage.
- g. Routine external building washdown provided no detergents are used.
- h. Pavement washwaters that do not contain detergents, leaks, spills of toxic or hazardous materials.
- i. Air conditioning condensate.
- j. Spring water.
- k. Foundation or footing drain flows that are not contaminated with process material such as solvents.
- l. Non-contaminated ground water associated with dewatering activities as described in Part 3.4 of the CGP.

7. The following non-stormwater discharges are prohibited by the CGP:

- a. Wastewater from concrete washout.
- b. Wastewater from washout or cleanout of stucco, paint, form release oils, curing compounds, and other construction materials.
- c. Fuels, oils, or other pollutants from vehicle and equipment operation and maintenance.
- d. Soaps, detergents, solvents, or other cleaners.
- e. Hazardous substances or oil resulting from an on-site spill.
- f. Solid materials, including building materials.
- g. Any other non-stormwater discharge not specifically allowed by the CGP as identified above.

8. Dewatering Controls (If Applicable): Include a description of the BMPs that will be used to ensure that discharges of noncontaminated ground water from dewatering operations do not cause or contribute to violations of state water quality standards.

9. BMPs: Describe the BMPs that will be implemented for each major activity and the timing during the construction process that they will be implemented.

10. Permanent stormwater management controls: Describe the stormwater management controls or BMPs (e.g., stormwater detention or retention systems, vegetated swales, or velocity dissipation devices at discharge points) that will be installed during the construction process to control pollutants in stormwater discharges.

11. Inspections: Inspections must be at least once every seven calendar days and within 24- hours of the end of a storm event that is 0.50 inches or greater (even if it rains on the weekend or a holiday).

12. Maintenance: Describe the maintenance activities and schedules that will be followed to keep BMPs in good and effective operating condition.
13. Signed Certifications: Include all the signed contractors and subcontractors certifications in the SWPPP (Contained at the end of this specification is an example certification form).

1.12 Site Data

- A. The following site data is provided to the Contractor for use in preparing the SWPPP and completing the NOI:

Total Site Area:	
Total Area Impacted by Construction:	0.46 AC
Existing Site Soils:	Tavares fine sands
Drainage Area Contributing to Each Discharge Point:	Drainage Area #1 0.28 Ac Drainage Area #2 0.18 Ac
Latitude and Longitude of Project Location:	LAT 28°31'32.15" N, LONG 81°21'55.29"W
MS4 Operator Name:	N/A
Receiving Waters:	Lake Lancaster

1.13 Minimum Erosion and Sediment Control Construction Requirements

- A. Stabilize all construction site exits with coarse aggregate or other approved materials, in accordance with details on the Drawings. Other minimum construction requirements that need to be implemented in order to comply with the NPDES Generic permit include installation of sediment barriers down slope from construction activities that disturb site soil; constructing rock surface temporary parking areas; installation of sediment barriers down slope prior to clearing and grubbing; installation of sediment barriers on the down slope side of utility construction and soil stockpiles; and the installation of sediment barriers on the down slope side of grading activities.
- B. Stabilization measures shall be initiated as soon as practicable, but in no case more than 7 days, in portions of the site where construction activities have temporarily or permanently ceased.
- C. The Owner has the authority to limit surface area of erodible earth material exposed by clearing and grubbing, excavation, trenching, borrow and embankment operations. The Owner also has authority to direct Contractor to provide immediate permanent or temporary erosion and sediment control measures.
- D. The Contractor shall respond to erosion and sediment control maintenance requirements or implement additional measures to control erosion ordered by Owner or governing authorities within 48 hours or sooner if required at no additional cost to the Owner.

- E. The Contractor shall incorporate permanent erosion control features into project at earliest practical time to minimize need for temporary controls.
- F. For drainage basins with 10 or more disturbed acres at one time, a temporary (or permanent) sediment basin providing 3,600 cubic feet of storage per acre drained, or equivalent control measures, shall be provided where attainable until final stabilization of the site. The 3,600 cubic feet of storage area per acre drained does not apply to flows from offsite areas and flows from onsite areas that are either undisturbed or have undergone final stabilization where such flows are diverted around both the disturbed area and the sediment basin. For drainage basins with 10 or more disturbed acres at one time and where a temporary sediment basin providing 3,600 cubic feet of storage per acre drained, or equivalent controls is not attainable, a combination of smaller sediment basins and/or sediment traps and other BMPs should be used. At a minimum, silt fences, or equivalent sediment controls are required for all sideslope and downslope boundaries of the construction area.
- G. Water trucks shall be used as needed during construction to reduce dust generated on the site. Dust control must be provided by the Contractor and shall be in compliance with applicable local and state dust control regulations.

1.14 Maintenance Requirements

- A. Maintain all erosion and sediment control measures throughout construction. Repair or replace all damaged sediment barriers. Remove accumulated sediment along all silt fences where the height of the sediment exceeds one-third of the height of the silt fence. Inspect all temporary and permanent grassing areas and re-grass where there are bare spots, washouts, or unhealthy growth.
- B. At the completion of construction, once final stabilization has been achieved, clean all accumulated sediment from all storm structures, pipelines, and stormwater ponds. Remove all temporary sediment controls upon receipt of authorization to remove has been received from the Owner or Engineer. Note that this may not occur for some time after construction activities have been completed, in order to ensure their removal has not occurred until final stabilization has been achieved to the satisfaction of the Owner and Engineer.

1.15 Stormwater Discharge Provisions

- A. Substances that have the potential for polluting surface and/or groundwater must be controlled by whatever means necessary in order to ensure that they do not discharge from the site. As an example, special care must be exercised during equipment fueling and servicing operations. If a spill occurs, it must be contained and disposed so that it will not flow from the site or enter groundwater, even if this requires removal, treatment, and disposal of soil in accordance with local and state regulations.
- B. All personnel involved with construction activities must comply with state and local sanitary or septic system regulations. Temporary sanitary facilities shall be provided at the site throughout the construction phase for use by all construction personnel and shall be serviced by a commercial operator at least once a week.

- C. Discharges resulting from groundwater dewatering activities at construction sites are permitted provided the groundwater is free of sediments, is not contaminated, and dewatering occurs in accordance with state and local governing agency regulations.
- D. Chemicals, paints, solvents, fertilizers, and other toxic material must be stored in waterproof containers. Except during application, the contents must be kept in trucks or within storage facilities. Runoff containing such material must be collected, removed from the site, treated, and disposed at an approved solid waste or chemical disposal facility.
- E. The discharge of hazardous substances or oil in the stormwater discharge(s) from a facility or activity shall be prevented. This does not relieve the operator of the reporting requirements of 40 CFR part 117 and 40 CFR part 302. The operator shall submit within 14 calendar days of knowledge of the release a written description of: the release (including the type and estimate of the amount of material released), the date that such release occurred, the circumstances leading to the release, and remedial steps to be taken. The SWPPP must be modified within 14 calendar days of knowledge of the release to: provide a description of the release, the circumstances leading to the release, and the date of the release. In addition, the plan must be reviewed to identify measures to prevent the reoccurrence of such releases and to respond to such releases, and the plan must be modified where appropriate.

CONTRACTOR / SUBCONTRACTOR CERTIFICATION

The SWPPP shall list all the contractors or subcontractors who will be conducting construction activities at the site, and identify the areas of the site in which they will be working.

All contractors and subcontractors identified in the SWPPP must sign a copy of the following certification statement before conducting any construction activities at the site. The certifications must have the name and title of the person signing the certification; the name, address, and telephone number of the contracting firm; and the signature date.

These statements must be maintained in the SWPPP file on site.

Name of Contractor / Subcontractor Conducting Construction at the site:

Business Name

Business Address

Business Telephone Number

CERTIFICATION:

"I certify under penalty of law that I understand, and shall comply with, the terms and conditions of the State of Florida Generic Permit for Stormwater Discharge from Large and Small Construction Activities and this Stormwater Pollution Prevention Plan."

Signature

Date

Printed Name

Title

**CONTRACTOR
CERTIFICATION**

The SWPPP has been prepared by:

Business Name

Business Address

Business Telephone Number

The Contractor who has prepared the SWPPP shall make the following certification:

“I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.”

Signature

Date

Printed Name

PART 2 PRODUCTS – Not Used

PART 3 EXECUTION – Not Used

END OF SECTION

**SECTION 01520
TEMPORARY FACILITIES AND CONTROLS**

PART 1 GENERAL

1.01 Section Includes

Construction facilities, controls, temporary utilities, project identification signs, field office and storage sheds, storage of materials and equipment.

1.02 Submittals

- A. Prior to installation of construction facilities and temporary controls, submit the following items for review and approval:
- B. Project identification sign - provide proposed text, layout, and sizing of all required signs

1.03 Construction Facilities and Temporary Controls

All construction facilities and temporary controls remain the property of the Contractor establishing them and shall be maintained in a safe and useful condition until removed from the construction site.

1.04 Removal of Temporary Construction

Remove the various temporary facilities, services, and controls and legally dispose of them as soon as the Owner deems permissible. Portions of the site and areas used for temporary facilities shall be restored to existing or better condition, including but not limited to fill replacement, regrading, compaction, and sodding.

1.05 Transportation and Handling

- A. Manufactured materials and products shall be delivered to the project site as needed for installation, undamaged, in original packages, containers, or bundles, as packaged by the manufacturer with manufacturer's name, brand, seals, and labels intact.
- B. Materials other than those designated within the Specifications or approved by the Owner shall not be delivered to the project site.

1.06 Storage and Protection

- A. The Contractor shall be responsible for protection and preservation of all materials until final acceptance of the Project. Any damage to work prior to acceptance shall be remedied by the Contractor at no additional cost to the Owner.
- B. Provide temporary weather-tight enclosures to protect work from damage by the elements, and protect finished surfaces to prevent any damage resulting from the work of any trade.

1.07 Security

- A. Contractor shall, at all times, be responsible for the security required in all project areas and shall provide all reasonable protection to prevent damage, injury or loss to employees on the Work and all other persons who may be affected thereby; all the work materials and equipment to be incorporated therein, whether in storage on or off the project site, under the care, custody or control of the Contractor or any subcontractors; and any other property under the care, custody or control of the Contractor or any subcontractors. Contractor shall be responsible for such security and safety until final acceptance of the Work.
- B. Full time watchmen will not be specifically required as a part of the Contract, but the Contractor shall provide inspection of work area daily and shall take whatever measures are necessary to protect the safety of the public, workmen, and materials, and provide for the security of the site, both day and night.

PART 2 PRODUCTS

2.01 Temporary Electric Service

- A. Furnish and maintain temporary lighting and power required to perform the Work. Include in the Bid all costs for providing temporary electrical service.
- B. Temporary service shall include protective enclosures, branch wiring, outlets, lamps, and grounding as required by NEC and Local Electrical Codes.

2.02 Temporary Heating

The Contractor shall furnish fuel or power and provide and operate all temporary heating units. Heat shall be provided as necessary to perform the Work. Temporary heating units shall be adequately vented and approved devices which will not damage finished areas. The Contractor shall also furnish all tarpaulins and temporary enclosures necessary to provide this protection.

2.03 Temporary Ventilation

The Contractor shall provide, operate, and furnish power for temporary ventilation required for the proper installation and curing of materials and safety of workmen.

2.04 Temporary Water

- A. Provide a temporary water distribution system for all construction purposes and pay for all water used. Obtain temporary meters from the local water utility as required and pay all associated fees.
- B. Furnish potable drinking water in suitable dispensers and with cups for use of all employees at the job.
- C. Provide all temporary piping, hoses, etc., required to transport water to the point of usage by all trades.

2.05 Temporary Sanitary Facilities

Provide temporary toilet facilities as required. Maintain these during the entire period of construction under this Contract for the use of all construction personnel on the job. Enough chemical toilets shall be provided to conveniently serve the needs of all personnel. Chemical toilets and their maintenance shall meet the requirements of State and local health regulations and ordinances.

2.06 Temporary Pumping and Site Drainage

Keep the site free from water at all times to permit continuous access and to prevent damage to the work.

2.07 Material Hoists and Cranes

- A. Provide material hoists required for normal use by all trades and employ skilled hoist operators. Provide all necessary guards, signals, safety devices, etc., required for safe hoist operation. The construction and operation of material hoists shall be in accordance with the applicable ANSI Standards, the "Manual Code of Accident Prevention in Construction" of the Associated General Contractors of America, OSHA, and of other Federal, State, and municipal codes or ordinances. The Contractor shall prohibit the use of hoists for transporting personnel. Hoists shall be located to avoid risk of damage to completed work.
- B. Special rigging and hoisting facilities shall be provided by each trade requiring their use.

2.08 Temporary Runways, Scaffolding, and Ladders

- A. Provide temporary ladders, ramps, and runways as required for performance and inspection of the work. The above facilities shall be constructed and maintained in accordance with the applicable Federal, State, and Municipal regulations and codes.
- B. Furnish, erect, and maintain all scaffolding required for this work. Scaffolding shall be constructed and maintained in accordance with applicable State and Federal laws and local ordinances. Scaffolding shall be promptly removed after serving its purpose.
- C. The structural strength and safety of scaffolding, runways, covers, railings, ladders, stairs, etc., and compliance with law shall be the sole responsibility of the Contractor.

2.09 Temporary Chutes

No materials shall be dropped from structures except through enclosed wooden or metal chutes which shall be provided and maintained as required for the performance of the work by the various trades.

2.10 Contractor's Field Office and Storage Sheds

The Contractor shall provide field office and storage sheds that it determines are required for the performance of the Work and protection of materials and equipment.

PART 3 EXECUTION

3.01 Access Roads and Parking Areas

- A. Construct temporary roadways and parking areas within the site as required to provide proper access to the site for delivery of material and equipment of all trades. It is up the Contractor to determine whether it needs to construct any temporary roads or parking areas to accommodate its construction (including delivery of materials, equipment, and manpower to the site).
- B. At completion of the work or when directed by the Owner, surfacing and sub-base material used for the temporary road and parking areas shall be removed, unless otherwise approved by the Owner.

END OF SECTION

**SECTION 01610
DELIVERY, STORAGE, AND HANDLING**

PART 1 - GENERAL

1.01 Description

- A. This Section specifies the general requirements for the delivery, handling, storage and protection for all items required in the construction of the Work.
- B. Deliver, handle and store products in accordance with manufacturer's recommendations and by methods and means that will prevent damage, deterioration, and loss including theft and protect against damage from climatic conditions. Control delivery schedules to minimize long-term storage of products at the site and overcrowding of construction spaces. In particular, 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. Damaged or defective items, in the opinion of the City, will be replaced at no cost to the City.

1.02 Requirements

- A. The Contractor is responsible for all material, equipment and supplies sold and delivered to the City under this Contract until final inspection of the Work and acceptance thereof by the City.
- B. All materials and equipment to be incorporated in the Work will be handled and stored by the Contractor before, during and after shipment in a manner to prevent warping, twisting, bending, breaking, chipping, rusting, and any injury, theft or damage of any kind whatsoever to the material or equipment.
- C. All materials and equipment, which in the opinion of the City, have become so damaged as to be unfit for the use intended or specified, will be promptly removed from the site of the Work, and the Contractor will receive no compensation for the damaged materials or equipment or for its removal.
- D. In the event any such material, equipment and supplies are lost, stolen, damaged or destroyed prior to final inspection and acceptance, the Contractor will replace same without additional cost to the City.

1.03 Delivery

- A. Transport and handle items in accordance with manufacturer's instructions.
- B. The City and the Contractor's project superintendent must be on-site to accept all deliveries shipped directly to the job site. If the project superintendent is not present for a delivery, that delivery may be rejected by the City. If any delivery is rejected due to non-availability of the Contractor's project superintendent, delivery shall be rescheduled at no additional cost to the City.

- C. Schedule delivery to reduce long-term on-site storage prior to installation and/or operation. Under no circumstances will materials or equipment be delivered to the site more than 1-month prior to installation without written authorization from the City.
- D. Coordinate deliveries in order to avoid delay in, or impediment of, the progress of the Work.
- E. Schedule deliveries to the site not more than 1-month prior to scheduled installation without written authorization from the City.
- F. Coordinate delivery with installation to ensure minimum holding time for items that are hazardous, flammable, easily damaged or sensitive to deterioration.
- G. All items delivered to the site will be unloaded and placed in a manner that will not hamper the Contractor's normal construction operation or those of Subcontractors and other Contractors and will not interfere with the flow of necessary traffic.
- H. Deliver products in undamaged condition, in manufacturer's original containers or packaging, with identifying labels intact and legible. Maintain packaged materials with seals unbroken and labels intact until time of use.
- I. Immediately on delivery, inspect shipments with the City to ensure compliance with requirements of Contract Documents and accepted submittals, and that products are properly protected and undamaged. If the Contractor does not notify the City regarding the delivery and the City rejects any part of the delivery, there will be no additional cost to the City for the material to be returned. For items furnished by others (i.e. City), perform inspection in the presence of the City. Provide written notification to the City of any problems.
- J. Promptly remove damaged material and unsuitable items from the job site, and promptly replace with material meeting the specified requirements, at no additional cost to the City.

1.04 Storage and Handling

- A. Provide equipment and personnel to handle products by methods recommended by the manufacturer to prevent soiling or damage to products or packaging, with seals and labels intact and legible.
- B. The Contractor is responsible for securing a location for on-site storage of all material and equipment necessary for completion of the Work. The location and storage layout will be submitted to the City at the Pre-Construction conference.
- C. Manufacturer's storage instructions will be carefully studied by the Contractor and reviewed with the City. These instructions will be carefully followed and a written record of this kept by the Contractor.
- D. All material delivered to the job site will be protected from dirt, dust, dampness, water, and any other condition detrimental to the life of the material from the date of delivery to the time of installation of the material and acceptance by the City.

- E. When required or recommended by the manufacturer, the Contractor will furnish a covered, weather protected storage structure providing a clean, dry, non-corrosive environment for all mechanical equipment valves, architectural items, electrical and instrumentation equipment, and special equipment to be incorporated into this Project.
- F. Arrange storage in a manner to provide easy access for inspection. Make periodic inspections of stored products to assure that products are maintained under specified conditions and free from damage or deterioration.
- G. Should the Contractor fail to take proper action on storage and handling of equipment supplied under this Contract within 7-days after written notice to do so has been given, the City retains the right to correct all deficiencies noted in previously transmitted written notice and deduct the cost associated with these corrections from the Contract Amount. These costs may be comprised of expenditures for labor, equipment usage, administrative, clerical, engineering, and any other costs associated with making the necessary corrections.

1.05 Specific Storage and Handling

(Additional specific storage and handling requirements may be found in the specification sections addressing the material requirements.)

- A. All mechanical and electrical equipment and instruments subject to corrosive damage by the atmosphere if stored outdoors (even though covered by canvas) will be stored in a weather tight building to prevent damage. The building may be a temporary structure on the site or elsewhere, but it must be satisfactory to the City. The building will be provided with adequate ventilation to prevent condensation. Maintain temperature and humidity within range required by manufacturer.
 - 1. All equipment will be stored fully lubricated with oil, grease and other lubricants unless otherwise instructed by the manufacturer. Mechanical equipment to be used in the Work, if stored for longer than 90-days, will have the bearings cleaned, flushed and lubricated prior to testing and startup, at no extra cost to the City.
 - 2. Moving parts will be rotated a minimum of once weekly to ensure proper lubrication and to avoid metal-to-metal "welding." Upon installation of the equipment, the Contractor will start the equipment, at least half load, once weekly for an adequate period of time to ensure that the equipment does not deteriorate from lack of use.

3. Lubricants will be changed upon completion of installation and as frequently as required thereafter during the period between installation and acceptance. New lubricants will be put into the equipment at the time of acceptance. Prior to acceptance of the equipment, the Contractor will have the manufacturer inspect the equipment and certify that its condition has not been detrimentally affected by the long storage period. Such certifications by the manufacturer will be deemed to mean that the equipment is judged by the manufacturer to be in a condition equal to that of equipment that has been shipped, installed, tested and accepted in a minimum time period. As such, the manufacturer will guaranty the equipment equally in both instances. If such a certification is not given, the equipment will be judged to be defective. It will be removed and replaced at the Contractor's expense.
 4. Electric motors provided with heaters will be temporarily wired for continuous heating during storage. Upon installation of the equipment, the Contractor will start the equipment, at least half load, and once weekly for an adequate period of time to insure that the equipment does not deteriorate from lack of use.
- B. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
 - C. Cement and lime will be stored under a roof and off the ground and will be kept completely dry at all times.
 - D. Brick, block and similar masonry products will be handled and stored in a manner to minimize breakage, chipping, cracking and spilling to a minimum.
 - E. Precast Concrete will be handled and stored in a manner to prevent accumulations of dirt, standing water, staining, chipping or cracking.
 - F. All structural and miscellaneous steel and reinforcing steel will be stored off the ground or otherwise to prevent accumulations of dirt or grease, and in a position to prevent accumulations of standing water and to minimize rusting. Beams will be stored with the webs vertical.
 - G. Metals will be stored dry, all under cover and vented to prevent build-up of humidity, all off ground to provide air circulation.
 - H. Lumber will be stacked to provide air circulation. Store materials for which maximum moisture content is specified in an area where moisture content can be maintained.
 - I. Gypsum wallboard systems will be stored to protect all metal studs, furring, insulation boards, batts, accessories and gypsum board to prevent any type of damage to these materials. Rusted material components, damp or wet insulation or gypsum boards will not be accepted.
 - J. Acoustical materials will be delivered to the job site in unbroken containers labeled and clearly marked. Materials will not be removed from containers until ready to install, but will be stored in dry area with cartons neatly stacked. Before installation, acoustical board will be stored for not less than 24-hours in the Work area at the same temperature and relative humidity.

- K. Linear items will be stored in dry area with spacers to provide ventilation. Stack linear items to prevent warping, complying with manufacturer's instructions.
- L. Paints and other volatile materials will be stored within approved safety containers. No glass jugs will be permitted. Storage areas will be equipped with not less than 2 fire extinguishers (C02 type) sufficient to discharge a distance of 25-feet when fully charged and have current tags. No other building materials will be stored in this area. Used rags will be removed daily. Clean rags will be stored in metal closed containers.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

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**SECTION 01650
PUMP STATION START-UP AND TESTING**

PART 1 - GENERAL

1.01 Scope of Work

- A. The Contractor will conduct preliminary testing of pump station facilities, products and equipment. If the preliminary field tests disclose any items furnished under this Contract which do not comply with the requirements of the Contract Documents, the Contractor shall make all changes, adjustments and replacements required prior to Start-up Demonstration and Acceptance Testing.
- B. The Contractor shall arrange qualified instruction by the manufacturer's representative for City's designated operating and maintenance personnel in operation, adjustment and maintenance of products, equipment and systems.
- C. The Contractor shall furnish all labor, fuel, energy, lubrication, water, and all other materials, equipment, tools and instruments necessary for the Start-up Demonstration and Acceptance Testing unless otherwise specified.
- D. The startup and final check out shall demonstrate and ensure to City the complete operating pump station system. The Contractor shall provide documentation certifying proper installation, testing and operation of all prescribed equipment and systems.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 Pump Station Start-Up Testing and Inspection

- A. The Contractor shall notify City at least ten (10) normal working days prior to performing any testing or start-up.
- B. The following shall have been successfully met prior to pump station start-up:

City of Everglades City: Chokoloskee Master Pump Station Rehabilitation – Specifications

1. All gravity infrastructure walk through and testing completed and accepted;
 2. CCTV inspections completed and accepted;
 3. CONTRACTOR wire checks completed and accepted;
 4. The CONTRACTOR shall conduct testing of all equipment and appurtenances prior to start-up testing and make all changes, adjustments and replacements as required.
 5. FDEP Clearance received, if applicable;
 6. Permanent power and water meter installed onsite;
 7. Prior to scheduling the pump station start-up, the final RECORD DOCUMENTS including the BOUNDARY SURVEY with improvements must be submitted to and approved by City, in accordance with Specification 01720, "Project Record Documents"
 8. A laminated copy of the pump manufacturer's pump curve with the design engineer's high head and low head operating points marked on the curve shall be onsite.
- C. The intent of the start-up testing is for the Contractor to demonstrate to City that the Work will function as a complete and operable system under normal as well as emergency operating conditions and the pump station is ready for acceptance.
- D. The Contractor shall furnish all labor, fuel, energy, lubrication, water and all other materials, equipment, tools, and instruments necessary for pump station start-up testing and inspection. All material used shall be listed on the Appendix E " List of Materials and Approved Manufacturers ." All required certification letters, spare parts and supplies shall be provided to City. Listed below is a partial checklist of requirements to be met.

1. The Contractor shall coordinate startup activities with City, the manufacturer's representatives and Subcontractors. A factory representative knowledgeable in the mechanical and electrical equipment furnished shall inspect and supervise a start-up of their respective equipment. A minimum of 1 full business day shall be provided for the testing. Additional time may be necessary due to faulty or incomplete Work. Upon satisfactory completion of the equipment testing and inspection, the factory representative(s) shall issue the required manufacturer's warranty certificates.
 2. Initiate start-up of each system in accordance with the operation and maintenance manual. Demonstrate that all of the components of a system are operating under their own controls as designated without overheating or overloading any parts and without objectionable vibration as determined by City.
 3. Observe the system operation and make adjustments as necessary to optimize the system performance. Coordinate City for any adjustments desired or operational problems requiring debugging.
 4. All functions of the pump station mechanical and electrical equipment shall be tested and inspected for operation and workmanship. All equipment shall be properly installed and meet the design performance requirements.
 5. The pumps shall be flow tested at the pump station start-up to verify their performance meets the design requirements and the manufacturer's pump curve.
 6. Furnish 1 electronic copy in Acrobat "pdf" format of the Operation and Maintenance Manual for the pump station to City.
 7. The Contractor shall bear the entire expense of rectifying Work installed.
 8. The Contractor shall furnish City with a written certification signed by the Manufacturer's representative that the equipment has been properly installed and lubricated, is in accurate alignment, is free from undue stress imposed by piping or mounting bolts and has been operated under full load conditions and that satisfactory operation has been obtained.
- E. Re-testing
1. If the start-up testing does not meet the requirements, the deficiencies shall be corrected, and the testing procedure will be rescheduled again.
- F. Acceptance
1. The pump station shall be accepted based on the pump station functioning as a complete and operable system under normal as well as emergency operating conditions, the approved construction documents have been met and any deficiencies that were observed and noted have been corrected.
 2. The Contractor shall ensure all fuel, lubrication, and all other materials for operation are replenished.

END OF SECTION

**SECTION 01730
OPERATING AND MAINTENANCE DATA**

PART 1 - GENERAL

1.01 Scope of Work

A. Compile product data and related information appropriate for Owner's maintenance and operation of products furnished under this Contract.

1. Prepare operating and maintenance data as specified in this Section and as referenced in other pertinent sections of Specifications.

1.02 Implementation

A. Manual: Preparation and Description

1. Preparation of data shall be done by personnel
 - a. Trained and experienced in maintenance and operation of described products.
 - b. Familiar with requirements of this SECTION.
 - c. Skilled as technical writer to the extent required to communicate essential data.
 - d. Skilled as draftsman competent to prepare required drawings
2. Description
 - a. Prepare data in the form of an instructional manual for use by City's personnel
 - b. Format
 - 1) Size: 8-1/2 inches x 11 inches.
 - 2) Paper: 20 pound minimum, white, for typed pages.
 - 3) Text: Manufacturer's printed data, or neatly typewritten.

B. Drawings:

1. Provide reinforced punched binder tab, bind in with text.
2. Reduce larger drawings and fold to size of text pages, but do not use drawing prints larger than 14 inches x 17 inches.
3. Provide fly-leaf for each separate product, or each piece of operating equipment.
 - a. Provide typed description of products and major component parts of equipment.
 - b. Provide indexed tabs.

C. Cover: Identify each volume with typed or printed title "OPERATING AND MAINTENANCE INSTRUCTIONS". List:

1. Title of Project.
2. Identity of separate structure as applicable.
3. Identity of general subject matter covered in the manual

D. Binders:

1. Commercial quality three-post binders with durable and cleanable plastic covers.
2. Maximum post height: 2 inches.
3. When multiple binders are used, correlate the data into related consistent groupings.

E. Content:

1. At a minimum provide a neatly typewritten table of contents for each volume, arranged in systematic order.
 - a. CONTRACTOR, name of responsible principal, address and telephone number.
 - b. A list of each product required to be included, indexed to content of the volume.
 - c. List, with each product, name, address and telephone number of:
 - 1) Subcontractor or installer.
 - 2) A list of each product required to be included, indexed to content of volume.
 - 3) Identify area of responsibility of each.
 - 4) Local source of supply for parts and replacements.
 - d. Identify each product by product name and other identifying symbols as set forth in Contract Documents.

F. Product Data:

1. Include only those sheets which are pertinent to the specific product.
2. Annotate each sheet to:
 - a. Clearly identify specific product or part installed.
 - b. Clearly identify data applicable to installation.
 - c. Delete references to inapplicable information.
3. Supplemental product data: as necessary to clearly illustrate:
 - a. Relations of component parts of equipment and systems.
 - b. Control and flow diagrams.
 - c. Written text, as required to supplement product data for the particular installation.
 - 1) Organize in consistent format under separate headings for different procedures.
 - 2) Provide logical sequence of instructions of each procedure
 - d. Coordinate drawings with information in Record Documents to assure correct illustration of completed installation.
 - e. Do not use Record Documents as maintenance drawings.
 - f. Copy of each warranty, bond and service contract issued.
 - g. Provide information sheet for CITY'S personnel:
 - 1) Proper procedures in event of failure.
 - 2) Instances which might affect validity of warranties or bonds.
 - h. Final manual shall include both manufacturer's certifications (Specification 01650) and a copy of all training documents provided during training sessions.

G. Manual for Materials and Finished

1. Submit six copies of complete manual in final form.
 2. Content: for architectural products, applied materials and finishes.
 - a. Manufacturers' data, giving full information on products
 - 1) Catalog number, size, composition.
 - 2) Color and texture designations.
 - 3) Information required for reordering special manufactured products.
 - b. Instructions for care and maintenance
 - 1) Manufacturer's recommendation for types of cleaning agents and methods.
 - 2) Cautions against cleaning agents and methods which are detrimental to product.
 - 3) Recommended schedule for cleaning and maintenance.
 3. Content: for moisture protection and weather-exposed products
 - a. Manufacturer's data, giving full information on products
 - 1) Applicable standards.
 - 2) Chemical composition.
 - 3) Details of installation.
 4. Instructions for inspection, maintenance and repair.
 5. Additional requirements for maintenance data: As requested by the ENGINEER
- H. Manual for Equipment and Systems
1. Submit six copies of complete manual in final form.
 2. Content, for each unit of equipment and system, as appropriate:
 - a. Description of unit and component parts.
 - 1) Function, normal operating characteristics, and limiting conditions.
 - 2) Performance curves, engineering data and tests.
 - 3) Complete nomenclature and commercial number of replaceable parts.
 - b. Operating procedures:
 - 1) Start-up, break-in, routine and normal operating instruction.
 - 2) Regulation, control, stopping, shut-down and emergency instructions.
 - 3) Summer and winter operating instructions.
 - 4) Special operating instructions.
 - c. Maintenance procedures:
 - 1) Routine operations.
 - 2) Guide to "trouble-shooting".
 - 3) Disassembly, repair and reassembly.
 - 4) Alignment, adjusting and checking.
 - d. Servicing and lubrication required.
 - e. Manufacturer's printed operating and maintenance instructions.
 - f. Description of sequence of operation by control manufacturer.
 - g. Original manufacturer's parts list, illustrations, assembly drawings and diagrams required for maintenance.
 - 1) Predicted life of parts subject to wear.
 - 2) Items recommended to be stocked as spare parts.

- h. As installed control diagrams by controls manufacturer.
 - i. Each subcontractor's coordination diagrams.
 - j. Charts of valve tag numbers, with location and function of each valve.
 - k. List of original manufacturer's spare parts, manufacturer's current prices and recommended quantities to be maintained in storage.
 - l. Certificate of Demonstration.
- I. Content, for each electric and electronic system, as appropriate:
 - 1. Description of system and component parts.
 - a. Function, normal operating characteristics, and limiting conditions.
 - b. Performance curves, engineering data and tests.
 - c. Complete nomenclature and commercial number of replaceable parts.
 - 2. Circuit directories of panel boards.
 - a. Electrical service
 - b. Controls
 - c. Communications
 - 3. As installed color coded wiring diagrams.
 - a. Operating procedures:
 - 1) Routine and normal operating instructions.
 - 2) Sequences required.
 - 3) Special operating instructions.
 - b. Maintenance procedures:
 - 1) Routine operations.
 - 2) Guide to "trouble-shooting".
 - 3) Disassembly, repair and reassembly.
 - 4) Adjustment and checking.
 - c. Manufacturer's printed operating and maintenance instructions.
 - d. List of original manufacturer's spare parts, manufacturer's current prices, and recommended quantities to be maintained in storage.
 - e. Other data as required under pertinent sections of specifications.
 - 4. Prepare and include additional data when the need for such data become apparent during instruction of CITY'S personnel.
- J. Submittal Schedule

1. All submittal documents shall be provided in both hardcopy, bounded in separate three-ring binders, indexed, tabbed with sectional dividers, and no larger than 8½-inch x 11-inch and bookmarked electronic media - Adobe® Acrobat® portable document format. Two sets of hardcopy and two sets of electronic media shall be provided. All drawings shall be provided in both hardcopy, bounded, indexed, and no larger than 11-inch x 17-inch and bookmarked electronic media - Autodesk® AutoCAD® file format AND Adobe® Acrobat® portable document format. Two sets of hardcopy and two sets of electronic media shall be provided.
2. Submit three (3) copies of completed data in final form no later than 30 days following the ENGINEER'S review of the last shop drawing and/or other submittal specified under SECTION 01300.
 - a. One copy will be returned with comments to be incorporated into final copies.
3. Submit six (6) copies of approved manual in final form and PDF formats to the ENGINEER within 30 days after the reviewed copy is received.
4. Append six (6) copies of addendum to the operation and maintenance manuals as applicable and certificates as specified and PDF format within 30 days after final inspection and start- up testing.
5. Instruction of City's Personnel
 - a. Prior to final inspection or acceptance, the manufacturer's representative shall fully instruct CITY'S designated operating and maintenance personnel in operation, adjustment and maintenance of products, equipment and systems.
 - b. Operating and maintenance manual shall constitute the basis of instruction.
 - 1) Review contents of manual with personnel in full detail to explain all aspects of operations and maintenance.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

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SECTION 01740 WARRANTIES AND BONDS

PART 1 - GENERAL

1.01 Scope of Work

- A. Contractors responsibility shall be to:
1. Compile warranties and bonds, as required in the Contract Documents and as specified herein.
 2. Co-execute submittals when requested by Engineer.
 3. Review submittals to verify compliance with Contract Documents.
 4. Submit Warranties and Bonds to Engineer for review and transmittal to City

1.02 Implementation

- A. Submittal Requirements
1. Assemble warranties, bonds and service and maintenance contracts, executed by each of the respective manufacturers, suppliers, and subcontractors.
 2. Quantity: Two original signed copies are required.
 3. Table of Contents: Neatly typed, in orderly sequence. Provide complete information for each item.
 - a. Product of work item.
 - b. Firm, with name of principal, address and telephone number.
 - c. Scope.
 - d. Date of beginning of warranty, bond or service and maintenance contract.
 - e. Duration of warranty, bond or service maintenance contract.
 - f. Contractor, name of responsible principal, address and telephone number.
- B. Format of Submittals
1. Prepare in duplicate packets:
 - a. Paper: Size 8-1/2 inches x 11 inches, punch sheets for standard three-post binder.
 - b. Fold larger sheets to fit into binders.
 - c. Cover: Identify each packet with typed or printed title WARRANTIES AND BONDS'. List:
 - 1) Title of Project
 - 2) Name of Contractor
 - d. Binders: Commercial quality, three-post binder, with durable and cleanable plastic covers and maximum post width of two inches

C. Warranties and Bonds

1. For all major pieces of equipment, submit a warranty from the equipment manufacturer. The manufacturer's warranty period shall be concurrent with Contractor's for one (1) year, unless otherwise specified. Durations of systems' (i.e. moisture protection, conveyance, etc.) warranties shall be as specified elsewhere in the Contract Documents.
2. Contractor shall be responsible for obtaining certificate for equipment warranty for all major equipment provided which has at least 1 hp motor or which lists for more than \$1,000. ENGINEER reserves the right to request warranties for equipment not classified as major. Contractor shall still warrant equipment not considered to be "major" in Contractor's one-year warranty period even though certificates of warranty may not be required.
3. In the event that the equipment manufacturer or supplier is unwilling to provide a one-year warranty concurrent with the Contractor's for one (1) year, Contractor shall obtain from the manufacturer a two year warranty commencing at the time of equipment delivery to the job site. This two-year warranty from the manufacturer shall not relieve Contractor of the one-year warranty.
4. Contractor shall be responsible for all costs of repairs of work which becomes defective during construction and the following warranty period.
5. Warranty shall cover all necessary labor, equipment and replacement parts resulting from faulty or inadequate design, improper assembly or erection, defective workmanship and materials, leakage, breakage or other failure of any or all equipment and components furnished by the manufacturer.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

**SECTION 01770
CONTRACT CLOSEOUT**

PART 1 GENERAL

1.01 Section Includes

Substantial completion requirements, clean-up, final completion requirements, closeout submittals

1.02 Clean-Up Operations

- A. The entire Project site shall be thoroughly cleaned at the completion of the Work.
- B. Clean all installed pipelines, structures, sidewalks, paved areas, accumulated silt in ponds, plus all adjacent areas affected by construction, as directed by the Owner or jurisdictional agency. Equipment to clean these surfaces shall be subject to approval by the Owner.
- C. Restore to original condition or better all property not designated for alteration by the Contract Documents, including all areas used for staging and storage. Restoration includes but is not limited to fill replacement, regrading, compaction, and sodding. Conduct inspections of the completed restoration with the Owner, and conduct additional restoration as directed.

1.03 Substantial Completion Requirements

- A. Complete the following before requesting the inspection for certification of substantial completion.
 - 1. Submit record drawings in accordance with section 01300.
 - 2. Complete required cleaning and testing of the completed construction in accordance with the specifications and the Owner's operating and maintenance personnel.
- B. Work is not substantially complete until the following has occurred:
 - 1. The Owner has received clearance to place the completed construction into service from the regulatory agencies.

1.04 Final Completion Requirements

- A. Complete the following before requesting the inspection for certification of final completion.
 - 1. All punchlist items identified during the substantial completion inspection.
 - 2. Deliver tools, spare parts, extra stocks of material and similar physical items to the Owner.
 - 3. Discontinue or change over and remove temporary facilities and services from the project site, along with construction tools and facilities, mock-ups, and similar elements.

4. Clean all marred surfaces including touch up painting, pressure washing, or other measures as needed as directed by the Owner.
5. Broom clean paved driveways and parking areas.
6. Hose clean sidewalks, loading areas, and others contiguous with principal structures.
7. Fully restore all property not designated for construction including all areas used for staging and storage.
8. Provide Final Record Drawings in accordance with Section 01780.

1.05 Closeout Submittals

- A. Upon completion of the project, or portions thereof, the Contractor shall transfer to the Owner all applicable items accumulated throughout construction. These include but are not limited to the following items:
 1. Service manuals, installation instructions, maintenance and operating instructions, special tools, and specialties
 2. Spare parts ordered as part of this Contract
 3. Delivery of any salvaged or borrowed materials or equipment to the Owner
 4. All keys to all doors, gates, and equipment
 5. Checklist indicating satisfactory completion of all unfinished items from the final inspection
 6. Certificate of Substantial Completion
 7. Certificate of Final Completion
 8. Submittal of the Material and Workmanship Bond
 9. Submittal of manufacturers' guarantees, warranties, bonds, and letters of coverage extending beyond the time limitations of the Contractor's guarantee.
 10. Contractor's Final Release of Lien
 11. Final Waivers of lien from all Subcontractors and Suppliers
 12. Consent of Surety to Final Payment
 13. Final record documents of completed facilities

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 02050
DEMOLITION AND MAINTENANCE OF SERVICE DURING CONSTRUCTION

PART 1 - GENERAL

1.01 Description

A. Scope of Work:

1. This Section includes furnishing all labor, materials, permits, notifications, equipment and incidentals required for the demolition and disposal of all materials and equipment designated for removal.
2. These Specifications call attention to certain activities necessary to maintain and facilitate operation during and immediately following construction and do not purport to cover all of the activities necessary. The Contractor shall exercise due care to maintain continuous operation of the existing facilities and minimize operation inconvenience by providing temporary bypass pumping system as specified in section 13273. In accordance with this requirement, a Demolition and Removal Plan shall be developed and submitted in accordance with Sub Part 1.06 herein.
3. Demolition includes, but is not limited to:
 - a. Removal of pumps, miscellaneous piping, valves, electrical conduits, wiring, control panels, junction boxes, control panels, RTU, clearing and grubbing, and other items as shown on the Drawings or necessary to complete the Project.
 - b. Disposal of nonsalvageable and excess unacceptable material as specified below.
 - c. Off-site disposal of excess and unacceptable materials.
4. The Contractor shall examine the Contract Documents, visit the project site and determine the extent of the work affected therein, and all conditions under which the work will be performed.

1.02 Permits and Notices

- A. Permits and Licenses: Contractor shall obtain all necessary permits and licenses for performing the work and shall furnish a copy of same to the Owner prior to commencing the Work. The Contractor shall comply with the requirements of the permits.
- B. Notices: Contractor shall issue written notices of planned demolition at least one month prior to any demolition to all residence in surrounding area, along with companies or local authorities owning utility conduit, wires or pipes running to or through the project site. Notices to residences shall include a project description, estimated duration and anticipated traffic constriction for the project. Drafts of said notices shall be submitted to

the Engineer.

- C. Utility Services: Contractor shall notify utility companies or local authorities furnishing gas, water, electrical, telephone, cable television, or sewer service to remove any equipment owned by them in structures to be demolished and to remove, disconnect, cap, or plug their services to facilitate demolition.

1.03 Conditions and Structures

- A. Conditions existing at the time of inspection for bidding purposes will be maintained by the Owner insofar as practicable, however, minor variations within the structure may occur prior to the start of demolition work.

1.04 Rules and Regulations

- A. The Florida Building Code and applicable codes shall control demolition, modification, or alteration of the existing buildings or structures.
- B. No blasting shall be done on site. The Contractor shall not bring or store any explosives on site.
- C. The Contractor shall dispose of all wastewater contents (including sediment) and discharge structure in accordance with FDEP Rules and Regulations.

1.05 Disposal of Material

- A. Salvageable material shall become the property of the Owner, if the Owner requests any specific item. The Contractor shall dismantle all the materials to such a size that they can be readily handled, and deliver any of the salvageable materials requested by the Owner to City Hall, 102 Copeland Ave. North Everglades City, FL 34139.
- B. The following examples are the types of material of which the Owner may maintain ownership:
 - 1. Valves greater than 3 inches in diameter.
 - 2. Pumps, pump stands, control panels, wiring, and winches.
 - 3. Generator
 - 4. Antenna
 - 5. LP tanks and appurtenances
- C. Prior to disposal of any material from the site, Contractor shall coordinate with Owner to verify that Owner does not want to maintain ownership.
- D. Any material that the Owner rejects shall become the Contractor's property and must be removed from the site, transported, and disposed of by the Contractor in compliance with all local, state and federal code requirements.

- E. Concrete, concrete block, and unsalvageable bricks shall be hauled to a waste disposal site by the Contractor.
- F. The storage of or sale of removed items on the site shall not be allowed.

1.06 Submittals

1. Submit to the Engineer within twenty (20) days after the Notice-to-Proceed for approval, five (5) copies of the proposed Demolition and Removal Plan for the structures and modifications as shown on the Drawings or as specified herein prior to the start of Work. Include a detailed schedule showing the coordination of bypassing, shutoff, capping and continuation of utility service as required. The Demolition and Removal Plan shall include as a minimum, the following: A detailed sequence of demolition and removal work to ensure the continued conveyance of wastewater service and compliance with regulatory agency requirements, as well as the expeditious completion of the Contractor's work.
 2. A list of all activities, including Owner activities, bypass activities and shutdowns, required to complete the work.
 3. Evidence (by signature) of review of the lift station manager of the work plan.
 4. The sequence of demolition and renovation of existing facilities shall be in accordance with the approved Demolition and Removal Plan as specified in this Section. The Contractor is solely responsible for construction and demolition sequencing of the Work.
 5. Submit signed and sealed demolition/shoring drawings and calculations prepared by a professional engineer, registered in the State of Florida.
- B. Before commencing demolition work, all modifications necessary to bypass the affected structure shall be completed. Contractor shall coordinate with the Owner's personnel to determine the locations of the affected equipment, valves and fittings at least 48 hours in advance of any demolition work.
 - C. The above procedure shall be followed for each individual demolition operation.

1.07 Traffic and Access

- A. Conduct demolition and modification operations, and the removal of equipment and debris to ensure minimum interference with roads, streets, and sidewalks both on-site and off-site and to ensure minimum interference with occupied or used facilities.
- B. The Contractor shall at all times maintain safe and convenient access to the existing site.
- C. Do not close or obstruct streets or walks without permission from the City and Engineer. Provide alternate traffic routes around closed or obstructed access ways.
- D. Special attention is directed towards maintaining safe and convenient access to the existing facilities remaining in service by City personnel. Relocation of the Contractor's materials or equipment due to uncoordinated interruption will be at the Contractor's

expense.

1.08 Child Safety

- A. CHILD SAFETY IS PARAMOUNT. Contractor shall take all means necessary to provide for pedestrian MOT and temporary fencing to avoid any potential safety issues at or around the site.
 - 1. Pedestrian MOT shall be reviewed and approved by the City and the Engineer prior to any onsite work by the contractor. The MOT may include but not limited to, signage, barricades, fencing, and temporary sidewalks.
 - 2. Temporary fencing shall be a minimum of 6-feet tall chain link fence secured securely in the ground. Gates shall be lockable and secure.
- B. Contractor shall keep all equipment and material within the limits of the easement and temporary construction easement and/or designated project limits.

1.09 Damage

- A. Promptly repair damage caused to adjacent facilities by demolition operations at no cost to the Owner.

1.10 Utilities

- A. Maintain existing utilities to remain in service and protect against damage during demolition operations.
- B. Do not interrupt existing utilities serving occupied or used facilities, except when authorized by the Owner and the Engineer. Provide temporary service during interruptions to existing utilities as acceptable to the Owner.
- C. The Contractor shall cooperate with the Owner to shut off utilities serving structures as required by demolition operations.
- D. The Contractor shall be solely responsible for making all necessary arrangements and for performing any necessary work involved in connection with the discontinuance or interruption of all public and private utilities or services under the jurisdiction of the utility companies.
- E. All utilities being abandoned shall be disconnected and terminated at the service mains in conformance with the requirement of the utility companies or the municipality owning or controlling them.

1.11 Pollution Control

- A. For pollution control, use water sprinkling, temporary enclosures, and other suitable methods as necessary to limit the amount of dust and dirt rising and scattering in the air to the lowest level of air pollution practical for the conditions of work. Comply with the governing regulations.

- B. Take all necessary measures and means to provide dust, dirt, debris and paint abatement methods to prevent damage to surrounding properties, on-site structures, and private property.
- C. Clean on-site structures and improvements of all dust, dirt and debris caused by demolition operations as directed by the Engineer. Clean or repair all off-site property as shown on the Drawings and specified herein. Return areas to conditions existing prior to the start of work.

1.12 Quality Control

- A. Protect all existing materials and equipment to be salvaged or reused from damage.
- B. No above-ground pipes, junction boxes, conduits, or wires are to be left abandoned.
- C. Leave all exposed ends of all pipe and conduit or junction boxes covered and safe.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.01 Sequence of Work

- A. The sequence of demolition and renovation of existing facilities shall be in accordance with the approved demolition and removal plan.
- B. The Contractor shall have a basic understanding of the operation of the existing pump station before preparation of the Demolition and Removal Plan to maintain facility operation and reliability during the demolition process.
- C. Show the complete sequence of construction by activity and by structure. Utilize proposed sequence of work as a basis for the detailed sequence of construction.

3.02 Removal of Existing Equipment, Piping, and Appurtenances

- A. Subject to the constraints of maintaining the existing facility in operation, existing equipment, non-buried valving and piping, and appurtenances not necessary for the operation of the new facility shall be removed as shown or indicated on the Drawings.
- B. All equipment, piping, and appurtenances shall be cleaned, flushed, and drained. Equipment to be retained by the Owner as specified in Paragraph 1.05 above shall be dismantled sufficiently to permit thorough cleaning and draining. All valves shall be left open.

3.03 Buried Piping

- A. Remove all demolished and abandoned buried piping encountered during excavation unless otherwise directed by Owner.

END OF SECTION

SECTION 02080

ABANDONMENT, REMOVAL, AND SALVAGE OR DISPOSAL OF EXISTING PIPE

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Scope of Work: This section specifies the furnishing of all labor, materials, equipment, and incidentals required to abandon, remove, salvage, and/or dispose of existing pipelines and appurtenances as shown on the Drawings and as specified herein.

1.02 QUALITY ASSURANCE

- A. Permits and Licenses: Contractor shall obtain and pay respective fees for all necessary permits and licenses for performing the Work and shall furnish a copy of same to the City prior to commencing the Work. The Contractor shall comply with the requirements of the permits. All removal or abandonment of asbestos pipe material shall be performed by a licensed asbestos abatement Contractor or Subcontractor registered in the State of Florida.
- B. Notices: Contractor shall issue written notices of planned Work to companies or local authorities owning utility conduit, wires, or pipes running to or through the project site. Copies of said notices shall be submitted to the City.
- C. Standards:
 - 1. Florida Administrative Code, Chapter 62-204.800
 - 2. National Emission Standards Hazardous Air Pollution (NESHAP), 40 CFR Part 61, Subpart M, latest revision
 - 3. Occupational Safety and Health Act, 29 CFR
 - 4. The Environmental Protection Agency (EPA) Asbestos Abatement Worker Protection Rule
 - 5. Florida Statute 455.300
 - 6. Asbestos pipe handling best management practices provided at the end of this section
- D. Quality Control
 - 1. It shall be the responsibility of the Contractor to provide supervision and inspections to ensure that the existing piping is removed and disposed, salvaged, or abandoned as designated in the Drawings and as specified herein.
 - 2. Asbestos Pipe
 - a. All removal or abandonment of pipe material containing asbestos shall be performed by a licensed asbestos abatement Contractor or Subcontractor.
 - b. The asbestos abatement Contractor or Subcontractor shall contact the County Environmental Protection Division prior to removal or abandonment of any asbestos material and shall obtain all required permits and licenses and issue all

required notices as required by the City Environmental Protection Division. The Contractor shall be responsible for all fees associated with permits, licenses, and notices to the governing regulatory agencies.

- c. The asbestos abatement Contractor shall perform Work in accordance with all applicable standards referenced in paragraph 1.02.C of this section.
- d. The asbestos abatement Contractor shall have experience performing asbestos removal similar to this Project.

1.03 SHOP DRAWINGS AND SUBMITTALS

A. Shop Drawings

1. Submittals shall be submitted to the City for review and acceptance prior to construction in accordance with the General Conditions and specifications Section 01300 "Submittals."
2. Shop Drawings shall be submitted to the City for review and acceptance prior to construction in accordance with these specifications for the following:
 - a. Grout
 - b. Caps and plugs
 - c. Credentials of licensed asbestos abatement Contractor including current certification.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 REMOVAL, ABANDONMENT, SALVAGE, AND DISPOSAL

- A. General: Existing piping designated on the Drawings to be removed shall be exposed and removed by the Contractor.
- B. Removal and Disposal
 1. Pipe designated to be removed shall be completely drained and the contents properly disposed. The piping system including fittings and valves shall then be completely removed from the site.
 2. Existing services and/or connections not shown on the Drawings shall be removed in accordance with this section at no additional cost. Existing live services encountered shall be maintained.
 3. Asbestos: Pipe material containing asbestos shall be removed and disposed by a licensed asbestos abatement Contractor or Subcontractor.
 4. Structures shall be removed in accordance with Section 02050 "Demolition and Maintenance of Service During Construction."
- C. Removal of material to be salvaged
 1. Pipe designated on the Drawings to be removed and salvaged shall be completely drained and the contents properly disposed. The pipe shall then be thoroughly pressure washed, palletized on wooden skids to a dimension not exceeding the

recommendation of the manufacturer, and conveyed to the City at the location designated by the City.

2. Items to be salvaged:
 - a. Air release valves
 - b. Sanitary manhole rings and covers
 - c. Isolation valves
 - d. Valve boxes
 - e. Fire hydrant and valve assemblies

D. Abandonment

1. Pipe designated on the Drawings to be abandoned (or retired in place) shall be left in place, drained, and its contents properly disposed. Pipe requires end caps or plugs. All air release valves and vaults, valve boxes, fire hydrants, manholes, and manhole rings and covers shall be removed and disposed of or salvaged as specified above.
2. Plugs: Pipe to be abandoned shall be capped or plugged with a mechanical joint fitting that will prevent soil or other deposits from entering the pipe.

E. Asbestos Pipe Handling Best Management Practices

1. Projects will require worker documentation before entering the regulated Work area. A copy of: their current training certificate (workers and their supervisor); current medical condition showing the doctor approved their working with asbestos and wearing a respirator; signed acknowledgment forms; and current record (6-months) of each workers respirator fit test will be required from all workers.
2. Projects also require air monitoring. OSHA will accept historic data on air monitoring within 12-months of the Project, provided the data is from a project of like material and conditions with a crew of the same experience, supervision, and training. Otherwise, monitoring is required throughout the Project. OSHA requires two (2) types of personnel air monitoring, full shift and 30-minute excursion level (when highest levels are anticipated).
3. Some provisions should be made for worker showering or otherwise washing following work before removing respirators, etc. Even if direct exposure is not anticipated, and at a minimum, a source of water to rinse the respirators, wash workers faces and hands, and (in the event of unanticipated direct exposure) some place to shower is required. The workers will also need a change room and some place to keep their street clothes and personal possessions.
4. Proposals to remove asbestos pipe sections by cutting must address how the cutting debris will be captured and kept from becoming airborne. Soil that could be considered contaminated may also have to be removed.
5. Licensed asbestos abatement Contractors or Subcontractors should have a pollution endorsement in their liability insurance in case of asbestos fiber release. A contingency plan, in case the project does not run as smoothly as expected, should be developed and include emergency phone numbers kept on site during the Project.
6. Daily logs of the asbestos removal work should be kept, and should include sign in sheets for the workers and whatever air monitoring was done. Accident reports and other reports or correspondence if something unusual happened should also be included.
7. Waste receipts must be kept through all stages of transport from the site to, and

including, the acceptance at the dumpsite where the material will be abandoned. Amount of material removed must be equal to the amount of material to be turned into to the dump.

8. The primary Contractor will give "approval for tear down" at project completion, indicating that all asbestos removal operations are complete and whether there is a need for any air monitoring. Air monitoring, if not required by any governing agency or approved permit as discussed previously, may also be required by the City if documentation to the general public pertaining to contamination is deemed necessary. This air monitoring is normally done by collecting area samples downwind of the project at the barrier tape or just inside it. It requires a source of electricity to run the pumps, which is often provided by a generator.

END OF SECTION

SECTION 02230 SITE PREPARATION

PART 1 GENERAL

1.01 Section Includes

- A. Layout of work and protection of bench marks.
- B. Protection of structures, trees, or vegetation to remain.
- C. Clearing and grubbing.
- D. Stripping and storing topsoil.

1.02 Related Sections

- A. Section 02050 – Demolition and Maintenance of Service During Construction
- B. Section 02370 - Erosion and Sedimentation Control

1.03 Coordination

- A. Notify the following utility owners which may have utilities in the project area and coordinate with them to avoid service interruptions and/or safety hazards:
 - 1. OUC
 - 2. AT&T
 - 3. CenturyLink
 - 4. Florida Public Utilities
 - 5. Teco Peoples Gas
 - 6. Charter Communications
- B. Contact “Sunshine State, One-Call” by dialing “811”, to determine if there are other utilities in the area, and their location. For additional information: www.callsunshine.com.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION

3.01 Bench Marks and Monuments

Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of the Owner. All benchmarks, property corners, and other survey

monuments that are lost, damaged, or destroyed shall be replaced by a Licensed Surveyor at the Contractor's expense.

3.02 Laying Out Work

- A. Base lines, property lines, and easement lines, are shown on the Drawings. Benchmarks utilized are also shown on the drawings.
- B. Stake out the construction, establish lines and levels, temporary bench marks, batter boards, centerlines and reference points for the work, and verify all dimensions relating to interconnection with existing features.
- C. Report any inconsistencies in the proposed grades, lines and levels, dimensions and locations to the Engineer before commencing work.
- D. Contain all construction activities within the right-of-way, easements, and property secured by the Owner, as shown on the drawings. Do not disturb surrounding properties or travel on surrounding properties without written consent from the property owner. Repair or reconstruct damaged areas on an immediate basis. All costs for repairs shall be the responsibility of the Contractor.

3.03 Burning

Burning is not allowed, unless notes on the drawings specifically allow it to occur. In the event burning is allowed, secure all necessary permits.

3.04 Protection of Trees and Shrubs

- A. Protect all trees and shrubs located outside the right-of-way, easements, and Owner secured property, particularly those trees and shrubs located adjacent to work areas.
- B. Within the right-of-way, easements, and Owner secured property, the intent is to allow trees and shrubs to remain in accordance with the following schedule:
 - 1. New roadway construction – trees and shrubs to remain where located more than 15 feet from the back of curb, or outside the limits of excavation or fill areas, whichever is further.
 - 2. Utility pipeline construction – trees and shrubs to remain outside a 15 foot wide path, centered on the pipeline.
- C. Protect branches, trunks, and roots of trees and shrubs that are to remain. Trees to remain in the construction area shall be boxed, fenced or otherwise protected before any work is started; remove boxing when directed by the Engineer. Do not permit heavy equipment or stockpiles within branch spread. Remove interfering branches without injury to trunks and cover scars with tree paint.

3.05 Relocation of Utilities

- A. Active utilities which do not interfere with the work shall be supported and protected from damage. After obtaining the Engineer's approval, relocate or remove active utilities which will interfere with work as indicated. Pay for all damage to active utilities and for relocation or removal of all interfering utilities which are ascertainable from Drawings, surveys, site inspection or encountered during construction.
- B. Coordinate with each utility and pay all costs associated with the protection of existing facilities during construction. Also coordinate necessary relocations or other construction related matters with each utility.
- C. Inactive or abandoned utilities and appurtenant structures encountered shall be removed to avoid interference as directed by the Engineer. Exposed ends of abandoned lines shall be plugged or capped in a water-tight manner.

3.06 Clearing and Grubbing

- A. Areas to receive clearing and grubbing shall include all areas to be occupied by the proposed improvements, areas for fill and site grading, and borrow sites. Remove trees outside of these areas only as indicated on the Drawings or as approved in writing by the Engineer.
- B. Clearing shall consist of removing trees and brush and disposal of other materials that encroach upon or otherwise obstruct the work.
- C. Exercise extreme care during the clearing and grubbing operations. Do not damage existing structures, pipes or utilities.
- D. Grubbing shall consist of removing and disposing of stumps, roots larger than 2" in diameter, and matted roots. Remove to a depth of not less than 18" below the original surface level of the ground.
- E. All combustible debris and refuse from site preparation operations shall be removed to legal offsite disposal areas.

3.07 Topsoil Removal

- A. All areas to be occupied by proposed improvements, and borrow sites shall be stripped of all brush, weeds, grass, roots and other material.
- B. Remove all loamy, organic topsoil suitable for seeding and planting to whatever depth encountered and store separately from other excavated material. Stockpile in designated areas and provide for proper drainage. Cover storage piles as required to prevent windblown dust.
- C. All removed topsoil shall be stockpiled within the project work area. Topsoil can be incorporated into the project in all areas that are to be grassed.
- D. Dispose of unsuitable topsoil as specified under disposal of debris. Excess topsoil shall be removed from site unless specifically noted on Contract Drawings.

3.08 Disposal of Debris

- A. All combustible debris and refuse from site preparation operations shall be removed to legal offsite disposal areas.
- B. All non-combustible debris (not including acceptable fill material, fences, or other structures), resulting from site preparation operations shall become the property of the Contractor and shall be removed to legal offsite disposal areas.

END OF SECTION

SECTION 02240 DEWATERING

PART 1 GENERAL

1.01 Section Includes

Dewatering design and operation requirements

1.02 Related Sections

Section 02370 - Erosion and Sedimentation Control

1.03 General Requirements

- A. Obtain the services of a qualified dewatering specialist to provide dewatering plan as may be necessary to complete the Work. Contractor shall be solely responsible for the design, installation, operation, maintenance, and any failure of any component of the system.
- B. Dewatering discharge from the site shall comply with all NPDES general permit requirements and state water quality standards. Provide all testing and permitting required and comply with all treatment or disposal methods required to meet all local, state and federal requirements.
- C. Design and provide dewatering system using accepted and professional methods consistent with current industry practice to eliminate water entering the excavation under hydrostatic head from the bottom and/or sides. Design system to prevent differential hydrostatic head which would result in floating out soil particles in a manner termed as a “quick” or “boiling” condition. System shall not be dependent solely upon sumps and/or pumping water from within the excavation where differential head would result in a quick condition, which would continue to worsen the integrity of the excavation’s stability.
- D. Provide dewatering system of sufficient size and capacity to prevent ground and surface water flow into the excavation and to allow all Work to be installed in a dry condition.
- E. No additional payment will be made for any supplemental measures to control seepage, groundwater, or artesian head.
- F. If dewatering equipment needed exceeds any of the following: 1) 6" pump volute; 2) 100,000 GPD total 24 hour (1 day) dewatering, and; 3) 1,000,000 GPD pump capacity, the Contractor shall be required to permit the dewatering system with the Water Management District.
- G. Dewatering permits from FDEP and if applicable the Water Management District must be obtained prior to City granting permission to discharging into public system.

- H. Prior to discharging groundwater into the City's stormwater systems or natural conveyances, permission must be received by the City Stormwater Compliance Section, and will be based on analytical results of the proposed untreated discharge water.
- I. Contractor shall be responsible for and shall repair without cost to the Owner any damage to work in place, or other contractor's equipment, utilities, residences, highways, roads, railroads, private and municipal well systems, adjacent structures, natural resources, habitat, existing wells, and the excavation, including, damage to the bottom due to heave and including but not limited to, removal and pumping out of the excavated area that may result from Contractor's negligence, inadequate or improper design and operation of the dewatering system, and any mechanical or electrical failure of the dewatering system.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION

3.01 General Requirements

- A. Control, by acceptable means, all water regardless of source and be fully responsible for disposal of the water.
- B. Confine discharge piping and/or ditches to available easement or to additional easement obtained by Contractor.
- C. Control groundwater in a manner that preserves strength of foundation soils, does not cause instability or raveling of excavation slopes, and does not result in damage to existing structures. Where necessary to these purposes, lower water level in advance of excavation, utilizing wells, wellpoints, jet educators, or similar positive methods. Maintain the groundwater level to a minimum of 2 feet below excavations. Provide piezometers if directed by the Engineer to document the groundwater level is being maintained.
- D. Commence dewatering prior to any appearance of water in excavation and continue until Work is complete to the extent that no damage results from hydrostatic pressure, flotation, or other causes.
- E. Open pumping with sumps and ditches shall be allowed, provided it does not result in boils, loss of fines, softening of the ground, or instability of slopes.
- F. Install wells and/or wellpoints, if required, with suitable screens and filters, so that continuous pumping of fines does not occur. During normal pumping, and upon development of well(s), levels of fine sand or silt in the discharge water shall not exceed 5 ppm. Install sand tester on discharge of each pump during testing to verify that levels are not exceeded.
- G. Control grading around excavations to prevent surface water from flowing into excavation areas.
- H. Remove subgrade materials rendered unsuitable by excessive wetting and replace with approved backfill material at no additional cost to the Owner.

- I. Walls shall not be exposed to water pressure before structural work at the next higher level has properly cured and the cantilever action of walls is eliminated.
- J. Any dewatering pumps within 1500-ft of private residences shall be equipped with satisfactory sound suppression.
- K. Water from dewatering activities shall be disposed in a manner that does not cause flooding, erosion, or the transfer of sediments.

3.02 Maintaining Excavation in Dewatering Condition

- A. Dewatering shall be a continuous operation. Interruptions due to power outages, or any other reason will not be permitted.
- B. Continuously maintain excavation in a dry condition with positive dewatering methods during preparation of subgrade, installation of pipe, and construction of structures until the critical period of construction and/or backfill is completed to prevent damage of subgrade support, piping, structure, side slopes, or adjacent facilities from flotation or other hydrostatic pressure imbalance.
- C. Provide standby equipment on site, installed, wired, and available for immediate operation if required to maintain dewatering on a continuous basis in the event any part of the system becomes inadequate or fails. If dewatering requirements are not satisfied due to inadequacy or failure of dewatering system, perform such work as may be required to restore damaged structures and foundation soils at no additional cost to Owner.
- D. System maintenance shall include but not be limited to 24-hour supervision by personnel skilled in the operation, maintenance, and replacement of system components, and any other work required to maintain excavation in dewatered condition.

3.03 System Removal

Remove all dewatering equipment from the site, including wells and related temporary electrical service.

END OF SECTION

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SECTION 02310 FINISH GRADING

PART 1 GENERAL

1.01 Section Includes

Topsoil placement, grading of site

1.02 Related Sections

- A. Section 02230 - Site Preparation
- B. Section 02315 - Excavation and Fill
- C. Section 02320 - Trenching, Bedding, and Backfilling

1.03 References

- A. American Association of State Highway and Transportation Officials (AASHTO) latest edition:
 - 1. AASHTO T267 – Determination of Organic Matter in Soils by Loss on Ignition

PART 2 PRODUCTS

2.01 Topsoil

- A. Topsoil shall be fertile, friable, natural topsoil typical of the area, free from subsoil, stones, plants, roots or other extraneous material and shall not be used while muddy or frozen.
- B. Topsoil shall contain not less than 8% organic matter (AASHTO T267). The topsoil shall consist of either natural topsoils typical of the locality and free from coarse stone aggregate or surface soils stripped from the site and enriched with humus at a rate of 8% by volume. The soil mixture prepared by mixing surface soils and humus shall be free of oil, cinders, coarse stone, and woody root material.

PART 3 EXECUTION

3.01 General

Provide all topsoil placement and finish grading and filling to achieve the lines and grades indicated on the Drawings. All earthwork shall be done in a manner that provides drainage.

3.02 Topsoil Placement

Place topsoil in all areas of new grading. The compacted subgrade to receive topsoil shall be scarified to a depth of 3 inches. Topsoil shall be spread evenly and compacted to a thickness of not less than 6 inches, to the proposed elevations and grades. Grade flush with walks, curbs, and paving.

3.03 Finish Grading

- A. All areas of the project including all previously grassed areas that have been disturbed, borrow sites, excavated and filled sections and adjacent transition areas shall be uniformly smooth-graded. Depressions from settlement shall be filled and compacted. Tops of embankments and breaks in grade shall be rounded. All surfaces shall be finished to provide adequate drainage. Finished surfaces shall be reasonably smooth, compacted, free from irregular surface changes and comparable to the smoothness obtained by blade-grader operations.
- B. Slope grades to drain away from structures at a minimum of ¼-inch per foot for 10 feet.
- C. Finished surfaces adjacent to paved or surfaced areas and within 10 feet of structures shall be within 1 inch of the proposed grade. All other areas shall be within 3 inches of the proposed grade.
- D. Newly graded areas shall be protected from traffic and erosion. All settlement or washing away that may occur from any cause prior to seeding or acceptance shall be repaired and grades re-established to the required elevations and slopes at no additional cost to the Owner.
- E. Unless otherwise indicated, dispose of all surplus material.

END OF SECTION

SECTION 02315 EXCAVATION AND FILL

PART 1 GENERAL

1.01 Section Includes

- A. Excavation and fill for roads, ponds, general site work
- B. Sheet piling, shoring and bracing
- C. Compaction

1.02 Related Sections

- A. Section 02230 - Site Preparation
- B. Section 02240 - Dewatering
- C. Section 02310 - Finish Grading
- D. Section 02320 - Trenching, Bedding, and Backfilling
- E. Section 02370 - Erosion and Sedimentation Control

1.03 References

- A. American Association of State Highway and Transportation Officials (AASHTO) latest edition:
 - 1. AASHTO M145 - Classification of Soils and Soil Aggregate Mixtures
 - 2. AASHTO T180 - Moisture-Density Relations of Soils Using a 10-lb Rammer and 18-in Drop
- B. American Society for Testing and Materials (ASTM) latest edition:
 - 1. ASTM D1557 - Laboratory Compaction Characteristics of Soil Using Modified Effort
 - 2. ASTM D2487 - Classification of Soils for Engineering Purposes
- C. Occupational Safety and Health Administration (OSHA) Regulations, including:
 - 1. Part 1926 Subpart P – Excavations

1.04 Definitions

- A. Backfill = material placed in newly excavated areas to the topsoil, paving sub-grade, or foundation level.

- B. Influence Area = the area within lines sloped downward at 45 degrees from the outer edges of paving, foundations, and utility lines. As a minimum, the influence area shall extend 5 feet beyond the edge of pavement (where there is no curb) or 5 feet beyond the back of curb.

1.05 Quality Assurance

- A. Field density testing frequencies:
 - 1. One test for each 5,000 square feet or fraction thereof per lift of general backfilling, minimum 2 tests each layer.
 - 2. One test per each lift of backfill around and under structures.
 - 3. One test per lift per each change in type of fill.
 - 4. One test per 1000 square feet of pavement subgrade, minimum of 2 tests.
- B. Sheeting, shoring, and bracing used for the support of excavations over 20 feet deep shall be designed by a professional engineer licensed by the State of Florida.

1.06 Preconstruction Requirements

Precondition surveys and vibration monitoring are required for those areas where residential structures are within 100 feet of the proposed construction.

PART 2 PRODUCTS

2.01 General

It is intended that previously excavated materials conforming to the following requirements be utilized wherever possible.

2.02 Materials

- A. Acceptable materials (suitable material): AASHTO M145 classification A-1, A-3, A-2-4, A-2-6; ASTM D2487 classification GW, GP, GM, SM, SW, SP; unless otherwise disapproved within the Soil and Subsurface investigation reports. No more than 12% of acceptable materials shall pass the number 200 sieve.
- B. Unacceptable materials (unsuitable material): AASHTO M145 classification A-2-5, A-2-7, A-4, A-5, A-6, A-7, A-8; ASTM D2487 classification GC, SC, ML, MH, CL, CH, OL, OH, PT; unless otherwise approved within the Soil and Subsurface investigation reports.
- C. Flowable fill shall be “Excavatable” and shall meet the requirements of FDOT specification section 121, with a maximum 28-day compressive strength of 100 psi and a minimum 28-day compressive strength of 80 psi.

2.03 Sheeting, Shoring, and Bracing

- A. The structural strength and safety of all sheeting, shoring and bracing shall be the sole responsibility of the Contractor. Repair any damage resulting from failure to provide adequate supports.
- B. Provide timber work, shoring, bracing, sheeting, and sheet piling where necessary to retain banks of excavations, prevent cave-in of adjacent ground, prevent displacement of utilities and structures, and to protect public safety.
- C. Contractor is solely responsible for the design, installation, and operation of dewatering systems and their safety and conformity with local codes and regulations.

PART 3 EXECUTION

3.01 General Construction Requirements

- A. Provide suitable temporary drainage channels for any water that may flow along or across the work as specified hereafter.
- B. Provide barriers, warning lights and other protective devices at all excavations.
- C. Sidewalks, roads, streets, and pavements shall not be blocked or obstructed by excavated materials, except as authorized by the Engineer, in which case adequate temporary provisions must be made for satisfactory temporary passage of pedestrians, and vehicles. Minimize inconvenience to public travel or to tenants occupying adjoining property.
- D. Where necessary to place excavated material adjacent to buildings, erect barriers to keep earth at least 4 feet from such buildings. Earth deposited on lawns shall be promptly and carefully removed to preserve the turf. All trees, shrubs, and landscaping shall be protected. Boring and jacking shall be used, if necessary, except where written permission is granted to remove trees and shrubs.

3.02 Preparation

- A. Identify required lines, levels, contours, and datum.
- B. Locate and identify existing utilities that are to remain and protect from damage.
- C. Notify utility companies to remove or relocate utilities that are in conflict with proposed improvements.
- D. Protect plant life, lawns, fences, existing structures, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.
- E. Protect benchmarks, property corners, and other survey monuments from damage or displacement. If marker needs to be removed it shall be referenced by licensed land surveyor and replaced, as necessary, by same.
- F. Prior to placing fill in low areas, such as previously existing ditches, ponds, or lakes, perform following procedures:

1. Drain water out by gravity with ditch having flow line lower than lowest elevation in low area. If drainage cannot be performed by gravity ditch, use adequate pump to obtain the same results.
2. After drainage of low area is complete, remove mulch, mud, debris, and other unsuitable material by using acceptable equipment and methods that will keep natural soils underlying low area dry and undisturbed.
3. If proposed for fill, muck, mud, and other materials removed from low areas shall be dried on-site by spreading in thin layers for observation by Engineer. Material shall be inspected and, if found to be suitable for use as fill material, shall be incorporated into lowest elevation of site filling operation, but not under building or pavement subgrade or within 10'-0" of perimeter of building subgrade or paving subgrade. If, after observation by Engineer, material is found to be unsuitable, unsuitable material shall be removed from site.

3.03 Sheeting, Shoring, and Bracing

- A. Furnish, install, and maintain, without additional compensation, sheeting, bracing, and shoring support required to keep excavations within the easement provided, to support the sides of the excavation, and to prevent any movement which may damage adjacent pavements or structures, damage or delay the work, or endanger life and health. Voids outside the supports shall be immediately filled and compacted.
- B. Sheeting, where required, shall be driven below the bottom of excavation so the lowest set of wales and struts are above the bottom of the excavation to allow necessary working room.
- C. The Engineer may direct in writing that supports in trenches be cut off at any specified elevation, in which case Contractor shall be paid for the supports left in place.
- D. Contractor may leave in place, to be embedded in the backfill of the excavation, any or all supports for the purpose of preventing injury to persons or property, whether public or private. However, no supports which are within 4' of the ground or pavement surface may be left in place without written permission of the Engineer. No extra payment will be made for supports left in place at the Contractor's option.
- E. All supports not left in place shall be removed in such manner as to avoid endangering the piping, structures, utilities or property, whether public or private. All voids left by the withdrawal of sheeting shall be immediately filled and compacted.
- F. The right of the Engineer to order supports left in place shall not be construed as creating an obligation on his part to issue such orders. Failure by the Engineer to exercise this right shall not relieve the Contractor from total liability for damages to persons or property resulting from the failure of the Contractor to leave in place sufficient supports to prevent any caving or moving of the ground adjacent to the excavation.

3.04 Excavation

- A. Do not excavate for any structure until that structure is scheduled for construction. Excavate only to the depth and dimensions necessary for the construction. Slope sides of

excavations in accordance with OSHA requirements and the recommendations contained within the project geotechnical report.

- B. The bottom of all excavations shall be undisturbed earth unless otherwise indicated, and shall be approved by the Engineer before any subsequent work is started. Over excavate a minimum of 2 feet where excavations occur within unsuitable soils, and replace over excavated material with suitable soils.
- C. Excavations carried below depths indicated on the Drawings without the previous approval of the Engineer shall be filled with 2500 psi concrete or flowable fill to the correct level at the expense of the Contractor.
- D. Maintain excavations in good order. If the bearing capacity of the foundation soils is reduced because the excavation is allowed to remain open prior to commencing work, the weathered soil shall be removed and replaced with 2500 psi concrete or flowable fill at the Owner's discretion at the expense of the Contractor.
- E. All suitable materials removed from excavation areas shall be used for the project. Excess excavated suitable material shall be stockpiled on site at a location of the Owner's choosing, and shall become the property of the Owner, unless otherwise indicated on the Drawings.
- F. Suitable onsite excavated materials containing silty or slightly clayey to clayey fine sands shall be sufficiently dried by surface spreading and discing if necessary, or by mixing with cleaner fine sands prior to placement in fill areas.
- G. Unsuitable materials within the influence area of construction shall be excavated, removed from the site, and disposed, unless otherwise indicated on the Drawings.
- H. Excavations shall be kept dry, compacted, and stable to a depth two feet below the bottom of the excavation.
- I. If portions of the bottom of excavations consist of material unstable to such a degree that, in the opinion of the Engineer, it cannot adequately support the construction, the bottom shall be over excavated and stabilized with approved coarse granular stabilization material. Depth of stabilization shall be as directed by the Engineer. The initial 50 tons of stabilization shall be incidental to the Contract. Compensation will be allowed only for such additional quantities as the Engineer shall direct in writing to be placed.

3.05 Filling

- A. All fill material shall be suitable soils or flowable fill. Fill placed within 1 foot of structures shall not contain rock or stone larger than 2 inch diameter. If a sufficient quantity of suitable material is not available from other excavations within the site, provide additional suitable material or flowable fill.
- B. Fill within the influence area of roadways, structures, foundations, or slabs, shall be placed in layers of 8 inch loose depth. In all other areas, place fill in layers of 12 inch loose depth.

- C. Take necessary precautions not to cause settlement or damage to adjacent slabs, walls, structures, or foundations. Place fill materials evenly adjacent to structures, without wedging against structures.
- D. Where filling is required on both sides of structures, fill and compact simultaneously on opposite sides in even layers.

3.06 Compaction

- A. Unless otherwise indicated, the type of equipment and number of passes required to obtain the specified degree of compaction shall be determined at the site, subject to the approval of the Engineer.
- B. Provide mechanical compaction for cohesive material and vibratory compaction for granular materials, unless otherwise approved by the Engineer. Vibratory compaction is not allowed within 100 feet of existing structures. In these areas, compaction shall be accomplished by static means only. If compaction difficulties arise, the Engineer shall be consulted to review and possibly modify compaction procedures.
- C. Noncohesive soils shall be compacted with vibrating roller or equivalent; cohesive soils shall be compacted with sheeps-foot roller, pneumatic tamping, or approved equivalent, unless otherwise indicated.
- D. Before compaction, moisten or aerate each layer as necessary to provide optimum moisture content. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.

3.07 Testing and Cleanup

- A. Provide for testing and cleanup as soon as practicable, so these operations do not lag far behind pipe installation. Perform preliminary cleanup and grading operations immediately after backfilling.
- B. All surplus excavated material shall be disposed of by the Contractor.

3.08 Field Quality Control

- A. Minimum Density Requirement (ASTM D1557 or AASHTO T180):
 - 1. Fill placed under and within the influence area of roadways, structures, slabs, foundations = 98 percent
 - 2. Fill placed within pond and road embankment = 95 percent
 - 3. Fill placed within public road right-of-way and utility easements outside the road influence area = 95 percent
 - 4. Fill placed within landscape areas = 85 percent
 - 5. Fill placed within all other areas = 90 percent

Where fill is placed and differing density requirements are defined, the more stringent density requirement governs.

END OF SECTION

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**SECTION 02320
TRENCHING, BEDDING, AND BACKFILLING**

PART 1 GENERAL

1.01 Section Includes

- A. Trenching for piping and electrical work.
- B. Excavation for manholes, junction boxes, meter vaults, and appurtenances.
- C. Sheet piling, shoring and bracing
- D. Bedding, backfilling, and compaction.

1.02 Related Sections

- A. Section 02230 - Site Preparation
- B. Section 02240 - Dewatering
- C. Section 02310 - Finish Grading
- D. Section 02315 - Excavation and Fill
- E. Section 02370 - Erosion and Sedimentation Control

1.03 References

- A. American Association of State Highway and Transportation Officials (AASHTO) latest edition:
 - 1. AASHTO M145 - Classification of Soils and Soil Aggregate Mixtures
 - 2. AASHTO T180 - Moisture-Density Relations of Soils Using a 10-lb Rammer and 18-in Drop
- B. American Society for Testing and Materials (ASTM) latest edition:
 - 1. ASTM D1557 - Laboratory Compaction Characteristics of Soil Using Modified Effort
 - 2. ASTM D2487 - Classification of Soils for Engineering Purposes
- C. Occupational Safety and Health Administration (OSHA) Regulations, including:
 - 1. Part 1926 Subpart P – Excavations

1.04 Definitions

- A. Bedding = Area from bottom of trench to centerline of pipe
- B. Backfill = material above the top of pipe to the topsoil, paving sub-grade, or foundation level.
- C. Influence Area = the area within lines sloped downward at 45 degrees from the outer edges of paving, foundations, and utility lines. As a minimum, the influence area shall extend 5 feet beyond the edge of pavement (where there is no curb) or 5 feet beyond the back of curb.

1.05 Quality Assurance

- A. The Contractor shall employ an independent testing laboratory, acceptable to the City of Everglades City and pay for all required tests. The laboratory shall submit one copy of the certified test reports, after testing in each phase, to the City of Everglades City for approval.
- B. Field density testing frequencies:
 - 1. One test for each 300 linear feet of pipeline or fraction thereof per lift of general backfilling in the pipeline trench. Where less than 300 linear feet of pipeline is installed, one test per lift of backfill is required, staggered along the pipeline at locations determined by the Engineer
 - 2. One test for each 100 square feet or fraction thereof of backfill around and under structures, with a minimum of two tests per lift.
 - 3. One test per lift per each change in type of fill.
- C. Sheet piling, shoring, and bracing used for the support of excavations over 20 feet deep shall be designed by a professional engineer licensed by the State of Florida.

1.06 Preconstruction Requirements

Precondition surveys and vibration monitoring are required for those areas where residential structures are within 100 feet of the proposed construction.

PART 2 PRODUCTS

2.01 General

It is intended that previously excavated materials conforming to the following requirements be utilized wherever possible.

2.02 Materials

- A. Acceptable materials (suitable material): AASHTO M145 classification A-1, A-3, A-2-4, A-2-6; ASTM D2487 classification GW, GP, GM, SM, SW, SP; unless otherwise disapproved within the Soil and Subsurface investigation reports. No more than 12 percent of acceptable materials shall pass the number 200 sieve.

- B. Unacceptable materials (unsuitable material): AASHTO M145 classification A-2-5, A-2-7, A-4, A-5, A-6, A-7, A-8; ASTM D2487 classification GC, SC, ML, MH, CL, CH, OL, OH, PT; unless otherwise approved within the Soil and Subsurface investigation reports.
- C. Flowable fill shall be “Excavatable” and shall meet the requirements of FDOT specification section 121, with a maximum 28-day compressive strength of 100 psi and a minimum 28-day compressive strength of 80 psi.

2.03 Sheeting, Shoring, and Bracing

- A. The structural strength and safety of all sheeting, shoring and bracing shall be the sole responsibility of the Contractor. Repair any damage resulting from failure to provide adequate supports.
- B. Provide timber-work, shoring, bracing, sheeting, and sheet piling where necessary to retain banks of excavations, prevent cave-in of adjacent ground, prevent displacement of utilities and structures, and to protect public safety.
- C. Contractor is solely responsible for the design, installation, and operation of dewatering systems and their safety and conformity with local codes and regulations.

PART 3 EXECUTION

3.01 General Construction Requirements

- A. Provide suitable temporary drainage channels for any water that may flow along or across the work as specified hereafter.
- B. Provide barriers, warning lights and other protective devices at all excavations.
- C. Sidewalks, roads, streets, and pavements shall not be blocked or obstructed by excavated materials, except as authorized by the Engineer, in which case adequate temporary provisions must be made for satisfactory temporary passage of pedestrians, and vehicles. Minimize inconvenience to public travel or to tenants occupying adjoining property.
- D. Where necessary to place excavated material adjacent to buildings, erect barriers to keep earth at least 4 feet from such buildings. Earth deposited on lawns shall be promptly and carefully removed to preserve the turf. All trees, shrubs, and landscaping shall be protected. Boring and jacking shall be used, if necessary, except where written permission is granted to remove trees and shrubs.
- E. If open excavations cross existing rigid surfacing, the surfacing shall be removed for a width one foot beyond the anticipated edge of the excavation. The pavement break shall be sawed to insure a straight joint. Surface replacement shall match existing surfacing except as otherwise indicated on the Drawings. Where open excavation is allowed along or across public roadways, excavation, backfill, and surface replacement shall conform to the requirements of all permits applicable thereto. In no case shall surface replacement edges bear on less than 12 inches of undisturbed soil.

3.02 Preparation

- A. Identify required lines, levels, contours, and datum.
- B. Locate and identify existing utilities that are to remain and protect from damage.
- C. Notify utility companies to remove or relocate utilities that are in conflict with proposed improvements.
- D. Protect plant life, lawns, fences, existing structures, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.
- E. Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of the Owner. All benchmarks, property corners, and other survey monuments that are lost, damaged, or destroyed shall be replaced by a Licensed Surveyor at the Contractor's expense.

3.03 Sheeting, Shoring, and Bracing

- A. Furnish, install, and maintain, without additional compensation, sheeting, bracing, and shoring support required to keep excavations within the easement provided, to support the sides of the excavation, and to prevent any movement which may damage adjacent pavements or structures, damage or delay the work, or endanger life and health. Voids outside the supports shall be immediately filled and compacted.
- B. Sheeting, where required, shall be driven below the bottom of excavation so the lowest set of wales and struts are above the bottom of the excavation to allow necessary working room.
- C. The Engineer may direct in writing that supports in trenches be cut off at any specified elevation, in which case Contractor shall be paid for the supports left in place.
- D. Contractor may leave in place, to be embedded in the backfill of the excavation, any or all supports for the purpose of preventing injury to persons or property, whether public or private. However, no supports which are within 4 feet of the ground or pavement surface may be left in place without written permission of the Engineer. No extra payment will be made for supports left in place at the Contractor's option.
- E. All supports not left in place shall be removed in such manner as to avoid endangering the piping, structures, utilities or property, whether public or private. All voids left by the withdrawal of sheeting shall be immediately filled and compacted.
- F. The right of the Engineer to order supports left in place shall not be construed as creating an obligation on his part to issue such orders. Failure by the Engineer to exercise this right shall not relieve the Contractor from total liability for damages to persons or property resulting from the failure of the Contractor to leave in place sufficient supports to prevent any caving or moving of the ground adjacent to the excavation.

3.04 Trenching

City of Everglades City: Chokoloskee Master Pump Station Rehabilitation Specifications

- A. All excavations shall be made by open cut unless otherwise indicated. Sides of trenches shall be kept as nearly vertical as possible from the trench bottom to a level of one foot above the top of the pipe. Slope sides of trenches in accordance with OSHA requirements and the recommendations contained within the project geotechnical report.
- B. Excavation of trenches shall not advance more than 50 feet ahead of completed pipe installation except as approved by the Engineer.
- C. Excavate trenches to depth indicated or required for indicated flow lines and invert elevations. Over excavate trenches a minimum of 2 feet where excavations occur within unsuitable soils, and replace over excavated material with suitable soils.
- D. Where rock is encountered, carry excavation 6 inches below scheduled elevation and backfill with a 6 inch layer of crushed stone or gravel prior to installation of pipe.
- E. For pipes or conduit 5 inches or less, excavate to indicated depths. Hand excavate bottom cut to accurate elevations and support pipe or conduit on undisturbed soil.
- F. For pipes or conduit 6 inches or larger, and other work indicated to receive subbase, excavate to subbase depth indicated, or, if not otherwise indicated, to 6 inches below bottom of work to be supported.
- G. Except as otherwise indicated, excavate for pressure piping so top of piping is minimum 3 feet below finished grade.
- H. Unsuitable excavated materials shall be removed from the site and disposed, unless otherwise indicated on the Drawings.
- I. Grade bottoms of trenches as indicated, notching under pipe bells to provide solid bearing for entire body of pipe.
- J. Trench bottoms shall be kept dry, compacted, and stable to a depth two feet below the bottom of the trench.
- K. Dig trenches to the uniform width required for particular item to be installed, sufficiently wide to provide ample working room. Provide 9 -12 inch clearance on each side of pipe or conduit.
- L. If more than one pipe is to be installed in a trench, the pipes shall be spaced a minimum of one foot apart for pipes 4 inches and larger.
- M. If portions of the bottom of trenches consist of material unstable to such a degree that, in the opinion of the Engineer, it cannot adequately support the pipe or structure, the bottom shall be over excavated and stabilized with approved coarse granular stabilization material. Depth of stabilization shall be as directed by the Engineer. The initial 50 tons of stabilization shall be incidental to the Contract. Compensation will be allowed only for such additional quantities as the Engineer shall direct in writing to be placed.
- N. Do not backfill trenches until tests and inspections have been made.

3.05 Trench Backfilling

- A. Following placement of pipe and inspection of joints, install tamped bedding material. Place bedding fill materials in layers of 6 inch loose depth.
- B. All bedding and backfill material shall be suitable soils or flowable fill. Backfill material within 1 foot of pipe and appurtenances shall not contain rock or stone larger than 2 inch diameter. If a sufficient quantity of suitable material is not available from the trench or other excavations within the site, provide additional suitable material or flowable fill.
- C. After completion of bedding and preliminary approval of piping and testing, the pipe shall be covered to a point one foot above the top of the pipe for the full trench width, placed in layers of 8 inch loose depth.
- D. Place backfill over pipe. Where trench is within the influence area of roadways, structures, foundations, or slabs, place backfill in layers of 8 inch loose depth. In all other areas, place backfill in layers of 12 inch loose depth.
- E. Take necessary precautions not to cause settlement or damage to adjacent slabs, walls, structures, or foundations. Place backfill and fill materials evenly adjacent to structures, without wedging against structures or displacement of piping or conduit.

3.06 Minor Structural Excavation and Backfilling

- A. Minor structures are defined as manholes, junction boxes, inlets, valve vaults, and meter vaults. Do not excavate for any structure until that structure is scheduled for construction. Excavate only to the depth and dimensions necessary for the construction.
- B. The bottom of all excavations shall be undisturbed earth unless otherwise indicated, and shall be approved by the Engineer before any subsequent work is started. Over excavate a minimum of 2 feet where excavations occur within unsuitable soils, and replace over excavated material with suitable soils.
- C. Excavations carried below depths indicated on the Drawings without the previous approval of the Engineer shall be filled with 2500 psi concrete or flowable fill at the Owner's discretion to the correct level at the expense of the Contractor.
- D. Maintain excavations in good order. If the bearing capacity of the foundation soils is reduced because the excavation is allowed to remain open prior to commencing work, the weathered soil shall be removed and replaced with 2500 psi concrete or flowable fill at the Owner's discretion at the expense of the Contractor.
- E. Do not backfill until new concrete has properly cured, coatings have been approved, and any required tests have been accepted.
- F. Fill within the influence area of roadways, structures, foundations, or slabs, shall be placed in layers of 8 inch loose depth. In all other areas, place fill in layers of 12 inch loose depth.

- G. Exercise care during backfilling operations to avoid any puncture, break or other damage to waterproofing systems, if any. Backfill adjacent to waterproofing in the presence of the Engineer.
- H. Where backfilling is required on both sides of structures, backfill and compact simultaneously on opposite sides in even layers. Other backfilling sequences shall be as specifically noted.

3.07 Compaction

- A. Unless otherwise indicated, the type of equipment and number of passes required to obtain the specified degree of compaction shall be determined at the site, subject to the approval of the Engineer.
- B. Provide mechanical compaction for cohesive material and vibratory compaction for granular materials, unless otherwise approved by the Engineer. Vibratory compaction is not allowed within 100 feet of existing structures. In these areas, compaction shall be accomplished by static means only. If compaction difficulties arise, the Engineer shall be consulted to review and possibly modify compaction procedures.
- C. Noncohesive soils shall be compacted with vibrating roller or equivalent; cohesive soils shall be compacted with sheeps-foot roller, pneumatic tamping, or approved equivalent, unless otherwise indicated.
- D. Before compaction, moisten or aerate each layer as necessary to provide optimum moisture content. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.

3.08 Testing and Cleanup

- A. Provide for testing and cleanup as soon as practicable, so these operations do not lag far behind pipe installation. Perform preliminary cleanup and grading operations immediately after backfilling.
- B. All surplus excavated material shall be disposed of by the Contractor.

3.09 Field Quality Control

- A. Minimum Density Requirement (ASTM D1557 or AASHTO T180):
 - 1. Backfill placed under and within the influence area of roadways, structures, slabs, foundations = 98 percent
 - 2. Backfill placed within pond and road embankment = 95 percent
 - 3. Backfill placed within public road right-of-way and utility easements outside the road influence area = 95 percent
 - 4. Backfill placed within landscape areas = 85 percent
 - 5. Backfill placed within all other areas = 90 percent

Where backfill is placed and differing density requirements are defined, the more stringent density requirement governs.

END OF SECTION

SECTION 02370 EROSION AND SEDIMENTATION CONTROL

PART 1 GENERAL

1.01 Section Includes

Designing, providing, maintaining, removing temporary erosion and sedimentation controls.

1.02 Related Sections

- A. Section 01415 - Stormwater Pollution Prevention / NPDES Requirements
- B. Section 02230 - Site Preparation
- C. Section 02240 - Dewatering
- D. Section 02315 - Excavation and Fill
- E. Section 02320 - Trenching, Bedding, and Backfilling

1.03 References

- A. Florida Department of Transportation (FDOT) Standard Specifications for Road and Bridge Construction, latest edition:
 - 1. Specification 300 - Prime and Tack Coats for Base Courses
 - 2. Specification 985 - Geotextile Fabrics
- B. State of Florida Erosion and Sediment Control Manual, latest edition.

1.04 Owner's Instructions / Sequencing

- A. Owner has authority to limit surface area of erodible earth material exposed by clearing and grubbing, excavation, trenching, borrow and embankment operations. Owner also has authority to direct Contractor to provide immediate permanent or temporary erosion and sediment control measures.
- B. Contractor shall respond to erosion and sediment control maintenance requirements or implement additional measures to control erosion ordered by Owner or governing authorities within 48 hours or sooner if required at no additional cost to the Owner.
- C. Contractor will be required to incorporate permanent erosion control features into project at earliest practical time to minimize need for temporary controls.

PART 2 PRODUCTS

2.01 Erosion Control

- A. Seeding and Mulching
- B. Sodding
- C. Hydro-seeding
- D. Coarse Aggregate
- E. Prime Coat - Per FDOT Specification 300

2.02 Sedimentation Control

- A. Silt Fence - Per Details on the Drawings
- B. Floating Turbidity Barriers - Per Details on the Drawings

PART 3 EXECUTION

3.01 Erosion Control

- A. Maintain temporary erosion control systems as directed by Owner or governing authorities to control erosion and siltation during life of contract.
- B. The erosion and sediment control measures shown on the plans represent a minimum requirement. The Contractor is responsible for determining additional erosion and sediment control measures needed in order to prevent the transfer of sediment from the project area and prevent the erosion of surfaces during construction, as needed to protect adjacent properties and water bodies.
- C. Permanently grass cut slopes as excavation proceeds to extent considered desirable and practical as determined by the Owner.
- D. Grass all disturbed areas within 7 days of initial disturbance. Type of grassing shall be as follows: temporary grassing to be sodding at all drainage structures, retention areas, swales and ditches, and where slopes are steeper than 5:1. Temporary grassing can be seed and mulch at all other locations unless otherwise indicated in the drawings or specifications.
- E. Dirt roads are to be stabilized and compacted within 7 days of the completion of trenching and grading activities.

3.02 Sedimentation Control

- A. Install prior to construction.
- B. All features of the project designed and constructed to prevent sediment shall be maintained during the life of the construction so as to function as they were originally designed and constructed.
- C. Remove any sediment build-up.

- D. Repair and reinstall any damaged or missing sediment control measures. Install additional measures if inspection reveals additional sedimentation control is necessary.
- E. Rough excavate and grade any proposed stormwater ponds at the start of site grading activities. Direct site runoff to the ponds to minimize runoff to offsite areas.

END OF SECTION

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SECTION 02578

SOLID SODDING

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Scope of Work: Establishing a stand of grass by furnishing and placing grass sod. Included are fertilizing, watering, and maintenance as required to assure a healthy stand of grass. Solid sodding shall be placed on all slopes greater than 4:1, within 10-feet of all proposed structures, and in all areas where existing grass or sod (regardless of its condition) is removed or disturbed by Contractor's operation unless otherwise specified or shown on the Drawings.

1.02 SHOP DRAWINGS AND SUBMITTALS

- A. Submittals shall be submitted to the City for review and acceptance prior to construction.
 - 1. A certification of sod quality by the producer shall be delivered to the City ten days prior to use.

PART 2 - PRODUCTS

2.01 GENERAL

- A. All material supplied and installed shall match that as existing in the right-of-way or private property.

2.02 GRASS SOD

- A. Grass sod for the road rights-of-way shall be of variety to match the existing adjacent area and shall be well matted with grass roots. The sod shall be taken up in rectangles, preferably 12-inch by 24-inch, shall be a minimum of 2-inches in thickness, and shall be live, fresh, and uninjured at the time of planting.
- B. Grass sod for restoration of new construction sites and/or areas disturbed by construction on existing sites shall be Bahia or St. Augustine well matted with grass roots. The sod shall be taken up in rectangles, preferably 12-inch by 24-inch, shall be a minimum of 2-inches in thickness, and shall be live, fresh, and uninjured at the time of planting.

- C. It shall be reasonably free of weeds and other grasses and shall have a soil mat of sufficient thickness adhering firmly to the roots to withstand all necessary handling. The sod shall be planted as soon as possible after being dug and shall be shaded and kept moist until it is planted.

2.03 FERTILIZER

- A. Commercial fertilizers shall comply with the state fertilizer laws.
- B. The numerical designations for fertilizer indicate the minimum percentages (respectively) of (1) total nitrogen, (2) available phosphoric acid, and (3) water-soluble potash contained in the fertilizer.
- C. The chemical designation of the fertilizer shall be 6-6-6. At least 50% of the nitrogen shall be derived from organic sources. At least 50 % of the phosphoric acid shall be from normal super phosphate or an equivalent source, which will provide a minimum of two units of sulfur. The amount of sulfur shall be indicated on the quantitative analysis card attached to each bag or other container.

2.04 WATER FOR GRASSING

- A. The water used in the sodding operations shall be by the Contractor as approved by the City.

PART 3 - EXECUTION

3.01 PREPARATION OF GROUND

- A. The area over which the sod is to be placed shall be scarified or loosened to a depth and then raked smooth and free from debris. Where the soil is sufficiently loose and clean, the City, at its discretion, may authorize the elimination of ground preparation.

3.02 APPLICATION OF FERTILIZER

- A. Before applying fertilizer, the soil pH shall be brought to a range of 6.0 - 7.0.
- B. The fertilizer shall be spread uniformly over the area to be sodded at the rate of 700-pounds per acre, or 16-pounds per 1,000 square feet, by a spreading device capable of uniformly distributing the material at the specified rate. Immediately after spreading, the fertilizer shall be mixed with the soil to a depth of approximately 4-inches.
- C. On steep slopes, where the use of a machine for spreading or mixing is not practicable, the fertilizer shall be spread by hand and raked in and thoroughly mixed with the soil to a depth of approximately 2-inches.

3.03 PLACING SOD

- A. The sod shall be placed on the prepared surface, with edges in close contact and shall be firmly and smoothly embedded by light tamping with appropriate tools.
- B. Where sodding is used in drainage ditches, or on slopes of 4:1 or greater, the setting of the pieces shall be staggered to avoid a continuous seam along the line of flow. Along the edges of such staggered areas, the offsets of individual strips shall not exceed 6-inches. In order to prevent erosion caused by vertical edges at the outer limits, the outer pieces of sod shall be tamped so as to produce a featheredge effect.
- C. On slopes greater than 2:1, the Contractor shall, if necessary, prevent the sod from sliding by means of wooden pegs driven through the sod blocks into firm earth at suitable intervals.
- D. Sod which has been cut for more than 72-hours shall not be used unless specifically authorized by the City after the inspection thereof. Sod which is not planted within 24-hours after cutting shall be stacked in an approved manner, maintained, and properly moistened. Any pieces of sod that, after placing, show an appearance of extreme dryness shall be removed and replaced by fresh, uninjured pieces.
- E. Sodding shall not be performed when weather and soil conditions are, in the City's opinion, unsuitable for proper results.

3.04 WATERING

- A. The areas on which the sod is to be placed shall contain sufficient moisture, as determined by the City, for optimum results. After being placed, the sod shall be kept in a moist condition to the full depth of the rooting zone for at least 2-weeks. Thereafter, the Contractor shall apply water as needed until the sod roots and starts to grow for a minimum of 60-days (or until final acceptance, whichever is latest).

3.05 MAINTENANCE

- A. The Contractor shall maintain, at his expense, the sodded areas in a satisfactory condition until final acceptance of the Project. Such maintenance shall include repairing of any damaged areas and replacing areas in which the establishment of the grass stand does not appear to be developing satisfactorily.
- B. Replanting or repair necessary due to the Contractor's negligence, carelessness, or failure to provide routine maintenance shall be at the Contractor's expense.

END OF SECTION

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**SECTION 02605
PRECAST STRUCTURES AND ACCESSORIES**

PART 1 GENERAL

1.01 Section Includes

- A. Precast sanitary and storm structures
- B. Lift Station Wet Well and Vaults
- C. Precast structure grates, access covers, and accessories
- D. Precast structure linings and coatings

1.02 Related Sections

Section 02320 - Trenching, Bedding, and Backfilling

1.03 References

- A. American Society for Testing and Materials (ASTM) latest edition:
 - 1. A48 - Gray Iron Castings
 - 2. A185 - Steel Welded Wire Reinforcement, Plain, for Concrete
 - 3. C216 - Facing Brick
 - 4. C270 - Mortar for Unit Masonry
 - 5. C443 - Joints for Concrete Pipe and Manholes, Using Rubber Gaskets
 - 6. C478 - Precast Reinforced Concrete Manhole Sections
 - 7. C923 - Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes and Laterals
 - 8. C990 - Joints for Concrete Pipe, Manholes, and Precast Box Sections Using Preformed Flexible Joint Sealants
 - 9. C1244 - Test method for Concrete Sewer Manholes by the Negative Air Pressure (Vacuum) Test
 - 10. D3753 - Glass Fiber Reinforced Polyester Manholes and Wetwells

1.04 Submittals

- A. All gratings and castings
- B. Precast structures
- C. Coatings and Linings for precast structures
- D. Connections to precast structures

- E. Submit the name of the subcontractor that will be installing the interior coatings (spray on liner) and a list of references of past experience documenting successful application of the spray on coating. Provide a minimum of three (3) references with project name, description of work, contact name and phone number for each reference.

PART 2 PRODUCTS

2.01 General

- A. Concrete shall have minimum 4000 psi compressive strength.
- B. Welded wire fabric shall conform to ASTM A185. Use 4 x 4 - W4 x W4 welded wire fabric unless otherwise indicated.
- C. Integrally cast steps within precast structures are not allowed.
- D. The date of manufacture and the name or trademark of manufacturer shall be clearly marked on each precast section.

2.02 Sewer Manholes

- A. All new sanitary sewer manholes shall be precast, and shall conform to ASTM C478. Concrete shall be Class II and have a minimum compressive strength of 4,000 psi at 28 days. The minimum wall thickness shall be five inches. Precast manholes shall be constructed with a precast monolithic base structure and the minimum base thickness shall be eight inches as shown on the Standard Construction Detail. The top section shall be an eccentric riser. The barrel, top and base sections shall have tongue and groove joints. All jointing material shall be a cold adhesive preformed plastic gasket, conforming to ASTM C 443. All manholes shall be leak-free.
- B. For sewer pipe sizes 24 inches in diameter and smaller, the minimum inside diameter of the manhole shall be 48 inches. For sewer pipe sizes between 24 and 36 inches, the minimum inside diameter of the manhole shall be 60 inches. For sewer pipe sizes larger than 36 inches in diameter, a 72 inch inside diameter manhole shall be provided.
- C. The date of manufacture and the name or trademark of the manufacturer shall be clearly marked on each precast section after coating of the exterior surface. Lift rings or non-penetrating lift holes shall be provided for handling precast manhole sections.

2.03 Flow Channel

- A. The flow channel shall be Portland Cement Type II concrete, minimum compressive strength of 2,500 psi. Fillers of any other material will not be accepted. Brick shall not be used to construct channels or benching. Flow channels shall be formed in the invert of the manhole and shall extend to the spring line of all connecting pipes (gravity sewer and force mains), conforming to the dimension of the adjacent pipe and providing changes in size, grade and alignment evenly.

2.04 Manhole Drop Connections

- A. Drop connections are discouraged except in extreme cases, only with pipe diameters less than 10 inches, and must be approved by the Wastewater Division.

2.05 Manhole Force Main Connections

- A. Force mains shall be oriented to facilitate flow, and shall enter the manhole such that the force main invert is no more than 12 inches above the invert of the effluent sanitary sewer line.

2.06 Manhole External Seal

- A. The top of manholes, cone, riser rings, iron frame, cover and all joints shall be encapsulated with a heat shrink-wrap with a minimum thickness of 98 mils (2.5mm). The wrap shall have a cross-linked polyolefin backing coated with a protective heat activated adhesive. The wrap should effectively bond to the substrate via primer provided by the manufacturer, providing corrosion and moisture protection. The wrap shall be applied with a high intensity propane torch. Heat Shrink wrap for all barrel section joints of manholes shall be a minimum 9-inch width wrap and a minimum of 12-inch width wrap shall be applied to the top section, riser rings, and manhole ring and cover. Adhesive tape materials are not be allowed.

2.07 Manhole Linings and Coatings

- A. New sewer manholes shall be coated inside and out with two (2) coats of bitumastic coating, installed at a minimum thickness of 8 mils per coat. Coatings shall be applied by the manhole manufacturer in strict accordance with the paint manufacturer's recommendations. All disturbed and uncoated surfaces shall be coated in the field.
- B. The first two (2) manholes upstream of a lift station, and manholes that receive force main discharge shall be lined. The interior liner shall have an FRP/Poly liner manufactured by GULiner or AGRU Liner with rings and covers coated with corrosion resistant epoxy coating approved by the Wastewater division.

2.08 Lift Station Wet Well

- A. Base, riser, and top shall be in accordance with details on the Drawings.
- B. All precast construction shall be in accordance with ASTM C-478, minimum wall thickness of 6 inches.
- C. New and existing wet wells shall be coated with Epoxy Tech or approved equal, or lined with AGRU liner or approved equal. Coating shall be applied and spark tested by the manufacturer's approved application and in accordance with the manufacturer's written instruction.
- D. The exterior of new wet wells shall be coated with two (2) coats of bitumastic coating, installed at a minimum thickness of 8 mils per coat. Coatings shall be applied by the manufacturer in strict accordance with the paint manufacturer's recommendations.

2.09 Lift Station Valve Vault

- A. This project has the valves located above ground and thus has no valve vault.

2.10 Manhole Frames and Lids

- A. Frames and covers shall be gray iron per ASTM A48, Class 30B and shall be US Foundry Type 227AS, traffic bearing (AASHTO H-20 loading), unless otherwise noted in the Drawings. Raised lettering on covers shall be "STORM", "SEWER", or as detailed on the drawings.
- B. Castings shall be smooth, clean, free from blisters, blowholes, shrinkage.
- C. Sanitary sewer manhole covers shall have non-penetrating pick holes.

2.11 Catch Basin Inlets, Frames, and Grates

- A. Provide cast iron inlets, frames, and grates in accordance with details on the Drawings.
- B. All frames and inlet grates shall be products of U.S. Foundry & Manufacturing Corporation, or equal.
- C. All inlet grates shall be secured by chain and eyebolt to the top of the structure.

2.12 Wet Well Access Covers

- A. The access covers shall be traffic bearing (AASHTO H-20 loading), hinged on the long side, with 0.25 inch thick diamond plate, with a flush lifting handle, and T-316 stainless steel hold open arms and heavy duty hinges, T-316 tamper proof attaching hardware, automatic T-316 hold open arm with aluminum latch. All bolts, locknuts, and accessories shall be stainless steel.
- B. Doors shall open to 90 degrees and automatically lock with a T-316 stainless steel hold open arms with release handles. The doors shall be equipped with stainless steel compression springs, a locking bar for a padlock (padlock to be supplied by the Owner), and fixed inside handle. Doors shall close flush with the frame.
- C. Castings shall be smooth, clean, free from blisters, blowholes, shrinkage.
- D. All access covers shall be watertight.

PART 3 EXECUTION

3.01 Confined Space

- A. Provide all necessary safety equipment and training required for work done in structures such as, but not limited to, Wet Wells, Valve Vaults, and Manholes. The equipment will include, but not be limited to, ventilation systems, gas detection devices, and safety harnesses. It is the Contractor's responsibility to determine if a structure is a confined space and supply the required safety equipment and training.

3.02 Manhole, Inlet and Wet Well Installation

- A. Install required bedding.
- B. Install base to proper elevation and alignment. Handle precast sections by lift rings only. Remove lift rings and fill all holes with non-shrink grout after erection.
- C. Pour invert immediately after setting first section of barrel.
- D. Prior to setting subsequent barrel sections, apply primer to tongue and groove ends and allow to set in accordance with manufacturer's recommendations. Add additional material on exterior joint if necessary for watertight joint.
- E. Apply coatings and liners as required.
- F. Backfill in accordance with Section 02320.
- G. Completed sewer manholes, wet wells, and valve vaults shall be watertight.

3.03 Installation of Castings

- A. Manhole castings to be fully embedded in mortar with adjustment brick courses placed between the frame and manhole, minimum of 2 courses, maximum of 4 courses. Mortar shall conform to ASTM C270, type M, brick to conform to ASTM C216, grade SW.
- B. Top of manhole castings in paved areas, including driveways and sidewalks to be flush with grade. Top of manhole castings outside paved areas to be 2 inches above grade, unless otherwise noted on the Drawings.

3.04 Pipe Connections

- A. Connection of ductile iron or PVC pipe to the manhole shall provide a watertight connection per ASTM C923. The use of adhesives or lubricants for installation of rubber connectors is prohibited.
- B. Connection of concrete pipe to the manhole shall be made with non-shrink metallic grout.

3.05 Manhole and Wet Well Testing

- A. There shall be no visible leakage through the structure walls or connections.
- B. All manholes are to be tested in accordance with ASTM C1244 and are required to pass this test.

END OF SECTION

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SECTION 02761 CLEANING SANITARY SEWER SYSTEMS

PART 1 - GENERAL

1.01 SCOPE OF WORK

- A. The Work covered in this section consists of cleaning sewer lines and manholes prior to the internal television inspection(s) for new or existing wastewater systems.
- B. Gravity Main and Sewer Lateral Cleaning: The intent of gravity main cleaning is to remove debris that may be causing a reduction in flow capacity, potential sewer backups, or that limits the ability to evaluate the structural condition of the pipe segment. On all sewers, the Contractor shall perform sewer-cleaning work to an acceptable level as necessary to perform a thorough television inspection of the sewer. An acceptable level is defined as the removal of all debris throughout the pipe segment cleaned. If the pipe condition is such that cleaning may cause a potential collapse, then the pipe shall be televised without attempting to clean it pending approval by Toho.
- C. Water for Cleaning: The Contractor will be responsible for obtaining a transient water meter and paying for water used during course of cleaning.
- D. Recovering of Equipment: The Contractor will be responsible for recovering any equipment that becomes lodged or lost in the pipeline. The Contractor will be responsible for all costs associated with required evacuation, restoration of roads and easements, and repairs to pipes and manholes as needed to restore the pipeline and appurtenances back to their original conditions.

1.02 CLEANING EQUIPMENT

- A. Hydraulically Propelled Equipment: The equipment used shall be of a movable dam type and be constructed in such a way that a portion of the dam may be collapsed at any time during the cleaning operation to protect against flooding of the sewer. The movable dam shall be equal in diameter to the pipe being cleaned and shall provide a flexible scraper around the outer periphery for grease removal. Special precautions to prevent flooding of the sewers and public or private property shall be taken at all times.
- B. High-Velocity Jet (Hydro-Cleaning) Equipment: All high-velocity sanitary sewer cleaning equipment shall be constructed for ease and safety of operation. The equipment shall have a selection of 2 or more high-velocity nozzles. The nozzles shall be capable of producing a scouring action from 15° to 45° (degrees) in all size mains. Equipment shall also include a high-velocity gun for washing and scouring manhole walls and floor. The gun shall be capable of producing flows from a fine spray to a solid stream. The equipment shall carry its own water tanks, auxiliary engines, pumps, and hydraulically driven hose reel.
- C. Mechanically Powered Equipment: Bucket machines shall be in pairs with sufficient power to perform the Work in an efficient manner. Machines shall be belt operated or have an overload device. Machines with direct drive that could cause damage to the pipe will not be used. A power rodding machine shall be either a sectional or continuous rod type capable of holding a minimum of 750-feet of rod. The rod shall be heat-treated steel. To ensure safe operation, the machine shall be fully enclosed and have an automatic safety clutch or relief valve.

- D. Vacuum machines may be used for removal of materials from manholes when other cleaning equipment is used to dislodge and transport material to the access point.
- E. Combination Cleaner: For cleaning small and large diameter sewer, the Contractor may use a combination hydraulic high volume water and solids separation system. Water volume of up to 250-gpm at or above 2,000-psi will move solids to the downstream manhole in high flow conditions. The separation system will dewater solids to 95 % (passing a paint filter test) and transfer them to a dump truck, if needed, for transport to a water reclamation facility, approved landfill, or other location specified by the Toho or designee. Wash water will be filtered to a point where it can be used in the pump for continuous cleaning. No bypassing of sewer flows will be necessary. The unit shall be capable of 24-hour operation and the unit shall not leave the manhole until a section is fully cleaned.

1.03 SHOP DRAWINGS AND SUBMITTALS

- A. Submittals shall be submitted to Toho for review and acceptance prior to construction in accordance with the General Conditions and specifications Section 01340 "Shop Drawings and Submittals."
- B. A daily log shall be maintained to record the location of the manholes and sewer lines, lengths of the lines cleaned, method of cleaning, line sizes, identify type of cleaning (light, medium, or heavy), and type of debris moved. Observations are to be recorded on a cleaning report form.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 GENERAL

- A. All material supplied shall be one of the products specified in Appendix " List of Materials and Approved Manufacturers ", appended to these technical specifications.
- B. The equipment shall remove dirt, grease, rocks, sand, other materials, and obstructions from the sewer mains, laterals, and manholes.
- C. A high-velocity sewer cleaner will be used for the majority of the cleaning work. Other equipment, such as bucket machines, rod machines, hydraulic root cutters, vacuum trucks and balling equipment shall be available.

3.02 CLEANING PRECAUTIONS

- A. All necessary precautions shall be taken to protect the sewer from damage during all cleaning and preparation operations. Precautions shall also be taken to ensure that no damage is caused to public or private property adjacent to or served by the sewer or its branches. The Contractor shall pay for and restore, at no additional costs to Toho, any damage caused to public or private property because of such cleaning and preparation operations.
- B. Satisfactory precautions shall be taken in the use of cleaning equipment. When hydraulically propelled cleaning tools (which depend upon water pressure to provide their cleaning force) or tools which retard the flow in the sewer line are used, precautions shall be taken to ensure that the

water pressure created does not damage or cause flooding of public or private property being served by the sewer. No fire hydrant shall be obstructed in case of a fire in the area served by the hydrant. All requirements shall be met when accessing a fire hydrant including but not limited to meters, backflow preventers, and properly trained personnel. It shall be the Contractor's responsibility to meet all state and local requirements.

3.03 CLEANING

- A. If cleaning of an entire sewer section cannot be successfully performed from one manhole, the equipment shall be set up on the other manhole and cleaning attempted again. If results of the cleaning are favorable, the Contractor will proceed with the TV inspection. All sludge, dirt, sand, rocks, and other solid or semisolid materials resulting from the cleaning operation shall be removed from the downstream manhole of the section being cleaned. The Contractor shall not be responsible for removing mortar or other material that is securely attached to the pipe walls or joints.
- B. Materials shall be disposed of from the site at least once at the end of each workday. The Contractor will be responsible for the disposal of materials removed from the sewer system. All sewer-cleaning efforts shall require documentation of all quantities and types of materials removed during cleaning.
- C. The designated sewer manhole sections shall be cleaned using hydraulically propelled, high-velocity jet, or mechanically powered equipment approved by Toho. Cleaning shall consist of normal hydraulic jet cleaning to facilitate the internal CCTV inspection.
 - 1. Types of cleaning of sanitary sewers:
 - a. Light cleaning of sewers consists of a maximum of 1 pass of the jet nozzle. Light cleaning of laterals will consist of flushing water into a cleanout.
 - b. Medium cleaning of sewers consists of 2 to 4 passes of the jet nozzle. Medium cleaning of laterals will consist of 1 to 4 passes with a jet nozzle.
 - c. Heavy cleaning consists of 5 or more passes of the jet nozzle such as removing heavy grease, debris, and roots.
 - d. Descaling of Ductile Iron pipe: Multiple passes with mechanical equipment to remove scale build up to restore pipe to original inside diameter.
 - 2. Selection of the equipment used shall be based on the conditions of lines at the time the Work commences. The equipment and methods selected shall be satisfactory to the Toho. The equipment shall be capable of removing dirt, grease, rocks, sand, debris, other materials, and obstructions from the sewer lines, laterals, and manholes.
 - 3. If cleaning of an entire section cannot be successfully performed from one manhole, the equipment shall be set up on the other manhole and cleaning again attempted. The intent of preparatory cleaning is to provide sufficient cleaning to ensure camera passage and the internal conditions of the pipeline can be fully assessed.
 - 4. If the Toho establishes that a particular section of the pipeline cannot be adequately cleaned due to broken, collapsed, or void areas, then the inspection will be attempted up to the obstruction.

3.04 ROOT REMOVAL

- A. Roots shall be removed in the designated sections and manholes where root intrusion is a problem and where authorized by the Toho. Special attention should be used during the cleaning operation to remove roots from the joints. Any roots that could prevent the proper application of chemical

sealants, or could prevent the proper seating and application of cured-in-place liners shall be removed. Procedures may include the use of mechanical equipment such as, rodding machines, bucket machines, winches using root cutters, porcupines, and equipment such as high-velocity jet cleaners. Chemical root treatment shall be used before or following the root removal operation, depending on the manufacturer's recommendation. The Contractor shall capture and remove all roots from the line.

3.05 CHEMICAL ROOT TREATMENT

- A. To aid in the removal of roots, manhole sections that have root intrusion shall be treated with an acceptable herbicide. The application of the herbicide to the roots shall be done in accordance with the manufacturer's recommendations and specifications in such a manner to preclude damage to surrounding vegetation. Any damaged vegetation, so designated by the Toho, shall be replaced by the Contractor at no additional cost to the Toho. All safety precautions as recommended by the manufacturer shall be adhered to for handling and application of the herbicide.

3.06 MATERIAL REMOVAL AND DISPOSAL

- A. All sludge, dirt, sand, rocks, grease, roots, and other solid or semisolid material resulting from the cleaning operation shall be removed at the downstream manhole of the section being cleaned. Contractor shall provide appropriate screening to stop passing of materials into downstream sewers. All solid or semisolid materials dislodged during cleaning operations shall be removed from the sewer by Contractor at the downstream manhole of the sewer section being cleaned. The passing of dislodged materials downstream of the sewer segment being cleaned shall not be permitted. In such an event, as observed or detected by the Toho or any third party, Contractor shall be responsible for cleaning the affected downstream sewers in their entirety, at no additional cost to the Toho.
- B. These materials shall become the property of the Contractor, shall be removed from the site at the end of each workday, and shall be disposed of by the Contractor. Copies of records of all disposals shall be furnished to the Toho, indicating disposal site, date, amount, and a brief description of material disposed. Disposal manifests from the licensed disposal facility shall be submitted with invoices.
- C. The Contractor shall keep his haul route and work area(s) neat, clean, and reasonably free of odor, and shall bear all responsibility for the cleanup of any spill.

3.07 ACCEPTANCE OF CLEANING OPERATION

- A. Acceptance of sanitary sewer cleaning shall be made upon the successful completion of the television inspection and shall be to the satisfaction of the Toho. If television inspection shows the cleaning to be unsatisfactory, the Contractor shall be required to re-clean and re-inspect the sewer line at no additional cost until the cleaning is shown to be satisfactory.
- B. In addition, on all sanitary sewers which have sags or dips, to an extent that the television camera lens becomes submerged during the television inspection, the Contractor shall use a high pressure cleaner to draw the water out of the pipe, or other means, to allow the full circumferential view of the pipe and identification of pipe defects, cracks, holes, and location of service connections.

END OF SECTION

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**SECTION 03100
CONCRETE FORMING AND ACCESSORIES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Formwork for cast-in place concrete, with shoring, bracing and anchorage.
- B. Openings for other work.
- C. Form accessories.
- D. Form stripping.

1.02 RELATED REQUIREMENTS

- A. Drawings and general provisions of the Contract, including Contractual Conditions and Divisions 1 Specification Sections, apply to this section.

1.03 REFERENCE STANDARDS

- A. ACI 117 - Standard Specifications for Tolerances for Concrete Construction and Materials; 2010.
- B. ACI 301 - Specifications for Structural Concrete; 2010 (Errata 2012).
- C. ACI 318 - Building Code Requirements for Structural Concrete and Commentary; 2011.
- D. ACI 347R - Guide to Formwork for Concrete; 2014.
- E. ASME A17.1 - Safety Code for Elevators and Escalators; 2013.
- F. PS 1 - Structural Plywood; 2009.

1.04 SUBMITTALS

- A. See Section 01300 - Submittals, for submittal procedures.
- B. Product Data: Provide data on void form materials and installation requirements.
- C. Shop Drawings: Indicate pertinent dimensions, materials, bracing, and arrangement of joints and ties.
- D. Delegated Design Data: As required by authorities having jurisdiction.

PART 2 PRODUCTS

2.01 FORMWORK - GENERAL

- A. Provide concrete forms, accessories, shoring, and bracing as required to accomplish cast-in-place concrete work.
- B. Design and construct to provide resultant concrete that conforms to design with respect to shape, lines, and dimensions.
- C. Comply with applicable state and local codes with respect to design, fabrication, erection, and removal of formwork.

- D. Comply with relevant portions of ACI 347R, ACI 301, and ACI 318.

2.02 WOOD FORM MATERIALS

- A. Softwood Plywood: PS 1, B-B High Density Concrete Form Overlay, Class I. 3/4 inch Minimum thickness.

2.03 REMOVABLE PREFABRICATED FORMS

- A. Preformed Steel Forms: Minimum 16 gage, 0.0598 inch thick, matched, tight fitting, stiffened to support weight of concrete without deflection detrimental to tolerances and appearance of finished surfaces.
- B. Tubular Column Type: Round, spirally wound laminated fiber material, surface treated with release agent, non-reusable, of sizes indicated.
- C. Void Forms: Moisture resistant treated paper faces, biodegradable, structurally sufficient to support weight of wet concrete mix until initial set; 2 inches thick. .

2.04 FORMWORK ACCESSORIES

- A. Form Ties: Snap-off type, galvanized metal, fixed length, cone type, with waterproofing washer, 1 inch back break dimension, free of defects that could leave holes larger than 1 inch in concrete surface.
 - 1. Provide stainless steel form ties for all exterior surfaces exposed to view.
 - 2. Approved Manufacturers:
 - a. Dayton: Sure-Grip"
 - b. Henschman: "Snapties"
 - c. Richmond: "Snop-Tys"
- B. Form Release Agent: Capable of releasing forms from hardened concrete without staining or discoloring concrete or forming bugholes and other surface defects, compatible with concrete and form materials, and not requiring removal for satisfactory bonding of coatings to be applied.
 - 1. Composition: Colorless reactive, mineral oil-based, soy-based, or vegetable-oil based compound.
 - 2. Do not use materials containing diesel oil or petroleum-based compounds.
 - 3. VOC Content: In compliance with applicable local, State, and federal regulations.
- C. Filler Strips for Chamfered Corners: Wood strip type; 3/4 by 3/4 inch size; maximum possible lengths.
- D. Dovetail Anchor Slot: Galvanized steel, at least 22 gage, 0.0299 inch thick, foam filled, release tape sealed slots, anchors for securing to concrete formwork.
- E. Dovetail Anchor Slot: Zinc coated (oriented vertically) shall be located at 3 feet - 0 inches on center horizontally wherever concrete surfaces adjoin masonry. Where concrete masonry units (CMU) abut columns, provide dovetail slot at centerline of adjoining CMU.
 - 1. Approved Manufacturers:
 - a. Henschman: Number 100 Standard, 24 gauge
 - b. Hohmann & Barnard, Inc. Number 305
 - c. Wire Products Company, Number F-17
 - d. Gateway Building Products: DAS-STD

- F. Flashing Reglets: Galvanized steel, at least 22 gage, 0.0299 inch thick, longest possible lengths, with alignment splines for joints, foam filled, release tape sealed slots, anchors for securing to concrete formwork.
- G. Nails, Spikes, Lag Bolts, Through Bolts, Anchorages: Sized as required, of sufficient strength and character to maintain formwork in place while placing concrete.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify lines, levels and centers before proceeding with formwork. Ensure that dimensions agree with drawings.

3.02 ERECTION - FORMWORK

- A. Erect formwork, shoring and bracing to achieve design requirements, in accordance with requirements of ACI 301.
- B. Provide bracing to ensure stability of formwork. Shore or strengthen formwork subject to overstressing by construction loads.
- C. Arrange and assemble formwork to permit dismantling and stripping. Do not damage concrete during stripping. Permit removal of remaining principal shores.
- D. Align joints and make watertight. Keep form joints to a minimum.
- E. Obtain approval before framing openings in structural members that are not indicated on drawings.
- F. Install void forms in accordance with manufacturer's recommendations. Protect forms from moisture or crushing.
- G. Coordinate this section with other sections of work that require attachment of components to formwork.

3.03 APPLICATION - FORM RELEASE AGENT

- A. Apply form release agent on formwork in accordance with manufacturer's recommendations.
- B. Apply prior to placement of reinforcing steel, anchoring devices, and embedded items.
- C. Do not apply form release agent where concrete surfaces will receive special finishes or applied coverings that are affected by agent. Soak inside surfaces of untreated forms with clean water. Keep surfaces coated prior to placement of concrete.

3.04 INSERTS, EMBEDDED PARTS, AND OPENINGS

- A. Provide formed openings where required for items to be embedded in passing through concrete work.
- B. Locate and set in place items that will be cast directly into concrete.
- C. Coordinate with work of other sections in forming and placing openings, slots, reglets, recesses, sleeves, bolts, anchors, other inserts, and components of other work.
- D. Install accessories in accordance with manufacturer's instructions, so they are straight, level, and plumb. Ensure items are not disturbed during concrete placement.

- E. Provide temporary ports or openings in formwork where required to facilitate cleaning and inspection. Locate openings at bottom of forms to allow flushing water to drain.
- F. Close temporary openings with tight fitting panels, flush with inside face of forms, and neatly fitted so joints will not be apparent in exposed concrete surfaces.

3.05 FORM CLEANING

- A. Clean forms as erection proceeds, to remove foreign matter within forms.
- B. Clean formed cavities of debris prior to placing concrete.
 - 1. Flush with water or use compressed air to remove remaining foreign matter. Ensure that water and debris drain to exterior through clean-out ports.

3.06 FORMWORK TOLERANCES

- A. Construct formwork to maintain tolerances required by ACI 117, unless otherwise indicated.
- B. Construct permanent insulated foam panel formwork to maintain tolerances required by ACI 301.
- C. Construct and align formwork for elevator hoistway in accordance with ASME A17.1.
- D. Camber slabs and beams in accordance with ACI 301.

3.07 FIELD QUALITY CONTROL

- A. An independent testing agency will perform field quality control tests, as specified in Section 01410 – Testing and Testing Laboratory Services.
- B. Inspect erected formwork, shoring, and bracing to ensure that work is in accordance with formwork design, and to verify that supports, fastenings, wedges, ties, and items are secure.
- C. Do not reuse wood formwork more than 3 times for concrete surfaces to be exposed to view. Do not patch formwork.

3.08 FORM REMOVAL

- A. Do not remove forms or bracing until concrete has gained sufficient strength to carry its own weight and imposed loads.
- B. Loosen forms carefully. Do not wedge pry bars, hammers, or tools against finish concrete surfaces scheduled for exposure to view.
- C. Store removed forms to prevent damage to form materials or to fresh concrete. Discard damaged forms.

END OF SECTION

SECTION 03200 CONCRETE REINFORCING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Reinforcing steel for cast-in-place concrete.
- B. Supports and accessories for steel reinforcement.

1.02 RELATED REQUIREMENTS

- A. Drawings and general provisions of the Contract, including Contractual Conditions and Division 1 Specification Section, apply to this section.

1.03 REFERENCE STANDARDS

- A. ACI 301 - Specifications for Structural Concrete; 2010 (Errata 2012).
- B. ACI SP-66 - ACI Detailing Manual; 2004.
- C. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon Steel Bars for Concrete Reinforcement; 2015.
- D. ASTM A775/A775M - Standard Specification for Epoxy-Coated Steel Reinforcing Bars; 2007b (Reapproved 2014).
- E. ASTM A884/A884M - Standard Specification for Epoxy-Coated Steel Wire and Welded Wire Reinforcement; 2014.
- F. ASTM D3963/D3963M - Standard Specification for Fabrication and Jobsite Handling of Epoxy-Coated Reinforcing Steel Bars; 2001 (Reapproved 2007).
- G. AWS D1.4/D1.4M - Structural Welding Code - Reinforcing Steel; 2011.
- H. CRSI (DA4) - Manual of Standard Practice; 2009.

1.04 SUBMITTALS

- A. See Section 01300 – Submittals, for submittal procedures.
- B. Shop Drawings: Comply with requirements of ACI SP-66. Include bar schedules, shapes of bent bars, spacing of bars, and location of splices.
- C. Manufacturer's Certificate: Certify that reinforcing steel and accessories supplied for this project meet or exceed specified requirements.
- D. Reports: Submit certified copies of mill test report of reinforcement materials analysis.

1.05 QUALITY ASSURANCE

- A. Perform work of this section in accordance with ACI 301.
- B. Welders' Certificates: Submit certifications for welders employed on the project, verifying AWS qualification within the previous 12 months.

PART 2 PRODUCTS

2.01 REINFORCEMENT

- A. Reinforcing Steel: ASTM A615/A615M, Grade 60 (60,000 psi).
 - 1. Plain billet-steel bars. for bars numbers 3 to number 18.
 - 2. Epoxy coated in accordance with ASTM A775/A775M.
- B. Steel Welded Wire Reinforcement (WWR): Class A epoxy coated, deformed type; ASTM A884/A884M.
- C. Reinforcement Accessories:
 - 1. Tie Wire: Federal specifications QQ-W-461 Annealed steel, minimum 16 gage, 0.0508 inch for use on epoxy coated steel reinforcement.
 - 2. Bar Supports and Spacers:
 - a. For unexposed concrete, bar supports and spacers shall be manufactured of standard brights basic wire upturned legs.
 - b. For concrete which will be exposed to view from the underside upon completion of the structures, use plastic capped bar supports and spacers.
 - c. For slabs on grade, use bolsters with runners where base will not support chair legs.
 - d. Do not use wood, brick or other non-specified material.
 - 3. Welded electrodes: AWS A5.1, Low Hydrogen, E70 Series.
 - 4. Welded Inserts: Provide wedge inserts for the support of brick ledger angles. Wedge inserts shall be placed at 4'-0" o.c. unless drawings indicate a more restrictive spacing. Provide the F-7 wedge insert and 3/4" diameter askew bolt, nut and washers as manufactured by Dayton Superior, 10101 C General Drive, Orlando, Florida, or equal.
 - a. Wedge inserts and 3/4" diameter bolts to be deemed equal shall submit test information documenting an ultimate capacity of at least 8,500 pounds when the shelf angle is loaded 2-1/4" from the face of concrete, with the bottom of the insert 1-1/2" clear from the beam bottom, for concrete strength of 4,000 psi.

2.02 RE-BAR SPLICING:

- A. Perform work of this section in accordance with ACI 318

2.03 FABRICATION

- A. Fabricate concrete reinforcing in accordance with CRSI (DA4) - Manual of Standard Practice.
- B. Welding of reinforcement is permitted only with the specific approval of Architect. Perform welding in accordance with AWS D1.4/D1.4M.
- C. Fabricate and handle epoxy-coated reinforcing in accordance with ASTM D3963/D3963M.

PART 3 EXECUTION

3.01 GENERAL:

- A. Cleaning and storage reinforcement: Steel reinforcement at the time concrete is placed shall be free from heavy rust, scale or other coating that will destroy or reduce the bond.

- B. All reinforcing steel shall be stored in neat piles at the site clear of the ground in such a manner that all bars can be readily identified when required.
- C. Excessive form oil on the reinforcing shall be removed by washing the reinforcing with kerosene. Exercise due care that no smoking or welding is permitted in the area of cleaning. Provide fire extinguisher at cleaning site.
- D. Supports for reinforcing steel: All reinforcing steel shall be rigidly supported, accurately located and held in position by the use of proper reinforcing steel supports, spacers and accessories before the concrete placement begins.
- E. The legs of all reinforcing supports shall be bent to form a foot so that the side and not the end of leg rods bears on the form.
- F. Metal reinforcement shall be protected by the thickness of the concrete indicated on the drawings. Where not otherwise shown, the concrete cover shall be not less than the following:
 - 1. 3 inches for footings and other principal structural members poured directly against the ground.
 - 2. 2 inches for bars larger than number 5, and 1-1/2 inches for number 5 bars and smaller where concrete will be exposed to the ground or weather after removal of forms.
 - 3. 1-1/2 inches in all beams, girders and columns.
 - 4. 3/4 inches for all slabs and walls not exposed to the ground or weather.
 - 5. In any event, there shall be not less than 3/4" of concrete protection over all reinforcing bars.
- G. Do not use bar supports or reinforcing as support for concrete runways or construction loads.
- H. Placing tolerances: Clear distance to formed surfaces: +/- 1/4 inch. Minimum spacing between bars: -1/4 inch:
 - 1. Top Bars in Slabs or Beams:
 - a. Members 8" or less in depth: +/- 1/4 inch
 - b. Members 8" to 24" in depth: +/- 1/4 inch
 - c. Members 24" or greater in depth: +/- 1/2 inch
 - 2. Crosswire of Slabs or Beams: Spaced evenly within 2 inches.
 - 3. Lengthwise of Member: +/- 2 inches
- I. Bending details: Typical bending and placing diagrams are shown on the drawings. For parts not shown, bending details and lengths shall conform to the requirements of the ACI Building Code 318 and "Manual of Standard Practice for Detailing Reinforced Concrete Structures" ACI 315.
- J. Bends for stirrups and ties shall be made around a pin having the diameter no less than 1-1/2 inches for number 3, and 2 inches for number 4.
- K. Bends for other bars shall be made around a pin having a diameter not less than six bar diameters for number 3 to number 6, 8 bar diameters for number 9, number 10 and number 11, 10 bar diameters for number 14 and number 18.
- L. All bars shall be bent cold. Heating of bars will not be allowed

3.02 SPECIAL REINFORCING REQUIREMENTS:

- A. Where walls or other items are shown as built integrally with other section, but are placed as separate pours, key and dowels must be provided. Dowels shall be the same size and at the same spacing as reinforcing.

- B. Main reinforcing bars shall not be spliced unless so noted on the drawings or approved by the Architect.
- C. Provide 6 X 6 - W1.4 X W1.4 electrically welded wire fabric, ASTM A-185 reinforcing in all concrete slabs on ground unless shown otherwise.
- D. Provide corner bars of same size and spacing as main reinforcement at all intersections and corners.
- E. Where openings occur in walls, or slabs, provide two number 5 bars at all sides and extending at least two feet beyond the corners and two number 5 bars at least three feet long diagonally across each re-entrant corner.
- F. Unless permitted by an Inspector employed by the owner reinforcement shall not be bent after being embedded in hardened concrete.

3.03 INSPECTION OF REINFORCEMENT:

- A. Reinforcing placement must be checked by an Inspector employed by the owner before any concrete is placed. Any corrections shall be made before concrete is placed.
- B. Placement of reinforcing shall occur in such sequence that the Inspector has sufficient time to inspect the correctness of the reinforcing within the placement area and retains the right to require necessary revisions be made before concrete is placed.
- C. The Contractor shall notify the Inspector at least 24 hours in advance of concrete placement for a particular portion of the building.
- D. Galvanized wire ties of double loop and tightly fastened to secure the proper spacing of rods and ties are required.

3.04 LAP SPLICING:

- A. Welded wire fabric shall be overlapped wherever successive mats or rolls are continuous such that the overlap measured between outermost cross wires is not less than one wire spacing plus 2 inches.
- B. Longitudinal (continuous) footing reinforcing: Class B.
- C. Beam Reinforcing: Class B.
- D. Column Reinforcing: Class B Offset lap splices.
- E. Column/footing dowels: Class B
- F. Masonry vertical reinforcing: Class B.
- G. Splices not included above: Class B

END OF SECTION

**SECTION 03250
CONCRETE ACCESSORIES**

PART 1 - GENERAL

1.01 Work Included

- A. Provide accessories for cast-in-place concrete.

1.02 Related Work

- A. Section 03100: Concrete Forms
- B. Section 03200: Concrete Reinforcement
- C. Section 03300: Cast-in-Place Concrete

1.03 Submittals

- A. Submit product data and samples in accordance with Section 01300.
- B. Submit product data on the following items.
 - 1. Water Stops
 - 2. Preformed Expansion Joint Fillers and Sealers
- C. Submit samples on the following items:
 - 1. Water Stops

PART 2 - PRODUCTS

2.01 Materials

- A. Precast Concrete Block Supports For Reinforcing Bars: Comply with ACI 315. Provide blocks with No. 4 dowels bent 90° to support topbars.
- B. Water Stops: Polyvinyl chloride meeting all requirements of U.S. Army Corps of Engineer's Specification CRD-C-572 and equal to Burke Water Stops as manufactured by The Burke Company. Provide flat ribbed type and split ribbed type, 6-inches x 3/8-inc for wall thicknesses up to 12 inches and 9 inch by 3/8 inch for wall thickness greater than 12 inches. Provide water stops as indicated on the Drawings and at all exterior walls and bottom slabs of liquid containing structures.
- C. Preformed Expansion Joint Filler:
 - 1. Bituminous type conforming to the requirements of ASTM D994.

2. Non-extruding type, self-expanding cork, $\frac{3}{4}$ -inch thick or as otherwise shown on the Drawings, conforming to the requirements of ASTM D1752, Type III, and compatible with the specified joint sealant compound.
- D. Joint Sealant: A multipart, gray, polyurethane sealant meeting U.S. Federal Specification TT-S-00227E (3) Type 1, Class A self-leveling for horizontal joints, and Type II, Class A, non-sag for vertical joints, and recommended by the manufacturer for continuous immersion in water. Provide sealants as manufactured by Products Research and Chemical Corporation, Mameco International, The Burke Company, W.R. Meadows, or equal.
- E. Inserts: Stainless steel, Type 316L, to fit the proposed hanger or support.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Precast Concrete Block Supports For Reinforcing Bars: Provide in sufficient quantity to support reinforcing bars in slabs formed on earth at a spacing not to exceed 4-feet on centers in both directions. Provide blocks with dowels to support top bars. Block supports are not required in slabs formed on tremi or working may concrete, but may be used at the Contractor's option. Blocks are not required for reinforcing bars properly supported from formwork. At other locations, refer to ACI 315 and CRSI MSP-1.
- B. Water Stops:
 1. Installation: Protect water stops from dirt, oil and concrete spatter and rigidly secure in position by means of split bulkheads and by fastening to reinforcing bars in two directions at not more than 12 inches on centers. Install water stops in construction joints in hydraulic structures required to contain liquid or to resist the entry of groundwater.
 2. Splices: Butt-splice water stops using a thermostatically controlled electric splicing iron as recommended by the manufacturer.
- C. Expansion Joints: Provide expansion joints of size and at locations as shown on the Drawings. Place expansion joint fillers every 30 feet in straight runs of walkways, at right angle turns and wherever concrete butts into vertical surfaces, unless otherwise shown on the Drawings.
- D. Joint Sealants: Provide joint sealants where indicated on the Drawings. Prepare surfaces, prime, prepare materials, all in complete compliance with the manufacturer's instructions.

END OF SECTION

**SECTION 03300
CAST-IN-PLACE CONCRETE**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Joint devices associated with concrete work.
- B. Miscellaneous concrete elements
- C. Concrete curing.

1.02 RELATED REQUIREMENTS

- A. Drawings and general provisions of the Contract, including Contractual Conditions and Divisions 1 Specification Sections, apply to this section.
- B. Section 03100 - Concrete Forming and Accessories: Forms and accessories for formwork.
- C. Section 03200 - Concrete Reinforcing.

1.03 REFERENCE STANDARDS

- A. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete; 1991 (Reapproved 2009).
- B. ACI 301 - Specifications for Structural Concrete; 2010 (Errata 2012).
- C. ACI 302.1R - Guide for Concrete Floor and Slab Construction; 2004 (Errata 2007).
- D. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete; 2000.
- E. ACI 305R - Hot Weather Concreting; 2010.
- F. ACI 306R - Cold Weather Concreting; 2010.
- G. ACI 308R - Guide to Curing Concrete; 2001 (Reapproved 2008).
- H. ACI 318 - Building Code Requirements for Structural Concrete and Commentary; 2011.
- I. ASTM C33/C33M - Standard Specification for Concrete Aggregates; 2013.
- J. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens; 2015a.
- K. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete; 2015.
- L. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic-Cement Concrete; 2012.
- M. ASTM C150/C150M - Standard Specification for Portland Cement; 2015.
- N. ASTM C173/C173M - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method; 2014.
- O. ASTM C260/C260M - Standard Specification for Air-Entraining Admixtures for Concrete; 2010a.
- P. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete; 2013.

- Q. ASTM C685/C685M - Standard Specification for Concrete Made by Volumetric Batching and Continuous Mixing; 2014.
- R. ASTM C881/C881M - Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete; 2014.
- S. ASTM C979/C979M - Standard Specification for Pigments for Integrally Colored Concrete; 2010.
- T. ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types); 2004 (Reapproved 2013).
- U. ASTM E1643 - Standard Practice for Selection, Design, Installation and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs; 2011.
- V. ASTM E1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs; 2011.

1.04 SUBMITTALS

- A. See Section 01300 - Submittals, for submittal procedures.
- B. Product Data: Submit manufacturers' data on manufactured products showing compliance with specified requirements and installation instructions.
 - 1. For curing compounds, provide data on method of removal in the event of incompatibility with floor covering adhesives.
 - 2. Provide certificates signed by material manufacturer, certifying that each material complies with the specified requirements.
- C. Mix Design: Submit proposed concrete mix design.
 - 1. Indicate proposed mix design complies with requirements of ACI 301, Section 4 - Concrete Mixtures.
 - 2. Indicate proposed mix design complies with requirements of ACI 318, Chapter 5 - Concrete Quality, Mixing and Placing.
- D. Test Reports
 - 1. Submit results of all compression, slump and air content tests performed during mix design and throughout the duration of the project as required by the Specifications.
 - 2. Submit sieve analysis of coarse and fine aggregate intended for use in the project.
 - 3. Submit a copy of State Certification that the concrete batching and weighing equipment has been inspected and approved.
 - 4. Submit letters from the cement and aggregate suppliers certifying that furnished materials meet appropriate ASTM Standards.
- E. Samples: Submit samples of under slab vapor retarder to be used.
- F. Samples: Submit two, 12 inch long samples of construction joint devices.
- G. Manufacturer's Installation Instructions: For concrete accessories, indicate installation procedures and interface required with adjacent construction.

- H. Project Record Documents: Accurately record actual locations of embedded utilities and components that will be concealed from view upon completion of concrete work.

1.05 QUALITY ASSURANCE

- A. Do not commence placement of concrete until mix designs have been approved by the Architect.
- B. Any concrete work which does not conform to the specified requirements, including strength, tolerance and finishes shall be corrected by the Contractor at his expense and as directed by the Architect.
 - 1. Tolerances listed in sub-paragraphs of 3.03 below.
- C. Perform work of this section in accordance with ACI 301 and ACI 318.
 - 1. Maintain one copy of each document on site.
- D. Follow recommendations of ACI 305R when concreting during hot weather.
- E. Follow recommendations of ACI 306R when concreting during cold weather.

1.06 TESTING:

- A. Concrete shall be sampled and tested for Quality Control during placement of concrete.
- B. Failure to detect defective work or material shall not in any way prevent later rejection when such defect is discovered nor shall it obligate Architect for final acceptance.
- C. Required Sampling and Testing
 - 1. Samples, for strength tests of each concrete mix shall be taken not less than once a day nor less than once for each 50 cu. yd. of concrete.
- D. If the total volume of concrete is such that the frequency of testing required above would provide less than five strength tests for a given mix, tests shall be made from at least five randomly selected batches.
 - 1. Secure composite samples in accordance with ASTM C172.
 - 2. Mold and cure five specimens from each sample in accordance with ASTM C31.
 - a. Samples for test shall be taken at the 1/4 and 3/4 points of the load mixer.
 - b. Cure specimens under laboratory conditions except as follows:
 - 1) When in the opinion of the Architect there is a possibility of the surrounding air temperature failing below 40 degrees F, he may require additional specimens to be cured under job conditions.
 - 2) In hot weather or periods of low humidity the Architect may require additional specimens to be cured under job conditions
 - (a) Test specimens in accordance with ASTM C39.
 - (1) Test one specimen at 3 days.
 - (2) Test one specimen at 7 days.
 - (3) Test two specimens at 28 days for acceptance. This test of two specimens constitutes one strength test. The results of the strength test shall be the average of the strengths of the two specimens tested.

- (b) Hold one specimen for future use if test does not comply at 28 days.
 - (c) Determine slump of the concrete sample for each strength test and whenever consistency appears to vary, using ASTM C143.
 - (d) Determine air content for each strength test in accordance with either ASTM C231, ASTM C173, or ASTM C138.
 - (e) Determine temperature of concrete sample for each strength test.
- E. Evaluation of Test Results
 - 1. For evaluation each specified concrete mix shall be represented by at least five strength tests.
- F. The strength level of the concrete will be considered satisfactory if both of the following requirements are met.
 - 1. The average of all sets of three consecutive strength tests (average of two cylinders) exceeds specified strength.
 - 2. No individual strength test (average of two cylinders) falls below the specified strength by 500 psi.
- G. If the strength level does not meet the above requirements, the Architect shall consider the concrete to be deficient and shall have the right to reject the work or require load tests on the structure in the areas the tests represent at no cost to the Owner.
- H. Report tests results in writing to the Architect and the Contractor on the same day that tests are made. Reports of compressive strength tests shall contain:
 - 1. Project identification name and number
 - 2. Date of concrete placement
 - 3. Name of Contractor
 - 4. Name of Concrete Supplier and Truck Number
 - 5. Name of Concrete Testing Service
 - 6. Concrete type and class
 - 7. Location of concrete batch in the structure
 - 8. Design compressive strength at 28 days
 - 9. Slump
 - 10. Air Content
 - 11. Concrete temperature
 - 12. Concrete mix identification number
 - 13. Compressive breaking strength
 - 14. Type of break for both 7-day tests and 28-day tests.
- I. TESTING SERVICES:
 - 1. The Owner will employ an independent testing laboratory meeting the requirements of ASTM E329 and approved by the Architect to perform the following services:

- a. Sample concrete at placement and make slump, air content, temperature and compression tests as described above.
 - b. Report tests results to the Architect.
2. Contractor Responsibilities
 - a. Pay for additional testing and inspection of materials or concrete occasioned by their failure by test or inspection to meet specification requirements.
 - b. Provide the necessary testing services for the qualification of proposed materials and the establishment of mix designs; and for any other testing services required by the Contractor.
 - c. Furnish any necessary labor to assist the designated testing agency in obtaining and handling samples.
 - d. Advise the testing agency sufficiently in advance of operations to allow for completion of tests.
 - e. Provide and maintain for the sole use of the testing agency adequate facilities for safe storage and proper curing of concrete test specimens as required by ASTM C31.
 - f. The use of Testing Services shall in no way relieve the Contractor of the responsibility to furnish materials and construction in full compliance with the Contract Documents.

PART 2 PRODUCTS

2.01 CONCRETE MATERIALS

- A. Cement: ASTM C150/C150M, Type I - Normal Portland type.
 1. Acquire cement for entire project from same source.
- B. Fine and Coarse Aggregates: ASTM C 33.
 1. Acquire aggregates for entire project from same source.
 2. Fine Aggregate: Clean, sharp sand, free from loam, clay, lumps or other deleterious substance.
 3. Coarse Aggregate For Normal Weight Concrete: Comply with ASTM C33 size #57. Clean, uncoated, processed aggregate of crushed stone or washed gravel containing no clay, mud, loam or foreign matter. Use of pit or bank run gravel is not permitted. Aggregate shall meet ASTM C33 Size No. 56 or 57.
 4. Where contractor elects to place concrete by pumping he shall provide a pump with sufficient capacity to place this size of aggregate.
 5. ASTM C404 for masonry grout. Maximum aggregate size shall be 3/8".
- C. Water: Clean and not detrimental to concrete.
 1. Water shall be fresh and potable. Water shall be obtained from city water system. The Contractor shall pay for the quantity of water used during construction and also furnish, install and maintain a water meter if required by the Water Department.

2.02 ADMIXTURES

- A. Do not use chemicals that will result in soluble chloride ions in excess of 0.1 percent by weight of cement.
- B. Air Entrainment Admixture: ASTM C260/C260M.
 - 1. Manufacturers:
 - a. "Darex" by W.R. Grace.
 - b. "SikaAer" by Sika Chemical Co.
 - c. "MBVR" by Master Builders
 - d. "Air-Mix" by Euclid
 - e. "Sealtight" by W.R. Meadows
- C. High Range Water Reducing Admixture: ASTM C494/C494M Type F and shall contain no chloride ions..
 - 1. Manufacturers:
 - a. "Melmet" by American Admixtures.
 - b. "WRDA 19" by W.R. Grace Co.
 - c. "Sikament" by Sika Chemical Co.
 - 2. Dosage and use of any mix containing this admixture shall be in strict accordance with the manufacturers direction and only with the written permission of the Engineer.
 - 3. A representative of the admixture manufacturer shall be present to observe the products use and to assure that it is being used in accordance with the manufacturers directions.
- D. Water Reducing and Retarding Admixture: ASTM C494/C494M Type D.
 - 1. Provide pigmented type, with ASTM C979/C979M inorganic pigments.
 - 2. Manufacturers:
 - a. "Daratard 17" by W.R. Grace & Company.
 - b. "Pozzolith 100XR" by Master Builders, Inc..
 - c. "Lubricon R" by American Admixture
 - d. "Plastocrete 161R" by Sika Chemical Co.
- E. Water Reducing Admixture: ASTM C494/C494M Type A.
 - 1. Manufacturers:
 - a. "Pozzolith 300 Series" by Master Builders.
 - b. "WRDA/HYCOL" by Grace.
 - c. "Plastocrete 161" by Sika
 - d. "Eucon-WR-75" by Euclid
- F. Calcium Chloride
 - 1. Do not use calcium chloride in any concrete.

- ## 2.04 BONDING AND JOINTING PRODUCTS

- ## 2.05 CURING MATERIALS

- 03300-7

5. Horncure W.R. Grace
6. Hydrocide Resin Sonneborn
- B. Curing/sealing compound:
 1. Sodium Silicate Sealer
 - a. Acceptable Products
 - b. Cure Hard Meadows
 - c. Eucosil Euclid Chemical
 - d. WB-309 Grace
 - e. Sonosil Sonneborn
 - f. Acurion Anti-Hydro Waterproofing
 2. Verify compatibility of finish with curing/sealing compounds.
- C. Moisture-Retaining Sheet: ASTM C171.
 1. Polyethylene film, clear, minimum nominal thickness of 0.0040 inch.
- D. Water: Potable, not detrimental to concrete.

2.06 CONCRETE MIX DESIGN

- A. Contractor shall provide all testing services for approval of mixes.
- B. The Contractor shall furnish the Architect for approval a mix design for each class of concrete at least 15 days prior to start of work.
- C. Do not begin production until mixes have been approved by Architect.
- D. Proportioning Normal Weight Concrete: Comply with ACI 211.1 recommendations.
- E. Concrete Strength: Establish required average strength for each type of concrete on the basis of field experience or trial mixtures, as specified in ACI 301.
 1. For trial mixtures method, employ independent testing agency acceptable to Architect for preparing and reporting proposed mix designs.
- F. Admixtures: Add acceptable admixtures as recommended in ACI 211.1 and at rates recommended or required by manufacturer.
- G. Normal Weight Concrete:
 1. Compressive Strength, when tested in accordance with ASTM C39/C39M at 28 days: 3,000 pounds per square inch.
 2. Water-Cement Ratio: Maximum 40 percent by weight.
 3. Total Air Content: 2-4 percent, determined in accordance with ASTM C173/C173M.
 4. Maximum Slump: 4 inches.
 5. Maximum Aggregate Size: 5/8 inch.

2.07 MIXING

- A. On Project Site: Mix in drum type batch mixer, complying with ASTM C685/C685M. Mix each batch not less than 1-1/2 minutes and not more than 5 minutes.
- B. Transit Mixers: Comply with ASTM C94/C94M.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify lines, levels, and dimensions before proceeding with work of this section.

3.02 PREPARATION

- A. Verify that forms are clean and free of rust before applying release agent.
- B. Coordinate placement of embedded items with erection of concrete formwork and placement of form accessories.
- C. Where new concrete is to be bonded to previously placed concrete, prepare existing surface by cleaning and applying bonding agent in according to bonding agent manufacturer's instructions.
 - 1. Use epoxy bonding system for bonding to damp surfaces, for structural load-bearing applications, and where curing under humid conditions is required.
 - 2. Use latex bonding agent only for non-load-bearing applications.
- D. Where new concrete with integral waterproofing is to be bonded to previously placed concrete, prepare surfaces to be treated in accordance with waterproofing manufacturer's instructions. Saturate cold joint surface with clean water, and remove excess water before application of coat of waterproofing admixture slurry. Apply slurry coat uniformly with semi-stiff bristle brush at rate recommended by waterproofing manufacturer.
- E. In locations where new concrete is doveled to existing work, drill holes in existing concrete, insert steel dowels and pack solid with non-shrink grout.
- F. Interior Slabs on Grade: Install vapor retarder under interior slabs on grade. Lap joints minimum 6 inches. Seal joints, seams and penetrations watertight with manufacturer's recommended products and follow manufacturer's written instructions. Repair damaged vapor retarder before covering.

3.03 PLACING CONCRETE

- A. Place concrete in accordance with ACI 304R.
- B. Place concrete for floor slabs in accordance with ACI 302.1R.
- C. Notify Architect not less than 24 hours prior to commencement of placement operations.
- D. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.
- E. Ensure reinforcement, inserts, embedded parts, and formed construction joint devices will not be disturbed during concrete placement.

- F. Place concrete continuously without construction (cold) joints wherever possible; where construction joints are necessary, before next placement prepare joint surface by removing laitance and exposing the sand and sound surface mortar, by sandblasting or high-pressure water jetting.
- G. Place concrete within the tolerances specified below:
 - 1. Dimensional tolerances for formed surfaces:
 - a. Variation from plumb:
 - 1) In the lines and surfaces of columns, piers, walls and in arises:
 - (a) In any 10 ft. of length.....1/4 in.
 - (b) Maximum for the entire length (length greater than 40'-0").....1 in.
 - 2) Exposed corner columns, control-joint grooves, and other conspicuous lines:
 - (a) In any 20 ft. of length.....1/4 in.
 - (b) Maximum for the entire length.....1/2 in.
 - b. Variation from the level or from the grades specified in the contract documents:
 - 1) In slab soffits, ceilings, beam soffits and in arises, measured before removal of supporting shores
 - (a) In any 10 ft. of length.....1/4 in.
 - (b) In any bay or in any 20 ft. of length.....3/8 in.
 - (c) Maximum for the entire length.....3/4 in.
 - 2) In exposed lintels, sills, parapets, horizontal grooves, and other conspicuous lines:
 - (a) In any bay or in 20 ft. length.....1/4 in.
 - (b) Maximum for the entire length.....1/2 in.
 - c. Variation of the linear building lines from established position in plan and related position of columns, walls, and partitions:
 - 1) In any bay.....1/2 in.
 - 2) In any 20 ft. of length.....1/2 in.
 - 3) Maximum for the entire length.....1 in.
 - d. Variation in the sizes and location of sleeves, floor openings, and wall openings.....+1/4 in.
 - e. Variation in cross-sectional dimensions of columns and beams and in the thickness of slabs and walls:
 - 1) Minus.....1/4 in.
 - 2) Plus.....1/2 in.
 - f. Footings*
 - 1) Variations in dimensions in plan:
 - (a) Minus.....1/4 in.

- (b) Plus.....1/2 in.
- (c) Misplacement or eccentricity:
 - (1) 2 percent of the footing width in the direction of misplacement but not more than.....2 in.
- (d) Thickness:
 - (1) Decrease in specified thickness.....5%
 - (2) Increase in specified thickness.....No limit
- 2) Footing Tolerances apply to concrete dimensions only, not to positioning of vertical reinforcing steel, dowels, or embedded items.

3.04 SLAB JOINTING

- A. Locate joints as indicated on the drawings.
- B. Anchor joint fillers and devices to prevent movement during concrete placement.
- C. Isolation Joints: Use preformed joint filler with removable top section for joint sealant, total height equal to thickness of slab, set flush with top of slab.

3.05 CONCRETE FINISHING

- A. Repair surface defects, including tie holes, immediately after removing formwork.
- B. Unexposed Form Finish: Rub down or chip off fins or other raised areas 1/4 inch or more in height.
- C. Exposed Form Finish: Rub down or chip off and smooth fins or other raised areas 1/4 inch or more in height. Provide finish as follows:
 - 1. Smooth Rubbed Finish: Wet concrete and rub with carborundum brick or other abrasive, not more than 24 hours after form removal.
 - 2. Grout Cleaned Finish: Wet areas to be cleaned and apply grout mixture by brush or spray; scrub immediately to remove excess grout. After drying, rub vigorously with clean burlap, and keep moist for 36 hours.
- D. Concrete Slabs: Finish to requirements of ACI 302.1R, and as follows:
 - 1. Other Surfaces to Be Left Exposed: Trowel as described in ACI 302.1R, minimizing burnish marks and other appearance defects.
- E. In areas with floor drains, maintain floor elevation at walls; pitch surfaces uniformly to drains at 1:100 nominal.

3.06 CURING AND PROTECTION

- A. Comply with requirements of ACI 308R. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.
- B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.

1. Normal concrete: Not less than 7 days.
- C. Surfaces Not in Contact with Forms:
 1. Initial Curing: Start as soon as free water has disappeared and before surface is dry. Keep continuously moist for not less than three days by water ponding, water-saturated sand, water-fog spray, or saturated burlap.
 2. Final Curing: Begin after initial curing but before surface is dry.
 - a. Moisture-Retaining Sheet: Lap strips not less than 3 inches and seal with waterproof tape or adhesive; secure at edges.
 - b. Curing Compound: Apply in two coats at right angles, using application rate recommended by manufacturer.

3.07 FIELD QUALITY CONTROL

- A. An independent testing agency will perform field quality control tests, as specified in Section 01-40-00 - Quality Requirements.
- B. Provide free access to concrete operations at project site and cooperate with appointed firm.
- C. Submit proposed mix design of each class of concrete to inspection and testing firm for review prior to commencement of concrete operations.
- D. Tests of concrete and concrete materials may be performed at any time to ensure conformance with specified requirements.
- E. Compressive Strength Tests: ASTM C39/C39M. For each test, mold and cure three concrete test cylinders. Obtain test samples for every 100 cubic yards or less of each class of concrete placed.
- F. Take one additional test cylinder during cold weather concreting, cured on job site under same conditions as concrete it represents.
- G. Perform one slump test for each set of test cylinders taken, following procedures of ASTM C143/C143M.
- H. Slab Testing: Cooperate with manufacturer of specified moisture vapor reduction admixture (MVRA) to allow access for sampling and testing concrete for compliance with warranty requirements.

3.08 DEFECTIVE CONCRETE

- A. Test Results: The testing agency shall report test results in writing to Architect and Contractor within 24 hours of test.
- B. Defective Concrete: Concrete not conforming to required lines, details, dimensions, tolerances or specified requirements.
- C. Repair or replacement of defective concrete will be determined by the Architect. The cost of additional testing shall be borne by Contractor when defective concrete is identified.
- D. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Architect for each individual area.

3.09 PROTECTION

- A. Do not permit traffic over unprotected concrete floor surface until fully cured.

END OF SECTION

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**SECTION 03350
CONCRETE FINISHES**

PART 1 GENERAL

1.01 SECTION INCLUDES:

- A. Furnish all labor, material, equipment, related services and supervision necessary for or incidental to the installation of the specified finishes on concrete work as shown or indicated on the Drawings and/or as specified.

1.02 RELATED DOCUMENTS:

- A. Drawings and General provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this specification.
- B. All other Divisions of the Contract Documents. Refer to each Division's specifications and drawings for all requirements, including but not limited to the following:
 - 1. Concrete Forming and Accessories – Section 03100
 - 2. Concrete Reinforcement – Section 03200
 - 3. Cast-In-Place Concrete – Section 03300.

1.03 SUBMITTALS:

- A. Chemical Retarder: Submit complete manufacturer's descriptive literature and performance characteristics.
- B. Curing Compounds: Submit complete manufacturer's descriptive literature and performance characteristics.
- C. Chemical Stain: Submit complete manufacturer's descriptive literature and performance characteristics.
- D. Chemical Sealer: Submit complete manufacturer's descriptive literature and performance characteristics.

1.04 FIELD SAMPLES:

- A. For final review of each finish by the Architect, construct sample panels 4'-0" by 4'-0".

1.05 DELIVERY, STORAGE AND HANDLING:

- A. Deliver the specified products in original, unopened containers with legible manufacturer's identification and information.
- B. Store specified products in conditions recommended by the manufacturer.

1.06 PROTECTION;

- A. Protect exposed concrete finishes from damage and soiling by other trades. Mask with polyethylene film as required.

PART 2 PRODUCTS

2.01 MATERIALS:

- A. Chemical Retarder:
- B. Curing compounds: Only compounds that will not stain or cause imperfections on the finished concrete shall be used.
- C. Chemical Sealer: Scofield Cureseal and Cureseal-S; L.M. Scofield Company, a clear curing and sealing compound for protecting concrete hardscapes and floors.

PART 3 EXECUTION

3.01 SCHEDULE OF FINISHES:

- A. General: Provide finishes at locations specified on Drawings.
- B. Finishing Formed Horizontal Surfaces:
 - 1. Light Broom Finish:
 - a. After trowel finish, while surface is still plastic, draw soft fiber bristle broom uniformly over surface, perpendicular to traffic flow, to create fine-grained but smooth texture to match Architect's sample.

3.02 APPLICATION OF SEALER:

- A. Concrete substrate shall be completely dry.
- B. Sealer shall be produced by the chemical stain manufacturer.
- C. Apply sealer according to manufacturer's written instructions at a rate of 400 to 500 square feet per gallon per coat.
- D. Maintain a wet edge at all times.
- E. Allow sealer to completely dry before applying additional coats.
- F. Apply second coat of sealer at 90 degrees to the direction of the first coat using the same application method and rates.
- G. Seal horizontal joints in areas subject to pedestrian or vehicular traffic.

3.03 PROTECTION:

- A. Protect floor from traffic for at least 72 hours after final application of sealer.

3.04 MAINTENANCE:

- A. Maintain chemically stained and sealed floors by sweeping. Clean spills when they occur and rinse dirt off with water. Wet-clean heavily soiled areas by mopping or by scrubbing with a rotary floor machine equipped with a scrubbing brush and a suitable, high quality commercial detergent. Maintain interior floors that require polishing by using a compatible, premium grade, emulsion-type, commercial floor polish, following manufacturer's instructions and safety requirements.

3.05 CLEAN UP:

- A. Remove trash, debris and excess material from the site on a regular basis and as directed by the Owner.

END OF SECTION

SECTION 03411
PRECAST CONCRETE HOLLOW CORE PLANKS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Precast roof and planks.
- B. Connection plates with brackets and hangers.
- C. Grouting plank joint keys.

1.02 RELATED REQUIREMENTS

- A. Section 03300 - Cast-in-Place Concrete.

1.03 REFERENCE STANDARDS

- A. ACI 301 - Specifications for Structural Concrete; 2010 (Errata 2012).
- B. ACI 318 - Building Code Requirements for Structural Concrete and Commentary; 2011.
- C. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2014.
- D. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2009.
- E. ASTM A416/A416M - Standard Specification for Low-Relaxation, Seven-Wire Steel Strand for Prestressed Concrete; 2018.
- F. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon Steel Bars for Concrete Reinforcement; 2015.
- G. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2015.
- H. AWS B2.1/B2.1M - Specification for Welding Procedure and Performance Qualification; 2014 (Amended 2015).
- I. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2015.
- J. AWS D1.4/D1.4M - Structural Welding Code - Reinforcing Steel; 2011.
- K. IAS AC157 - Accreditation Criteria for Fabricator Inspection Programs for Reinforced and Precast/Prestressed Concrete; 2017.
- L. PCI MNL-116 - Manual for Quality Control for Plants and Production of Structural Precast Concrete Products; 1999.
- M. PCI MNL-120 - PCI Design Handbook - Precast and Prestressed Concrete; 2012.
- N. PCI MNL-123 - Design and Typical Details of Connections for Precast and Prestressed Concrete; 1988.

- O. PCI MNL-126 - Manual For The Design of Hollow Core Slabs; 1998.
- P. PCI (CERT) - PCI Plant Certification; Current Edition.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination: Coordinate location of hanger tabs and devices for mechanical and electrical work and cutting of field openings.
- B. Preinstallation Meeting: Convene one week before starting work of this section.
 - 1. Discuss anchor and weld plate locations, sleeve locations, and cautions regarding cutting or core drilling.

1.05 SUBMITTALS

- A. See Section 01300 - Submittals, for submittal procedures.
- B. Product Data: Indicate standard component configuration, design loads, deflections, and cambers.
- C. Shop Drawings: Indicate plank locations, connection details, edge conditions, bearing requirements, support conditions, dimensions, openings, and relationship to adjacent materials.
- D. Manufacturer's Installation Instructions: Indicate special procedures, perimeter conditions requiring special attention.
- E. Designer's Qualification Statement.
- F. Manufacturer's Qualification Statement.
- G. Fabricator's Qualification Statement: Provide documentation showing precast concrete fabricator is accredited under IAS AC157.
- H. Erector's Qualification Statement.
- I. Sustainable Design Reporting: If any fly ash, ground granulated blast furnace slag, silica fume, rice hull ash, or other waste material is used in mix designs to replace Portland cement, submit the total volume of concrete, mix design(s) used showing the quantity of Portland cement replaced, reports showing successful cylinder testing, and temperature on day of pour if cold weather mix is used.

1.06 QUALITY ASSURANCE

- A. Designer Qualifications: Design precast concrete hollow core planks under direct supervision of a Professional Structural Engineer experienced in design of this work and licensed in Florida.
- B. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of experience.
- C. Fabricator Qualifications: Precast concrete fabricator accredited by IAS according to IAS AC157.
- D. Erector Qualifications: Company specializing in performing the type of work specified in this section, with minimum 3 years of experience.

- E. Welding Qualifications: Welding processes and welding operators qualified in accordance with AWS D1.1/D1.1M and AWS D1.4/D1.4M.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Lifting or Handling Devices: Capable of supporting member in positions anticipated during manufacture, storage, transportation, and erection.
- B. Mark each member with date of production and final position in structure.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Precast Concrete Hollow Core Planks:
 - 1. Any manufacturer with PCI Plant Certification.
 - 2. Any manufacturer with NPCA Plant Certification.

2.02 PRECAST UNITS

- A. Precast Hollow Core Planks: Comply with PCI MNL-120, PCI MNL-126, ACI 318, and ACI 301.
 - 1. Dimensions as indicated on drawings.
 - 2. Nominal thickness: 6 inches.
 - 3. Design components to withstand dead loads and design loads in the configuration indicated on drawings and as follows:
 - a. Roof Assembly: 20 pounds live load.
 - b. Maximum Allowable Deflection of Roof Planks: 1/180.
 - 4. Replace as much Portland cement as possible with fly ash, ground granulated blast furnace slag, silica fume, or rice hull ash as is consistent with strength requirements.
 - 5. Design connections in accordance with PCI MNL-123.
 - 6. Design components to accommodate construction tolerances, deflection of other building structural members and clearances of intended openings.
 - 7. Grouted Keys: Capable of transmitting horizontal shear force of 2,000 pounds per linear foot.

2.03 MATERIALS

- A. Concrete Materials: ACI 301.
- B. Tensioning Steel Tendons: ASTM A416/A416M.
- C. Reinforcing Steel: ASTM A615/A615M.
- D. Non-Shrink Grout: Non-metallic, minimum compressive strength of 10,000 psi.
- E. Cement Grout: Minimum compressive strength of 3,000 psi at 28 days.

2.04 ACCESSORIES

- A. Connecting and Supporting Devices: Plates, angles, items cast into concrete, ASTM A36/A36M carbon steel; prime painted.
- B. Core Hole End Plugs:
- C. Hanger Tabs: Galvanized steel, designed to fit into grouted key joints, capable of supporting 500 lbs dead load, predrilled to receive hanger.
- D. Bearing Pads: High density plastic, 1/8 inch thick, smooth on one side.
- E. Sill Seal: Compressible glass fiber strips.

2.05 FABRICATION

- A. Weld reinforcing in accordance with AWS D1.4/D1.4M.
- B. Embed anchors, inserts, plates, angles, and other items at locations indicated.
- C. Provide openings required by other sections, at locations indicated.
- D. Cut exposed ends flush.
- E. Plant Finish: Finish members to PCI MNL-116 Commercial Grade.
- F. Plant Finish: PCI MNL-116.
 - 1. Roof Members: Commercial Grade.
- G. Connecting and Supporting Steel Devices: Do not paint surfaces in contact with concrete or surfaces requiring field welding.

2.06 FABRICATION TOLERANCES

- A. Comply with PCI MNL-116 and PCI MNL-135.
 - 1. Maximum Variation From Nominal Dimensions:
 - a. Width: Plus or minus 1/4 in.
 - b. Length: Plus or minus 1/2 in.
 - c. Depth: Plus or minus 1/4 in.
 - 2. Maximum Variation From Intended Camber: Plus or minus 1/4 inch in 10 feet.
 - 3. Maximum Variation from Plan End Squareness: Plus or minus 1/4 in.
 - 4. Maximum Sweep: Plus or minus 1/4 in.
 - 5. Maximum Misalignment of Anchors, Inserts, Openings: Plus or minus 1/8 inch.
 - 6. Maximum Bowing of Members: Length/360.
 - 7. Maximum Bowing of Members: Plus or minus 1/4 inch in 10 feet.

2.07 SOURCE QUALITY CONTROL

- A. Produce planks in accordance with requirements of PCI MNL-116. Maintain plant records and quality control program during production of precast planks. Make records available upon request.
 - 1. Maintain one copy on project site.
- B. Inspect stressing tendons before delivery for compliance with specified standards.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that site conditions are ready to receive work and field measurements are as indicated on shop drawings.
- B. Verify supporting structure is ready to receive work.

3.02 PREPARATION

- A. Prepare support devices for the erection procedure and temporary bracing.

3.03 ERECTION

- A. Erect members without damage to structural capacity, shape, or finish. Replace or repair damaged members.
- B. Install bearing pads at bearing ends of planks.
- C. Align and maintain uniform horizontal and end joints, as erection progresses.
- D. Maintain temporary bracing in place until final connection is made. Protect members from staining.
- E. Adjust differential camber between precast members to tolerance before final attachment.
- F. Adjust differential elevation between precast members to tolerance before final attachment.
- G. Secure units in place. Perform welding in accordance with AWS D1.1/D1.1M.
- H. Grout longitudinal keys as indicated.
- I. Tape seal underside of plank joints to prevent grout leakage.
- J. Make plank-to-plank joints smooth using grout, troweled smooth. Transition differential elevation of adjoining planks with grout to a maximum slope of 1:12.

3.04 TOLERANCES

- A. Erect members level and plumb within allowable tolerances. Comply with PCI MNL-135.
 - 1. Maximum Jog in Alignment of Matching Ends: Plus or minus 1/2 inch.
 - 2. Exposed Joint Dimension: Plus or minus 3/8 inch.
 - 3. Differential Top Elevation As Erected: Plus or minus 3/8 inch.

4. Bearing Length in Span Direction: Plus or minus 3/8 inch.
5. Differential Bottom Elevation of Exposed Planks: Plus or minus 3/16 inch.

3.05 PROTECTION

- A. Protect members from damage caused by field welding or erection operations.
- B. Provide non-combustible shields during welding operations.

3.06 CLEANING

- A. Clean weld marks, dirt, and blemishes from surface of exposed members.

END OF SECTION

SECTION 03600 GROUT

PART 1 - GENERAL

1.01 Work Included

- A. Provide all labor, materials, tools and equipment and perform all grouting as specified hereinafter and indicated on the Drawings.

1.02 Related Work

- A. Section 03300, Cast-In-Place Concrete

1.03 Submittals

- A. Submit manufacturer's literature for review on the following items:
 - 1. Non-shrink grout data including grout properties, mixing, surface preparation and installation instructions.

1.04 Delivery and Storage

- A. Deliver and store grouting materials in unbroken containers with seals and labels intact as packaged by the manufacturer.

PART 2 - PRODUCTS

2.01 Materials

- A. Non-shrink, Nonmetallic Grout: The Burke Company's Non-Ferrous, Non-Shrink Grout, Sauereisen F-100 Level Fill, Master Builders Masterflow 713, Euclid NS Grout, or equal pre-mixed type.
- B. Non-shrink Metallic Grout: The Burke Company's Metallic Spec Grout, Master Builders Embeco 636 Grout pre-mixed type, or equal.
- C. Epoxy Grout: Sikadur 42 Grout-Pak, or equal, for grouting sleeves for anchor bolts, etc.

PART 3 - EXECUTION

3.01 Preparation

- A. Clean all bonding surfaces of dust and oil.

3.02 Installation

- A. Non-shrink Grout:

1. Use non-shrink, nonmetallic grout for grouting precast concrete wall panel connections, column base plates, anchor bolts, reinforcing bars, pipe sleeves, machinery supports and pump base plates. Use epoxy grout for anchor bolts, etc., where indicated on the Drawings.
2. Mix and place non-shrink grout as recommended by the manufacturer.
3. Mix grout as close to the work area as possible and transport quickly to its final position in a manner which will not permit segregation of materials.
4. Cure non-shrink grout with water saturated burlap for at least three days or with an application of Super Rez Seal cure and seal compound applied immediately after grout placement.
5. Do not operate machinery set on grout pads until the grout has cured for at least 24 hours.

END OF SECTION

**SECTION 03700
MODIFICATIONS AND REPAIR TO EXISTING CONCRETE**

PART 1 - GENERAL

1.01 Work Included

- A. Furnish all labor, materials, equipment and incidentals required to cut, repair, demolish, excavate or otherwise modify parts of existing structures or appurtenances as shown on the Drawings and as specified herein, including connecting new concrete to existing concrete, as necessary to complete the work under this Contract.

1.02 Related Work

- A. Section 03300, Cast-In-Place Concrete

1.03 Quality Assurance

- A. Do not cut, remove, or otherwise alter existing structures or concrete until authorization is given by the Engineer.
- B. When removing materials or portions of existing structures, and when making openings in existing structures, take all precautions and use all necessary barriers and other protective devices so as not to damage the structures beyond the limits necessary for the new work, nor to damage the structures or contents by falling or flying debris. Unless otherwise permitted, line drilling will be required in cutting existing concrete.

PART 2 - PRODUCTS

2.01 Materials

- A. Epoxy Bonding Compound: Two component, moisture insensitive, heavy viscosity, high strength, rigid epoxy system that will bond under dry, damp or wet conditions, and is equal to BurkEpoxy MV or BurkEpoxy Mortar as manufactured by The Burke Company, Sikadur Hi-Mod as manufactured by Sika Chemical Corp., or Euco 615 Epoxy as manufactured by Euclid Chemical Company.

PART 3 - EXECUTION

3.01 Installation

- A. Take field measurements in the required structures to determine the amount of concrete to be removed and/or repaired and the amount of patching to be done.

3.02 Construction Methods

- A. Where new concrete is to be made integral with existing concrete, use the methods shown in the Drawings.
- B. Mix and apply all bonding and patching materials in accordance with the manufacturer's instructions and recommendations.

3.03 Modifying or Repairing Existing Concrete

- A. Remove concrete to the depths shown or required. Roughen contact surface by chipping, sandblasting, scarifying or other approved methods. Thoroughly clean the surface, removing loose particles and dust.
- B. Cut off projecting reinforcement when required to provide at least 1-inch cover. Where shown, bend reinforcement across cut face and cover with new concrete.
- C. Thoroughly wash the roughened concrete surfaces and keep the surfaces saturated for at least 6 hours before placing new concrete. Remove all free water prior to placing the concrete. An epoxy bonding compound, as specified, may be used in lieu of saturating surface for 6 hours.
- D. Place cement mortar, where required, to a thickness slightly in excess of the finished surface, and steel-trowel-finish, flush with the adjacent surface.
- E. When the finish surface of new concrete in exposed surfaces is not specified to be coated, match the color of the existing adjoining concrete as closely as possible.
- F. Mix cement mortar in the proportions of one part portland cement to two parts of sand by volume. Do not use accelerating admixtures in surface treatment. Where shown on the Drawings, use a non-shrink grout for patching and filling.

3.04 Connections, New Concrete to Existing Concrete

- A. Make connections to existing concrete as shown on the Drawings.
- B. Where it is necessary to expose existing reinforcement, clean the reinforcing rods or wire mesh by wire brushing and hook new reinforcement into existing reinforcement and lap or weld as directed. Provide at least 3/4-inch clearance around each bar.
- C. Mix and apply the epoxy in strict accordance with the printed instructions of the approved manufacturer.
- D. Preparation of Concrete Surfaces:
 - 1. Surfaces must be clean and sound. Surfaces may be dry, damp, or wet, but free of standing water. Remove dust, laitance, grease, curing compounds, impregnations, waxes, foreign particles, and disintegrated materials by mechanical abrasion methods such as sandblasting. Sandblast steel to

appropriate finish.

2. If the concrete surfaces are sound and it is only necessary to remove laitance, grease or dust, the Contractor may, with the prior written approval of the Engineer, forego sandblasting and wash the concrete with a degreasing and etching chemical applied in accordance with the manufacturer's written instructions and as stipulated in these Specifications hereinafter.
3. Degreasing and Etching Chemical: ProSoCo, Inc., Sure-Klean Degreaser & Etch, or equal.
4. Application of Degrease and Etching Compound: As per manufacturer recommendations.

E. Application of Bonding Compound:

1. Cover the area to be overlayed with one coat of the epoxy compound applied with long-nap paint rollers, brushes, brooms, or by spray as per manufacturer's instructions.
2. Place the concrete while the epoxy compound is still tacky. If the bonding compound should harden before the concrete is placed, apply a fresh coat over the hardened coat and proceed.

F. Application of Grouting: To prepare a grout for anchor bolts or to level base plates, mix the compound as recommended by the manufacturer.

G. Weather Limitations: Place the epoxy compound only when both the concrete surface temperature and the ambient temperature are as recommended by the manufacturer.

3.05 Openings in Concrete

- A. Where openings are required for pipes, thimbles for gates, gate stems or other installations in existing concrete structures, cut the existing concrete within the limits required, as shown on Drawings or specified, expose the existing reinforcing steel and perform the work in such a manner as to prevent damage to the existing adjacent structures or equipment.
- B. Unless otherwise permitted, line drilling will be required.
- C. Where concrete is cut to provide openings for gate stems, accurately install pipe sleeves and grout in place in an approved manner.
 1. Clean the exposed reinforcement by wire brushing, then cut and bend to permit the installation and finally bend around the new pipe or thimble. Provide additional reinforcement as shown on the Drawings for typical reinforcing details of openings in walls and slabs, otherwise shown, specified or required.

2. After installation of pipelines and thimbles, etc., prepare the existing concrete as specified above and fill the void between the outside of the pipe or thimble and the existing concrete with non-shrink non-metallic grout.

END OF SECTION

SECTION 09900 PAINTING

PART 1 - GENERAL

1.01 Description of Work

- A. The Contractor shall furnish all materials, labor, equipment, and incidentals required to provide a protective coating system for the surfaces listed herein and not otherwise excluded. All surfaces described shall be included within the scope of this Section.
- B. The work includes painting and finishing of interior and exterior exposed items and surfaces such as walls, miscellaneous metal, construction signs, posts, pipes, fittings, valves, equipment, and all other work obviously required to be painted unless otherwise specified herein or on the Drawings. The omission of minor items in the schedule of work shall not relieve the Contractor of his obligation to include such items where they come within the general intent of the Specifications as stated herein. The following major items of the Project shall be coated (specific items to be coated are detailed in the specific class designated coating systems):
 - 1. Exposed ferrous surfaces of equipment, pumps, motors, tanks and ferrous or galvanized metal fittings and accessories.
 - 2. Exposed surfaces of PVC components of piping, fittings, valves, electrical conduit, and equipment.
 - 3. Exposed exterior surfaces of all existing and proposed metallic piping, fittings, and valves located on the interior and exterior of buildings and structures.
 - 4. Embedded aluminum or aluminum in contact with dissimilar metals or in contact with corrosive atmospheres.
- C. "Paint" as used herein means all coating systems, materials, including primers, emulsions, enamels, epoxies, sealers and fillers, and other applied materials whether used as a prime, intermediate, or finish coats.
- D. The following items will not be painted unless otherwise noted:
 - 1. Any code-requiring labels, such as Underwriters' Laboratories and Factory Mutual, or any equipment identification, performance rating, name or nomenclature plates.
 - 2. Any moving parts of operating units, such as valve and damper operators, linkages, sensing devices, and motor and fan shafts.
 - 3. Aluminum or fiberglass handrails, walkways, toeboards, windows, louvers, grating, checker plate, hatches, and stairways.

4. Stainless steel angles, tube, pipe, etc.
5. Products with polished chrome, aluminum, nickel, or stainless steel finish.
6. Stainless steel, brass, bronze, and aluminum other than exposed utility tubing.
7. Flexible couplings, lubricated bearing surfaces, insulation, and plastic pipe or duct interiors.
8. Plastic switch plates and receptacle plates.
9. Signs and nameplates.
10. Finish hardware.
11. Packing glands and other adjustable parts, unless otherwise indicated.
12. Portions of metal, other than aluminum, embedded in concrete. This does not apply to the back face of items mounted to concrete or masonry surfaces which shall be painted before erection. Aluminum to be embedded in, or in contact with, concrete shall be coated to prevent electrolysis.

1.02 Related Work

- A. Paint piping and equipment for identification purposes in accordance with Section 09905: Piping, Valve, and Equipment Identification System.

1.03 Quality Assurance

- A. Provide the best quality grade of the various types of coatings as regularly manufactured by approved paint material manufacturers. Materials not displaying the manufacturer's identification as a standard, best-grade product will not be acceptable.
- B. Provide undercoat paint produced by the same manufacturer as the finish coats. Undercoat and finish coat paints shall be compatible. Use only thinners approved by the paint manufacturer, and use only within recommended limits.
- C. Painting shall be accomplished by experienced painters specializing in industrial painting familiar with all aspects of surface preparations and applications required for this project. Work shall be done in a safe and workmanlike manner.
- D. Standards
 1. ASTM.
 2. OSHA.
 3. NFPA.
 4. SSPC.

5. NACE.
 6. NSF.
 7. AWWA.
- E. Acceptable Manufacturers
1. Carboline Company.
 2. Tnemec Company, Inc.
 3. Approved equal.

1.04 Submittals

- A. Materials and Shop Drawings: Submit to the Engineer as provided in Section 01300 – Submittals: Drawings and Submittals, shop drawings, manufacturer's specifications, and data on the proposed paint systems and detailed surface preparation, application procedures and dry film thickness (DFT).
- B. Schedule
1. The Contractor shall submit for approval a complete typewritten Schedule of Painting Operations within 90 days after the Notice to Proceed. This Schedule is imperative so that the various fabricators or suppliers may be notified of the proper prime coat to apply. It shall be the Contractor's responsibility to properly coordinate the fabricators' or suppliers' surface preparation and painting operations with these Specifications. This Schedule shall include for each surface to be painted, the brand name, generic type, solids by volume, application method, the coverage and the number of coats in order to achieve the specified dry film thickness, and color charts. When the Schedule has been approved, the Contractor shall apply all material in strict accordance with the approved Schedule and the manufacturer's instructions. Wet and dry paint film gauges may be utilized by the Owner or Engineer to verify the proper application while work is in progress.
 2. It is the intent of this Section that as much as possible all structures, equipment, and piping utilize coating systems specified herein supplied by a single manufacturer. All exceptions must be noted on the Schedule. For each coating system, only one (1) manufacturer's product shall be used.
- C. Color Samples: Manufacturer's standard color charts for color selection by Owner.
- D. Samples- Painting
1. Paint colors will be selected by the Owner. Compliance with all other requirements is the exclusive responsibility of the Contractor.

2. Samples of each finish and color shall be submitted to the Owner or Engineer for approval before any work is started.
 3. Samples shall be prepared so that an area of each sample indicates the appearance of the various coats. For example, where three (3) coat work is specified, the sample shall be divided into three (3) areas:
 - a. One (1) showing the application of one (1) coat only.
 - b. One (1) showing the application of two (2) coats.
 - c. One (1) showing the application of all three (3) coats.
 4. Such samples when approved in writing shall constitute a standard, as to color and finish only, for acceptance or rejection of the finish work.
 5. For piping, valves, equipment and miscellaneous metal work, provide sample chips or color charts of all paint selected showing color, finish, and general characteristics.
 6. Rejected samples shall be resubmitted until approved.
- E. The Contractor shall submit to the Owner, immediately upon completion of the job, certification from the manufacturer indicating that the quantity of each coating purchased was sufficient to coat all surfaces, in accordance with the requirements of this Section. Such certification shall make reference to square footage figures provided to the manufacturer by the Contractor.

1.05 Delivery, Handling and Storage

- A. Deliver all materials to the job site in original, unopened packages and containers bearing manufacturer's name and label in accordance with Section 01610: Delivery, Storage, and Handling.
1. Provide labels on each container with the following information:
 - a. Name or title of material.
 - b. Fed. Spec. number if applicable.
 - c. Manufacturer's stock number, date of manufacture and expiration date (shelf life).
 - d. Manufacturer's formula or specification number.
 - e. Manufacturer's batch number.
 - f. Manufacturer's name.
 - g. Generic type.

- h. Contents by volume, for major pigment and vehicle constituents.
 - i. Application instructions: thinning, ambient conditions, etc.
 - j. Color name and number.
 - 2. Containers shall be clearly marked to indicate any hazards connected with the use of the paint and steps which should be taken to prevent injury to those handling the product.
- B. All containers shall be handled and stored in such a manner as to prevent damage or loss of labels or containers.
- C. Used rags shall be removed every night and every precaution taken against spontaneous combustion.

1.06 Warranty and Guarantees

- A. Refer to Section 01740: Warranties and Bonds.
- B. All paint and coatings work performed under these Specifications shall be guaranteed by the coatings applicator for 100 percent of the total coated area for both materials and labor against failures during the warranty period.
 - 1. Warranty period: Minimum 5 years from date of substantial completion.
- C. Failure under this warranty shall include flaking, peeling, or delaminating of the coating due to aging, chemical attack, or poor workmanship; but it shall not include areas which have been damaged by unusual chemical, thermal, or mechanical abuse.

PART 2 - PRODUCTS

2.01 Materials

- A. All paint shall be manufactured by one of the suppliers listed in Paragraph 1.03E., herein, and shall be their highest grade of paint.
- B. The following coating systems list a product by name to establish a standard of quality; other products of the same generic types may be submitted to the Engineer for approval as described in Paragraph 1.04., herein. When other than the specified coating system is proposed, the Contractor shall submit a typewritten list giving the proposed coatings, brand, trade name, generic type and catalog number of the proposed system for the Engineer's approval.
- C. Paint used in successive field coats shall be produced by the same manufacturer. Paint used in the first field coat over shop painted or previously painted surfaces shall cause no wrinkling, lifting, or other damage to underlying paint. Shop paint shall be of the same type and manufacture as used for field painting by the Contractor.
- D. Emulsion and alkyd paints shall contain a mildewcide and both the paint and

mildewcide shall conform to OSHA and Federal requirements, including Federal Specification TT-P- 19.

- E. Finish coats containing lead shall not be allowed. Oil shall be pure boiled linseed oil.
- F. Rags shall be clean painter's rags, completely sterilized.

2.02 Coating Systems

- A. Class 1 Exposures - Exposed Concrete and Masonry, Interior, Non-Immersion excluding Floors.
 - 1. Examples of this classification include interior masonry and plaster, concrete block walls, concrete walls, columns, supports, ceilings, and beams of the designated structure.
 - 2. Surface Preparation: As specified in Paragraph 3.02, herein, including filling cracks, voids, and other surface imperfections, removing mortar droppings, cleaning, and air-blasting.
 - 3. Class 1 Coating System:
 - a. Prime Coat: Epoxy Polyamide Filler for Concrete Block
 - (1) Carboline Sanitile 600 Epoxy Block Filler: One (1) coat at 60 to 80 sq. ft./gal. Actual coverage may be less than the minimum stated depending on the porosity of the substrate to be coated.
 - b. Finish Coats: Epoxy Polyamide or Amine-Cure (Glossy):
 - (1) Carboline Carboguard 60: Two (2) coats at 6 to 8 mils DFT each coat for a minimum total finish thickness of 14 mils DFT.
- B. Class 2 Exposures – Exposed Concrete, Non-Immersion, Exterior
 - 1. Class 2 Exposures shall consist of all exterior exposed concrete surfaces of buildings and tanks. This applies to cast in place concrete, precast concrete, and masonry.
 - 2. Surface Preparation: As specified in Paragraph 3.02 herein and in addition the following:
 - a. Concrete surfaces shall be patched to produce a consistent, void free surface, eliminating all air pockets, pinholes, bug holes, tie holes, form fins and burrs, honeycombs and cracks. Patching compound shall be a sand/Portland cement mixture with a liquid, acrylic-polymer bonding additive equal to Master Builders Acryl-Set Liquid Polymer.

- b. After surface patching, remove remaining laitance or other debris by high pressure water blasting. Prior to application of coating system, surfaces shall be clean and dry.
 - 3. Class 2 Coating System
 - a. Prime Coat: Block Filler
 - (1) Carboline Sanitile 100 Block Filler
 - b. Finish Coats: Acrylic Emulsion
 - (1) Carboline Sanitile 155 Acrylic Emulsion: Two (2) coats at 3 mils DFT for each coat.
- C. Class 3 Exposures - Metals, Immersion, Non-Potable
 - 1. Class 3 exposures consist of exterior metal surfaces that are submerged in wastewater or exposed to splashing, mists and gases off wastewater treatment processes. Metals to be coated include ferrous and non-ferrous surfaces that are not already finish coated or hot dip galvanized. Such surfaces include the following:
 - a. Exterior surfaces of pumps, equipment, piping, and appurtenances located in lift station.
 - b. Miscellaneous ferrous and non-ferrous steel plates, shapes, hardware, etc. subject to contact with wastewater, or gases from liquids within the wet well.
 - 2. Surface Preparation: As specified in Paragraph 3.02 herein and in addition the following:
 - a. Bare metals or areas that were shop primed that have been damaged, shall be abrasive blast cleaned to SSPC-SP5, white metal blast cleaning standards.
 - b. Shop primed items, stored on-site for a prolonged period prior to coating, shall be prepared for coating following the coating manufacturer's recommendations prior to applying touch-up and subsequent coats. Surface preparation may include brush-off abrasive blasting or spot blasting to SSPC-SP5, white metal blast cleaning standards, for areas where the primer has been damaged and bare metal is showing.
 - c. Non-ferrous metals shall be degreased and cleaned in compliance with SSPC-SP1 for solvent cleaning. It is recommended to profile the surface by brush-blasting the surface in accordance with SSPC- SP16 guidelines to provide a more suitable anchor pattern.

3. Class 3 Coating System

- a. Prime Coat for Ferrous Metals: Two-part epoxy polyamide primer. Carboline Carboguard 60 Primer: One (1) coat, 4.0 mils DFT.
- b. Prime Coat for Non-Ferrous Metals: Two-part epoxy polyamide primer. Carboline CarboGuard 60: One (1) coat, 4.0 mils DFT.
- c. Finish Coats: Polyamide cured coal tar epoxy. Carboline Bitumastic 300M: Two (2) coats, 10 mils DFT per coat.
- d. Total minimum system finish coating thickness shall be 24 mils DFT for ferrous metals and 24.0 mils DFT for non-ferrous metals.

D. Class 4 Exposures - Metals, Non-Immersion, Interior/Exterior

- 1. Class 4 exposures consist of interior and exterior metal surfaces that do not come in direct contact with wastewater or corrosive atmospheres and shall include the following:
 - a. All existing and proposed above ground piping, fittings, valves, and metal electrical conduit.
 - b. Miscellaneous steel plates, shapes, hardware, etc.
 - c. Roof-mounted equipment, hatches, ductwork, ventilation fans, etc.
 - d. Galvanized steel surfaces.
 - e. Metal fuel piping and appurtenances associated with fuel storage and standby generator.
 - f. Other surfaces obviously requiring field coating or as specified to be field coated in Division 11 or in Section 09905: Piping and Equipment Identification Systems.
- 2. Surface Preparation: As specified in Paragraph 3.02 herein and, in addition, the following:
 - a. All bare metals or areas that were shop primed that have been damaged shall be abrasive blast cleaned to SSPC-SP6, commercial blast cleaning standards.
 - b. Shop primed items, stored on site for a prolonged period prior to coating, shall be prepared for coating following the coating manufacturer's recommendations prior to applying touch-up and subsequent coats. Surface preparation may include brush-off abrasive blasting or spot blasting to SSPC-SP6, commercial blast cleaning

standards, for areas where the primer has been damaged and bare metal is showing.

- c. Non-ferrous metals shall be degreased and cleaned in compliance with SSPC-SP1 for solvent cleaning. It is recommended to profile the surface by brush-blasting the surface in accordance with SSPC- SP16 guidelines to provide a more suitable anchor pattern

3. Class 4 Coating System

- a. Prime Coat for Ferrous Metals: Two-part epoxy polyamide primer. Carboline Carboguard 60 Primer: One (1) coat, 3 mils DFT.
- b. Prime Coat for Non-Ferrous Metals: Zinc phosphate acrylic primer. Carboline Galoseal WB: One (1) coat, 0.5 mils DFT.
- c. Intermediate Coat: Two component cross-linked epoxy. Carboline Carboguard 60: One (1) coat, 4 mils DFT.
- d. Finish Coats: Single component, water-borne acrylic topcoat. Carboline Sanitile 155: Two (2) coats, 2 mils DFT per coat.
- e. Total minimum system finish coating thickness shall be 12 mils DFT for ferrous metals and 8.5 mils DFT for non-ferrous metals.

E. Class 5 Exposures - Plastic Piping, Valves, Fittings, and Conduit

- 1. Class 5 exposures consist of PVC or fiberglass piping or electrical systems requiring color coding, and for protection of exposed, exterior plastic components from the elements, and shall include the following:
 - a. PVC and fiberglass piping, fittings, valves, and electrical conduits requiring color coding in accordance with Section 09905: Piping and Equipment Identification System.
 - b. Exposed exterior plastic piping, valves, and fitting components subject to UV degradation and weathering by the elements.
- 2. Surface Preparation: As specified in Paragraph 3.02 herein, including cleaning and washing with detergent to remove all dirt and foreign material, and light surface abrasion using medium grade sandpaper. Remove dust, dirt and debris with clean rags prior to coating.
- 3. Class 5 Coating System:
 - a. Primer Coat: Single component, water-borne acrylic primer. Sanitile 120: One (1) coat, 1 mils DFT.
 - b. Finish Coats: Single component, water-borne acrylic topcoat.

Carboline Sanitile 155: Two (2) coats, 3 mils DFT per coat.

- c. Total minimum system finish coating thickness shall be 7.0 mils DFT.

F. Class 6 Exposures - Aluminum

1. Class 6 exposures consist of aluminum surfaces embedded or in contact with concrete, mortar or plaster, or aluminum in contact with dissimilar metals which may cause corrosion due to electrolysis, and shall include the following:
 - a. Aluminum surfaces in contact with concrete, mortar or plaster, such as slide gate frames, hatch cover frames, stair stringers, portions of grating and frames, floor plate and frames, etc.
 - b. Aluminum surfaces in contact with dissimilar metals which may cause corrosion due to electrolysis.
2. Surface Preparation: As specified in Paragraph 3.02 herein, including solvent cleaning in accordance with SSPC-SP1 standards for solvent cleaning. It is recommended to profile the surface by brush-blasting the surface in accordance with SSPC-13 guidelines to provide a more suitable anchor pattern
3. Class 6 Coating System:
 - a. Prime Coat: Two-part epoxy polyamide primer.
Carboline CarboGuard 60: One (1) coat, 4.0 mils DFT.
 - b. Finish Coat: Polyamide cured coal tar epoxy.
Carboline Bitumastic 300 M: Two (2) coats, 10 mils DFT per coat, color: Black.
 - c. Total minimum system finish coating thickness shall be 24.0 mils DFT.

G. Class 7 Exposures – Concrete Floors in Building

1. Class 7 exposures shall include the concrete floor in all levels of the lift station buildings.
2. Surface Preparation: Trowel finish and other preparation in accordance with the paint manufacturer's recommendations.
3. Class 7 Coating System:
 - a. Prime Coat: Carboline Carboguard 890 (thinned): One (1) coat, 6.0 MDFT.
 - b. Finish Coat: Carboline Carboguard 890: Two (2) coats, 8.0 MDFT each, each coat shall include non-skid aggregate

- c. Total minimum system finish coating thickness shall be 22 DFT.
- H. Class 8 Exposures - Buried Exterior Concrete Surfaces
 - 1. Class 8 exposures consist of all exterior below grade surfaces for precast concrete structures and all exterior below grade concrete or masonry surfaces for building stemwalls.
 - a. Exterior below grade surfaces of precast and/or cast-in-place concrete wet wells, sanitary manholes, and vaults.
 - 2. Surface Preparation: Same as required for Class 2 exposure surface preparation specified in Paragraph 2.02.B.2 above.
 - 3. Class 8 Coating System
 - a. Prime Coat: Polyamide cured coal tar epoxy thinned 33 percent by volume.
Kop Coat Bitumastic No. 300-M: One (1) coat, 4 mils DFT.
 - b. Finish Coats: Polyamide cured coal tar epoxy.
Kop Coat Bitumastic No. 300-M: Two (2) coats, 10 mils DFT per coat.
 - c. Total minimum system finish coating thickness shall be 24 mils DFT.
- I. Class 9 Exposures - Woodwork and Hardboard
 - 1. Class 9 exposures consist of interior/exterior new wood surfaces including roofing components.
 - 2. Surface Preparation.
 - a. Clean and dry.
 - b. Sand rough areas.
 - 3. Class 9 Coating System.
 - a. Primer-Alkyd wood primer - Tnemec Series 36 Undercoater applied at 2.0-3.5 mils DFT.
 - b. Topcoats: SG Acrylic - Tnemec Series 7 Tneme-Cryl SG applied in two coats at 2.0-3.0- mils DFT per coat.
 - c. Minimum DFT for the three coat system is 7.5 Mils.

PART 3 - EXECUTION

3.01 Shop Painting

- A. Surface Preparation - All ferrous metal to be primed in the shop shall have all rust, dust and scale, as well as all other foreign substances, removed by sandblasting in accordance with SSPC-SP5, respectively. Cleaned metal shall be primed or pretreated immediately after cleaning to prevent new rusting. Under no circumstances will cleaned metal be allowed to sit overnight before priming, or pretreatment and priming. All nonferrous metals shall be solvent cleaned prior to the application of primer. In addition, galvanized surfaces which are to be topcoated shall first be degreased then primed.
- B. Materials Preparation
 - 1. Mix and prepare painting materials in strict accordance with manufacturer's recommendations and directions, stirring materials before and during application to maintain a mixture of uniform density, free of film, dirt and other foreign materials.
 - 2. No thinners shall be used except those specifically mentioned and only in such quantity as directed by the manufacturer in his instructions. If thinning is used, sufficient additional coats shall be applied to assure the required dry film thickness is achieved. The manufacturer's recommended thinner or clean-up solvent shall be used for all clean-up. Application by brush, spray, airless spray or roller shall be as recommended by the manufacturer for optimum performance and appearance.
- C. Applications
 - 1. All painting shall be done by skilled and experienced craftsmen and shall be of highest quality workmanship. Coating systems shall be as specified herein.
 - 2. Apply paint in accordance with the manufacturer's directions. Use applicators and techniques best suited for the type of material being applied.
 - 3. All paint and coatings materials shall be stored under cover and at a temperature within 10°F of the anticipated application temperature and at least 5°F above the dew point.
 - 4. Apply additional coats when undercoats, stains, or other conditions show through the final coat of paint, until the paint film is of uniform finish, color, and appearance.
 - 5. Paint shall be applied in a neat manner with finished surfaces free of runs, sags, ridges, laps, and brush marks. Each coat shall be applied in a manner that will produce an even film of uniform and proper thickness.
 - 6. Paint back sides of access panels and removable or hinged covers to match the exposed surfaces.
 - 7. Equipment manufacturer or supplier shall provide touch-up paint for items with shop applied finish coats.

8. Where specified in the individual Sections, primer coat(s) shall be applied in the shop by the equipment manufacturer. The shop coats shall be as specified and shall be compatible with the field coat or coats.
- D. Certification: The Contractor shall obtain from the equipment manufacturer or supplier, prior to shipment of equipment, a written certification that surface preparation, coating brand, material, DFT, and application method complied with this Section.

3.02 Surface Preparation

- A. All dirt, rust, scale, splinters, loose particles, disintegrated paint, grease, oil, and other deleterious substances shall be removed from all surfaces which are to be coated.
- B. Hardware, hardware accessories, machined surfaces, plates, lighting fixtures, and similar items and surfaces not to be painted which are in contact with or near surfaces to be painted shall be removed, masked, or otherwise protected prior to surface preparation and painting operations. Refer to Paragraph 3.09B.
- C. Before commencing work, the painter must make certain that surfaces to be covered are in proper condition and must obtain Engineer's approval to proceed. Should the painter find such surfaces impossible of acceptance, he shall report such fact to the Engineer. The application of paint shall be held as an acceptance of the surfaces and working conditions and the painter will be held responsible for the results reasonably expected from the materials and processes specified.
- D. Program the cleaning and painting so contaminants from the cleaning process will not fall onto wet, newly-painted surfaces.
- E. Ferrous Metal Surfaces
 1. Remove any oil or grease from surfaces to be coated with clean rags soaked in toluol or other solvent recommended by coating manufacturer in accordance with SSPC specifications. Any chemical contamination shall be eliminated by means of neutralization or flushing or both prior to additional surface preparation.
 2. All sharp edges and welds shall be ground smooth to a rounder contour, all weld splatter shall be removed, and all pits and dents shall be filled, and all imperfections shall be corrected prior to surface preparation.
 3. Surfaces shall be clean and dry. Remove dust and dirt by blowing off the surface with high pressure air or wiping clean with dry rags. Oil, grease and protective mill coatings shall be removed by solvent cleaning in accordance with SSPC-SPI.
 4. White rust should be removed by hand or power brushing. Care should be taken not to damage or remove the galvanizing. Rust should be removed from

old galvanized steel by Hand or Power Tool Cleaning in accordance with SSPC-SP2 or SP3.

F. Concrete Surfaces

1. All efflorescence, laitance, chalk, dust, dirt, oils, grease, concrete curing agents, form release agents, sealers, old coatings and other chemical contaminants shall be removed either by steam cleaning with detergent, by scrubbing with a hot trisodium phosphate solution consisting of 2 pounds of trisodium phosphate to each gallon of hot water (160°F), or by high pressure water blasting (3,000 psi or higher). Multiple cleaning operations may be required to remove all contaminants. Repeat the cleaning operation until the contamination is removed and flush the area with clean water to remove residual cleaning solution. Allow to dry thoroughly before coating.
2. All concrete surfaces to be coated shall be clean and dry. "Dry" is defined for new concrete as free of moisture and fully cured which is a minimum of 30 days at 75°F and 50 percent relative humidity or some equivalent cure time at other conditions (7 days minimum for stucco). Moisture content of concrete shall be determined by using both of the following methods.
 - a. The presence of moisture shall be checked by taping a one-foot square piece of 20 mil thick minimum plastic film on the surface. Pieces of test plastic film should be placed at various locations that are likely to be slow curing, such as below grade, low spots in floors, inside corners and lower wall areas. The plastic film should be carefully sealed with tape to prevent the escape of any moisture or vapor that would be trapped behind the film. The film should be left in place overnight or longer to allow sufficient time for moisture migration. After 16 hours minimum remove and examine the backside for moisture condensation and inspect the concrete surface for darkened areas. The source of the moisture, if present, shall be located, and the cause corrected prior to coating.
 - b. The presence of moisture shall also be determined with a moisture detection device such as a Delmhorst Model DLM2E. Moisture determined by this method shall be less than 14 percent moisture content before coating operations shall be allowed to proceed.
3. Old paint and unremoved tar stains shall be solvent cleaned with naphtha, trichloroethylene, or perchloroethylene. Proper safety precautions shall be observed if this step is necessary. The surface shall be flushed with fresh water and dried.
4. Do not use form oils incompatible with coating, concrete curing agents, or concrete hardeners on concrete surfaces to be coated.
5. Concrete and/or cinder block walls to receive a coating shall be air-blasted with 100 psi clean, dry, oil-free air to remove dust, etc., and wire brushed to remove all loose and/or weak mortar.

G. Galvanized Steel and Non-Ferrous Metal

1. Galvanized steel and aluminum will only be coated when so specified.
2. Surfaces shall be clean and dry. Remove dust and dirt by blowing off the surface with high pressure air or wiping clean with dry rags. Oil, grease and protective mill coatings shall be removed by solvent cleaning in accordance with SSPC-SP1.
3. White rust should be removed from galvanized steel or aluminum by hand or power brushing. Care should be taken not to damage or remove the galvanizing. Rust should be removed from old galvanized steel by Hand or Power Tool Cleaning in accordance with SSPC-SP2 or SP3.
4. Other surface preparation as outlined in the coating manufacturer's latest written application instructions shall be observed for more demanding exposures.

H. Stainless Steel

1. Stainless steel will only be coated when so specified, or when it is adjacent to areas to be coated such as piping supports, anchor bolts or flange bolts.
2. Stainless steel requires only solvent cleaning prior to coating using any one of the methods in SSPC-SP1. Only solvents and cleaning solutions containing less than 200 ppm of halogens should be used to prevent stress corrosion cracking.
3. Stainless steel may be whip-blasted to provide a surface profile to increase the mechanical bond of the coating system. The height of the profile and the texture required shall be defined for the operator and as a standard for the acceptance of the work. Pictorial standards for the surface cleanliness of carbon steel are not applicable to stainless steel, since there are no corrosion products or mill scale to remove from the surface.
4. Abrasive blast cleaning procedures outlined by Steel Structures Painting Council may also be used for stainless steel. Only very hard silica sand or other abrasive media shall be used for a fast cutting action and to obtain a sharp angular profile.

I. PVC or Other Plastic Piping or Ductwork

1. Solvent clean.
2. If recommended by manufacturer, lightly abrade surface with medium grade sandpaper. Remove dust by wiping with clean rags.

J. Wood Surfaces: Wood should be clean and dry. Remove surface deposits of sap or

pitch by scraping and wiping clean with rags dampened with mineral spirits or VM & P Naphtha. Seal knots and pitch pockets with shellac reduced with equal parts of shellac thinner (denatured alcohol) before sandpaper and finishing with fine grit and remove sanding dust. After the prime coat is dry, fill cracks and holes with putty or spackling compound. When filler is hard, sand flush with the surface using fine grit sandpaper. Sand lightly between coats with fine grit, open-coated sandpaper

3.03 Materials Preparation

- A. Mix and prepare painting materials in strict accordance with manufacturer's recommendations and directions, stirring materials before and during application to maintain a mixture of uniform density, free of film, dirt, and other foreign materials.
- B. Except where otherwise specified, thinning shall be done only if necessary for the workability of the coating material and then, only in accordance with the coating manufacturer's most recent printed application instructions. Use only thinner provided by coating manufacturer. If thinning is used, sufficient additional coats shall be applied to assure the required dry film thickness is achieved. The manufacturer's recommended thinner or clean-up solvent shall be used for all clean-up. Application by brush, spray, airless spray or roller shall be as recommended by the manufacturer for optimum performance and appearance.

3.04 Application

- A. Paint all exposed surfaces in rooms scheduled for painting whether or not colors are designated in schedules, except where the natural finish of material is obviously intended and specifically noted as a surface that will not be painted. Where items or surfaces are not specifically mentioned, paint these the same as adjacent similar materials or areas. If color of finish is not designated, the Engineer will select these from standard colors available for the materials systems as specified.
- B. Color Selection
 - 1. Colors for Multi-Coat Systems: Each coat shall be applied in a different color or shade from the preceding coat to aid in determining the uniformity and coverage of the coating. The finish coat color shall be selected by the Owner or Engineer. When a white finish coat is specified, the last two (2) coats shall be white.
 - 2. Color Coding Piping: All exposed piping shall be identified as specified in Section 09905: Piping and Equipment Identification System. Pipe identification system shall include color coding or banding, legends, and arrows.
- C. All painting shall be done by skilled and experienced craftsmen and shall be of highest quality workmanship.
- D. Apply paint in accordance with the manufacturer's directions. Use applicators and techniques best suited for the type of material being applied. All equipment shall be maintained in good working order and shall be comparable to that described in the

coating manufacturer's most recent application instructions. It shall be thoroughly cleaned and inspected daily. Worn spray nozzles, tips, etc., shall be replaced regularly. Effective oil and water separators shall be used and serviced on all air lines.

- E. All paints and coating materials shall be stored under cover and at a temperature within 10°F of the anticipated application temperature and at least 5°F above the dew point.
- F. Apply additional coats when undercoats, stains, or other conditions show through the final coat of paint, until the paint film is of uniform finish, color, and appearance.
- G. Paint shall be applied in a neat manner with finished surfaces free of runs, sags, ridges, laps, and brush marks. Each coat shall be applied in a manner that will produce an even film of uniform and proper thickness. Allow each coat to dry thoroughly before applying the next coat following manufacturer's recommendations taking into account temperature and relative humidity.
- H. All interior surfaces of structures shall be finish coated prior to installation of equipment, conduit, and other exposed items. Paint back sides of access panels and removable or hinged covers to match the exposed surfaces.
- I. Finish exterior doors on tops, bottoms, and side edges the same as the exterior faces, unless otherwise indicated.
- J. Sand lightly between each succeeding enamel or varnish coat.
- K. Omit the field primer on metal surfaces which have been shop-primed and touch-up painted, unless otherwise specified.
- L. The prime and intermediate coats as specified for the various coating systems may be applied in the shop by the manufacturer. The shop coats shall be of the type specified and shall be compatible with the field coating. Items such as pumps, motors, equipment, electrical panels, etc. shall be given at least one touch-up coat with the intermediate coating material and one (1) complete finish coat in the field.

3.05 Application Requirements

A. Environmental Requirements

- 1. Comply with manufacturer's recommendations as to environmental conditions under which coatings and coating systems can be applied.
 - a. The conditions below shall be adhered to even if manufacturer's recommendations are less stringent. If manufacturer's recommendations are more stringent, they shall apply.
 - b. No coatings shall be applied when the air, surface, and material temperature is below 55°F or above 95°F for 24 hours prior to and 24 hours after coating application. Surface temperature shall be at least

5°F above the dew point for 24 hours prior to and 24 hours after coating application. The dewpoint shall be determined by use of a sling psychrometer in conjunction with U.S. Weather Bureau psychometric tables. Do not apply coatings when the relative humidity exceeds 85 percent or to damp or wet surfaces, unless otherwise permitted by the coating manufacturer's printed instructions. No painting shall be done when the surfaces may become damaged by rain, fog or condensation or when it is anticipated that these conditions will prevail during the drying period, unless suitable enclosures to protect the surface are used. Where heat is necessary, it shall be supplied by the painting applicator and shall be of such type that it will maintain an air and coated surface temperature of 55°F minimum prior to and after the coating application as described above, and 90°F minimum during the cure stage if hot air forced curing is recommended by the coating manufacturer for special coatings. Further, this heater shall be of such type as not to contaminate the surface area to be or being coated with combustion products. The Contractor shall supply utilities to run electric or gas heaters. Any surface coating damaged by moisture or rain shall be removed and redone as directed by the Owner or Engineer.

2. Do not apply finish in areas where dust is being or will be generated during application through full cure.
 3. All exterior painting shall be done only in dry weather.
 4. Spray application shall occur only when wind velocities, including gusts, are less than 10 miles per hour. All materials, equipment, etc. in the vicinity of spray application shall be protected from overspray.
- B. Application of materials shall be done only on properly prepared surfaces as herein specified. Between any two coats of material, unless specifically covered in the coating manufacturer's most recent printed application instructions, if more than one (1) week passes between subsequent coats, the coating manufacturer shall be contacted for his recommended preparation of the surface prior to application of the next coat. This preparation might include brush-off blasting, steam cleaning, or solvent wiping (with an indicated solvent) and shall be specified in writing by the material supplier and followed by the applicator. Any surface coating damaged by moisture or rain shall be removed and redone as directed by the Owner or Engineer.
- C. In no case shall paint be applied to surfaces which show a moisture content greater than 14 percent. The presence of moisture shall be determined prior to coating by testing with a moisture detection device such as a Delmhorst Model DLM2E.

3.06 Minimum Coating Thickness

- A. Coating thickness shall meet or exceed the specified minimum dry film thickness (DFT) in all areas. The average coating thickness as determined by multiple representative DFT measurements shall meet or exceed the mid-point of the specified

DFT range. If the measured DFT is below this value, the surface shall be recoated with at least the minimum DFT until the total DFT meets or exceeds the mid-point DFT.

- B. Coverage rates are theoretical as calculated by the coating manufacturer and are, therefore, the maximum allowable.
- C. Apply a prime coat to material which is required to be painted or finished, and which has not been prime coated by others.
- D. On masonry, application rates will vary according to surface texture; however, in no case shall the manufacturer's stated coverage rate be exceeded. On porous surfaces, it shall be the painter's responsibility to achieve a protective and decorative finish either by decreasing the coverage rate or by applying additional coats of paint.
- E. Recoat primed and sealed walls and ceilings where there is evidence of suction spots or unsealed areas in first coat, to assure a finish coat with no burn-through or other defects due to insufficient sealing.

3.07 Finishes

- A. Pigmented (Opaque) Finishes: Completely cover to provide an opaque, smooth surface of uniform finish, color, appearance, and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections will not be acceptable.
- B. Complete Work: Match approved samples for color, texture, and coverage. Remove, refinish, or repaint work not in compliance with specific requirements.

3.08 Field Quality Control

- A. The Contractor shall request acceptance of each coat by the Owner's representative before applying the next coat; and the Contractor shall provide the necessary properly calibrated gauges. All nonferrous surfaces shall be checked for number of coats and thickness by use of a Tooke gauge. All ferrous surfaces shall be checked for film thickness by use of an Elcometer or Micro-Test magnetic dry film gauge properly calibrated. In addition, submerged tank linings and metals shall be tested for freedom from holidays and pinholes by use of a Tinker-Rasor or K-D Bird Dog Holiday Detector. All defects shall be corrected to the satisfaction of the Owner.

3.09 Protection

- A. All other surfaces shall be protected while painting.
- B. Protection of furniture and other movable objects, equipment, fittings, and accessories shall be provided throughout the painting operation. Remove all electric plates, surface hardware, etc., before painting; protect and replace when completed. Mask all machinery nameplates and all machined parts not to receive paint. Lay drop cloths in all areas where painting is being done to adequately protect flooring and other work from all damage.

3.10 Cleaning

- A. The Contractor shall perform the work under this Section while keeping the premises free from accumulation of dust, debris, and rubbish and shall remove all scaffolding, paint cloths, paint, empty paint containers, and brushes from buildings and the project site when completed.
- B. Cleaning: All paint brushed, splattered, spilled, or splashed on any surface not specified to be painted shall be removed.
- C. The Contractor shall insure that all glass throughout the facility is cleaned of dirt and paint before he leaves the job site. Further, the Contractor shall insure that all glass is thoroughly washed and polished.
- D. Upon completion of the project, the job site shall be left neat and clean.

3.11 Extra Stock

- A. Paint To Be Supplied To Owner: Upon completion of painting work, the Owner shall be furnished at no additional cost, unopened containers providing a minimum of one (1) gallon of each type and color of finish paint for touching up. Multi- component coatings shall have each component supplied in separate containers boxed together. Paint container labels shall be complete with manufacturer's name, generic type, number, color, and location where used.

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**SECTION 09905
PIPING, VALVE, AND EQUIPMENT IDENTIFICATION
SYSTEM**

PART 1 - GENERAL

1.01 Description

- A. Scope of Work: The work included under this Section consists of providing an identification system for piping systems and related equipment.
- B. Related Work Described Elsewhere:
 - 1. Submittals: Section 01300.
 - 2. Painting: Section 09900.
 - 3. Equipment: Division 11
 - 4. Mechanical: Division 15.

1.02 Quality Assurance

- A. Standards: ANSI Standard A13.1, Scheme for the Identification of Piping Systems.

1.03 Submittals

- A. Submit manufacturer's descriptive literature, illustrations, specifications, and other pertinent data in accordance with Section 01300.
- B. Schedules:
 - 1. Provide a typewritten list of all tagged valves giving tag color, shape, letter code and number, the valve size, type, use, and general location.
 - 2. Provide a complete list of materials to be furnished and surfaces on which they will be used.
- C. Samples:
 - 1. Provide a sample of each type valve tag supplied.
 - 2. Provide a sample of each type of identification tape supplied.
 - 3. Provide manufacturer's color charts for color selection by Engineer.

1.04 Products Delivery, Storage, and Handling

- A. Delivery Of Materials: Except for locally mixed custom colors, deliver sealed containers with labels legible and intact.

B. Storage of Materials:

1. Store only acceptable project materials on project site.
2. Store in suitable location.
3. Restrict storage to paint materials and related equipment.
4. Comply with health and fire regulations.

1.05 Job Conditions

A. Environmental Requirements:

1. Comply with manufacturer's recommendations as to environmental conditions under which coatings and coating systems can be applied.
2. Do not apply finish in areas where dust is being generated.

B. Protection: Cover or otherwise protect finished work of other trades and surfaces not to be painted.

PART 2 - PRODUCTS

2.01 Materials

A. Materials for painting shall conform to requirements of Section 09900: Painting.

B. Materials selected for coating systems for each type surface shall be the product of a single manufacturer.

C. Aboveground piping shall be identified by self-adhesive pipe markers equal to those manufactured by W. H. Brady Company.

1. Markers shall be of wording and color as shown in Table 09905.

2. Lettering shall be:

- a) 2 1/4-inches high for pipes 3 inches diameter and larger.
- b) 1 1/8-inches high for pipes less than 3 inches diameter.

3. Flow arrows shall be:

- a) 2 1/4-inches by 6 inches for pipes 3 inches diameter and larger.
- b) 1 1/8-inches by 3 inches for pipes less than 3 inches diameter.

D. Buried piping shall be identified by identification tape installed over the centerline of

the pipelines.

1. Identification Tape for Steel or Iron Pipe: Identification tape shall be manufactured of inert polyethylene film so as to be highly resistant to alkalies, acids, or other destructive agents found in soil, and shall have a minimum thickness of 4 mils. Tape width shall be 6 inches and shall have background color specified below, imprinted with black letters. Imprint shall be as specified below and shall repeat itself a minimum of once every 2 feet for entire length of tape. Tape shall be Terra Tape Standard 250, or approved equal.
2. Identification Tape for Plastic or Non-Magnetic Pipe: Identification tape shall be manufactured of reinforced polyethylene film with a minimum overall thickness of 4 mils and shall have a 0.35 mil thick magnetic metallic foil core. The tape shall be highly resistant to alkalies, acids, and other destructive agents found in soil. Tape width shall be 3 inches and shall have background color specified below, imprinted with black letters. Imprint shall be as specified below and shall repeat itself a minimum of once every 2 feet for entire length of tape. Tape shall be TerraTape Sentry Line 1350, or approved equal.

3. Tape background colors and imprints shall be as follows:

<u>Imprint</u>	<u>Background Color</u>
"Caution Sewer Line Buried Below"	Green
"Caution Electrical Line Buried Below:	Red
"Caution Water Line Buried Below"	Blue
"Caution Telephone Line Buried Below"	Orange

4. Identification tape shall be "Terra Tape" as manufactured by Reef Industries, Inc., Houston, TX; Allen Systems, Inc., Wheaton, IL; or approved equal.
5. In addition to the metallic identification tape specified, buried metallic pipe used for reclaimed water, effluent, and non-potable water service shall be painted with three (3) continuous stripes in order to identify service. Each stripe shall be 2-inches wide and the paint color shall match the color of the corresponding identification tape. Paint shall be an acrylic or epoxy paint that is suitable for the intended service. One (1) stripe shall be located on the top of the pipe and the remaining stripes shall be on each side of the pipe.

E. Aboveground Valve Identification: A coded and numbered tag attached with brass chain and/or brass "S" hooks shall be provided on all valves.

1. Tag Types: Tags for valves on pipe shall be brass or anodized aluminum. Colors for aluminum tags shall, where possible, match the color code of the pipe line on which it is installed. Square tags shall be used to indicate normally closed valves and round tags shall indicate normally open valves.

2. Coding: In addition to the color coding, each tag shall be stamped or engraved with wording or abbreviations to indicate the valve service and number. All color and letter coding shall be approved by the Engineer. Valve service shall either be as listed in Table 09905, or by equipment abbreviation if associated with a particular piece of equipment. Valve numbering, if required, shall be as approved by the Engineer and/or Owner.
- F. Buried Valve Identification: Each buried valve shall be identified by providing a concrete pad or post and bronze disc as shown on the Drawings.

PART 3 - EXECUTION

3.01 Color Coding for Pipes and Equipment

- A. Piping color codes, and code labels for pipe identification shall conform to Table 09905.
- B. General Notes and Guidelines:
 1. Pipelines, equipment, or other items which are not listed here shall be assigned a color by the Owner and shall be treated as an integral part of the Contract.
 2. Color coding shall consist of color code painting and identification of all exposed conduits, through lines and pipelines for the transport of gases, liquids, or semi-liquids including all accessories such as valves, insulated pipe coverings, fittings, junction boxes, bus bars, connectors and any operating accessories which are integral to a whole functional mechanical pipe and electrical conduit system.
 3. All moving parts, drive assemblies, and covers for moving parts which are potential hazards shall be Safety Orange.
 4. All safety equipment shall be painted in accordance with OSHA Standards.
 5. All inline equipment and appurtenances not assigned another color shall be painted the same base color as the piping. The pipe system shall be painted with the pipe color up to, but not including, the flanges attached to pumps and mechanical equipment assigned another color.
 6. All pipe hangers and pipe supports shall be painted, unless specified otherwise due to material of construction.
- C. All pipe hangers, pipe supports, and accessories shall be painted to match their piping. The system shall be painted up to, but not including, the face of flanges or the flexible conduit connected to electrical equipment. Structural members used solely for pipe hangers or supports shall be painted to match their piping. Where the contact of dissimilar metals may cause electrolysis and where aluminum will contact

concrete, mortar or plaster, the contact surface of the metals shall be coated in accordance with Section 09900.

- D. All systems which are an integral part of the equipment, that is originating from the equipment and returning to the same piece of equipment, shall be painted between and up to, but not including, the face of flanges or connections on the equipment.
- E. All insulated surfaces, unless otherwise specified, shall be given one (1) coat of sizing, one (1) prime coat, and one (1) finish coat.
- F. System code lettering and arrows shall conform to the requirements of ANSI A13.1 marked on piping as follows:

- 1. Legends shall be of the following color for the respective pipe color:

<u>Key to Classification of Predominant Colors For Piping Specified</u>		<u>Color of Letters, if not Otherwise</u>
(F) Fire Protection:	Red	White
(D) Dangerous:	Yellow Orange	Black Black
(S) Safe:	Green White Black Light Grey Dark Grey Aluminum	Black Black White Black White Black
(P) Protective:	Blue	White

- 2. All piping containing or transporting corrosive or hazardous chemicals shall be identified with labels every 10 feet and with at least two (2) labels in each room. Otherwise, markers shall be placed no more than 20 feet apart with at least one (1) marker on every straight run and additional markers at turns and where pipes pass through walls.
- 3. An arrow indicating direction of flow shall be placed adjacent to each marker.

3.02 Fabricated Equipment

- A. Unless otherwise indicated or specifically approved, all fabricated equipment shall be shop primed and finished. See Section 09900 - Painting.
- B. The Contractor shall be responsible for and take whatever steps are necessary to

properly protect the shop prime and finish coats against damage.

- C. Where specified in other Sections of these Specifications for mechanical equipment, the Contractor shall apply field coats of paint in accordance with Section 09900. If the shop finish coating is unsatisfactory due to poor adhesion or other problems with primer or finish coats, coatings shall be removed and replaced by sandblasting, priming and finishing in accordance with Section 09900 and this Section.
- D. Wherever fabricated equipment is required to be sandblasted, the Contractor shall protect all motors, drives, bearings, gears, etc., from the entry of grit. Any equipment found to contain grit shall be promptly and thoroughly cleaned. Equipment contaminated by grit in critical areas, such as bearings, gears, seals, etc., shall be replaced at no cost to the Owner.

3.03 Installation of Identification Tape

- A. Identification tape shall be installed for all buried pipelines and conduits in accordance with the manufacturer's installation instructions and as specified herein.
- B. Identification tape for piping shall be installed at two (2) locations:
 - 1. One (1) foot below finished grade along centerline of pipe, and;
 - 2. Directly on top of the pipe.

TABLE 09905

COLOR CODES AND ABBREVIATIONS

Service	Conduit, Pipe, and Valve Color Code	Letter and Flow Arrow Color
Gravity Drain	Brown	N/A
Sanitary Sewer	Green	N/A
Force Main	Green	Black
Potable Water	Blue	Black
Reuse Water	Purple	Black
Diesel Fuel	OSHA Red	White

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SECTION 09910
HIGH-PERFORMANCE EPOXY WET WELL COATINGS

PART 1 GENERAL

1.01 Summary

- A. The work shall include the complete rehabilitation of the concrete sanitary wet wells including an inspection of each structure for active inflow, infiltration and exfiltration; mitigating any discovered leakage; surface preparation; structural repairs; application of epoxy cementitious mortar to provide a continuous, void free film; top coat(s) of 100% solids epoxy including all quality control testing.
- B. Surface Preparation: The Contractor shall perform SSPC-SP 13/NACE No. 6, Severe Service and shall produce a minimum surface profile of a CSP 5 as noted in SSPC-SP13/NACE No. 6 and ICRI Guideline 03732. All blasting and removed material shall be captured, removed and disposed of properly.
- C. Repairs: Cementitious mortar with fiberglass reinforcement shall be used for structural repairs or surface repairs exceeding ¼". Minimum repair mortar thickness shall be ¼" as required to re-establish the original surface plane.
- D. Resurfacing: Cementitious epoxy surfacing material shall be applied a minimum of 1/16" and a maximum of ¼" to provide a void free surface. Material must be compatible with the material for the liner.
- E. Chemical Resistant Liner: Contractor to apply a 100% solids, high build epoxy coating to provide chemical resistance to wastewater conditions.

1.02 References

- A. ASTM B117 – Operating Salt Spray (Fog) Apparatus
- B. ASTM D790 – Flexural Properties of Plastics
- C. ASTM D695- Compressive Properties of Plastics
- D. ASTM D638 – Tensile Properties of Plastics
- E. ASTM D2584 – Volatile Matter Content
- F. ASTM D2794 – Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact)
- G. ASTM C109 – Compressive Strength Hydraulic Cement Mortars
- H. ASTM D4541 – Pull-Off Strength of Coatings Using a Portable Adhesion Tester
- I. ASTM D4414 – Standard Practice for Measurement of Wet Film Thickness of Organic Coatings by Notched Gages

- J. ASTM C267 – Chemical Resistance of Mortars, Grout and Monolithic Surfacing
- K. ASTM G62-14 – Standard Test Method for Holiday Detection

1.03 Submittals

- A. Product Data:
 - 1. Manufacturer's data sheets for the grout materials including manufacturer's installation instructions.
 - 2. Manufacturer's data sheets for the active leak material, surfacer and finish coating materials including manufacturer's installation instructions.
 - 3. Applicator's procedures for preparing the surface of the structure and installing the surfacer and finish coating system.
 - 4. Third party test results verifying the physical properties of the coating materials meet or exceed the requirements of these specifications.
 - 5. Documentation that the applicator of the coating has been trained and certified by the Manufacturer and meets the experience requirements of these specifications.
- B. Samples:
 - 1. Actual color samples available for coating system.
- C. Miscellaneous:
 - 1. One copy of manufacturer's Safety Data Sheets (SDS), for coating, to Engineer's field office for information. Contractor shall post copy of SDS on Site at all times coating is in progress.
 - 2. System Warranty.
- D. Submit in accordance with Section 01300 - Submittals.

1.04 Quality Assurance

- A. Manufacturer Qualifications:
 - 1. Manufacturer shall have a minimum three years experience providing epoxy based coatings.
 - 2. Manufacturer shall be a primary blender of epoxy product with proprietary formulations and capacity to provide field technical services as required.
- B. Applicator Qualifications:
 - 1. Application subcontractor shall be approved by the manufacturer.
 - 2. Lead person on site shall be approved by the manufacturer.

1.05 Delivery, Storage, and Handling

- A. Deliver product in manufacturer's original containers.
- B. Store product in warm dry condition.

- C. Replace product damaged by shipment, weather, or job conditions.

1.06 Project/Site Conditions

- A. Schedule pre-installation conference to review installation schedule, shut down and restricted access procedures. Include Owner's Representative and Contractor's Superintendent.
- B. Environmental Requirements:
 - 1. Dry-heat, de-humidify, and ventilate areas to obtain conditions recommended by coating manufacturer.
 - 2. Relative humidity conditions as specified by coating manufacturer shall be adhered to.
 - 3. No unprotected, unheated exterior coating shall be undertaken when cold, damp, foggy, or rainy weather appears probable.
 - 4. Maintain manufacturer's environmental requirements until coating is fully cured.
- C. Inspect surface preparation, application procedures, and review proposed dry film thickness at each installation location.
- D. Ambient installation temperature is recommended to be above 60°F. Contractor to verify and follow all manufacturer's requirements. Contractor and Owner's Representative shall measure the ambient temperature and humidity in the wet well each day prior to applying any coating.
- E. Assure ventilation of enclosed spaces and illumination is adequate for installation.
- F. Assure no personal property is within spray fly pattern during installation of spray components.
- G. Coating shall be tack free within 4 hours of application, and shall be cured prior to putting the wet well into service. The Contractor shall allot a minimum of 72 hours after the final application of the coating before the wet well is put into service.

1.07 Warranty

- A. Manufacturer shall warranty in writing the coating system against defects in material and workmanship for a period of 5 years.

PART 2 PRODUCTS

2.01 General

The coating system may be spray; roll; or brush-applied, 100% solids epoxy surfacing system for use in coating existing sanitary sewer structures. The following products have been approved for use on this project:

- A. Chemical Grouting of Active Leaks:
 - 1. Stop active leaks with patching material or chemical or cementitious grout.

2. Apply material in accordance with the manufacturer's recommendation.
- B. Structural Repair:
 1. Cementitious mortar with fiberglass reinforcement shall be used for structural repairs or surface repairs exceeding ¼". Minimum repair mortar thickness shall be ¼" as required to re-establish the original surface plane
- C. Surfacer Application: Surfacer material must be compatible with the epoxy liner material:
 1. Cementitious epoxy surfacing material shall be applied a minimum of 1/16" and a maximum of ¼" to provide a void free surface.
 2. Approved products:
 - a. MS-2 A by The Strong Company, Inc.
 - b. Mortarclad Series 218 by Tnemec Company
 - c. FS-707 by Induron Protective Coatings
 - d. Engineer approved equal
- D. Chemical Resistant Liner:
 1. 100% solids, high build epoxy coating to provide chemical resistance to wastewater conditions. Coating thickness shall be as recommended by the manufacturer with Engineer approval.
 2. Approved Products:
 - a. Raven 405 by Raven Lining Systems
 - b. Perma-Glaze Series G435 by Tnemec Company
 - c. Ceramasafe 90 by Induron Protective Coatings
 - d. Engineer approved equal.

2.01 Requirements

- A. In order to be considered as an equal, a product must have the following minimum physical characteristics as measured by the applicable ASTM standards referenced herein:

ASTM B 117	1 Year
ASTM D 2794	90 in/lbs, No Cracking
ASTM D 4541	900 psi. avg. 3 trials

PART 3 EXECUTION

3.01 Examination

- A. Examine the areas and conditions under which Work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Materials removed and replaced to correct defects due to Work placed on unsuitable surfaces shall be at Contractor's expense.

3.02 Surface Preparation

- A. Applicator shall inspect all surfaces specified to receive the surfacing system prior to surface preparation. Applicator shall promptly notify Owner of any noticeable disparity in the surfaces that may interfere with the proper preparation or application of the surfacing system.
- B. All concrete that is not sound or has been damaged by chemical exposure shall be restored to a sound concrete surface. All contaminants including all oils, grease, incompatible existing coatings, waxes, form release, curing compounds, efflorescence, sealers, salts, or other contaminants shall be removed, incidental to the project.
- C. Surfaces to receive protective coating shall be cleaned to produce a sound concrete surface with adequate profile and porosity to provide a strong bond between the surfacing system and the substrate. Surface preparation methods shall be based upon the conditions of the substrate and the requirements of the surfacing system to be applied, but as a minimum, shall be in accordance with the procedures listed below.
 - 1. Clean all surfaces with high pressure water to remove all loose or contaminated debris. Other equipment and methods may be required to remove all unsound material.
 - 2. When all loose, contaminated, and unsound debris has been removed, the surface shall be made free of voids, cracks and other imperfections using Cementitious mortar with fiberglass reinforcement.
 - 3. The surface shall receive SSPC-SP 7 Brush Off Blast to clean surface.
 - 4. Active water infiltration shall be stopped by using a cementitious water plug that is compatible and suitable for top coating with the specified surfacing system.
 - 5. If preinstallation inspection reveals infiltration (defined as visible and consistent movement of water) through the wall of the structure, a collapse in an area of the wall, a bench that needs to be rebuilt/repared, a necessity for sandblasting (if necessary after surface preparation as described in specification) or anything that will require more than typical preparation of the structure, the contractor will advise the Owner's Representative.
- D. Chemical Grout
 - 1. Chemical grout is to be used to stop the infiltration of ground water into the sewer or structure. Depending upon the nature of the infiltration, whether through non-moving cracks or joints or porous substrate, the type and formulation of the chemical grout will vary. However, they should meet the following requirements.
 - a. The liquid grout should react with or perform in the presence of water and upon curing shall prevent the passage of water. The cured material must withstand wet/dry cycles without degradation and re-expand to its original volume upon being subsequently wetted.
 - b. The cured material must be chemically stable and resistant to mild concentrations of acids, alkalis and organic found in normal domestic sewage. The cured material must not be biodegradable.
 - c. Cleanup must be done without use of flammable or hazardous chemicals and the residual materials must be easily removable from the sewer or structure.

2. Before construction activities begin, the Contractor shall submit the specifications for, installation techniques and experience with the various chemical grouts proposed for the types of repairs to be made. The Engineer must review these submittals before grout is purchased for the project.
3. Acceptable manufacturer:
 - a. AV-100 Chemical Grout by Avanti International or
 - b. Engineer approved equal.

E. Application of Surfacer

1. The interior surfacing system shall be applied to the walls, bench, support beams, lid, and invert of both sanitary sewer wet wells and to the specified surfaces of all other structures.
2. Apply the cementitious epoxy surfacing material a minimum of 1/16" and a maximum of 1/4" to provide a void free surface. The interior surfacing system shall be continuously bonded to all brick, mortar, concrete, chemical sealant, grout, pipe and other surfaces inside the structure.
3. The cured surfacing shall be monolithic with proper sealing connections to all unsurfaced areas and shall be placed and cured in conformance with the recommendations of the surfacing system manufacturer.
4. When cured, the system shall form a continuous, tightfitting, impermeable surfacing that is suitable for sewer system service and chemically resistant to any chemicals, bacteria or vapors normally found in domestic sewage.
5. The system shall effectively seal the interior surfaces of the wet well and prevent any penetration or leakage of groundwater infiltration.
6. The system shall be compatible with the thermal conditions of the existing sewer structure surfaces.
7. Application procedures shall conform to the recommendations of the interior surfacing system manufacturer, including material handling, mixing, and environmental controls during application, safety, and equipment.
8. The equipment shall be specially designated to accurately ratio and apply the specified materials and shall be regularly maintained and in proper working order.
9. The specified materials must be applied by an approved installer of the surfacing system.
10. The walls and bench and invert of the structure shall be lined with the surfacing system to provide a thickness based on the condition of the existing structure. The cured surfacing shall be monolithic with proper sealing connections to all unsurfaced areas and shall be placed and cured in accordance with the recommendations of the surfacing system manufacturer.

F. Application of Chemical Resistant Liner

1. The interior surfacing system shall be applied to the walls, bench, supports beams, lid, and invert of both wet wells and to the specified surfaces of all other structures.
2. Apply two coats of the 100% solids, high build epoxy coating to provide chemical resistance to wastewater conditions. Coating thickness shall be as recommended by the manufacturer with Engineer approval.

3. The cured liner shall be monolithic with proper sealing connections to all unsurfaced areas and shall be placed and cured in conformance with the recommendations of the surfacing system manufacturer.
4. When cured, the system shall form a continuous, tightfitting, impermeable surfacing that is suitable for sewer system service and chemically resistant to any chemicals, bacteria or vapors normally found in domestic sewage.
5. The system shall effectively seal the interior surfaces of the wet well and prevent any penetration or leakage of groundwater infiltration.
6. The system shall be compatible with the thermal conditions of the existing sewer structure surfaces.
7. Application procedures shall conform to the recommendations of the interior surfacing system manufacturer, including material handling, mixing, and environmental controls during application, safety, and equipment.
8. The equipment shall be specially designated to accurately ratio and apply the specified materials and shall be regularly maintained and in proper working order.
9. The specified materials must be applied by an approved installer of the liner system.
10. The walls, bench, support beams, lid, and invert of the structure shall be lined with the liner system to provide a thickness based on the condition of the existing structure. The cured surfacing shall be monolithic with proper sealing connections to all unsurfaced areas and shall be placed and cured in accordance with the recommendations of the surfacing system manufacturer.

3.04 Field Quality Control

- A. Components of coating may be color-coded. Assure that each subsequent coat completely hides prior coating.
- B. Perform dry film thickness tests as required.
- C. Maintain spray and other installation equipment in proper operating condition throughout installation.
- D. Provide reserve equipment as required.

3.05 Cleaning

- A. Clean spills and oversprays as they occur.
- B. Consult manufacturer's literature and SDS sheets for proper cleaning products and methods.

3.06 Protection

- A. Protect installed work until accepted by Owner.

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**SECTION 11208
SUBMERSIBLE WASTEWATER PUMPS**

PART 1 - GENERAL

1.01 Description

A. Scope of Work

1. Furnish all labor, materials, equipment and incidentals required and install, place in operation, and field test submersible pumps for Chokoloskee Lift Station.
2. The pumps and associated equipment covered under this Section include the following requirements:
 - Two submersible pumps and motors for each duplex pump station or three submersible pumps and motors for each triplex pump station.
3. The following accessories and associated equipment are to be provided by the pump supplier for each duplex/triplex pump station:
 - pump control panel
 - lifting cables and hooks
 - hatches and frames
 - electrical cables and cable hangers
 - level indicators/floats
 - mounting elbows, adapters and anchor bolts
 - seamless guide/slide rails with Type 316 stainless steel upper guide rail brackets
 - pump base plates
4. These Specifications are intended to give a general description of what is required, but do not cover all details which will vary in accordance with the requirements of the equipment as offered. It is, however, intended to cover the furnishing, the shop testing, the delivery and complete installation and field testing, of all materials, equipment and appurtenances for the complete pumping units as herein specified, whether specifically mentioned in these Specifications or not.
5. For all units there shall be furnished and installed all necessary and desirable accessory equipment and auxiliaries whether specifically mentioned in these Specifications or not, and as required for an installation incorporating the highest standard for this type of service including field testing of the entire installation and instructing the regular operating personnel in the care, operation and maintenance of all equipment.

1.02 Qualifications

- A. The pumps covered by these Specifications are intended to be standard pumping units of proven ability as manufactured by a manufacturer having a minimum of five (5) years experience in the production of such pumps. The pumps furnished shall be

designed, constructed and installed in accordance with the best practice and methods, and shall operate satisfactorily when installed. Pumps shall be manufactured in accordance with the Hydraulic Institute Standards.

- B. All equipment furnished under this Specification shall be new and unused, shall be the standard product of manufacturers having a successful record of manufacturing and servicing the equipment and systems specified herein for a minimum of five (5) years.
- C. The pumps shall be furnished complete with accessories required and shall be as manufactured by Xylem (Flygt) or approved equal.

1.03 Quality Assurance

- A. Unit Responsibility: All equipment including but not limited to the pumps, motors, control panel and level sensors, access hatch frames and covers (for wetwell and valve box), pump mounting elbows, guide rails, pump base plates, pump lifting cable, cable holder, and startup service shall be supplied by the pump supplier to insure unit responsibility.
- B. Factory Tests: The pump manufacturer shall perform the following tests on each pump before shipment from the factory:
 - 1. Megger the pump for insulation breaks or moisture.
 - 2. Prior to submergence, the pump shall be operated dry and be checked for correct rotation.
 - 3. Pump shall be operated for 30-minutes in a submerged condition.
 - 4. Pump shall be removed from test tank, meggered immediately for moisture, oil plugs removed for checking lower seal, inspection plug removed for checking of upper seal and possible water intrusion of stator housing.
 - 5. A written certified test report giving the above information shall be supplied with each pump at the time of shipment.
 - 6. All ends of pump cables shall be fitted with a rubber shrink fit boot to protect cable prior to electrical installation.
 - 7. The Contractor shall furnish and install equipment from a single manufacturer.

1.04 Submittals

- A. Submittals shall be submitted to the EOR and City for review and acceptance prior to construction in accordance with the General Conditions and specifications Section 013400 "Shop Drawings and Submittals."
- B. Certified pump test performance for:
 - 1. Flow, gpm
 - 2. Total Dynamic Head (TDH), feet
 - 3. NPSHr, feet
 - 4. Input Power and Shaft Power, horsepower
 - 5. Overall Efficiency and Pump Efficiency, %

- C. Layout drawings showing installation details with dimensions specific for this application.
- D. Shop Drawings for all associated equipment and accessories specified under this Section in accordance with Division 1 in sufficient detail to enable the CountyToho to determine compliance with all stated specification requirements.
- E. Operating Instructions: Operating and maintenance data shall be furnished to the CountyToho as provided in the General Conditions and Division 1. The instructions shall be prepared specifically for this installation and shall include all required cut sheets and operating and maintenance instructions for personnel unfamiliar with such equipment.
- F. Manufacturer's Certification
 - 1. After acceptance of pump Shop Drawings, factory performance test data will be submitted for approval on each pumping unit.
 - 2. Tests shall be in accordance with the standards of the Hydraulic Institute including head, capacity, brake horsepower and pump efficiency.
 - 3. A written certified test report shall be supplied with each pump at the time of shipment.
- G. Copies of all materials required to establish compliance with the Specifications shall be submitted in accordance with the provisions of the bidding documents. Submittals shall include at least the following:
 - 1. Shop and erection drawings showing all important details of construction, dimensions and anchor bolt locations.
 - 2. Descriptive literature, bulletins, and/or catalogs of the equipment.
 - 3. Data on the characteristics and performance of each pump. Data shall include guaranteed performance curves, based on actual shop tests of similar units, which show that they meet the specified requirements for head, capacity, efficiency, NPSH, submergence and horsepower. Curves shall be submitted on 8-1/2-inch by 11-inch sheets, at as large a scale as is practical. Curves shall be plotted from no flow at shut off head to pump capacity at minimum specified TDH. Catalog sheets showing a family of curves will not be acceptable.
 - 4. The total weight of the equipment including the weight of the single largest item.
 - 5. A complete total bill of materials of all equipment.
 - 6. A list of the manufacturer's spare parts to be supplied in accordance with Paragraph 1.05.
 - 7. All submittal data required by the General Conditions.
 - 8. Complete motor data including:
Nameplate

identification No-load
current
Full load current
Full load efficiency
Locked rotor
current
High potential test data
Bearing inspection report

- H. In the event that it is impossible to conform with certain details of the Specifications due to different manufacturing techniques, describe completely all nonconforming aspects.

1.05 Operating Instructions

- A. Operating and maintenance manuals shall be furnished. The manuals shall be prepared specifically for this installation and shall include all required cuts, drawings, equipment lists, descriptions, etc., that are required to instruct operating and maintenance personnel unfamiliar with such equipment. The number and special requirements shall be as specified in the bidding documents.
- B. A factory representative of all major component manufacturers, who has complete knowledge of proper operation and maintenance, shall be provided for one (1) 8- hour day to instruct representatives of the Owner and the Engineer on proper operation and maintenance. If there are difficulties in operation of the equipment due to the manufacturer's design or fabrication, additional service shall be provided at no cost to the Owner.

1.06 Tools and Spare Parts

- A. One (1) set of all special tools required for normal operation and maintenance shall be provided. All such tools shall be furnished in a suitable steel tool chest complete with lock and duplicate keys.
- B. Guaranteed Parts Stock Program: The pump supplier shall have a guaranteed parts stock program in the State of Florida.
- C. Required spare parts include all parts that normally require maintenance in the five (5) years after installation. Spare parts shall be properly bound and labeled for easy identification without opening the packaging and suitably protected for long-term storage. Spare parts shall be delivered to the Owner prior to pump station start-up.

1.07 Product Handling

- A. All parts shall be properly protected so that no damage or deterioration will occur during a prolonged delay from the time of shipment until installation is completed and the units and equipment are ready for operation.
- B. All equipment and parts must be properly protected against any damage during a prolonged period at the site.

- C. Factory assembled parts and components shall not be dismantled for shipment unless permission is received in writing from the Engineer.
- D. Finished surfaces of all exposed pump openings shall be protected by wooden blanks, strongly built and securely bolted thereto.
- E. Finished iron or steel surfaces not painted shall be properly protected to prevent rust and corrosion.
- F. After hydrostatic or other tests, all entrapped water shall be drained prior to shipment, and proper care shall be taken to protect parts from the entrance of water during shipment, storage and handling.
- G. Each box or package shall be properly marked to show its net weight in addition to its contents.

1.08 Warranty

- A. The pump manufacturer shall warrant the units being supplied against defects in workmanship and material for a period of five (5) years or 10,000 hours of operation, whichever occurs first. The warranty shall apply to 100% parts and labor for the time specified and shall not be prorated.

PART 2 - PRODUCTS

2.01 Materials and Equipment

- A. The pumping units required under this Section shall be complete including pumps and motors with proper alignment and balancing of the individual units. All parts shall be so designed and proportioned as to have liberal strength, stability, and stiffness and to be especially adapted for the work to be done.
- B. Each discharge connection for each pump shall be rigidly and accurately anchored into position. All necessary anchor bolts, nuts, and washers shall be Type 316 stainless steel and shall be furnished by the pump manufacturer for installation by the Contractor.
- C. Stainless steel nameplates giving the name of the manufacturer, the rated capacity, head, speed, and all other pertinent data shall be attached to each pump and motor.
- D. Oversized stainless steel lifting bail.

2.02 Pumps and Accessories

- A. General
 - 1. Brass or stainless-steel nameplates identifying the name of the manufacturer, voltage, phase, rated horsepower, speed and any other pertinent data shall be attached to each pump.
 - 2. Anchors and Fasteners: All necessary foundation bolts, plates, nuts, and washers shall

be furnished by the equipment manufacturer and shall be Type 316 stainless steel.

- B. Pump Design: The pumps shall be capable of handling raw unscreened domestic wastewater and passing a minimum 3-inch diameter solid sphere.
- C. Casing: The stator casing and oil casing shall be of gray cast iron construction, with all parts coming into contact with sewage protected by a corrosion resistant paint proven to withstand an environment of raw wastewater.
- D. Impeller: The impeller shall be constructed of gray cast iron, ASTM A-48, class 30 – 40. All external bolts and nuts shall be Type 316 stainless steel. Each pump shall be provided with a replaceable metallic wear ring system to maintain pump efficiency. Impellers can be of the closed or open type. The closed type can utilize a single or double vane. The open type shall be single or double vane with a self-cleaning, adjustable cast iron wear plate. All impellers shall be dynamically balanced and of non-clog design capable of passing solids, fibrous material, and heavy sludge and constructed with long throughways with no acute turns.
- E. Mechanical Seals: Each pump shall be provided with a tandem double mechanical seal running in an oil or air reservoir, composed of two separate lapped face seals, each consisting of one stationary and one rotating tungsten carbide or silicone ring with each pair held in contact by a separate spring, so that the outside pressure assists spring compression in preventing the seal faces from opening. The compression spring shall be protected against exposure to the pumped liquid. Silicone carbide may be used in place of tungsten carbide for the upper and lower seal. The pumped liquid shall be sealed from the oil or air reservoir by one face seal and the oil reservoir from the air filled motor chamber by the other. The seals shall require neither maintenance nor adjustment and shall be easily replaced. Seal shall be held in place by locking ring. Conventional double mechanical seals are not acceptable. Cartridge seals are acceptable.
- F. Guide Rails, Lifting Cable, and Discharge Elbow
 - 1. The design shall be such that pumping units will be automatically connected to the discharge piping when lowered into place on the discharge connection. Pump removal for service or inspection will be by quick disconnect and hoist retrieve. Removal shall not require personnel to enter the wetwell nor shall nuts, bolts or fasteners require removal. Each pump shall be fitted with 6-feet of Type 316 stainless steel, minimum Grade 50, 3/4-inch chain attached to the lifting mechanism and air craft rated 1/4-inch stainless steel cable provided between the cable holder and the chain ("Grip-eye System", or acceptable equal), to permit raising the pump for inspection and removal using a closed chain hook and electric hoist. The lifting bail shall be constructed of Type 316 stainless steel for each pump.
 - 2. A sliding guide bracket shall be an integral part of the pumping unit and the pump casing shall have a machined connecting flange to connect with the cast iron discharge connection, which shall be bolted to the floor of the wetwell with stainless steel anchor bolts and so designed as to receive the pump discharge flange without the need of any bolts or nuts.
 - 3. Sealing of the pumping unit to the discharge connection shall be accomplished by a simple downward motion with the entire weight of the pumping unit guided by two

Schedule 40 welded seamless Type 316 stainless steel guide bars which will press it tightly against the discharge connection. All Type 316 seamless tubular stainless steel guides shall be 2-inch diameter for use with pumps up to 25-horsepower. Pumps greater than 25-horsepower shall use 3-inch diameter Type 316 seamless tubular stainless steel guides. No portion of the pump shall bear directly on the floor of the wetwell and no rotary motion of the pump shall be required for sealing. Sealing at the discharge connection shall be metal-to-metal contact of the pump discharge and mating discharge connection.

4. The pump base elbow design shall be interchangeable such that it will provide a watertight connection for any of the specified or otherwise accepted pumps without requiring any special tools, gaskets or adapters. Assembly shall be capable of receiving a standard Flygt pump without special modification to either the pump or existing base elbow.
 5. Approved pump manufacturers, if necessary to meet the above specification, shall provide a sliding guide bracket adapter.
 6. Pump base elbow shall be bolted to a 1-inch-thick steel pump base plate which is anchored to the wetwell floor at six locations with 6-inch epoxy anchors. Pump base plate shall extend 6-inches beyond the pump volute and base elbow and trimmed to fit as necessary.
- G. Pump Motor: All motors shall be built in accordance with the latest NEMA, IEEE, ANSI and AFBMA Standards where applicable. The pump motor shall be housed in an air filled watertight casing and shall have Class H insulated windings which shall be moisture resistant. The motors shall be NEMA Design B rated 155°C maximum. Pump motors shall have cooling characteristics suitable to permit continuous operation in a totally, partially or non-submerged condition. The pump shall be capable of running continuously in a totally dry non-submerged condition under full load without damage for extended periods. Before final acceptance a field running test demonstrating this ability, with 24-hours of continuous operation under the above conditions, shall be performed for all pumps being supplied as required by the CountyToho. The motor shall be capable of a minimum of 10 starts per hour. Motors 25-horsepower and below shall be rated 230/460-volt, 3-phase and speed shall be nominal 1,750 RPM or less. Motors greater than 25-horsepower shall be 460 volt, 3-phase and speed shall be nominal 1,750 RPM or less. Pump motors shall be non-overloading over the entire published performance curve.
- H. Heat and Moisture Sensors: Each motor shall incorporate a minimum of one ambient temperature compensated overheat sensing device. This protective device shall be wired into the pump controls in such a way that if excessive temperature is detected the pump will shut down. This device shall be self-resetting.
- I. Cables: Cables shall be designed specifically for submersible pump applications and shall be properly sealed. A type CGB watertight connector with a neoprene gland shall be furnished with each pump to seal the cable entry at the control panel. The pump cable entry seal design shall preclude specific torque requirements to insure a watertight and submersible seal. The cable entry shall be comprised of a single cylindrical elastomer grommet, flanked by washers, all having a close tolerance fit against the cable outside diameter and the entry inside diameter and compressed by the entry body containing a strain relief function, separate from the function of sealing the

cable. The assembly shall bear against a shoulder in the pump top. The cable entry junction chamber and motor shall be separated by a stator lead sealing gland or terminal board, which shall isolate the motor interior from foreign material gaining access through the pump top. Secondary sealing systems utilizing epoxy potting compounds may be used. The manufacturers shall supply a cable cap as part of the spare parts for each pump when this type of sealing system is used. All cables shall be continuous, without splices from the motor to the control panel, unless otherwise approved by the CountyToho. The junction chamber containing the terminal board shall be perfectly leak proof.

J. Special Tools and Spare Parts

1. Special Tools: Provide special tools for normal operation and maintenance in accordance with the Appendix B "Pump Station Start-Up Report" form.
2. Spare Parts: The pump supplier will include at least one set of spare parts with a toolbox as detailed in accordance with Appendix B "Pump Station Start-Up Report" form.

K. Pump Access Hatch and Frame

1. Material: Structural aluminum or Type 316 stainless steel.
2. Design
3. Liveload: 300-pounds per square foot.
4. Regular extruded angle section frame.
5. Hatch cover (diamond pattern) opens 90° (degrees) and locks automatically with stainless steel positive locking arm and release handle. Hatch cover shall be permanently embossed "CONFINED SPACE" and painted lettering shall not be acceptable. Each door shall be equipped with a recessed hasp enclosure.
6. Frame attachments (all Type 316 stainless steel)
7. Upper guide rail holders
8. Lift cable holder
9. Hatch hinges: heavy-duty Type 316 stainless steel hinges with tamper proof fasteners.
10. Accessories
11. Lifting handle: Type 316 stainless steel.
12. Finish: Mill finish with bituminous coating applied to exterior of frame.

2.03 Shop Painting

- A. Before exposure to weather and prior to shop painting, all surfaces shall be thoroughly cleaned, dry and free from all mill-scale, rust, grease, dirt and other foreign matter.
- B. All pumps and motors shall be shop coated, with manufacturer's standard coating.
- C. All nameplates shall be properly protected during painting.
- D. Gears, bearing surfaces, and other similar surfaces obviously not to be painted shall be given a heavy shop coat of grease or other suitable rust-resistant coating. This coating shall be maintained as necessary to prevent corrosion during periods of storage and erection and shall be satisfactory to the Engineer up to the time of the final acceptance test.

2.04 Control Panels

- A. Control panels for the pumps shall be furnished in accordance with the drawings.

PART 3 - EXECUTION

3.01 Installation

- A. Installation shall be in strict accordance with the manufacturer's instructions and recommendations and in the locations shown on the Drawings. Installation shall include furnishing the required oil and grease for initial operation. The grades of oil and grease shall be in accordance with the manufacturer's recommendations. Anchor bolts shall be set in accordance with the manufacturer's recommendations.
- B. The Contractor shall submit a certificate from the equipment manufacturer stating that the installation of the equipment is satisfactory, that the equipment is ready for operation, and that the operating personnel have been suitably instructed in the operation, lubrication and care of each unit.

3.02 Inspection and Testing

- A. General:
 - 1. The Engineer shall have the right to inspect, test or witness tests of all materials or equipment to be furnished under these Specifications, prior to their shipment from the point of manufacture.
 - 2. The Engineer shall be notified in writing prior to initial shipment, in ample time so that arrangements can be made for inspection by the Engineer.
 - 3. The Engineer or his representative shall be furnished all facilities, including labor, and shall be allowed proper time for inspection and testing of material and equipment.
 - 4. Materials and equipment shall be tested or inspected as required by the Engineer, and the cost of such work shall be included in the cost of the equipment. The Contractor shall anticipate that delays may result because of the necessity of inspection, testing and accepting materials and equipment before their use is approved.
 - 5. The services of a factory representative shall be furnished for one (1) day and he shall have complete knowledge of proper operation and maintenance to inspect the final installation and supervise the test run of the equipment. With the permission of the Owner these services may be combined with those provided under Paragraph 1.04 of this Section.
 - 6. Field tests shall not be conducted until such time as the entire installation is complete and ready for testing.

B. Pumps:

1. After all pumps have been completely installed, and working under the direction of the manufacturer, conduct in the presence of the Engineer, such tests as are necessary to indicate that pumps conform to the Specifications. Field tests shall include all pumps included under this Section. Supply all electric power, water or wastewater, labor, equipment and incidentals required to complete the field tests.
2. If the pump performance does not meet the Specifications, corrective measures shall be taken or pumps shall be removed and replaced with pumps which satisfy the conditions specified. A 24-hour operating period of the pumps will be required before acceptance. During this 24-hour operating period, the Contractor shall supply all power necessary.

3.03 Field Testing

- A. Upon completion of all the mechanical work, the Contractor shall coordinate with equipment manufacturer and conduct testing as specified herein to demonstrate that the equipment performs in accordance with all specifications.
- B. The Contractor shall perform initial testing of the equipment ensuring to himself that the tests listed in the Final Acceptance Test paragraph below can be satisfactorily completed.
- C. The Contractor shall give written notice, seven (7) days in advance, of the date of Final Acceptance Test to the Owner and Engineer. All tests shall be in conformance with other applicable Sections of these Specifications.
- D. The Final Acceptance Test shall demonstrate that all items of these Specifications have been met by the equipment as installed and shall include, but not be limited to, the following tests:
 1. That all units have been properly installed and are in correct alignment.
 2. That the units operate without overheating or overloading any parts and without objectional vibration.
 3. That there are no mechanical defects in any of the parts.
 4. That the pumps meet the specified hydraulic requirements.
 5. That the pumps shall be capable of pumping raw, unscreened sewage.
 6. That the pump sensors and controls perform satisfactorily as to sequence control, correct start and stop elevations, and proper alarm functions.
- E. In the event that the equipment does not meet the Final Acceptance Test, the Contractor shall, at his own expense, make such changes and adjustments in the equipment which he deems necessary and shall conduct further tests until full satisfaction is indicated by

the Engineer and written certification is received thereof.

- F. The Owner will pay the salaries of the personnel selected by the Owner for operation of the equipment. Payment of all other salaries, public utility services, and operating expenses shall be borne by the Contractor for the test period and any additional test period required.

3.04 Training

- A. After completion of the field certification and testing, a minimum of three (3) separated four (4) hour operator instruction and training sessions on equipment and system operation shall be provided. Contractor shall provide a proposed list of dates and times to hold the training sessions to the City at least (3) three weeks prior to the proposed dates, City must approve times prior to final scheduling the training. The training shall provide a complete overview of all equipment, testing, adjusting, operation, and maintenance procedures. The training shall take the form of classroom sessions at the project site conducted by the manufacturer or local representatives who are knowledgeable and familiar with the project. Hands-on instruction and training will be conducted so that actual operation and maintenance of the equipment and systems can be performed by Owner upon completion of the training. Training shall be provided to the owner prior to final system start up. The training shall take the form of classroom and field instruction and shall cover:
 - 1. Documentation in the final Operation and Maintenance Manuals.
 - 2. Use the Operation and Maintenance Manuals or other guides.
 - 3. Equipment and system startup and shutdown.
 - 4. System operation procedures for all modes of operation.
 - 5. Procedures for dealing with abnormal conditions and emergency situations for which there is a specified system response.
 - 6. Any and all special tools, equipment training manuals used during the training shall be the property of the OWNER upon completion of the training.

3.05 Pump Performance Schedule

- A. Pumps shall be furnished per "Table 11208-A, Pump Performance Data" below, and also on plan sheet C-2.0. The performance data described below is the basis of design using the Pumps manufactured by Xylem (Flygt). Pumps manufactured by other specified manufacturers meeting the design criteria are acceptable:

TABLE 11208-A

PUMP PERFORMANCE DATA

Parameter	Flygt
Number of Pumps	2
Pump Type	Submersible
Operating Point, GPM	146
TDH, Ft.	63
Maximum Size Solids, In.	3
Minimum Discharge Size, In.	2
Maximum Horsepower Per Pump, HP	9.4
Maximum RPM	3445
Voltage, V	230
Phase	1
Frequency, Hz	60

END OF SECTION

**SECTION 13273
BYPASS PUMPING WASTEWATER**

PART 1 - GENERAL

1.01 Scope of Work

- A. The work covered by this Section consists of providing temporary bypass pumping or other means to maintain wastewater flows around the construction areas in order to facilitate all work involved with the project. The Contractor shall be responsible to divert all sewage flows around the construction area to provide uninterrupted wastewater service to the users of the system at all times while preventing any sewage overflows or spills. The Contractor shall furnish, install, operate, and maintain all necessary equipment, materials, labor and power for the bypass pumping system for the duration of the project. The Contractor shall perform all restoration work to the satisfaction of the Engineer.
- B. The Contractor shall employ the services of a vendor or subcontractor who can demonstrate to the Engineer that they specialize in the design, installation, operation and maintenance of temporary bypass pumping systems. Approved vendors include, but are not limited to Sunbelt, Rain For Rent, and Thompson Pumps. The Contractor shall provide a list of references for projects that their vendor or subcontractor has completed in the past of similar size and complexity. The design, installation, operation and removal of the temporary pumping system shall be the Contractor's responsibility. The bypass pumping system shall meet the requirements of all codes and regulatory agencies having jurisdiction.
- C. The Contractor shall submit a bypass pumping plan to the Engineer for review and approval. The Contractor, in collaboration with the vendor/subcontractor shall prepare detailed plans and descriptions of the bypass pumping system according to the requirements set forth in Section 3.03 of this specification. Contractor shall outline all backup provisions and precautions regarding the safe handling of bypass pumped wastewater. No bypass pumping shall be installed until the submittal has been reviewed and approved by the Engineer.

PART 2 - EQUIPMENT

2.01 General

- A. The Contractor shall provide and maintain adequate equipment, piping and other necessary appurtenances in order to maintain uninterrupted wastewater service for all pipelines affected by the construction work. The Contractor shall have backup pumps, generators, piping, appurtenances, vacuum trucks and/or tankers ready to deploy immediately in case of any failure of the bypass pumping system or as necessary to complete the work. Flexible hose shall not be allowed for use as bypass piping, except as necessary at discharge points as approved by the Engineer. Bypass pumps shall be quiet pack type with proper sound attenuation resulting in a maximum SPL level of 55 decibels at the closest residence.

2.02 Pumps

- A. All pumps used shall be fully automatic, self-priming, quiet pack type and shall not require the use of foot valves. Vacuum-assisted or compressor-assisted dry priming pumps are acceptable. The pumps may be electric, gasoline, or diesel powered. All pumps used must be designed to allow dry running for extended periods of time.
- B. In the event a Compressor-Assisted style pump is used, the compressor, under normal working conditions, must be able to exhaust the air through its system without discharging the fluid into the atmosphere. Delivering the discharged fluid into a collection bucket through an external exhaust tube can pose a damage to the environment and will not be accepted.
- C. The Contractor shall provide a standby pump for each size pump used in the bypass pumping system (minimum of 2 pumps). The standby pumps shall be placed in-line by means of a manifold. The manifold shall be complete with isolating valves and non-return check valves to allow pumping to continue without disturbing the piping system in the event the primary pump should fail. The Contractor shall provide the appropriate automatic start/stop control panel necessary for each pump.

2.03 Piping

- A. Bypass pipe shall be constructed of rigid galvanized pipe with quick-connect fittings or high density polyethylene pipe (HDPE) with fused joints. Flexible discharge hose will not be allowed unless authorized and approved by the Engineer for a special circumstance or purpose. All piping shall be designed to withstand at least twice the maximum system pressure or 50 psi minimum, whichever is greater.
- B. The pipeline must be located off the street except where the pipeline crosses side streets and driveways, where the contractor must place the by-pass pipelines in trenches and cover with temporary asphalt pavement or provide approved ramps.
- C. When needed, air release valves must be placed in-line properly to alleviate trapped air and resulting high pressure within the discharge pipeline. Check valves and tees shall be used as necessary to connect bypassed flow from lateral pipelines.

2.04 Temporary Pipe Plugs

- A. Plugs used shall be multiple layer style inflatable type. Each plug shall be properly tested and tagged under the required pressure for each specific condition. Flow through plugs may be necessary for suction and discharge lines for the bypass system.
- B. Plugs must be used with the proper restraints that meet or exceed industry standards.
- C. All plugs shall be firmly attached to a stationary object above ground by a steel cable in order to prevent loss of the plug into the pipeline.

PART 3 - EXECUTION

3.01 General

- A. The bypass pumping system shall be properly sized to pump the maximum flow rate and the system(s) shall include redundant pumps in case of pump failure. The Contractor shall demonstrate that the pumping system is functioning properly and is sufficiently sized to successfully handle all flows by performing a test run for at least 24 hours prior to beginning work.
- B. The Contractor shall abide by all OSHA regulations for the duration of the project. The Contractor will also proceed with extreme caution when working in a confined space or around toxic gases. Employees working in confined spaces shall have proper certifications.
- C. The Contractor shall have and maintain all materials, equipment and labor necessary to complete the repair or replacement of any part of the bypass pumping system on the job site prior to isolating the pipeline to be taken out of service.
- D. The Contractor is responsible for installing the bypass pipeline below grade as necessary to avoid roadway, sidewalk and driveway closures. The Contractor is responsible for locating and protecting existing utilities in the area where the Contractor chooses to install the bypass system. The Contractor shall install the bypass pipelines so as to minimize disturbance to existing utilities and shall obtain approval of the pipeline locations from the Engineer prior to installation. The Contractor shall pay all costs associated with the bypass pumping system, including restoration, locating and/or relocating utilities and obtaining approvals.

3.02 Traffic Considerations

- A. The Contractor is responsible for any associated maintenance of vehicular or pedestrian traffic necessary to accommodate the bypass pumping system. The Contractor shall locate bypass pumping suction and discharge lines so as to not interfere with the use of streets, sidewalks, driveways and businesses, which may include temporary trenching of piping through intersections. Ingress and egress to adjacent properties shall be maintained at all times. Ramps, steel plates, temporary walkways or any other approved methods shall be deployed by the Contractor to facilitate vehicular and pedestrian traffic over the bypass piping at no additional cost to the City. High traffic commercial properties or special events may require the use of an alternate method.

3.03 Bypass Pumping Plans

- A. The Contractor shall submit comprehensive written plans to the City for review and approval that describes the bypass pumping system to maintain wastewater flows during construction. The Contractor shall also provide a sketch showing the location of bypass pumping equipment for each bypass pumping setup. The plan shall include any proposed tanker(s), pump(s), bypass piping, backup plan and equipment, work schedule, monitoring plan and log for monitoring the bypass pumping system.

The bypass pumping plans must include the following:

1. Quantity and location of the pumps (primary and standby).
2. Model, size, flow capabilities and brief description of each pump.
3. Size, length, joints and material type of the suction and discharge piping.
4. Power requirements and source for electric motor driven units (if applicable).
5. Complete set of pump specifications with system demand curve.
6. Schematic drawing of the bypass pumping system, including a profile of suction and

discharge piping.

7. Method of discharge pertaining to manholes.
 8. Description of discharge manifold including isolation and non-return valves.
 9. Method and effectiveness of noise control for pumps.
 10. Size, type and intended use of pipe plugs.
 11. Control strategy for operation and alarms.
- B. All piping shall be designed to withstand at least twice the maximum system pressure or 50 psi minimum, whichever is greater. The Contractor shall cease bypass pumping and return the flow to the new or existing sewer if so directed by the Engineer. During bypass pumping, no wastewater shall be leaked, dumped, or spilled in any area outside of the existing wastewater system. When bypass operations are complete, all bypass piping shall be drained into the wastewater system prior to disassembly.

3.04 Bypass Operation

- A. The City must approve the bypass plan prior to implementation of the bypass system. The Contractor shall plug off and pump down the sewer manhole or line segment in the immediate work area and shall maintain the upstream wastewater system so that surcharging does not occur. The Contractor shall be responsible for maintaining flows from pipes entering the system at manholes within the bypassed sewer segment.
- B. The Contractor shall be responsible for onsite monitoring of the bypass pumping operation 24 hours per day, 7 days per week, by onsite personnel responsible for proper operation and maintenance of the equipment. Any electronic monitoring in lieu of onsite monitoring must be detailed in the comprehensive written plan and approved by the City at its sole discretion, prior to use. If a remote system is approved, the Contractor must furnish a list of emergency numbers and contacts that will be programmed into the telemetry system. The personnel responsible for remote monitoring shall be within 30 minutes drive time of the site. Bypass pumps and motors shall have proper sound attenuation resulting in a maximum sound level of 55 decibels at any adjacent private property.
- C. The Contractor shall ensure that no damage will be caused to private property as a result of bypass pumping operations. The Contractor shall complete the work and satisfactorily pass all tests and inspections, and repair any deficiencies as quickly as possible, prior to discontinuing the bypass pumping operation and returning flow to the sewer system.
- D. The Contractor shall immediately notify the City should a sanitary sewer overflow or spill occur and take the necessary action to clean up and disinfect the spillage to the satisfaction of the City and/or other governmental agency.

3.05 Contractor Liability

- A. The Contractor shall be responsible for all required pumping, equipment, piping and appurtenances to accomplish the bypass pumping and shall also be responsible for any and all damage that results directly or indirectly from the bypass pumping operation. The Contractor shall also be liable for all damage claims, penalties and fines that the City incurs resulting from a sanitary sewage overflow or spill. In addition to the aforementioned costs, the Contractor will be fined \$5,000 per each 24-hour period following an overflow that the wastewater overflow or spill is not completely cleaned, disinfected, and the sewer system returned to operational status.

- B. The Contractor shall be responsible for all physical damage to the local sewer lines and laterals caused by the Contractor's equipment or employees.
- C. It is the intent of these specifications to require the Contractor to maintain adequate sewer service of all affected customers regardless of the flow condition.

END OF SECTION

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**SECTION 15044
PRESSURE TESTING OF PIPING**

PART 1 - GENERAL

1.01 Description

- A. Scope of Work: This Section specifies the hydrostatic testing requirements for plant piping. Hydrostatic pressure and leakage testing shall be completed in accordance with AWWA C600 and C605, latest revision, however, no leakage is allowed.
- B. Testing Records:
 - 1. Provide a record of each piping installation during the testing. These records shall include:
 - a) Date of test.
 - b) Identification of pipeline tested or retested.
 - c) Identification of pipeline material.
 - d) Identification of pipe specification.
 - e) Test fluid.
 - f) Test pressure.
 - g) Remarks: Leaks identified (type and location), types of repairs, or corrections made.
 - h) Certification by Contractor that the leakage rate measured conforms to the Specifications.
 - i) Signature of Owner's representative witnessing successful pipe testing and receipt of the required records.
 - 2. Submit five (5) copies of the test records to the Owner upon completion of the testing.

PART 2 - PRODUCTS

2.01 General

- A. Testing fluid shall be water for all hydrostatic tests.
- B. Provide pressure gauges, pipes, bulkheads, pumps, and meters to perform the hydrostatic testing.

PART 3 - EXECUTION

3.01 Testing Preparation

- A. Pipes shall be in place and anchored before commencing pressure testing.
- B. Conduct hydrostatic tests on exposed and above ground piping after the piping has been installed, complete and attached to the pipe supports, hangers, anchors, expansion joints, valves, and meters.
- C. Before conducting hydrostatic tests, flush pipes with water to remove all traces of dirt and debris.
- D. Test new pipelines which are to be connected to existing pipelines by isolating the new line from the existing line by means of properly restrained pipe caps, plugs, special flanges, or blind flanges. After the new line has been successfully tested, remove caps, plugs, or flanges and connect to the existing piping.
- E. Conduct hydrostatic tests on buried pipe after installation of all required thrust restraints, and the trench has been completely backfilled. The pipe may be partially backfilled and the joints left exposed for inspection for an initial leakage test. Perform the final test, however, after completely backfilling and compacting the trench.
- F. Pressure Test:
 - 1. All tests shall be made in the presence of and to the satisfaction of the Owner, Engineer, and any local or State inspector having jurisdiction.
 - a. Provide not less than three (3) working days notice to the Owner, Engineer, and the authority having jurisdiction when it is proposed to make the tests.
 - b. Any piping or equipment that has been left unprotected and subject to mechanical or other injury shall be retested as directed by the Engineer.
 - c. The piping systems may be tested in sections as the work progresses, but no joint or portion of the system shall be left untested.
 - 2. All elements within the system that may be damaged by the testing operation shall be removed or otherwise protected during the operation.

3. Repair all damage done to existing or adjacent work or materials due to performance of the tests.

3.02 Hydrostatic Testing

- A. Hydrostatic Testing of Aboveground or Exposed Piping: Open vents at high points of the piping system to purge air while the pipe is being filled. Subject the piping system to the test pressure indicated. Maintain the test pressure for a minimum of four (4) hours. Examine joints, fittings, valves, and connections for leaks. The piping system shall show no leakage or weeping. Correct leaks and retest until no leakage is obtained.
- B. Hydrostatic Testing of Buried Piping:
 1. Where any section of the piping contains concrete thrust blocks or encasement, do not start the pressure test until at least 10 days after the concrete has been poured. When testing mortar-lined piping, fill the pipe to be tested with water and allow it to soak for at least 48 hours to absorb water before conducting the pressure test.
 2. Apply and maintain the test pressure by means of a hydraulic force pump. Maintain the test pressure for a minimum duration of four (4) hours. No leakage is allowed.
 3. Repair and retest any pipes showing leakage.
- C. Test pressures for various pipe applications are set forth below.

Service	Mark	Test Pressure (psig)
Sanitary Force Main	FM	100
Potable Water	PW	150
Non-Potable Water	NPW	150
Fuel Piping	FUEL	25

NOTES:

1. Piping not listed and sections of piping in gross discrepancy with listed pressure, with the approval of the Engineer, shall be tested at a minimum of 1.5 times working pressure.

3.03 Pneumatic Testing

- A. Gravity Sewers: Lines labeled "SS" on the Drawings. Refer to next page for the Low Pressure Air Testing Of Installed Sewer Pipe

- B. Drains: Lines labeled “DR” on the Drawings.
1. The Contractor shall perform low pressure air testing in conformance with the requirements of UNI-B-6 "Recommend Practice for Low-Pressure Air Testing of Installed Sewer Pipe", as published by Uni-Bell Plastic Pipe Association. The test period shall be two (2) hours. The Engineer shall be present during all testing.
 2. During drain construction, all service laterals, stubs, and fittings shall be properly capped or plugged so as not to allow air loss. Where necessary, the Contractor shall restrain and seal caps, plugs, or short pipe lengths such that failure and leaks are prevented.
 3. Should a line section fail to meet test requirements, the Contractor shall determine the source, or sources of leakage, and make all necessary repairs as approved by the Engineer and repeat the test until leakage is within specified limits.

END OF SECTION

**SECTION 15050
PIPING, VALVES AND ACCESSORIES**

PART 1 - GENERAL

1.01 Description

- A. Scope of Work: The Work included in this Section consists of furnishing all labor, equipment, and materials and performing all operations necessary for the construction or installation of all utility piping, fittings, valves, and appurtenances complete and ready for operation as shown on the Drawings and specified herein.
- B. Related Work Described Elsewhere (where applicable)
 - 1. Submittals: Section 01300.
 - 2. Operating and Maintenance Data: Section 01730.
 - 3. Warranties and Bonds: Section 01740.
 - 4. Trenching, Bedding, Backfilling: Section 02320.
 - 5. Concrete: Division 3.
 - 6. Equipment: Division 11.
 - 7. Mechanical: Division 15.

1.02 Quality Assurance

- A. Construction Requirements
 - 1. All the buried lines on-site shall be installed with at least 36 inches of cover, unless otherwise shown or indicated on the Drawings.
 - 2. For underground utilities, changes in horizontal alignment of less than 11-1/4 degrees may be achieved through the use of allowable pipe deflection in lieu of fittings shown on the Drawings at the Contractor's option, but subject to approval of the Engineer as to layout. Said deflection shall not exceed 75 percent of the maximum allowable deflection stated in the pipe manufacturer's installation instructions.
- B. Pipe Inspection: The Contractor shall obtain from the pipe manufacturers a certificate of inspection stating that the pipe and fittings supplied for this Contract have been inspected at the plant and that they meet the requirements of these Specifications. All pipe and fittings shall be subject to visual inspection at time of delivery and also just before they are lowered into the trench to be laid. Joints or fittings that do not conform to these Specifications will be rejected and must be removed immediately by the Contractor. The

entire product of any plant may be rejected when, in the opinion of the Engineer, the methods of manufacture fail to secure uniform results, or where the materials used are such as to produce inferior pipe or fittings.

1.03 Submittals

A. Shop Drawings

1. In general, the following Shop Drawings shall be submitted to the Engineer for approval prior to construction:
 - a. Valve and meter boxes.
 - b. All valves, including gate, plug, ball, check, air release, and solenoid valves.
 - c. Couplings.
 - d. Tapping sleeves.
 - e. Service saddles.
 - f. Pressure gauges.
 - g. Flexible expansion joints, tie rods, and flanged coupling adapters.
 - h. Joint lubricant.
 - i. Temporary plug and anchorage system for hydrostatic pressure test.
 - j. Pipe supports
2. A separate shop drawing submittal will be required for each major item listed above and for each different type of an item within a major item. For example, separate submittals will be required for plug, solenoid, check, and automatic air release valves. All submittals shall be in accordance with the General and Special Conditions and Section 01300: Submittals

B. Acceptance of Material

1. 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 current AWWA and ASTM Standards and these Specifications. No pipe or fittings will be accepted for use in the Work on this project until the affidavit has been submitted and approved by the Engineer.
2. The Owner reserves the right to sample and test any pipe or fitting after delivery and to reject all pipe and fittings represented by any sample which fails to comply with the specified requirements.

- C. Operation and Maintenance Manuals: Submit operation and maintenance manuals for applicable components requiring periodic maintenance and/or explanation of operation. Manuals shall be prepared in accordance with Section 01730: Operating and Maintenance Data. Information shall include:
 - 1. Detailed assembly drawings, clear and concise instructions for operating, adjusting, overhauling, troubleshooting and, other maintenance. Include shop drawings previously submitted and approved with all corrections.
 - 2. A complete lubrication schedule including lubricant types, grades, and recommended frequency of lubrication.
 - 3. A list of parts for all products with catalog numbers and all data necessary for ordering replacement parts. Such instructions and parts lists shall be prepared for the specific product furnished and shall not refer to other types or models.

1.04 Delivery, Storage and Handling

- A. Pipe, fittings, valves and accessories shall be handled in a manner that will ensure a sound undamaged condition during shipping, delivering and installing.
- B. Particular care shall be taken not to injure the pipe coating and linings.
- C. Insides of valves and piping shall be kept free of dirt and debris.

1.05 Job Conditions

- A. Water in Excavation: Water shall not be allowed in the trenches while underground pipes are being laid and/or tested. The Contractor shall not open more trench than the available pumping facilities are able to dewater to the satisfaction of the Engineer. The Contractor shall assume responsibility for disposing of all water so as not to injure or interfere with the normal drainage of the territory in which he is working. In no case shall the pipelines being installed be used as drains for such water, and the ends of the pipe shall be kept properly and adequately plugged during construction by the use of approved plugs or caps and not by improvised equipment. All necessary precautions shall be taken to prevent the entrance of mud, sand, or other obstructing matter into the pipelines. If on completion of the work any such materials have entered the pipelines, it must be cleaned as directed by the Engineer so that the entire system will be left clean and unobstructed.

PART 2 - PRODUCTS

2.01 Ductile Iron Pipe and Fittings

- A. Ductile Iron Pipe: Ductile iron pipe shall conform to the requirements of ANSI, A21.51 and AWWA C151, latest revision. The minimum pressure class for underground pipes shall be class 350. Pipe shall be furnished in laying lengths of 20 feet or less, unless specified elsewhere or shown otherwise on the Drawings. Flanged pipe shall have a

minimum thickness class of Class 53. All pipe and fittings shall be new & unused. No refurbished piping or fittings shall be accepted.

B. Coating and Lining

1. Corrosion Resistant Interior Lining: In accordance with the Contract Documents, ductile iron pipe, fittings and specials used for wastewater applications shall be lined with Tnemec Perma-Shield PL Series 431 or Engineer approved equal with a minimum dry film thickness of 40 mils applied in two coats by a manufacturer approved facility. The gasket area of bells and fittings shall be protected from excessive coating thickness that might affect proper gasket sealing. Storage, handling, surface preparation, application, installation, and safety precautions shall strictly follow the material manufacturer's instructions or recommendations.
2. Standard Lining: Unless noted otherwise in the Contract Documents, ductile iron pipe, fittings, and specials to be used for reclaimed or potable water service shall have an interior protective lining of cement-mortar in accordance with ANSI/AWWA A21.4/C104.
3. Exterior Coatings: Where ductile iron pipe and fittings are installed under ground or in a casing pipe where the soils and groundwater are not considered corrosive, the exterior coating shall be a minimum 1.0 mil thick bitumastic coating in accordance with ANSI/AWWA A21.51/C151.
4. Exterior Coating for Exposed Pipe: Ductile iron pipe, fittings, and specials to be installed above ground shall be furnished with a shop applied primer on the exterior and painted. The shop primer and painting shall be as specified in Section 09900: Painting.

C. Fittings: Fittings for ductile iron pipe shall be either mechanical joint, restrained joint, or flanged joint as indicated on the Drawings and shall have a minimum working pressure of 350 psi. Fittings shall be ductile iron and shall conform to ANSI/AWWA C110/A21.10 and ANSI/AWWA C111/A21.11, latest revisions for flanged and mechanical joint pipe. Fittings shall be coated and lined as specified above or as specified on the Drawings. The rubber gaskets for flanged, mechanical, and push-on joints shall be as described below.

D. Push-On Joints: Pipe using push-on joints shall be in strict accordance with ANSI/AWWA C111/A21.11, latest revision and shall be as manufactured by American Cast Iron Pipe Company (Fastite Joint), United States Pipe Company (Tyton Joint), or Clow Corporation (Super Bell Tite Joint). Jointing materials shall be provided by the pipe manufacturer and installation shall be in strict accordance with the manufacturer's recommended practice. For process air service, joint materials shall be rated for operating temperature of at least 300° F.

E. Mechanical Joints: Jointing materials for mechanical joints shall be provided by the pipe and fitting manufacturer. For process air service, joint materials shall be rated for an operating temperature of at least 300° F. Materials assembly and bolting shall be in strict accordance with ANSI/AWWA C111/A21.11, latest revisions. Tee head bolts and nuts for mechanical joints shall be manufactured of high strength, low alloy steel in accordance with ANSI/AWWA C111/A21.11.

- F. Flanged Joints: Flanges shall be Class 125 per ANSI B16.1 with any special drilling and tapping as required to insure correct alignment and bolting.
1. Gaskets for liquid service shall be full face, 1/8-inch thick, cloth-inserted rubber by Johns-Manville No. 109, John Crane Co., Style 777, or approved equal. Gaskets shall be suitable for a water pressure of 350 psi at a temperature of 180°F.
 2. Bolts, nuts, and washers for flanges shall be of carbon steel conforming to ASTM A307, Grade B, unless otherwise specified on the Drawings. Standard hardware and all items associated with the bolt assemblies shall be hot dip galvanized at a minimum.
 3. Flanges shall be long-hub type screwed tightly on pipe by machine at the foundry prior to facing and drilling. Machined flange surfaces shall be coated with rust inhibitor immediately after facing and drilling. Field assembled screwed on flanges are prohibited.
- G. Restrained Joints and Fittings: Pipe joints and fittings shall be restrained in accordance with the Drawings and the requirements of this Specification. In cases where the calculated required length of restrained pipe is not evenly divisible by nominal laying lengths of pipe, the total required length of restrained pipe shall be rounded up to the next closest nominal length that is evenly divisible by the standard laying length.
1. Manufactured Restrained Joints: Manufactured restrained joints shall be Flex-Ring, Lok-Ring, or Lok-Fast manufactured by the American Cast Iron Pipe Company, HP-Lok or TR-Flex type manufactured by US Pipe Company, or an equal approved by the Engineer.
 2. Restrained joint pipe and fittings shall be ductile iron only and shall comply with applicable portions of this Specification. Manufactured restrained joints shall be capable of deflection during assembly. Deflection shall not exceed 80 percent of the manufacturer's recommendations.
 3. Tee head bolts and nuts for restrained joints shall be manufactured of high strength, low alloy steel in accordance with ANSI/AWWA C111/A21.11.
- H. Alternate Restrained Joints: Ductile iron pipe and fittings with mechanical joints may be restrained using a follower gland which includes a restraining mechanism. When actuated during installation, the restraining device shall impart multiple wedging action against the pipe wall which increases resistance as internal pressure in the pipeline increases.
1. The joint shall maintain flexibility after installation. Glands shall be manufactured of ductile iron conforming to ASTM A536 and restraining devices shall be of heat treated ductile iron with a minimum hardness of 370 BHN. The gland shall have standard dimensions and bolting patterns for mechanical joints conforming to ANSI/AWWA C111, latest revisions.
 2. Tee head bolts and nuts shall be manufactured of corrosion-resistant, high strength, low alloy steel in accordance with ANSI/AWWA C111/A21.11.

3. The restraining wedges shall have twist-off nuts to insure proper torquing. The mechanical joint restraint device shall have a minimum working pressure rating of 250 psi with a minimum safety factor of 2 to 1 and shall be MEGALUG® as manufactured by EBBA Iron, Inc.
4. The following restrained joint systems are acceptable alternatives to the devices specified above:
 - a. Grip Ring as manufactured by Romac Industries, Inc.
 - b. MJ Field Lok as manufactured by Tyler Pipe.
 - c. StarGrip as manufactured by Star Pipe Products.
 - d. One-Lok as manufactured by Sigma Corporation.

2.02 Polyvinyl Chloride (PVC) Pipe and Fittings

- A. Small PVC Pressure Piping: Unless otherwise specified, PVC pressure pipe smaller than 4 inches nominal diameter shall be Schedule 80 PVC in accordance with ASTM D1785. Schedule 80 pipe shall have either solvent welded or threaded joints. PVC pressure pipe shall bear the approved seal of the National Sanitation Foundation (NSF). PVC pipe that is exposed to sunlight shall be manufactured with additives to provide resistance to ultraviolet deterioration.
 1. Fittings: Socket type, solvent welded fittings for Schedule 80 PVC pipe shall be in conformance with ASTM D2467. Threaded type fittings for Schedule 80 PVC pipe shall be in conformance with ASTM D2464. All solvent welded or threaded joints shall be watertight.
 2. Flanges: Flanges for Schedule 80 PVC pipe shall be rated for a 150 psi working pressure with ANSI B 16.1 dimensions and bolting pattern. Flanges shall be connected to PVC piping with either solvent welded or threaded joints in accordance with ASTM D2467 or ASTM 2464, respectively. Gaskets shall be neoprene, full faced type with a minimum thickness of 1/8-inch. Nuts and bolts shall be hexagonal with machine threads, manufactured of Type 316 stainless steel in accordance with ASTM A320, Class 2. Type 316 stainless steel flat washers, with lock washers, shall be used against PVC flanges. The nuts shall have a hardness that is lower than that of the bolts and washers by a difference of 50 Brinnell hardness to prevent galling during installation.
 3. Solvent Cement: PVC solvent cement shall be in compliance with ASTM D2564 and in accordance with the pipe manufacturer's recommendations.
 4. Thread Lubricant: Lubricant for Schedule 80 threaded joints shall be Teflon tape only.
- B. Large PVC Pressure Piping

1. PVC pipe 4 through 60 inches in size shall conform to AWWA C900. Such pipe shall have a Dimension Ratio (DR) of either 18 or 25 depending upon the application as indicated in the Drawings. The pressure rating for DR18 pipe shall be 235 psi and the pressure rating of DR25 pipe shall be 165 psi. PVC pipe shall have the same outside diameter as ductile iron pipe for each pipe size. The same standards apply to fusible PVC, with the exception that a lower DR may be warranted because of the installation forces or stresses resulting from certain trenchless installation procedures.
2. Fittings for buried PVC pressure pipes shall be ductile iron fittings with mechanical joint ends as specified herein.
3. Bell and Spigot: Pipe joints shall be made with integral bell and spigot pipe ends. The bell shall consist of an integral thickened wall section designed to be at least as strong as the pipe wall. The bell shall be supplied with a factory glued rubber ring gasket which conforms to the manufacturer's standard dimensions and tolerances. The gasket shall meet the requirements of ASTM F477 "Elastomeric Seals (Gaskets) for Joining Plastic Pipe". PVC joints shall be "Ring-Tite" as manufactured by J-M Manufacturing Company, Inc. or an equal approved by the Engineer.
4. Restrained Joints: Where indicated on the Drawings, to prevent pipe joints and fittings from separating under pressure, pipe joints and fittings shall be restrained as follows below or the use of the appropriate type of CertainTeed Certa-Lok pipe may be used as specified by the Engineer:
 - a. PVC pipe bell and spigot joints shall be restrained with the EBBA Iron MEGALUG® Series 1500 Restrainer or an equal approved by the Engineer. The restraining device and tee head bolts shall be manufactured of high strength ductile iron meeting ASTM A536, Grade 6542-10. Clamping bolts and nuts shall be manufactured of high strength, low alloy steel meeting the requirements of ANSI/AWWA C111/A21.11. The following systems are acceptable alternatives to the devices specified above:
 - i. Romac Industries, Inc. Style 470SJ and Style 611.
 - ii. Star Pipe Products Series 1100C and Series 1200C.
 - iii. Sigma Corporation PV-LOK Series PVP.
 - iv. Ford Uni-Flange Series 1350 and Series 1390.
 - b. Mechanical joint fittings used with PVC pipe shall be restrained with the EBBA Iron MEGALUG® Series 2000 PV Restrainer or an equal approved by the Engineer. The restraining device and tee head bolts shall be manufactured of high strength ductile iron meeting ASTM A536, Grade 65-42-10. Clamping bolts and nuts shall be manufactured of high strength, low alloy steel meeting the requirements of ANSI/AWWA C111/A21.11. The following systems are acceptable alternatives to the devices specified above:
 - i. Romac Industries, Inc. Style 470MJ and Style 612.
 - ii. Star Pipe Products PVC StarGrip and PVC Ring Lock.

- iii. Sigma Corporation PV-LOK Series PVM.
- iv. Ford Uni-Flange Series 1300.

2.03 Steel Piping and Fittings

- A. All galvanized steel pipe shall be Schedule 40 pipe meeting the requirements of ASTM A120. All pipe joints shall be threaded. Fittings shall be galvanized malleable iron fittings with a pressure rating of at least 150 psi.

2.04 Flanged Adapter Couplings

- A. Adapters shall be suitable for joining plain-end pipe to flanged pipes and fittings. Adapters shall conform in size and bolt hole placement to ANSI standards for steel and/or cast iron flanges, 125 or 150 pound standard, unless otherwise required for connections (ANSI B16.1 125 lb./ANSI B16.5 150 lb.).
- B. Adapters shall be constructed of steel and coated in accordance with Section 09900. Bolts and nuts shall be Type 316 stainless steel conforming to ASTM A193, Grade B8 for bolts, and ASTM A194, Grade 8 for nuts and washers. Bolts and nuts greater than 1-1/8 inches in diameter shall be carbon steel ASTM A307, Grade B, with cadmium plating, ASTM A165, Type NS. Gasket material shall be suitable for exposure to the liquids to be contained within the pipes. All adapters shall be restrained with set screws to prevent axial movement. The restraint system shall be rated for a working pressure of at least 150 psi.
- C. Adapters shall be Dresser Style 128 or equal.

2.05 Gate Valves

- A. Bronze Gate Valves: Gate valves installed aboveground, 2 inches in size and smaller, shall be Class 150 all bronze valves conforming to Fed. Spec. WW-V-54d, Type 1, Class B designed for a non-shock water pressure of 300 psi. Bronze for valve body and internals shall be in accordance with ASTM B16.18. Valves shall be furnished with screwed ends, handwheel operator, non-rising stem, one-piece solid wedge disc and screwed bonnet. Valves shall be as manufactured by Crane, Powell, or an approved equal. The minimum weight of valves shall be as follows:

<u>Valve Size (Inches)</u>	<u>Valve Weight (Pounds)</u>
1/2	1.0
3/4	1.5
1	2.5
1-1/4	3.6
1-1/2	4.6
2	7.6

2.06 Plug Valves

- A. Plug valves shall be non-lubricated 100% full port eccentric type with flanged or mechanical joint ends as specified below. Valves shall open by turning to the left (counter-clockwise), when viewed from the stem. Valve pressure ratings, body flanges, and wall thicknesses shall be in full conformance with ANSI B16.1, latest revision. Valves shall seal leak-tight against full rated pressure in both directions. Prior to shipment from the factory, each valve shall be hydrostatically tested as follows. Valve seats shall be tested to provide leak tight shut off to 175 psi for valves through 12-inch and 150 psi for valves 14 inches and larger, with pressure in either direction. In addition, a hydrostatic shell test shall be performed with the plug open to a pressure twice that of rating specified above to demonstrate overall pressure integrity of the valve body. Plug valves shall be eccentric plug valves as manufactured by DeZurik or ValMatic.
- B. Valve bodies shall be constructed of high strength cast iron conforming to ASTM A126, Class B and AWWA C504, latest revisions. Valve seats shall be formed by cast bodies with raised eccentric seats which have a corrosion-resistant welded-in overlay of not less than 90 percent pure nickel on all surfaces contacting the plug face. Valve seats shall be in accordance with AWWA C504 and AWWA C507, latest revisions. Valves shall be furnished with resilient faced plugs with neoprene facing, suitable for use with sludge. Valves shall be furnished with replaceable, permanently lubricated, stainless steel or fiberglass backed woven teflon fiber, sleeve-type bearings in the upper and lower plug stem journals. Plug stem bearings shall comply with AWWA C504 and C507, latest revisions. Valves shall be bolted bonnet design. Valves shaft seals shall be designed so that they can be repackaged without removing the bonnet and the packing shall be adjustable. Packing material shall be Buna-Vee type packing. Valve shaft seals shall be in accordance with AWWA C504 and AWWA C507, latest revisions. All exposed valve nuts, bolts, springs, washers, and the like shall be Type 316 stainless steel.
- C. All interior ferrous surfaces of the valve, except the valve seating surfaces, shall be coated with a factory applied, fusion bonded or thermosetting epoxy coating in accordance with AWWA C550, latest revision. Coating shall be holiday-free with a minimum thickness of 12 mils. Surfaces shall be clean, dry, and free from rust, oil, and grease before coating.
- D. All exterior surfaces of plug valves shall be clean, dry, and free from rust and grease before coating. For buried service, the exterior ferrous parts of all valves shall be coated at the factory. For valves installed aboveground, the exterior ferrous parts of all valves shall be shop primed at the factory with one coat, minimum dry film thickness 2 - 3.5 mils, of a lead and chromate-free primer with rust-inhibitive pigments and synthetic resins. Primer shall be suitable for finish paint specified. Following installation, above-ground valves shall be finish painted in accordance with Section 09900: Painting.
- E. All plug valves installed above ground, in a vault, or on flanged piping shall have flanged ends as specified for ductile iron pipe. Flanges shall comply with facing, drilling and thickness of ANSI Standards for Class 125 dimension. All buried plug valves shall have mechanical joint ends as specified for ductile iron pipe.
- F. Mechanical Valve Actuators

1. Each plug valve installed underground shall have a gear actuator with a 2-inch square nut designed for buried and submerged service. Gear actuator shall be sized for the maximum pressure differential across the valve, equal to the pressure rating of the valve. Valve shall have seals on all shafts and gaskets on valve and actuator covers to prevent entry of water and dirt. Actuator mounting brackets for buried or submerged service shall be totally enclosed and shall have gasket seals. All exposed valve nuts, bolts, springs, washers, and the like shall be Type 316 stainless steel.
2. Each above ground plug valve and all plug valves installed in concrete vaults shall be furnished with a mechanical gear actuator furnished with a handwheel. Gear actuator shall be sized for the maximum pressure differential across the valve, equal to the pressure rating of the valve. All gearing shall be enclosed in a high-strength cast iron housing, suitable for running in a lubricant. Housing shall be provided with seals on all shafts to prevent the entry of dirt and water into the actuator. Actuator shaft and quadrant shall be supported on permanently lubricated bronze bearings. Actuator shall clearly indicate valve position and an adjustable stop shall be provided to set closing torque.

2.07 Swing Check Valves

- A. Swing check valves 2-inch through 24-inch in size shall conform to AWWA C508, latest revision, and shall be designed for a minimum water working pressure of 150 psi. Check valves shall have cast iron body, swing type design, and ends shall be flanged, Class 125 in accordance with ANSI B16.1. When open, the valve shall have a straight way passage with a minimum flow area equal to the full pipe area. Swing check valves shall be completely bronze fitted with renewable bronze seat ring and a rubber faced disc. Valve hinge pin shall be stainless steel. Check valves shall be supplied with an outside lever and spring. The check valve bonnet shall be provided with a tapped boss with plug for future installation of a pressure gauge.
- B. Swing check valves shall absolutely prevent the return of water back through the valve when the inlet pressure decreases below the downstream pressure. The check valve shall be constructed such that the disc and body seat ring may be easily removed and replaced without removing the valve from the line. Each valve shall be hydrostatically tested at the factory, at a test pressure of 300 psi.
- C. Prior to shipment from the factory, the interior ferrous surfaces of the valve, except for finished, non-ferrous, or bearing surfaces, shall be coated with a fusion bonded or thermosetting epoxy coating in accordance with AWWA C550, latest revision. Coating shall be holiday-free, NSF approved, with a minimum thickness of 12 mils. Surfaces shall be clean, dry, and free from rust and grease before coating.
- D. All exterior surfaces of swing check valves shall be clean, dry, and free from rust and grease before coating. Exterior ferrous parts of all valves shall be shop primed at the factory with one coat, minimum dry film thickness of 4 mils, of a rust inhibitive, universal primer. Primer shall be suitable for finish paint specified. Following installation, valves shall be finish painted in accordance with Section 09900: Painting.
- E. Valve Manufacturer: Swing check valves shall be manufactured by Clow or M&H.

2.08 Air Release Valves

A. Air Release Valves for Wastewater Service

1. Sewage Combination Air Valves (SCAV)

- a. Design: Single body, double orifice to allow large volumes of air to escape or enter pipe (vacuum release).

- 1) Maximum Operating Pressure: 250 PSI (17.2 Bar)
- 2) Operating Range: 0 – 250 PSI (0 - 17.2 Bar)
- 3) Valve seat does not contact the medium (air cushion).
- 4) Two connections for effective flushing during maintenance work (top inlet flushing connection)
- 5) All mechanical parts are manufactured of corrosion-resistant materials; valve body is stainless steel 316Ti

b. Materials:

No.	Component	Series - Stainless Steel
1	Outlet elbow with strainer, 1,5"	Polyethylene (PE) 100
2	Cup seal with retaining ring	Buna NBR
3	O-ring 79 x 7 mm	Buna NBR
4	Hex Head Bolt	Stainless Steel
5	Hexagon nut	Stainless Steel
6	Deflector	Polyethylene (PE)
7	Body	Stainless Steel 316Ti
8	Float	Delrin® POM1
9	Ball valve, 1"	Stainless Steel
10	Float spindle, complete	Stainless Steel 316Ti
11	Body nut with grid	Delrin® POM1
12	Membrane holder, complete	Delrin® POM1
13	O-ring 157 x 6 mm.	Buna NBR
14	Clamping flange	Stainless Steel
15	Valve body & cover	Delrin® POM1
16	Valve basket with Buna N O-rings	Delrin® POM1
17	Threaded ring	Delrin® POM1
18	Pressure spring	Stainless Steel
19	Damper ring	Buna NBR

s smaller than 4 inches shall have threaded ends. Valves 4 inches and larger shall have flanged ends.

2. Flanges for Class 150 valves shall comply with ANSI B16.1, Class 125. Flanges for Class 300 valves shall comply with ANSI B16.1, Class 250.

3. Threaded ends shall comply with ANSI B2.1.

C. Bolts and Nuts for Flanged Valves:

1. Bolts and nuts for flanged valves located outdoors and above ground shall be Type 316 stainless steel conforming to ASTM A-193, Grade B8M or bolts, and ASTM A-194, Grade 8M for nuts.
- D. Gaskets: Gaskets for flanged end valves shall be as described in the detail piping specifications.
- E. Air release valves shall be manufactured by H-TEC Model 986 (Stainless Steel) or ARI Model S-020 (Stainless Steel).

2.09 Service Saddles, Corporation or Curb Stops, and Service Lines

- A. Service saddles shall have ductile iron bodies in accordance with ASTM A536, latest revision, with double stainless steel straps. Ductile iron body shall have a fusion bonded epoxy coating with a minimum thickness of 12 mils. Straps shall be Type 316 stainless steel with premium grade Type 316 L stainless steel bolts and Type 316 stainless steel washers and nuts. The nuts shall be Teflon coated. The gasket material shall be an elastomeric compound resistant to degradation by oil, natural gas, acids, alkalies, most aliphatic fluids, and chloramines. Service saddles shall be rated for a working pressure of at least 200 psi. The outlet of the saddle shall have AWWA tapered threads for corporation stops or IP threads for gate valves. Service saddles shall be manufactured by Ford or an approved equal.
- B. Corporation stops shall be designed and manufactured in accordance with AWWA C-800, latest edition. Inlet threads shall be AWWA-taper thread (CC). Outlet shall be fitted with connections to suit connecting pipe or tube. Corporation stops shall be Ford FB-1000 or FB-1100, Mueller P25008 or P25028, or an approved equal.
- C. Curb stops shall be constructed of bronze and conform to AWWA C-800 (ASTM B62). Seats and O-rings shall be of Buna-N rubber and all curb stops shall be lockable. Inlet and outlet connections shall be compatible with adjacent pipe, tubing, yokes, or meters as applicable. Curb stops, meter branches, service tees, and wye branches shall be in accordance with City of Temple Terrace Standards and manufactured by Ford, Mueller, R.Y. McDonald, or an approved equal.
- D. Potable water service lines shall be blue polyethylene tubing conforming to AWWA C-800 and AWWA C-901. Tubing shall be rated for a working pressure of 200 psi.

2.10 Stainless Steel Ball Valves

- A. General Service: Stainless steel ball valves shall be standard port type for the sizes indicated on the Drawings. Ball valves shall be designed for a working pressure of 200 psi with positive shut off when in the closed position. Valve body and ends shall be constructed of forged Type 316 stainless steel and valve ends shall be NPT threaded connections. The ball shall have a full bore port design machined from a solid metal piece with highly polished surfaces. The ball and stem shall be manufactured from Type 316 stainless steel. Manually operated ball valves shall be furnished with lever operators manufactured of forged Type 316 stainless steel with a molded vinyl sleeve. Stainless

steel ball valves shall be Type 1000 Neles-Jamesbury screwed end ball valves or an equal approved by the Engineer.

2.11 Tapping Sleeves and Valves

- A. Mechanical joint tapping sleeves shall be full body ductile-iron and have an outlet flange with the dimensions of the Class 125 flanges shown in ANSI B16.1, properly recessed for tapping valve. Glands shall be ductile iron. Gaskets shall be vulcanized natural or synthetic rubber. Bolts, nuts and gaskets shall comply with ANSI/AWWA C111/A21.11. Sleeves shall be capable of withstanding a 200 psi working pressure.
- B. Steel tapping sleeves shall be fabricated of minimum 3/8" carbon steel meeting ASTM A285 Grade C unless specified otherwise on the Drawings. Outlet flange shall meet AWWA C-207, Class "D" ANSI 150 lb. drilling and be properly recessed for the tapping valve. Bolts and nuts shall be high strength low alloy steel, meeting AWWA C111 (ANSI A21.11) or Type 304 Stainless Steel. Gaskets shall be synthetic rubber. Sleeve shall have manufacturer applied fusion bonded epoxy coating, minimum 12 mil thickness. Steel tapping sleeves shall be manufactured by JCM or an approved equal.
- C. Tapping valves shall be resilient wedge gate valves meeting the requirements as specified herein; however, the end configuration shall be compatible with the tapping sleeve.

2.12 Pressure Gauge Assemblies

- A. Pressure gauges shall have the following design features: silicone oil filled, 4-inch aluminum dial with black numerals on white background, Type 316 stainless steel bourdon tube and internal movement, 330 Series stainless steel case and ring, safety glass lens, threaded lens retaining ring, adjustable pointer, either friction or gear adjustable, blowout protection, 1/2-inch Type 316 stainless steel stem mounting, and 1.0 percent accuracy based on full scale. No stop pins shall be permitted on the dial face. Internal stop pins shall be required to prevent the sector gear from becoming disengaged from the geared needle post as a result of over or under pressure range. Provide Type 316 stainless steel pressure snubbers on all gauges not protected by diaphragm seals. Provide a supply of replacement fill liquid for all gauges supplied for the entire project. Pressure gauges shall be as manufactured by U.S. Gauge, Ashcroft, Marshalltown, Marsh, Wika, or approved equal.
- B. Pressure Gauge Service and Ranges: Pressure gauges shall be furnished for the following service use with the indicated range. This table is for convenience only and may not depict all systems or all services that require gauges.

<u>Service</u>	<u>Range</u>	<u>Diaphragm Seal</u>
Pump Discharge	0-100 psi	Yes

- C. Each pressure gauge assembly shall be furnished with an isolation ball valve. Body, stem, and all other parts of valves shall be manufactured of Type 316 stainless steel. Valve packing shall be high-density TFE. Valve connections shall be 1/2-inch female NPT threaded connections. Ball valves for pressure gauge assembly isolation shall be 45 Series as manufactured by Swagelok, or an equal approved by the Engineer.

2.13 Wall Sleeves, Seals, and Pipes and Non-Standard Castings

A. Wall Sleeves:

1. Wall sleeves shall be of cast iron, ductile iron, or hot-dip galvanized carbon steel and shall have a waterstop ring located in the center of the wall. Sleeves shall be provided with seals and shall be oversized as required for the installation of seals. Sleeves shall terminate flush with finished surfaces of walls and ceilings, and shall extend 2 inches above the finished floor.
2. When noted on the Drawings, smaller pipe sleeves in CMU specified sand shall be oversized as required for the installation of the process pipe and sealant materials. Sleeves shall terminate flush with finished surfaces of walls and ceilings, and shall extend 2 inches above the finished floor.
3. For poured or grouted in place sleeves, lightweight, high-impact thermoplastic sleeves may be substituted. Plastic sleeves shall have an integral waterstop and anchoring ribs. Plastic sleeves shall be a product of the sleeve seal manufacturer and shall be Century Line Sleeves as manufactured by Thunderline Corporation or an approved equal.
4. Wall sleeves shall be installed for all piping passing through building walls and floors, except where noted on the Drawings. Sleeves shall be of sufficient size to pass the pipe without binding. Sleeves shall terminate flush with finished surfaces of walls and ceilings, and shall extend 2 inches above the finished floor. Escutcheons shall be provided at walls and floor to completely conceal the sleeves smaller than 3 inches. Escutcheons shall be cast iron, nickel plated split-type.

- B. Wall Sleeve Seals: Wall sleeve seals shall be modular mechanical type consisting of interlocking synthetic rubber links shaped to continuously fill the annular space between the pipe and wall sleeve. Links shall be loosely assembled with bolts to form a continuous rubber belt around the pipe with a pressure plate under each bolt head and nut. After the seal assembly is positioned in the sleeve, tightening of the bolts shall cause the rubber sealing elements to expand and provide an absolutely water-tight seal between the pipe and wall sleeve. The synthetic rubber shall be suitable for exposure to water, wastewater, and groundwater. Pressure plates shall be of nylon polymer and bolts, nuts, and washers shall be Type 316 stainless steel. The seals shall be Link Seal as manufactured by Thunderline Corporation or an Engineer approved equal.

2.14 Flexible Expansion Joints

- A. Flexible expansion joints shall be of the molded wide double arch design manufactured of neoprene rubber with polyester and steel reinforcement. Neoprene body shall be

supplied with a Hypalon coating. All expansion joints shall have filled arches. Joints shall be flanged, suitable for 150 psi water working pressure, and in accordance with ANSI B16.1 dimensions and bolting patterns. Flanged ends shall be furnished with split 316 stainless steel retaining rings.

- B. Provide 316 stainless steel limit restraint rods on all lines as follows:

Nominal Pipe Size (Inches)	<u>150 psi</u>		<u>300 psi</u>	
	No. Bolts Or Studs	Size (Inches)	No Bolts Or Studs	Size (Inches)
2	2	5/8	2	5/8
3	2	5/8	2	5/8
4	2	5/8	2	5/8
6	2	5/8	2	5/8
8	2	5/8	2	5/8
10	2	5/8	2	3/4
12	2	3/4	2	7/8
14	2	3/4	2	1
16	2	7/8	2	1-1/4
18	2	1	2	1-3/8
20	2	1	2	1-1/2
24	4	1	4	1-1/4

- C. Minimum performance for flexible expansion joints shall be as follows:

Size (In.)	Axial Compression (Inches)	Axial Elongation (Inches)	Lateral Deflection (Inches)	Angular Deflection Degrees
2	7/8	1/2	1	30
4	7/8	1/2	1	30
6	7/8	1/2	1	25
8	1-3/8	3/4	1	25
10	1-3/8	3/4	1	20
12	1-3/8	3/4	1	20
24	1-5/8	7/8	1	20

- D. Flexible expansion joints shall be as manufactured by Mercer, Red Valve, General Rubber Corporation, Metraflex Company, or an equal approved by the Engineer.

PART 3 - EXECUTION

3.01 Inspection

- A. All pipe, fittings, valves, and other material shall be subject to inspection and approval by the Engineer after delivery, and no broken, cracked, imperfectly coated, or otherwise damaged or unsatisfactory material shall be used. When a defect or crack is discovered, the damaged portion shall not be installed. Cracked pipe shall have the defect cut off at least 12 inches from the break in the sound section of the barrel.

3.02 General Installation Requirements

- A. Excavation, backfill, and compaction shall conform to the provisions of Sections 02315 and 02320. Upon satisfactory installation of the pipe bedding material as specified in Section 02320, a continuous trough for the pipe barrel and recesses for the pipe bells or couplings shall be excavated by hand digging. When the pipe is laid in the prepared trench, true to line and grade, the pipe barrel shall receive continuous, uniform support and no pressure will be exerted on the pipe joints from the trench bottom.
- B. Cover for underground piping shall not be less than that indicated on the Drawings. The minimum cover for pipe shall be 36 inches. In areas where other piping conflicts preclude the cover desired, the piping shall be laid to provide the maximum cover obtainable.
- C. Pipe, fittings, valves, and accessories shall be installed as shown or indicated on the Drawings.
- D. All connections to existing piping systems shall be made as shown or indicated on the Drawings after consultation and cooperation with authorities of the Owner. Some such connections may have to be made during off-peak hours (late night or early morning).
- E. Pipe Joint Deflection: Whenever it is desirable to deflect pipe joints to avoid obstructions or to maintain required alignment, the amount of the joint deflection shall not exceed 75 percent of the maximum limits allowed by the pipe manufacturer.
- F. In preparation for pipe installation, placement (stringing) of pipe should be as close to the trench as practical on the opposite side of the trench from the excavated material. The bell ends of the pipe should point in the direction of the work progress.
- G. Pipe and fittings shall be laid accurately to the lines and grades indicated on Drawings. Where grades for the pipeline are not indicated on the Drawings, maintain a uniform depth of cover with respect to finish grade. Care shall be taken to insure a good alignment both horizontally and vertically and to give the pipe a firm bearing along its entire length. Any pipe which has its grade or joint disturbed after laying shall be taken up and relayed.
- H. All pipe and fittings shall be cleared of sand, dirt, and debris before laying. All precautions shall be taken to prevent sand, dirt, or other foreign material from entering the pipe during installation. If necessary, a heavy, tightly woven canvas bag of suitable size shall be placed over each end of the pipe before lowering into the trench and left there until the connection is made to the adjacent pipe. Any sand, dirt, or other foreign material that enters the pipe shall be removed from the pipe immediately. Interior of all pipe and fittings shall be kept clean after installation until accepted in the complete Work.
- I. Any time that pipe installation is not in progress, the open ends of pipe shall be closed by a watertight plug or other method approved by the Engineer. Plugs shall remain in pipe ends until all water is removed from the trench. No pipe shall be installed when trench conditions are unsuitable for such work, including standing water, excess mud, or rain.
- J. After pipe has been laid, inspected, and found satisfactory, sufficient backfill shall be placed along the pipe barrel to hold the pipe securely in place while conducting the preliminary hydrostatic test. No backfill shall be placed over the joints until the

preliminary test is satisfactorily completed, leaving them exposed to view for the detection of visible leaks.

- K. Upon satisfactory completion of the hydrostatic test, backfilling of the trench shall be completed.
- L. Above-Ground and Exposed Piping: Piping shall be cut accurately to measurements established at the job site and shall be worked into place without springing or forcing, properly clearing all equipment access areas and openings. Changes in sizes shall be made with appropriate reducing fittings. Pipe connections shall be made in accordance with the details shown and manufacturer's recommendations. Open ends of pipelines shall be properly capped or plugged during installation to keep dirt and other foreign material out of the system. Pipe supports and hangers shall be provided where indicated or as required to insure adequate support of the piping.

3.03 Installation of Ductile Iron Pipe

- A. All ductile iron pipe and fittings shall be laid in accordance with American Water Works Association Standard ANSI/AWWA C600, latest revision, entitled "Standard for Installation of Ductile Iron Water Mains and Their Appurtenances".
- B. Restrained Joints: Restrained joints shall be provided where indicated on the Drawings. Joint assembly shall be made in strict accordance with the manufacturer's instructions, which shall be submitted to the Engineer for review and approval before commencing work.
- C. Flanged Joints: Flanged joints shall be made up by inserting the gasket between the flanges. The threads of the bolts and the faces of the gaskets shall be coated with suitable lubricant immediately before installation.
 - 1. Bolt holes of flanges shall straddle the horizontal and vertical centerlines of the pipe. Clean flanges by wire brushing before installing flanged fittings. Clean flange bolts and nuts by wire brushing and lubricate bolts with oil and graphite.
 - 2. Insert the nuts and bolts (or studs), finger tighten, and progressively tighten diametrically opposite bolts uniformly around the flange to the proper tension.
 - 3. Exercise care when tightening joints to prevent undue strain upon valves, pumps, and other equipment.
 - 4. If flanges leak under pressure testing, loosen or remove the nuts and bolts, reset or replace the gasket, reinstall or retighten the bolts and nuts, and retest the joints. Joints shall be watertight.

3.04 Installation of PVC Pipe

- A. All push-on joint PVC pipe shall be installed in accordance with the pipe manufacturer's published installation guide, the AWWA Manual of Practice No. M23 "PVC Pipe Design and Installation" and the Uni-Bell Plastic Pipe Association installation recommendations.

B. PVC Pipe Joint Assembly for Threaded and Solvent Welded Pipe:

1. All threaded and solvent welded joints shall be made watertight in accordance with ASTM D2855, ASTM D2564, and AWWA Manual M23. All pipe cutting, threading, and jointing procedures for threaded and solvent welded PVC pipe joints shall be in strict accordance with the pipe and fitting manufacturer's printed installation instructions. Thread lubricant for threaded joints shall be Teflon tape only.
2. At threaded joints between PVC and metal pipes, the metal side shall contain the socket end and the PVC side the spigot. A metal spigot shall not, under any circumstances, be screwed into a PVC socket.

3.05 Installation of Pipe Sleeves, Wall Castings, and Couplings

- A. Pipe sleeves and wall castings shall be provided at the locations called for on the Drawings. These units shall be as detailed and of the material as noted on the Drawings. They shall be accurately set in the concrete or masonry to the elevations shown. All wall sleeves and castings required in the walls shall be in place when the walls are poured. Ends of all wall castings and wall sleeves shall be of a type consistent with the piping to be connected to them.
- B. Link seals for wall sleeves shall be installed in strict accordance with the manufacturer's printed installation instructions. For watertight applications in tanks, the link seal installation shall be tested hydrostatically for leaks at the same time as the tank. Any leaks that occur during the test period shall be repaired by checking the link seals for proper installation and replacing of units found to be defective at no additional cost to the Owner.
- C. Pipe couplings shall be installed in strict accordance with the manufacturer's published instructions and recommendations.

3.06 Installation of Valves

- A. Valves of the size and type shown on the Drawings shall be set plumb and installed at the locations indicated on the Drawings. Valves shall be installed in accordance with manufacturer's installation instructions and per the details on the Drawings.
- B. Valves shall be installed such that they are supported properly in their respective positions, free from distortion and strain. Valves shall be installed such that their weight is not borne by pumps and equipment that are not designed to support the weight of the valve.
- C. Valves shall be carefully inspected during installation; they shall be opened wide and then tightly closed and the various nuts and bolts shall be tested for tightness. Special care shall be taken to prevent any foreign matter from becoming lodged in the valve seat. Check and adjust all valves for smooth operation.
- D. Install valves with the operating stem in either horizontal or vertical position.
- E. Allow sufficient clearance around the valve operator for proper operation.

- F. Clean iron flanges by wire brushing before installing flanged valves. Clean carbon steel flange bolts and nuts by wire brushing, lubricate flange bolt threads with oil or graphite, and tighten nuts uniformly and progressively. Clean threaded joints by wirebrushing or swabbing. Apply Teflon joint compound or Teflon tape to pipe threads before installing threaded valves. Joints shall be watertight.
- G. For buried valves, a valve box shall be centered accurately over the operating nut and the entire assembly shall be plumb. The tops of valve boxes shall be adjusted to the proper elevation as specified below and as shown on the Drawings.
- H. Valves shall be tested hydrostatically, concurrently with the pipeline in which they are installed. Protect or isolate any parts of valves, operators, or control and instrumentation systems whose pressure rating is less than the pressure used for the pressure tests. If valve joints leak during pressure testing, loosen or remove the nuts and bolts, reseal or replace the gasket, reinstall or retighten the bolts and nuts, and hydrostatically retest the joints.
- I. Following installation, all above-ground valves shall be painted in accordance with the painting system specified in Section 09900: Painting.

3.07 Hydrostatic Pressure and Leakage Testing - See Section 15044

3.08 Obtaining Potable Water for Testing and Flushing

- A. The potable water supply shall be protected with an air gap or a reduced pressure principle backflow preventer approved by the Owner, if potable water is used for testing and flushing.
- B. To obtain potable water service during construction, the Contractor shall be required to install a temporary water meter, if public supply is available. The piping, fittings, backflow preventer, and appurtenances required for the temporary construction water service shall be supplied by the Contractor.
- C. The Contractor shall coordinate with the Owner for temporary construction water service connection, usage, and flushing.

3.09 Installation of Reduced Pressure Back Flow Preventers

- A. Back flow preventers shall be installed at the locations shown on the Drawings. Back flow preventers shall be installed in accordance with the manufacturer's written installation instructions and as shown on the Drawings.
- B. Reduced pressure principle back flow preventers shall be installed horizontally with an 18-inch minimum clearance between the finished grade and the lowest point on the bottom of the unit. Reduced pressure back flow preventers shall be installed with provisions for a suitable drain arrangement to drain off discharges from the relief valve, so that discharges are not objectionable. Back flow preventers shall be installed such that they are easily accessible for testing, maintenance and repair.

- C. Piping and fittings for units 3 inches and larger in size shall have flanged joints. Piping, fittings, and valves for units 3 inches and larger in size shall be properly supported with adjustable pipe support stands as shown on the Drawings.
- D. Following installation of the reduced pressure back flow preventer, piping, fittings, valves, and the entire above ground assembly shall be finish painted in accordance with Section 09900: Painting.

3.10 Main Cleaning and Flushing

- A. Following the hydrostatic and leakage tests, all the mains constructed under this contract shall be cleaned and flushed to remove sand, loose dirt, and other debris. Flushing velocity shall be a minimum of 2.5 fps. Flushing shall continue until clean water flows from the main. However, the Contractor shall endeavor to use the minimum amount of flushing water required to complete the work.
- B. Temporary blowoffs may be required for the purpose of flushing mains. Temporary blowoffs shall be installed as close as possible to the ends of the main being flushed. Blowoffs installed on the main shall be the same diameter as the main. Temporary blowoffs shall be removed and plugged after the main is flushed. Use of temporary blowoffs shall be at no additional cost to the Owner.
- C. The Owner shall be notified at least 72 hours prior to flushing mains.
- D. Blowoffs and temporary drainage piping used for flushing shall not be discharged into any gravity sewer or pumping station wet well. The Contractor shall obtain prior approvals from the Engineer and the Owner as to the methods and locations of flushing water discharge.

3.11 Disinfecting Potable Water Pipelines

- A. General: Before being placed in service, all potable water pipelines shall be disinfected by chlorination. Taps for chlorination and sampling shall be uncovered and backfilled by the Contractor as required. The disinfection procedure shall be approved by the Engineer.
- B. Standard: AWWA C651-92, "Standard for Disinfecting Water Mains".
- C. Procedure
 1. Flush all dirty or discolored water from the line and introduce chlorine in approved dosages through a tap at one end while water is being withdrawn at the other end of the line.
 2. The chlorine solution shall remain in the pipeline for at least 24 hours.
 3. Following the chlorination period, all treated water shall be flushed from the line and replaced with water from the distribution system.
 4. Bacteriological sampling and analysis shall be made in full accordance with AWWA Manual C651-92 and the appropriate FDEP permit. If necessary, the Contractor will be required to re-chlorinate.

5. Sampling and analysis shall be done by the Owner.
- D. Approval: The line shall not be placed in service until the requirements of the State and County Public Health Department are met, and the Letter of Clearance is obtained from the Department of Environmental Protection.

END OF SECTION

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SECTION 15062
DUCTILE IRON PIPE AND FITTINGS

1. GENERAL

1.1 Description

- A. Scope of Work: Furnish all labor, materials, equipment and incidentals required and install, all ductile iron piping, ductile iron fittings, and appurtenances as shown on the Drawings and as specified herein.
- B. General Design: The equipment and materials specified herein are intended to be standard types of ductile iron pipe and cast or ductile iron fittings for use in transporting wastewater, potable water, and reclaimed water.

1.2 Quality Assurance

- A. Qualifications: All of the ductile iron pipe and ductile or cast iron fittings shall be furnished by manufacturers who are fully experienced, reputable, and qualified in the manufacture of the materials to be furnished. The pipe and fittings shall be designed, constructed and installed in accordance with the best practices and methods and shall comply with these specifications as applicable.
- B. Standards
 - 1. ANSI A 21.50/AWWA C150
 - 2. ANSI A-21.51/AWWA C151
 - 3. ANSI A-21.41/AWWA C104
 - 4. C-105 – Poly Encasement
 - 5. C-110 –DI & CI Fittings
 - 6. C-111 – Rubber Gasket Joints
 - 7. C-153 – Compact Fittings
 - 8. C-115 – Flanged DIP
 - 9. C-116 – FBE Coating
- C. Factory Tests: The manufacturer shall perform the factory tests described in ANSI A-21.51/AWWA C151.
- D. Quality Control

1. The manufacturer shall establish the necessary quality control and inspection practice to ensure compliance with the referenced standards.

1.2 Submittals

A. Materials and Shop Drawings

1. Submit Shop Drawings and piping layouts. Shop Drawings shall include dimensioning, methods and locations of required supports and all other pertinent technical specifications. Show locations of all field cuts. Shop Drawings and piping layout drawings shall be prepared by the pipe manufacturer.

B. Manufacturer's Certification

1. Submit manufacturer's sworn certification of factory tests and test results.

1.2 Product Delivery, Storage and Handling

- A. The Contractor shall be responsible for storing and handling all materials furnished by the pipe supplier. The supplier/Vendor shall replace, at their expense, all materials found to be defective or damaged during transport from the factory to the job site. All pipe delivered to project site for installation is subject to random testing for compliance with the designated specifications.
- B. Delivery and Storage: Delivery and storage of the materials shall be in accordance with the manufacturer's recommendations. Stored pipe shall be covered for protection against contamination and UV light. Joint gaskets shall be stored in clean, dark and dry location until immediately before use.
- C. Handling: Care shall be taken in loading, transporting and unloading to prevent damage to the pipe and fittings and their respective coatings. Pipe or fittings shall not be rolled off the carrier or dropped. Pipe shall be unloaded by lifting with a forklift or crane. All pipe or fittings shall be examined before installation and no piece shall be installed which is found to be defective. Pipe shall be handled to prevent damage to the pipe or coating. Accidental damage to pipe or coating shall be repaired to the satisfaction of the City or be removed from the job. When not being handled, the pipe shall be supported on timber cradles or on level ground, graded to eliminate all rock points and to provide uniform support along the full pipe length. When being transported, the pipe shall be supported at all times in a manner which will not permit distortion or damage to the lining or coating. Any unit of pipe that, in the opinion of the City, is damaged beyond repair by the Contractor shall be removed from the site.

2. PRODUCTS

2.1 Material

A. Ductile Iron Pipe

1. Standards: ANSI A-21.50, AWWA C150 and ANSI A-21.51, AWWA C151
2. Thickness/Pressure Class:
 - a. Below ground piping: Class 350 (4-inch to 12-inch), Class 250 (16-inch and above) unless otherwise noted or specified.
 - b. Above ground piping: Flanged, Class 350 (minimum) unless otherwise noted or specified.
3. Joints
 - a. Push-on or Mechanical Joints (below ground piping):
 - 1) Standards: ANSI A21.11, AWWA C111
 - 2) Class: 350-psi working pressure rating
 - 3) Gaskets
 - a) Sanitary/Wastewater, Potable and Reclaimed Water Service: Styrene Butadiene Rubber (SBR) ring type.
 - b. Flanged (above ground or inside below ground vaults):
 - 1) Standards: ANSI A21.15, ANSI B16.1
 - 2) Class: 125-pound factory applied screwed long hub flanges, plain faced without projection.
 - 3) Gaskets
 - a) All Span lengths: full-face Toruseal gaskets as manufactured by American Cast Iron Pipe or acceptable equal.
 - c. Restrained Joints are required for all pipes:
 - 1) Manufacturers: Lok-Ring system (all sizes) or locking type gasket systems (for 16-inch diameter and smaller) as manufactured by American Ductile Iron Pipe; MEGALUG System as manufactured by EBBA Iron; or acceptable equal.
 - 2) Class: 250-psi minimum design pressure rating.
 - 3) Standard mechanical joint retainer glands shall not be acceptable.

d. Joint Accessories

- 1) Mechanical joint bolts, washers and nuts: Ductile iron or Corten steel.
- 2) Flanged joint bolts, washers and nuts: 316 stainless steel with bolts and nuts conforming to ASTM A193 Grade B8M.
 - a) Pipe Length (below ground installation): 20-feet maximum nominal length.

4. Pipe Identification

- a. Each length of pipe shall bear the name or trademark of the manufacturer, the location of the manufacturing plant, and the class or strength classification of the pipe. The markings shall be plainly visible on the pipe barrel. Pipe which is not clearly marked is subject to rejection.

B. Fittings

1. Ductile iron fittings 4-inch through 24-inch shall be pressure rated at 350-psi minimum, except flanged joint type fittings which shall be rated at 250-psi minimum. All 30-inch and larger fittings shall be pressure rated to 250-psi minimum. All fittings shall conform to either ANSI/AWWA C110/A21.10 and/or C153/A21.53, latest revision, and shall be ductile iron only. All fittings shall be cast and machined allowing the bolt holes to straddle the vertical centerline. All fittings shall be designed to be capable to withstand, without bursting, hydrostatic tests of three times the rated water working pressure. All fittings shall have a date code cast (not printed or labeled) with identification of date, factory, and the factory unit from which it was cast and machined. Fittings shall have the pressure rating, nominal diameter of openings, manufacturer's name, and the country where cast and number of degrees or fraction of the circle distinctly cast on them. Ductile iron fittings shall have the letter "DI" or "Ductile" cast on them.
2. Joints shall be as described for ductile iron pipe for above ground/exposed and buried service.
3. All potable water main fittings shall have NSF 61 certification, and ISO 9001 certification for both the foundry and manufacturer. The NSF 61 certification shall be issued on all coatings and linings, from the said manufacturers that are used for potable water applications.

2.2 Coatings, Linings and Identification Markings

A. Exterior Coatings

1. Below ground/buried or in a casing pipe:

- a. Type: Asphaltic coating, 1.0-mil DFT in accordance with ANSI/AWWA A21.51/C151.
- b. Markings: (continuous 3-inch wide strip within top 90 degrees of pipe - min. drying time 30-minutes before backfill).
- c. Color:
 - 1) Raw Wastewater: Safety Green
 - 2) Reclaimed Water: Purple (Pantone 522C)
 - 3) Potable Water: Safety Blue

2. Above ground/Exposed/In vaults

- a. Coatings and coating testing for ductile iron pipe and fittings for above ground/exposed applications shall be accordance with Division 9. Primer, intermediate and final coats whether shop or field applied shall be compatible and applied in accordance with the coating system manufacturer's recommendations. Asphaltic seal coat applied to the exterior of above ground piping and fittings shall be blasted and completely removed prior to coating per NACE-3/SSPC-SP6 commercial blast cleaning minimum angular anchor profile of 1.5-mils.
- b. Color:
 - 1) Raw Wastewater: Safety Green
 - 2) Reclaimed Water: Purple (Pantone 522C)
 - 3) Potable Water: Safety Blue

B. Interior Lining (Applied by pipe manufacturer)

1. Wastewater: Interior coating shall be Protecto 401 (amine cured novalac epoxy containing at least 20% by volume of ceramic quartz pigment) for all pipe and fittings. All ductile iron pipe and fittings shall be delivered to the manufacturer certified applicator without asphalt, cement lining, or any other lining on the interior surface and no coating shall have been applied to the first 6-inches of the exterior of the DIP spigot ends. Minimum surface preparation shall be SSPC-SP 1 Solvent Cleaning method to remove oil and grease followed by NACE-4 / SSPC-SP7 Brush-Off Blast Cleaning. Protecto 401 shall be applied within 12-hours of surface preparation to the interior of the pipe and fittings so as to obtain a continuous and relatively uniform and smooth integral lining with a total minimum dry film thickness of 40-mils for the complete system. No lining shall take place when the substrate or ambient temperature is below 40°F. The lining shall not be used on the face of the flange of fittings or flanged pipe. The system shall be holiday free and holiday testing (minimum 2000 volts) shall be

conducted and pinholes shall be repaired prior to shipping.

2. Treated effluent pipe down stream of Secondary Clarifiers: Interior coating shall be fusion-bonded epoxy (FBE) or Cement Mortar lined with asphaltic seal coat.
 - a. FBE for Fittings: Fittings shall be supplied with a FBE coating, both inside and outside for total protection including flanged and buried fittings. The exterior of flanged fittings for above ground assemblies shall adhere to final exterior coating requirements per 3119 2.04 A. The FBE coating system shall meet or exceed ANSI/AWWA C-550 and C116/A21.116 requirements and shall have NSF 61 certification. FBE coating thickness shall be 6 to 8-mils dry film thickness, shall be applied for secure adhesion, shall have a smooth surface and shall be holiday free.
 - b. Cement mortar lining with a seal coat of asphaltic material shall be in accordance with ANSI/AWWA A21.4/C104.

C. Polyethylene Encasement is required on all buried pipe

1. Standard: ANSI A 21.5/AWWA C105, 8-mil minimum thickness.
2. Polyethylene shall be color-coded to process.

3. EXECUTION

3.1 Installation

- A. Ductile iron pipes shall be installed in accordance with AWWA C600 and AWWA Manual M-42. When a restraining type gasket is used, the bell shall be painted red.
- B. Underground Ductile Iron Pipe and Fittings:
 1. Bedding firm, dry and even bearing of suitable material. Blocking under the pipe will not be permitted.
 2. Placement
 - a. Alignment: In accordance with lines and grades shown on the Drawings. Deflection of joints shall not exceed 75% of the values recommended by the pipe manufacturer.
 - b. The Contractor shall provide line and grade stakes at a 100-foot maximum spacing and at all line and/or grade change locations. The Contractor shall provide temporary benchmarks at a maximum of 1,000-foot intervals. The minimum pipe cover shall be 30-inches below the finished grade surface or 30-inches below the elevation of the edge of pavement of the road surface whichever is greater.
 - c. All pipe and fittings shall be inspected prior to lowering into trench to insure

no cracked, broken or otherwise defective materials are being used. All homing marks shall be checked for the proper length so as to not allow a separation or over homing of connected pipe. Homing marks incorrectly marked greater than 1-inch shall result in rejection of pipe and removal from site. The Contractor shall clean ends of pipe thoroughly and remove foreign matter and dirt from inside of pipe and keep clean during and after installation.

- d. Proper implements, tools and facilities shall be used for the safe and proper protection of the Work. Pipe shall be lowered into the trench in such a manner as to avoid any physical damage to the pipe. Pipe shall not be dropped or dumped into trenches under any circumstances.
- e. Trench Dewatering and Drainage Control: Contractor shall prevent water from entering trench during excavation and pipe-laying operations to the extent required to properly grade the bottom of the trench and allow for proper compaction of the backfill. Pipe shall not be laid in water.
- f. Pipe Laying in Trench: Dirt or other foreign material shall be prevented from entering the pipe or pipe joint during handling or laying operations and any pipe or fitting that has been installed with dirt or foreign material in it shall be removed, cleaned and re-laid. Pigging of pipe may be used to remove foreign materials in lieu of flushing. At times when pipe installation is not in progress, the open ends of the pipe shall be closed by a watertight plug or by other means approved by the City to ensure absolute cleanliness inside the pipe. The pipe shall be installed with the color stripe and pipe text on the top of pipe.
 - 1) Cutting: When required, cutting shall be done using appropriate equipment designed for the intended purpose, leaving a smooth cut at right angles to the axis of the pipe. Cut ends of the pipe to be used with a push-on bell shall be beveled. Bare metal exposed at ends of the pipe shall be field coated in accordance with pipe manufacturer's recommendations. Cut pipe for wastewater service shall have exposed bare metal ends repaired with Protecto 401 using the coating system manufacturer's field repair kit.
 - 2) Joint Placement
 - a) Push on joints: Pipe shall be laid with the bell facing upstream. The gasket shall be inserted and the joint surfaces cleaned and lubricated prior to placement of the pipe. After joining the pipe, a metal feeler shall be used to verify that the gasket is correctly located.
 - b) Mechanical Joints: Pipe and fittings shall be installed in accordance with the "Notes on Method of Installation" under ANSI A21.11/AWWA C111. The gasket shall be inserted and the joint surfaces cleaned and lubricated with soapy water before tightening the bolts to the specified torque.

C. Thrust Restraint

- 1. General: Thrust restraint shall be accomplished by the use of mechanical restraining

devices unless specifically identified otherwise on the Drawings or herein.

2. All DI pipe joints shall be restrained.

D. Installation of Pipes on Curves

1. Maximum deflections at pipe joints, fittings and laying radius for the various pipe lengths shall not exceed the recommendations of the pipe manufacturer or the maximum deflection requirements as allowed in the City of Everglades City Municipal Utility Standards.

3.2 Cleaning and Field Testing

- A. General: At the conclusion of the Work, the Contractor shall provide all associated cleaning and field testing as specified in other related sections of these specifications.

END OF SECTION

SECTION 15065

POLYVINYL CHLORIDE (PVC) PIPE AND FITTINGS

1. GENERAL

1.1 Scope of Work

- A. Furnish all labor, materials, equipment and incidentals required and install, disinfect and test polyvinyl chloride (PVC) pipe, fittings and appurtenances of the sizes and in the locations shown on the Contract Drawings and as specified herein.
- B. The Engineer reserves the right to make such modifications in locations as may be found desirable to avoid interference between pipes, or for other reasons. Pipe fitting notation is for the Contractor's convenience and does not relieve him/her from installing and jointing different or additional items where required to achieve a complete piping system.
- C. Pipe/piping refers to all pipe, fittings, material and appurtenances required to construct PVC pressure piping systems throughout the Project, as specified, complete and in place.

1.2 Reference Standards

- A. Unless otherwise indicated, all materials, workmanship and practices shall conform to the following standards:

STANDARD	DESCRIPTION
American Society for Testing and Materials (ASTM)	
ASTM A-242	Standard Specification for High-Strength Low-Alloy Structural Steel
ASTM A-320	Standard Specification for Alloy-Steel Bolting Materials for Low-Temperature Service
ASTM A-536	Standard Specification for Ductile Iron Castings
ASTM D-1784	Standard Specification for Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds
ASTM D-1785	Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120
ASTM D-2464	Standard Specification for Threaded Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80
ASTM D-2467	Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80
ASTM D-2564	Standard Specification for Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems
ASTM D-2774	Standard Practice for Underground Installation of Thermoplastic Pressure Piping
ASTM D-2855	Standard Practice for Making Solvent-Cemented Joints with Poly(Vinyl Chloride) (PVC) Pipe and Fittings

ASTM D-3139	Standard Specification for Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals
ASTM F-437	Standard Specification for Threaded Chlorinated Poly(Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 80
ASTM F-477	Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe
American Water Works Association (AWWA)	
AWWA C-110	Standard for Ductile-Iron and Gray-Iron Fittings, 3-inch through 48-inch, for Water and Other Liquids
AWWA C-111	Standard for Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings
AWWA C-651	Disinfecting Water Mains
AWWA C-900	Polyvinyl Chloride (PVC) Pressure Pipe, 4-in Through 12-in for Water Distribution
AWWA C-905	Polyvinyl Chloride (PVC) Water Transmission Pipe, Nominal Diameters 14-in Through 36-in.
AWWA M-23	PVC Pressure Pipe and Fittings
National Sanitation Foundation (NSF)	
Std No. 14	Plastic Piping Components and Related Materials
Std No. 61	Drinking Water System Components - Health Effects

- B. Where reference is made to one of the above standards, the revision in effect at the time of Bid Opening shall apply.

1.3 Quality Assurance

- A. All PVC pipe and fittings shall be from a single manufacturer who is fully experienced, reputable, and qualified in the manufacture of the items to be furnished. The equipment shall be designed, constructed, and installed in accordance with the best practices and methods and shall comply with these specifications.
- B. Pipe for use with domestic potable water shall have an NSF seal of approval. The Supplier shall be responsible for the provisions of all test requirements specified in NSF Standard No. 14 as applicable.
- C. Acceptable Manufacturers of PVC shall include Certain-Teed Products, Corporation; Johns-Manville (J-M), or approved equal.

1.4 Submittals

- A. Submit to the Engineer, in accordance with the General Conditions, Supplementary Conditions and Section 01300, "Submittals", within thirty (30) days of the Effective Date of the Agreement, the name of the pipe and fitting manufacturers and a list of materials to be furnished by each manufacturer. The submittal shall include information on the local representative for each manufacturer, if the product is sold through a distributor, descriptive literature, illustrations, specifications, installation instructions and related information.
- B. Shop Drawings including piping layouts and schedules shall include dimensioning, fittings, types and locations of valves and appurtenances, joint details, methods and location of

supports, anchorage, gasket material, grade of material and all other pertinent technical information for all items to be furnished.

- C. Prior to each shipment of pipe, certified test reports that the pipe for this Contract was manufactured and tested in accordance with the ASTM and AWWA Standards specified herein shall be submitted.

1.5 System Description

- A. The equipment and materials specified herein are intended to be of standard types for use in transporting water, wastewater and reclaimed water.
- B. Note information in pipe schedule on Contract Drawings, if any, and in this Section, especially concerning pressures, minimum thickness, etc.
- C. The Contractor is responsible for compatibility between pipe materials, fittings and appurtenances.

1.6 Product Delivery, Storage and Handling

- A. PVC pipe shall be delivered to the Project Site in unbroken bundles packaged in such a manner as to provide protection against damage. When possible pipe should be stored at the Project Site in unit packages ready for use. Package units shall be handled using a forklift or a spreader bar with fabric straps. Packaged units shall not be stacked higher than two (2) units high at the Project Site. Any pipe damaged in shipment shall be replaced as directed by the Engineer, at no additional cost to the Owner.
- B. When it is necessary to store PVC pipe and fittings for more than thirty (30) days, exposure to direct sunlight shall be prevented by covering the pipe with an opaque material. Adequate air circulation above and around the pipe shall be provided as required to prevent excessive heat accumulation. PVC pipe shall not be stored close to heat sources or hot objects such as heaters, fires, boilers or engine exhaust. Pipe gaskets shall be protected from excessive exposure to heat, direct sunlight, ozone, oil and grease. The interior and all sealing surfaces of pipe, fittings and other appurtenances shall be kept clean and free of dirt and foreign matter.
- C. All pipe and fittings shall be thoroughly cleaned before installation and the interior shall be kept clean until testing.
- D. Care shall be taken in handling and laying pipe and fittings to avoid severe impact blows, crushing, abrasion damage, gouging or cutting. Pipe shall be lowered, not dropped, from trucks or into trenches. All cracked, damaged or defective pipe and fittings, or any length of pipe having a gouge, scratch or other permanent indentation of more than ten percent (10%) of the wall thickness in depth, shall be rejected and removed at once from the work and replaced with new acceptable pipe at no additional cost to the Owner.

1.7 Job Conditions

- A. Water in Excavation

1. Water shall not be allowed in the trenches while underground pipes, fittings, valves and/or accessories are being laid and/or tested.
2. The Contractor shall not open more trench than the available pumping facilities are able to dewater to the satisfaction of the Engineer. The Contractor shall assume responsibility for disposing of all water so as not to injure or interfere with the normal drainage of the territory in which he is working.
3. In no case shall the pipelines being installed be used as drains for such water, and the ends of the pipe shall be kept properly and adequately plugged during construction by the use of approved stoppers and not by improvised equipment.
4. All necessary precautions shall be taken to prevent the entrance of mud, sand, or other obstructing matter into the pipelines. If on completion of the work any such materials has entered the pipelines, it must be cleaned as directed by the Engineer so that the entire system will be left clean and unobstructed.

2. PRODUCTS

2.1 General

- A. All materials that come into contact with potable water shall be on either the EPA or NSF lists of products approved for use in contact with potable water. Manufacturers shall submit an affidavit with the shop drawings indicating approval by the EPA or NSF for the materials used in products that come into contact with potable water, in accordance with Rule 62-555.320(3), Florida Administrative Code.

2.2 Polyvinyl Chloride (PVC) Pipe and Fittings

A. Small Diameter Gravity Drainage Piping (< 4-inches)

1. PVC pipe smaller than four (4) inches nominal diameter used for gravity drainage piping shall be Schedule 40 pipe in accordance with ASTM D-1785.
2. Schedule 40 PVC pipe shall have solvent welded joints as specified for PVC pressure pipe.

B. Large Diameter Gravity Drainage Piping (≥ 4-inches)

1. Unless otherwise noted, large gravity drainage piping shall conform to the requirements and shall have gasketed integral bell ends:

Pipe Size (inches)	Pipe Requirements
4 -12	AWWA C900, DR25
> 12	AWWA C905, DR25

2. Pipe shall be designed for a maximum working pressure at not less than 100 psi and with not less than a 4 to 1 sustained hydrostatic pressure safety factor.

3. Fitting shall be ductile iron fittings with restrained mechanical joints and as specified in Section 15062, "Ductile Iron Pipe and Fittings".
4. Pipe shall be made of ductile iron pipe O.D.'s instead of IPS.

C. Small PVC Pressure Piping (< 4-inches)

1. Unless otherwise specified, PVC pressure pipe smaller than four (4) inches nominal diameter shall conform to the following requirements, as shown on the Contract Drawings or specified in other Sections.

Pipe Size (inches)	Pipe Requirements
< 4	Schedule 80, ASTM D-1785

2. Schedule 80 pipe shall have solvent welded joints unless otherwise shown on the Contract Drawings or specified in other Divisions.
3. PVC pressure pipe shall bear the approved seal of the National Sanitation Foundation (NSF).
4. PVC pipe that is exposed to sunlight shall be manufactured with UV additives to provide resistance to ultraviolet light deterioration.
5. Fittings
 - a. Socket type, solvent welded fittings for Schedule 80 PVC pipe, less than three (3) inches in diameter, shall be in conformance with ASTM D-2467. Socket type, solvent welded fittings for Schedule 80 CPVC pipe, less than three (3) inches in diameter, shall be in conformance with ASTM F-439.
 - b. Threaded type fittings for Schedule 80 PVC pipe, less than three (3) inches in diameter, shall be in conformance with ASTM D-2464. Threaded type fittings for Schedule 80 CPVC pipe, less than three (3) inches in diameter, shall be in conformance with ASTM F-437.
 - c. Solvent weld solvent welded or threaded joints shall be "water-tight".
 - d. All fittings for PVC pipelines greater than or equal to three (3) inches shall be ductile iron. All adapters, fittings and transition gaskets necessary to connect PVC fittings shall be furnished.
6. Flanges
 - a. Flanges for Schedule 80 PVC pipe shall be rated for a 150 psi working pressure with ANSI B-16.1 dimensions and bolting pattern.
 - b. Flanges shall be connected to PVC piping with either solvent welded or threaded joints in accordance with ASTM D-2467 or ASTM D-2464, respectively. Gaskets shall be neoprene, full faced type with a minimum thickness of 1/8-inch.

- c. Nuts and bolts shall be hexagonal with machine threads, manufactured of Type 316 stainless steel in accordance with ASTM A-320, Class 2.
- d. Type 304 stainless steel flat washers with lock washers shall be used against PVC flanges.
- e. The nuts shall have a hardness that is lower than that of the bolts and washers by a difference of 50 Brinnell hardness to prevent galling during installation.
7. PVC solvent cement shall be in compliance with ASTM D-2564 and in accordance with the pipe manufacturer's recommendations. The Contractor shall use a cleaner recommended by the manufacturer for cleaning the pipe/fittings prior to solvent welding. Lubricant for Schedule 80 threaded joints shall be Teflon tape only.
8. Provide suitable adapters for connections to equipment and other piping systems.

D. Large PVC Pressure Piping (≥ 4-inches)

1. Unless otherwise noted, PVC pressure pipe for the nominal diameters shown shall conform to the following requirements, have gasketed integral bell ends, and be manufactured to ductile iron O.D.'s instead of IPS.

Pipe Size (inches)	Pipe Requirements	Max. Working Pressure (psi)
4 - 12	AWWA C900, DR-18	150
> 12	AWWA C905, DR-18	235

2. PVC pipe shall bear the NSF marking of approval when used for potable water applications.
3. PVC Pipe shall be designed for maximum working pressure as indicated above and with not less than a 4 to 1 sustained hydrostatic pressure safety factor.
4. Fittings shall be ductile iron fittings with restrained mechanical joint ends as specified in Section 15062, "Ductile Iron Pipe and Fittings". All adapters, fittings and transition gaskets necessary shall be furnished.
5. PVC pipe that is exposed to sunlight shall be manufactured with UV additives to provide resistance to ultraviolet light deterioration.
6. Bell and Spigot
 - a. Pipe joints shall be made with integral bell and spigot pipe ends meeting ASTM D-3139, "Standard Specification for Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals". The bell shall consist of an integral thickened wall section designed to be at least as strong as the pipe wall.

- b. The bell shall be supplied with factory glued rubber ring gasket which conforms to the manufacturer's standard dimensions and tolerances.
- c. The gasket shall meet the requirements of ASTM F-477, "Elastomeric Seals (Gaskets) for Joining Plastic Pipe".
- d. PVC joints shall be "Ring-Tite" as manufactured by Johns-Manville Manufacturing Company, Inc. or an equal approved by the Engineer.

7. Fittings

- a. All fittings for use with PVC pipe three (3) inches and larger in size shall be ductile iron with a minimum working pressure of 250 psi and shall conform to ANSI/AWWA A21.10/C-110, latest revision except as shown on the Contract Documents.
- b. Fittings shall have mechanical joint bell ends manufactured in accordance with ANSI/AWWA A21.11/C-111, latest revision. Jointing materials for mechanical joints shall be provided by the fitting manufacturer. Materials, assembly and bolting shall be in accordance with ANSI/AWWA A21.11/C-111, latest revision.
- c. Tee head nuts and bolts for mechanical joints shall be manufactured of corrosion resistant high strength, low alloy COR-TEN steel meeting the requirements of ASTM A-242, or approved equal.
- d. All cast iron and ductile iron fittings for use with PVC pipe shall be coated and lined, as specified for ductile iron pipe in Section 15062, "Ductile Iron Pipe and Fittings", intended for similar service, as noted on the Contract Drawings.

8. Restrained Joints

- a. In accordance with the Contract Drawings, to prevent pipe joints and fittings from separating under pressure, pipe joints and fittings shall be restrained as follows, or with EOR approved equal:
 - 1) PVC pipe bell and spigot joints shall be restrained with the EBBA Iron MEGALUG® Series 1500 Restrainer or an equal approved by the Engineer. The restraining device and tee head bolts shall be manufactured of high strength ductile iron meeting ASTM A-536, Grade 65-45-12. Clamping bolts and nuts shall be manufactured of corrosion resistant high strength, low alloy COR-TEN steel meeting the requirements of ASTM A-242.
 - 2) Mechanical joint fittings used with PVC pipe shall be restrained with the EBBA Iron MEGALUG® Series 2000 PV Restrainer or an equal approved by the Engineer. The restraining device and tee head bolts shall be manufactured of high strength ductile iron meeting ASTM A-536, Grade 65-45-12. Clamping bolts and nuts shall be manufactured of corrosion resistant high strength, low alloy COR-TEN steel meeting the requirements of ASTM A-242.

E. Clear PVC Reinforced Tubing

1. Clear PVC tubing, for chemical applications shown on the Contract Drawings, shall be nylon reinforced, PVC clear tubing.
2. The inside diameter shall be as shown on the Contract Drawings or as specified in Sections of this Project Manual.
3. Tubing shall be able to withstand a working pressure of 150 psi.
4. Tubing shall be Amaclear "R" as manufactured by Amazon Hose Rubber Company, or approved equal.

F. All ductile iron fittings and accessories for pipelines (above grade - flanged; below grade - mechanical joint) shall be compatible with the pipe.

G. PVC fittings shall meet the requirements of AWWA C-900/C-905 and be of the same, or higher, pressure rating as the pipeline.

H. PVC color shall be in accordance with the Contract Documents.

3. EXECUTION

3.1 Storage and Handling of PVC Pipe

A. Delivery, Storage and Handling of PVC pipe shall follow the requirements of Article 1.7 of this Section.

3.2 Installation of PVC Pipe and Fittings

- A. No single piece of pipe shall be laid unless it is straight. The centerline of the pipe shall not deviate from a straight line drawn between the centers of the openings at the ends of the pipe by more than $\frac{1}{16}$ -inch per foot of length. If a piece of pipe fails to meet this requirement check for straightness, it shall be rejected and removed from the site. Laying instructions of the pipe manufacturer shall be explicitly followed.
- B. If any defective pipe is discovered after it has been installed, it shall be removed and replaced with a sound pipe in a satisfactory manner at no additional cost to the Owner.
- C. All PVC pipe and fittings and cast or ductile iron fittings shall be laid in accordance with the pipe manufacturer's published installation guide, the AWWA Manual of Practice No. M23, "PVC Pipe - Design and Installation" and the Uni-Bell Plastic Pipe Association installation recommendations.
- D. In preparation of pipe installation, placement (stringing) of pipe should be as close to the trench as practical on the opposite side of the trench from the excavated material. The bell ends of the pipe should point in the direction of the work progress.

- E. Pipe and fittings shall be laid accurately to the lines and grades indicated on the Contract Drawings or as indicated by the Engineer. Care shall be taken to insure a good alignment both horizontally and vertically and to give the pipe a firm bearing along its entire length. Any pipe that has its grade or joint disturbed after laying shall be taken up and re-laid.
- F. All pipe and fittings shall be cleared of sand, dirt and debris before laying. All precautions shall be taken to prevent sand, dirt or other foreign material from entering the pipe during installation. If necessary, a heavy, tightly woven canvas bag of suitable size shall be placed over each end of the pipe before lowering into the trench and left there until the connection is made to the adjacent pipe. Any sand, dirt or other foreign material that enters the pipe shall be removed from the pipe immediately. The interior of all pipe and fittings shall be kept clean after installation until accepted in the complete work.
- G. Any time that pipe installation is not in progress, including lunchtime, the open ends of the pipe shall be closed by a watertight plug or other method approved by the Engineer. Plugs shall remain in the pipe ends until all water is removed from the trench. No pipe shall be installed when trench conditions are unsuitable for such work, including standing water, excess mud, rain or snow.
- H. Good alignment shall be preserved during installation. The deflection at joints shall not exceed that recommended by pipe manufacturer. Fittings, in addition to those shown on the Contract Drawings, shall be provided, if required, in crossing utilities which may be encountered upon opening the trench.
- I. As soon as the excavation is complete to normal grade of the bottom of the trench, bedding shall be placed, compacted and graded to provide firm, uniform and continuous support for the pipe. Bell holes shall be excavated so that only the barrel of the pipe bears upon the bedding. The pipe shall be laid accurately to the lines and grades indicated on the Contract Drawings. Blocking under the pipe will not be permitted. Bedding shall be placed evenly on each side of the pipe to mid-diameter, and hand tools shall be used to force the bedding under the haunches of the pipe and into the bell holes to give firm continuous support for the pipe. Bedding for pipe shall be as specified in Section 02320, "Trenching, Bedding, and Backfilling". Generally the compaction shall be done evenly on each side of the pipe and compaction equipment shall not be operated directly over the pipe until sufficient backfill has been placed to ensure that such compaction equipment will not have a damaging effect on the pipe. Equipment used in compacting the initial three (3) feet of backfill shall be approved by the pipe manufacturer's representative prior to use.
- J. Field Cutting of PVC Pipe
 - 1. Field cutting of pipe shall be done in a neat workmanlike manner without creating damage to the pipe. The pipe shall be cut square with a fine-toothed hand or power saw or other cutter or knife designed for use with plastic pipe.
 - 2. Prior to cutting, the pipe shall be marked around its entire circumference or a square-in vise shall be used to ensure the pipe end is cut smooth at right angles to the axis of the pipe.
 - 3. Remove burrs by smoothing edges with a knife, file, or sandpaper.

4. Bevel the cut end of the pipe with a pipe beveling tool, wood rasp or portable sander to prevent damage to the gasket during joint assembly. A factory finished beveled end should be used as a guide to ensure a proper beveling angle and correct depth of bevel. Round off any sharp edges on the leading edge of the bevel with a knife or file.
- K. Any pipe having defective joint surfaces shall be rejected, marked as such and immediately removed from the job site.
- L. Each length of the pipe shall have the assembly mark aligned with the pipe previously laid and held securely until enough backfill has been placed to hold the pipe in place.
- M. Before any joint is made, the pipe shall be checked to assure that a close joint with the next adjoining pipe has been maintained and that the inverts are matched and conform to the required grade. The pipe shall not be driven down to grade by striking it.
- N. Precautions shall be taken to prevent flotation of the pipe in the trench.
- O. When moveable trench bracing such as trench boxes, moveable sheeting, shoring or plates are used to support the sides of the trench, care shall be taken in placing and moving the boxes or supporting bracing to prevent movement of the pipe, or disturbance of the pipe bedding and the backfill. Trench boxes, moveable sheeting, shoring or plates shall not be allowed to extend below top of the pipe. As trench boxes, moveable sheeting, shoring or plates are moved, pipe bedding shall be placed to fill any voids created and the backfill shall be recompacted to provide uniform side support for the pipe.

3.3 Jointing PVC Pipe (Push-On Type)

- A. **Pipe shall be laid with bell ends looking ahead.**
- B. The PVC bell and spigot joint shall be assembled in accordance with the pipe manufacturer's installation instructions, ASTM D-2774, and AWWA Manual M-23. Clean the interior of the bell, the gasket, and the spigot of the pipe to be jointed with a rag to remove any dirt or foreign material before assembling. Inspect the gasket, pipe spigot bevel, gasket groove, and sealing surfaces for damage or deformation.
- C. Lubricate the spigot end of the pipe with a lubricant supplied or specified by the pipe manufacturer for use with gasketed PVC pipe in the application being installed (potable water, wastewater, effluent, or reclaimed water). The lubricant should be applied as specified by the pipe manufacturer. After the spigot end is lubricated, it must be kept clean and free of dirt and sand. If dirt and sand adhere to the lubricated end, the spigot must be wiped clean and relubricated.
- D. Insert the spigot into the bell so that it contacts the gasket uniformly. Align the pipe sections and push the spigot end into the bell until the manufacturer's reference mark on the spigot is flush with the end of the bell. The pipe should be pushed into the bell using a bar and block. The joint shall not be assembled by "stabbing" or swinging the pipe into the bell, nor shall construction machinery be used to push the pipe into the bell.
- E. If undue resistance to insertion of the spigot end is encountered or if the reference mark

does not reach the flush position, disassemble the joint and check the position of the gasket. If the gasket is twisted or pushed out of its seat, inspect the components, repair or replace damaged items, clean the components, and repeat the assembly steps. Be sure the pipe is in proper alignment during assembly. If the gasket was not out of position, check the distance between the spigot end and the reference mark and relocate the mark if it is out of position.

- F. The weight of valves and fittings shall not be carried by the PVC pipe. The valve or fitting shall be supported by a concrete cradle as shown on the standard details. Concrete for the cradle shall be poured against undisturbed soil.

3.4 Jointing Mechanical Joint Fittings

- A. Mechanical joints at valves, fittings and where designated shall be in accordance with the AWWA C-111 and the instructions of the pipe manufacturer. Suitable PVC to cast iron adapters shall be installed prior to installing fittings. PVC beveled spigots shall be cut flush prior to insertion in mechanical joint pipe. To assemble the joints in the field, thoroughly clean the joint surfaces and rubber gasket with soapy water before tightening the bolts.
- B. Bolts shall be tightened to the specified torques. Under no condition shall extension wrenches or pipe over handle of ordinary ratchet wrench be used to secure greater leverage.

3.5 PVC Joint Assembly for Threaded and Solvent Welded Pipe

- A. All threaded and solvent welded joints shall be made watertight in accordance with ASTM D-2855, ASTM D-2564, and AWWA Manual M-23. All pipe cutting, threading, and jointing procedures for threaded and solvent welded PVC pipe joints shall be in strict accordance with the pipe and fitting manufacturer's printed installation instructions. Thread lubricant for threaded joints shall be teflon tape only.
- B. At threaded joints between PVC and metal pipes, the metal side shall contain the socket end and the PVC side the spigot. A metal spigot shall not, under any circumstances, be screwed into a PVC socket.
- C. The Contractor shall make sure that the proper cement is used with the proper pipe and fittings. Never use CPVC cement on Type I PVC pipe or, conversely, never use PVC cement on CPVC pipe and fittings.

3.6 Restrained Joints

- A. Restrained joints shall be made in strict, complete accordance with the manufacturer's recommendations.
- B. All piping shall be restrained as indicated on the Contract Drawings.
- C. All fittings shall be restrained.
- D. In cases where the calculated required length of restrained pipe is not evenly divisible by nominal laying lengths of pipe, the total required length of restrained pipe shall be rounded up to the next closest nominal length that is evenly divisible by the standard laying length.

3.7 Field Painting

- A. Pipe normally exposed to view shall be painted and marked as specified in Section 09900, "Painting" and Section 09905, "Piping, Valve and Equipment Identification System".

3.8 Separation of Non-Potable Water Mains and Potable Water Mains

A. Horizontal Separation

- 1. Existing and proposed water and wastewater or non-potable force mains shall be separated at least six (6) feet horizontally.
- 2. Horizontal separation between water mains and wastewater or non-potable force mains must always be a minimum of six (6) feet unless a closer than separation has been specifically detailed on the Contract Drawings that have been approved under the FDEP Permit.

B. Vertical Separation

1. Parallel Lines

- a. Whenever potable water and non-potable water lines (reclaimed, sanitary, stormwater, force mains) run parallel and do not meet the horizontal separation requirements, then the lines shall be vertically separated with the potable water line at least eighteen (18) inches above the top of the non-potable lines.

2. Crossings

- a. Force mains crossing water mains shall be installed to provide a minimum vertical distance of eighteen (18) inches measured from the outside of the potable water line to the outside of the non-potable line. The potable water line may be either above or below the non-potable line at crossings. The constructed pipeline shall be installed so that the pipeline joints are as far from the crossing as possible.

3.9 Concrete Pipe Encasement

- A. Concrete for concrete pipe encasement shall have a minimum strength of 3,000 psi at twenty-eight (28) days and encasement shall be constructed in accordance with details shown on the Contract Drawings. Encasement shall be constructed where:
 - 1. Indicated on the Contract Drawings.
 - 2. Piping is laid under buildings, structures and structure pads.
- B. The points of beginning and ending of concrete pipe encasement shall not be more than six (6) inches from a pipe joint to protect the pipe from cracking due to uneven settlement of its foundation or the effects of superimposed live loads.
- C. Pipe encasement, if necessary shall provide a minimum coverage of twelve (12) inches

all around the pipe including pipe bells.

3.10 Connection to Existing Water, Wastewater and Reuse Systems

- A. The Contractor shall coordinate making connection of the new mains to mains which are in service at the time of construction with the Owner.
- B. The Contractor shall not connect to existing facilities unless the Engineer and a representative of the Owner are present.
- C. Operation of all system valves shall be the responsibility of the Owner's personnel only. At no time shall the Contractor operate any system valves. System valves shall be defined as any valve which has main pressure against either side of the valve. The Contractor shall notify the Owner to request that a valve be operated, in writing, at least twenty-four (24) hours prior to the time operation is required.

3.11 Cleaning and Flushing of Pipelines

- A. Following the hydrostatic and leakage tests, all the mains constructed under this Contract shall be cleaned and flushed to remove sand, loose dirt, and other debris. The minimum flushing velocity shall be 2.5 feet per second. Flushing shall continue until clean water flows from the main. However, the Contractor shall endeavor to use the minimum amount of flushing water required to complete the work.
- B. Upon completion of testing for the gravity drain line system, drain lines shall be flushed to remove dirt, sand, stones, and other debris which may have entered the lines during construction and settled out in the lines and/or manholes. Materials and debris flushed from the drain lines shall be removed from a downstream manhole, basin or lift station and disposed of at an approved disposal area.
- C. Temporary blowoffs may be required for the purpose of flushing mains. Temporary blowoffs shall be installed as close as possible to the ends of the main being flushed. Blowoffs installed on the main shall be the same diameter as the main. Temporary blowoffs shall be removed and plugged after the main is flushed. All costs for installing and removing temporary blowoffs shall be at no additional cost to the Owner.
- D. Blowoffs and temporary drainage piping used for flushing shall not be discharged into any gravity sewer or pumping station wetwell. The Contractor shall obtain prior approvals from the Engineer and the Owner as to the methods and locations of flushing water discharge.

3.12 Disinfection of Potable Water Pipelines

- A. Before any portion of the potable water piping systems is to be placed in service, it shall be disinfected; and its disinfection shall be demonstrated by bacteriological tests conducted in accordance with Standard Methods for Examination of Water and Wastewater, latest edition, for the coli-aerogenes group, by an approved laboratory, acceptable to the Engineer and the County Health Department.

3.13 Pressure Testing of Pipe

- A. After installation, the pipe shall be tested for compliance with the specifications. The Contractor shall furnish all necessary equipment and labor for the pressure test and leakage test on the pipelines.
- B. Pressure testing of pipeline shall be in accordance with Section 15044, “Pressure Testing of Piping”.

END OF SECTION

SECTION 15126 HANGERS AND SUPPORTS

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Scope of Work: Furnish and install all pipe supports as indicated and as specified herein.
- B. Number and Location: The Drawings depict only minimum pipe support locations. Adequate pipe supports shall be supplied for all piping systems to provide a rigid overall installation and additional support for pipe ends when equipment is disconnected.
- C. Related Work Described Elsewhere:
 - 1. Submittals: Section 01300.
 - 2. Concrete: Division 3.
 - 3. Painting: Section 09900.
 - 4. Mechanical: Division 15.

1.02 SUBMITTALS

- A. Submit manufacturer's descriptive literature for all pipe support devices and materials demonstrating compliance with this Specification and the support details shown on the Drawings in accordance with Section 01300.

PART 2 - PRODUCTS

2.01 PIPING SUPPORTS FOR DUCTILE IRON PIPE

- A. Furnish and install supports necessary to hold the piping and appurtenances in a firm, substantial manner at the lines and grades indicated on the Drawings or specified. Piping supports and hangers shall conform to Federal Specification WW-H-171 or shall be as shown or indicated on the Drawings. Piping within structures shall be adequately supported from floors, walls, ceilings, or beams. Supports from the floor shall be approved flange supports, saddle stands or suitable concrete piers as indicated or approved. Pipe saddles shall be shaped to fit the pipe with which they will be used and shall be capable of screw adjustment.
- B. Concrete piers shall conform accurately to the bottom 1/3 to 1/2 circumference of the pipe. Piping along walls shall be supported by approved wall brackets with attached pipe rolls or saddles or by wall brackets with adjustable hanger rods. For piping supported from the ceiling, approved rod hangers proportioned for the size of pipe to be supported and of a type capable of screw adjustment after erection of the pipeline, with suitable adjustable concrete inserts or beam clamps, shall be used. The use of perforated band iron strap (plumber's strap), wire, or chain as pipe hangers will not be acceptable. If required,

piping supports shall be placed so as to provide a uniform slope in the pipe without sagging. Supports shall be located wherever necessary in the opinion of the Engineer; however, in no case shall the spacing between supports exceed the dimensions shown on the Drawings or recommended by the pipe manufacturer. Adequate supports shall be used adjacent to valves and fittings in pipelines. Fabricated steel or cast iron pipe supports, saddles, rolls, brackets and the like shall be as manufactured by Grinnell, B-Line, or an equal approved by the Engineer.

- C. All fabricated steel or cast iron pipe supports, saddles, rolls, brackets, devices, and the like shall be hot-dip galvanized after fabrication and/or machining in accordance with ASTM A123. All nuts, bolts, clips and other hardware, and all hanger rods used for pipe supports, shall be Type 316 stainless steel. All nuts, bolts and threaded rods shall be in accordance with ASTM A320, Class 2. All such devices shall be painted in accordance with Section 09900: Painting, after installation.

2.02 PIPE SUPPORTS FOR SMALL DIAMETER PIPE

- A. Small diameter piping (4 inches in diameter and smaller) shall be supported with Type 316 stainless steel (for interior or exterior use) and/or fiberglass reinforced plastic (for interior use only) pipe supports. Hardware used for pipe supports shall be Type 316 stainless steel. Channel framing support systems shown on the Drawings shall be as manufactured by Aickenstrut, Unistrut, or approval equal.
- B. In some cases, to adequately support small diameter PVC, steel, or copper piping, a frame support structure may be required. Where required or shown on the Drawings, frame support structures shall be constructed using channels, fittings, brackets, hardware, and other accessories.
- C. Pipe supports for small diameter piping shall be located wherever necessary in the opinion of the Engineer to adequately support the pipe; however, they shall have a maximum spacing as specified hereinafter for straight pipe runs. Adequate supports shall be used adjacent to valves and fittings in pipelines.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. General:
 - 1. Install hangers or supports at all changes in direction at the spacing requirements stated herein and at the end of piping runs to minimize the stresses imposed on piping, valves, associated equipment and appurtenances.
 - 2. Piping support systems and accessories shall be installed in accordance with the manufacturer's installation instructions.
 - 3. Install all hangers, supports, rods, inserts, clamps, bolts and other supporting devices of sizes and spacings to prevent loads from exceeding the manufacturer's maximum recommended loading with a safety factory of 5.

4. Secure hangers to beams or approved concrete inserts where possible.
5. When piping is installed on structural steel supports, provide blocking of pipe rolls to prevent lateral pipe movement.
6. Do not support piping from other pipes or from stairs and walkways.
7. Where possible, set all inserts or anchor bolts before concrete is placed.

B. Expansion and Contraction:

1. Rigidly support all piping with adequate provisions for expansion and contraction.
2. Firmly anchor horizontal runs over 50 feet in length at the midpoint of the runs to force expansion equally toward the ends.

C. Spacing:

1. Install hangers and supports at sufficiently close intervals to maintain alignment and prevent sagging.
2. The following table is based on spacing requirements for hard drawn copper tube, Class 53 DIP, Schedule 80 PVC, or Standard Weight (Schedule 40) steel pipe carrying a fluid with a specific gravity of 1.0 at a temperature not exceeding 120 degrees F. Support spacing for other pipe materials or for piping carrying fluids with specific gravities or temperatures exceeding those stated above shall be approved by the Engineer. Maximum spacing of hangers and supports shall be as follows:

Nominal Pipe Diameter, (inches)	Support Spacing, Feet			
	<u>Coppe</u>	<u>Ductile Iron</u>	<u>Plastic</u>	<u>Steel</u>
	<u>r</u>			
1/2	4.0	N/A	3.5	4.5
3/4	4.0	N/A	4.0	5.0
1	4.0	N/A	4.5	5.5
1-1/4	6.0	N/A	5.0	6.5
1-1/2	6.0	N/A	5.0	7.5
2	6.0	N/A	5.5	8.0
2-1/2	6.0	N/A	5.5	8.0
3	6.0	N/A	6.0	8.0
4	N/A	8.0	7.0	8.0
Larger than 4	N/A	See Note	N/A	See Note

Note: Spacing shall be 10 feet maximum but may be increased depending on pipe size. Refer to AWWA standard of practice.

D. Supporting Vertical Piping:

1. Support at a maximum of 10 feet spacing.

2. Support at all points necessary to insure rigid installation with adequate provisions to allow expansion and contraction and prevent vibration.
 3. Support by approved pipe collars, clamps, brackets, or wall rests.
- E. Supporting PVC Pipe:
1. Support in strict accordance with the manufacturer's instructions and recommendations for the conditions of operation, temperature, and size of pipe.
 2. Support in a manner which will prevent subsequent visible sagging of the pipe between supports due to plastic deformation.
- F. Drain, Waste and Vent Piping: Support by adjustable hangers.
- G. Valves, Fittings and Specialties: Independently support pipe, valves and specialties connected to pumps and equipment.
- H. Temporary Pipe Supports:
1. Lay out each section of pipeline and make connections while the pipe is held in temporary supports.
 2. After the completion of connections in each section of pipeline, hold the section in place with temporary clamps.
 3. Do not remove the temporary clamps until the piping is correctly installed on the permanent supports.

3.02 PAINTING

- A. All fabricated steel or cast iron pipe supports, saddles, brackets, rolls, clevises and the like shall be painted, after installation, as specified in Section 09900.

END OF SECTION