

CONSTRUCTION AGREEMENT No. 1586

THIS AGREEMENT is dated _____ by and between CITY OF POMPANO BEACH, FLORIDA (hereinafter called OWNER) and Murphy Pipeline Contractors, LLC (hereinafter called CONTRACTOR).

OWNER and CONTRACTOR, in consideration of the mutual covenants hereinafter set forth, agree as follows:

Article 1. WORK

The project consists of the furnishing of all labor, equipment and materials for: Trenchless pipe rehabilitation & related items and services

The Project for which the Work under the Contract Documents may be the whole or only a part is generally described as follows: RFP E-15-22.

CONTRACTOR is authorized to conduct work up to two hundred thousand dollars (\$200,000.00). For any work that will exceed this amount, CONTRACTOR shall attain Payment and Performance bonds in accordance with Exhibit "B", General Conditions, attached hereto and by reference incorporated herein and made a part hereof. Prior to execution of this Agreement, CONTRACTOR shall provide the OWNER with a letter from their surety company that states CONTRACTOR is able to attain said bonds within twenty four (24) hours or a reasonable time that will not impact the emergency utilities repair services to be provided to the OWNER as part of this Agreement. Failure to provide the bonds as required herein may result in liquidated damages and any other remedy afforded to the OWNER by law.

Article 2. ENGINEER

Not Applicable.

Article 3. CONTRACT TIME

This Contract shall be for a term of five (5) year or less beginning with the date this Agreement is fully executed by both parties and may be extended for an additional five (5) year period. In addition to the requirements of Article 4 below, CONTRACTOR shall include, to the best of their ability, a substantial and final completion time with their plan to provide work under this Agreement. Specific assigned tasks performed pursuant to this Agreement shall be timely completed as directed by staff depending upon the emergent circumstances and as required to repair and protect the utility facilities and the public. Upon mutual agreement of substantial and final completion times for a project between both parties, failure of the CONTRACTOR to meet the substantial and final completion times for a project shall result in the application of liquidated damages as per Article 5 below.

Article 4. PRECONSTRUCTION PHASE REQUIREMENTS

Contractor shall be instructed to commence the Work by written instruction in the form of a Purchase Order issued by the OWNER's General Services Department and two or more Notices to Proceed issued by the Contract Administrator. The first Notice to Proceed and Purchase Order will not be issued until Contractor's submission to OWNER of all required documents and after execution of this Contract by both Parties. Preliminary work, including submission of a project schedule, schedule of values, submittals, submittal schedule, and other documents required for permitting, and performance of work that does not require permits, shall be commenced within ten (10) calendar days after the date of the first Notice to Proceed. Contractor shall have ten (10) days after receipt of signed and sealed contract drawings from Consultant to apply for construction permits to the applicable permitting authority. Issuance of all permits by the permitting authority shall be a condition precedent to the issuance of a second Notice to Proceed for all other Work. Except for the reimbursement of permit application fees as may be provided in the Contract Documents, Contractor shall not be entitled to compensation of any kind during the permitting process. The Work to be performed pursuant to the second Notice to Proceed shall be commenced within ten (10) calendar days of the Project Initiation Date specified in the second Notice to Proceed.

Article 5. LIQUIDATED DAMAGES

OWNER and CONTRACTOR recognize that time is of the essence of the Agreement and that OWNER will suffer financial loss if the Work is not completed within the times specified in Article 3, above, plus any extensions thereof allowed in accordance with the EXHIBIT "B" GENERAL CONDITIONS. They also recognize the delays, expense and difficulties involved in the proving in a legal or arbitration proceeding the actual loss suffered by OWNER if the Work is not completed on time. Accordingly, instead of requiring any such proof, OWNER and CONTRACTOR agree that as liquidated damages for delay (but not as a penalty) CONTRACTOR shall pay OWNER five hundred and 00/100 dollars (\$500.00) for each day that expires after the time specified in Article 3 for Substantial Completion, plus any monies paid by the OWNER to the ENGINEER for additional engineering and inspection services until the Work is substantially complete. After Substantial Completion if CONTRACTOR shall neglect, refuse or fail to complete the remaining Work within the Contract Time or any proper extension thereof granted by OWNER, CONTRACTOR shall pay the OWNER three hundred and 00/100 (\$300.00) for each day that expires after the time specified in Article 3 for completion of Work and readiness for final payment, plus any monies paid by the OWNER to the ENGINEER for additional engineering and inspection services.

Article 6. CONTRACT PRICE

OWNER shall pay CONTRACTOR for completion of the Work in accordance with the Contract Documents in current funds as follows:

The total sum of the work shall not exceed three million dollars (\$3,000,000.00) per fiscal year this agreement is in effect. See Exhibit "A" attached for line item pricing.

Article 7. PAYMENT PROCEDURES

7.1 CONTRACTOR shall submit Applications for Payment in accordance with the EXHIBIT "B" GENERAL CONDITIONS. Applications for Payment will be processed by ENGINEER as provided in the EXHIBIT "B" GENERAL CONDITIONS.

7.2 Progress Payments. OWNER shall make progress payments on account of the Contract Price on the basis of CONTRACTOR'S Applications for Payment as recommended by ENGINEER, on or about the 1st day of each month during construction as provided below. All progress payments will be on the basis of the progress of the Work measured by the schedule of values established in the EXHIBIT "B" GENERAL CONDITIONS (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no schedule of values, as provided in the General Requirements.

7.2.1 Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below, but, in each case, less the aggregate of payments previously made and such amounts as ENGINEER shall determine, or OWNER may withhold, accordance with the EXHIBIT "B" GENERAL CONDITIONS.

5% of Work completed will be withheld by OWNER as retainage.

7.2.2 Upon Substantial Completion, in an amount sufficient to increase total payments to CONTRACTOR to 95% of the Contract Price, less such amounts as ENGINEER shall determine, or OWNER may withhold, in accordance with the EXHIBIT "B" GENERAL CONDITIONS.

7.3 Final Payment. Upon final completion and acceptance of the Work in accordance with the EXHIBIT "B" GENERAL CONDITIONS, OWNER shall pay the remainder of the Contract Price as recommended by ENGINEER as provided in said EXHIBIT "B" GENERAL CONDITIONS.

Article 8. CONTRACTOR'S REPRESENTATIONS

In order to induce OWNER to enter into this Agreement, CONTRACTOR makes the following representations:

8.1 CONTRACTOR has familiarized itself with the nature and extent of the Contract documents,

Work, site, locality, and all local conditions and Laws and Regulations that in any manner may affect cost, progress, performance or furnishing of the Work.

8.2 CONTRACTOR has studied carefully all reports of explorations and tests of subsurface conditions and drawings of physical conditions which are identified in the bid, and accepts the determination set forth in the bid of the extent of the technical data contained in such reports and Drawings upon which CONTRACTOR is entitled to reply.

8.3 CONTRACTOR has obtained and carefully studied (or assumes responsibility for obtaining and carefully studying) all such examinations, investigations, explorations, tests, reports

and studies in addition to or to supplement physical conditions at or contiguous to the site or otherwise may affect the cost, progress, performance or furnishing of the Work as CONTRACTOR considers necessary for the performance or furnishing of the Work at the Contract Price, within the Contract Time and in accordance with other terms and conditions of the Contract Documents, including specifically the provisions of the EXHIBIT "B" GENERAL CONDITIONS; and no additional examinations, investigations, explorations, tests, reports, studies or similar information or data are or will be required by CONTRACTOR for such purposes.

8.4 CONTRACTOR has reviewed and checked all information and data shown or indicated on the Contract Documents with respect to existing Underground Facilities at or contiguous to the site and assumes responsibility for the accurate location of said Underground Facilities. No additional examinations, or investigations, explorations, tests, reports, studies or similar information or data in respect of said Underground Facilities are or will be required by CONTRACTOR in order to perform and furnish the Work at the Contract Price, within the Contract Time and in accordance with the other terms and conditions of the Contract Documents.

8.5 CONTRACTOR has correlated the results of all such observations, examinations, investigations, explorations, tests, reports and studies with the terms and conditions of the Contract Documents.

8.6 CONTRACTOR has given ENGINEER written notice of all conflicts, errors or discrepancies that he has discovered in the Contract Documents and the written resolution thereof by ENGINEER is acceptable to CONTRACTOR.

8.7 By entering into this Contract, the CONTRACTOR becomes obligated to comply with the provisions of Section 448.095, Fla. Stat., "Employment Eligibility." This 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 to comply will lead to termination of this Contract, or if a subcontractor knowingly violates the statute, the subcontract must be terminated immediately. 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 this contract 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.

Article 9. CONTRACT DOCUMENTS

The Contract Documents which comprise the entire agreement between OWNER and CONTRACTOR concerning the Work consist of this Agreement and the following Exhibits, attached hereto and by reference incorporated herein and made a part hereof:

Exhibit "A" – Invitation for Bid (IFB), including, but not limited to, original IFB, general conditions, specifications, drawings, exhibits to the IFB, insurance requirements, any addenda issued and all documentation submitted by the CONTRACTOR; including, but not limited to, CONTRACTOR's Bid Pages, CONTRACTOR's sworn statement

on drug-free workplace, CONTRACTOR'S insurance certificate, any documentation submitted by the CONTRACTOR prior and after award in relation to the IFB and this Agreement

Exhibit “B” – EXHIBIT “B” GENERAL CONDITIONS

This Agreement and the exhibits listed above, including any approved amendments to the Agreement comprise the entirety of the contract documents between the OWNER and CONTRACTOR. This Agreement may only be amended, modified or supplemented as provided in Exhibit “B”, General Conditions.

Any inconsistency in this Agreement and its exhibits listed above shall be resolved by giving precedence in the following order:

- a) This Agreement
- b) Exhibit “B”, General Conditions
- c) Exhibit “A”, IFB, addenda and documentation

Article 10. MISCELLANEOUS

10.1 Terms used in this Agreement which are defined in the EXHIBIT “B” GENERAL CONDITIONS will have the meanings indicated in the EXHIBIT “B” GENERAL CONDITIONS.

10.2 No assignment by a party hereto of any rights under or interests in the Contract Documents will be binding on another party hereto without the written consent of the party sought to be bound; and specifically but without limitation moneys that may become due and moneys that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the Contrary in any written consent to an assignment no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

10.3 OWNER and CONTRACTOR each binds itself, its partners, successors, assigns and legal representatives to the other party hereto, its partners, successors, assigns and legal representatives in respect of all covenants, agreements and obligations contained in the Contract Documents.

10.4 Project Web Requirements:

- a. This project shall utilize e-Builder Enterprise (Software), a web-based project management software. OWNER shall use the Software to manage all project documents, communications and costs between the CONTRACTOR and OWNER. Training will be provided for the CONTRACTOR and all subcontractors that require access to the software.
- b. CONTRACTOR shall conduct project controls outlined by the OWNER utilizing the Software. **The designated web-based application license(s) shall be provided by the OWNER to the CONTRACTOR and subcontractors.** No additional software will be required.

- c. CONTRACTOR shall have the responsibility for logging in to the project web site on a daily basis, and as necessary to be kept fully apprised of project developments and required action items. These may include but are not limited to: Contracts, Contract Exhibits, Contract Amendments, Drawing Issuances, Addenda, Bulletins, Permits, Insurance & Bonds, Safety Program Procedures, Safety Notices, Accident Reports, Personnel Injury Reports, Schedules, Site Logistics, Progress Reports, Correspondence, Daily Logs, Non-Conformance Notices, Quality Control Notices, Punch Lists, Meeting Minutes, Requests for Information, Submittal Packages, Substitution Requests, Monthly Payment Request Applications, Supplemental Instructions, Owner Change Directives, Potential Change Orders, Change Order Requests, Change Orders and the like. All supporting data including but not limited to shop drawings, product data sheets, manufacturer data sheets and instructions, method statements, safety SDS sheets, Substitution Requests and the like will be submitted in digital format via the Software.

THE REMAINDER OF THIS PAGE IS INTENTIONALLY LEFT BLANK

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed the day and year hereinabove written.

Attest:

CITY OF POMPANO BEACH

ASCELETA HAMMOND, CITY CLERK

By: _____
REX HARDIN, MAYOR

APPROVED AS TO FORM:

By: _____
GREGORY P. HARRISON, CITY MANAGER

MARK E. BERMAN, CITY ATTORNEY

(SEAL)

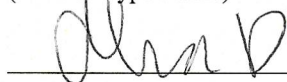
"CONTRACTOR"

Witnesses:



Taylor Morris

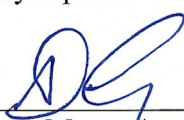
(Print or Type Name)



Alisa Djilic

(Print or Type Name)

Murphy Pipeline Contractors, LLC

By: 

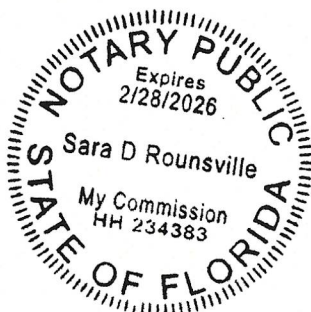
Andrew Mayer Asst. Secretary


STATE OF Florida

COUNTY OF Duval

The foregoing instrument was acknowledged before me, by means of ☒ physical presence or ☐ online notarization this 6th day of July, 2022, by Andrew Mayer as Asst. Secretary of Murphy Pipeline Contractors, LLC a Delaware corporation authorized to do business in Florida. He is personally known to me or who has produced _____ (type of identification) as identification.

NOTARY'S SEAL:





NOTARY PUBLIC, STATE OF Florida

Sara Rounsville

(Name of Acknowledger Typed, Printed or Stamped)

HH 234383

Commission Number

Corporate Authorization

Andrew Mayer, Assistant Secretary of Murphy Pipeline Contractors, LLC. (the "Corporation"), a Delaware corporation, is duly elected and appointed officer of the Corporation and holds full corporate authority to enter any contracts and execute Bid Forms on behalf of the Corporation.

In witness whereof, I have caused this instrument to be executed and the corporate seal to be hereunto affixed on the 6th day of July 2022.

Seal:

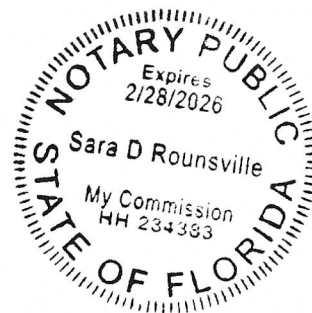


Murphy Pipeline Contractors, LLC.

By: _____

Glenn M Shor

Vice President





Florida's Warmest Welcome

**REQUEST FOR PROPOSALS
E-15-22**

**TRENCHLESS REHABILITATION
AND
PIPE-BURSTING TECHNOLOGY**

RFP OPENING: JUNE 13, 2022, 2:00:00 P.M.

Virtual Zoom Meeting
For access go to:

<https://www.pompanobeachfl.gov/meetings>

Issued: May 12, 2022

REQUEST FOR PROPOSALS

The City of Pompano Beach (the “City”) will receive sealed proposals for Request for Proposals (RFP) **E-15-22, Trenchless Rehabilitation and Pipe-Bursting Technology** until **2:00:00 p.m. (local), June 13, 2022**. Proposals must be submitted electronically through the eBid System on or before the due date and time as specified herein. RFP openings are open to the public. All Proposers and/or their representatives are invited to be present. Any proposal received after the due date and time specified will not be considered. Any uncertainty regarding the time a proposal is received will be resolved against the Proposer.

Proposer must be registered on the City’s eBid System in order to view the RFP Documents and respond to this RFP. The solicitation documents can be downloaded for free from the eBid System as a pdf at: <https://pompanobeachfl.ionwave.net>. The City is not responsible for the accuracy or completeness of any documentation the Proposer receives from any source other than from the eBid System. Proposer is solely responsible for downloading all required documents. A list of Proposers will be read aloud in a public forum. To attend the virtual public meeting, go to <https://www.pompanobeachfl.gov/meetings> to find the Zoom link.

INTRODUCTION

The intent of this RFP is to establish as needed, open-end contracts for service throughout the City on an annual basis. The project consists of furnishing all labor, equipment, tools, and materials for the trenchless replacement or rehabilitation of underground pipes, per attached specification, and as described herein.

A. TERM OF AGREEMENTS/CONTRACTS

The term of agreements/contracts will be five (5) years, with the option to renew for a maximum of one (1) additional five-year period, subject to mutual agreements/contracts.

B. SCOPE OF WORK

See Exhibits “Exhibit C - Technical Specifications”, “Exhibit D - Pre-Chlorinated Pipe Bursting”, “Exhibit E Sewer Slip-Lining”, and “Exhibit F Slip-Lining of Existing Sewer Line” in the Attachments tab of the City’s eBid System.

C. INSTRUCTIONS TO PROPOSERS

1. DEFINED TERMS

Terms used in these “Instructions to Proposers” have the meanings assigned to them in the “General Conditions”. The term “Proposer” means one who submits a proposal directly to the City, as distinct from a sub-proposer, who submits a proposal to a Proposer. The term “Awarded Proposer” means the highest-ranked, qualified, responsible and responsive Proposer to whom the City (on the basis of the

City's evaluation as hereinafter provided) makes an award. The term "RFP Documents" includes the RFP and the proposed Contract Documents (including all addenda issued prior to receipt of proposals).

2. COPIES OF PROPOSAL DOCUMENTS

- a. Complete sets of the Proposal Documents may be obtained from the City of Pompano Beach website at no charge.
- b. Complete sets of Proposal Documents must be used in preparing proposals; the City assumes no responsibility for errors or misinterpretations resulting from the use of incomplete sets of Proposal Documents.
- c. The City, in making copies of Proposal Documents available on the above terms, does so only for the purpose of obtaining proposals on the work and does not confer a license or grant for any other use.

3. QUALIFICATIONS OF PROPOSALS

To demonstrate qualifications to perform the work, and to be considered for award, each Proposer must submit written evidence, such as previous experience, present commitments and other such data as may be called for in this document. The proposer shall provide documented evidence of the following:

- a. Being actively engaged in the installation of pipe using the static pipe bursting of potable water main and wastewater gravity, force-main and sewer slip lining method for a minimum of seven (7) years.
- b. Having performed one-hundred thousand feet (100,000') or more of water main replacement using the process of pre-chlorinated and/or and wastewater gravity, force-main pipe bursting and sewer slip lining in the United States of America over the past twenty-four (24) month period.
- c. The work experience must have been performed under the company name with significant experience demonstrated by key personnel proposed. Experience must be with the use of a static pipe bursting system or slip lining, with evidence of two-inch (2"), four-inch (4"), six-inch (6"), eight-inch (8"), ten-inch (10") and twelve-inch (12") projects.
- d. Submitting the project reference sheet by listing five (5) similar projects successfully completed within the last five (5) years. To be counted, each project reference must encompass: replacing potable water main, using the static pipe bursting method, using the pre-chlorination method and replacing wastewater gravity and force-main, using the static pipe bursting method and/or slip lining, all projects must be from the state of Florida.
- e. Contractor must have at least (5) years of experience in the municipal installation of potable water and/or gravity/force main sewer systems in urban environments of Florida

and has successfully installed at least twenty-five thousand feet (25,000') of trenchless water distribution and/or wastewater collection systems in Florida.

- f. Performing three-hundred (300) water service line installations or more using the process of Pit Launched Mini-Horizontal Directional Drill in the United States of America over the past five (5) years. Experience shall also include installation of water service lines under a public road with an asphalt surface using a Pit Launched Mini-Horizontal Directional Drill.
- g. The vendor shall have a valid State of Florida Underground Utility Contractor's License.

4. PUBLIC ENTITY CRIMES

In accordance with Section 287.133 (2)(a), Florida Statutes: 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 proposal on a contract to provide any goods or services to a public entity, may not submit a proposal on a contract with a public entity for the construction or repair of a public building or public work, may not submit proposals 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 Section 287.017, Florida Statutes for Category Two for a period of thirty-six (36) months from the date of being placed on the convicted vendor list.

5. DRUG FREE WORKPLACE

In accordance with Section 287.087, Florida Statutes, preference shall be given to businesses with Drug-free Workplace Programs.

6. ANTI-KICKBACK ACT

The Awarded Proposer must comply with the Copeland "Anti-Kickback Act" (19 U.S.C. Section 874), as supplemented in U.S. Department of Labor Regulations (Exhibit A DOL 29 CFR, Part 3).

7. EXAMINATION OF CONTRACT DOCUMENTS AND SITES

- a. It is the responsibility of each Proposer before submitting a proposal to (a) examine the Contract Documents thoroughly, (b) visit the site to become familiar with local conditions that may affect costs, progress, performance or furnishing of the work, (c) consider Federal, State and Local Laws and Regulations that may affect cost, progress, performance or furnishing of the work, (d) study and carefully correlate Proposer's observations with the Contract Documents, and (e) notify the City of all conflicts, errors or discrepancies in the Contract Documents.
- b. Information and data reflected in the Contract Documents with respect to or contiguous to the site is based upon information and data furnished to the City by owners of such facilities or others, and the City does not assume responsibility for accuracy or completeness thereof unless it is expressly provided otherwise.

- c. Provisions concerning responsibilities for the adequacy of data furnished to prospective Proposers on subsurface conditions, underground facilities and other physical conditions, and possible changes in the Contract Documents due to differing conditions appear in the General Conditions.
- d. Before submitting a proposal, each Proposer will, at Proposer's own expense, make or obtain any additional examinations, investigations, explorations, tests and studies and obtain any additional information and data which pertain to the physical conditions (surface, subsurface and underground facilities) at or contiguous to the site or otherwise which may affect cost, progress, performance or furnishing of the work and which Proposer deems necessary to determine its proposal for performing and furnishing the work in accordance with the time, price and other terms and conditions of the Contract Documents.
- e. On request in advance, City will provide each Proposer access to the site to conduct such explorations and tests as each Proposer deems necessary for submission of a proposal. Proposer shall fill all holes, clean up and restore the site to its former condition, or better, upon completion of such explorations.
- f. The lands upon which the work is to be performed, rights-of-way and easements for access thereto and other lands designated for use by Contractor in performing the work are identified in the Contract Documents. All additional lands and access thereto required for temporary construction facilities or storage of materials and equipment are to be provided by Contractor. Easements for permanent structures or permanent changes in existing structures are to be obtained and paid for by the City unless otherwise provided in the Contract Documents.
- g. The electronic submission of a proposal will constitute an incontrovertible representation by Proposer that Proposer has complied with every requirement of this section and the General Conditions, that without exception the proposal is premised upon performing and furnishing the work required by the Contract Documents and such means, methods, techniques, sequences or procedures of construction as may be indicated in or required by the Contract Documents, and that the Contract Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance and furnishing of the work.

8. INTERPRETATIONS AND ADDENDA

- a. All questions must be submitted using the Questions feature in the eBid System.

All questions must be submitted by 5:00:00 p.m. at least seven (7) calendar days before the scheduled solicitation deadline. No further questions will be accepted after this due date and time. Oral and other interpretations or clarifications will be without legal effect.

If any addendum is issued to this RFP, the addendum will be issued via the eBid System. It shall be the responsibility of each Proposer, prior to submitting its proposal, to contact

the City's Purchasing Division at (954) 786-4098 to determine if any addendum was issued and to make such addendum a part of its proposal. Addendum will be posted in the eBid System.

- b. An addendum may also be issued to modify the RFP Documents as deemed advisable by the City.

9. PROPOSAL SECURITY

- a. Each proposal must be accompanied by Proposal Security made payable to the City in an amount of five percent (5%) of the Proposer's maximum Proposal Price and in the form of a certified check, cashier's check, or a Proposal Bond issued by a surety meeting the requirements provided herein. Proposer shall upload a copy of its Proposal Bond or a copy of the certified check to the Response Attachments tab in the eBid System. The Awarded Proposer will be required to submit the original executed Proposal Bond or cashier's check prior to the execution of the Contract and before the commencement of any work.
- b. The Proposal Security of the Awarded Proposer will be retained until such Proposer has executed the Contract and furnished the required contract security (if provided as a cashier's check or bank officer's check), whereupon the Proposal Security will be returned. If the awarded Proposer fails to execute and deliver the Contract and furnish the required contract security within ten (10) days after the Notice of Award, the City may annul the Notice of Award and the Proposal Security of that Proposer will be forfeited. The Proposal Security of other Proposers whom the City believes to have reasonable chance of receiving the award may be retained by the City until a completed Contract has been issued, whereupon Proposal Security furnished by such Proposers will be returned.
- c. The Proposal Bond, if provided, shall be issued by a Company having a registered agent in the State of Florida. This check or bond shall be retained by the City as liquidated damages should the Proposer refuse or fail to enter into a Contract with the City for the execution of the work provided in the proposal, in the event the proposal of the Proposer is accepted.

10. LIQUIDATED DAMAGES

- a. Provisions for liquidated damages, if any, are set forth in the Contract.
- b. Each Proposer must submit in its Proposal the amount of consideration required by the Proposer in return for the Proposer's promise of indemnity contained in the General Conditions section of this RFP. The amount to be submitted shall be no less than ten dollars \$10.00.

11. SUBSTITUTE OR “OR-EQUAL” ITEMS

The Contract, if awarded, shall be on the basis of materials and equipment described in the drawings or specified in the specifications without consideration of possible substitute or “or-equal” items. Whenever it is indicated in the Drawings or specified in the Specifications that a substitute or “or-equal” item of material or equipment may be furnished or used by Awarded Proposer/Contractor if acceptable to the City, application for such acceptance will not be considered by the City until after the effective date of the Contract.

12. PROPOSER ACKNOWLEDGEMENT

- a. The Proposer Acknowledgement is included with this RFP.
- b. All requested information on the Proposer Acknowledgement is to be provided electronically using the City’s eBid System.
- c. In case of a discrepancy between unit prices and totals, unit prices will prevail.

13. SUBMISSION OF PROPOSALS

- a. Proposals shall be submitted electronically using the City’s eBid System on or before the due date and time specified herein.
- b. More than one proposal received for the same work from an individual, firm or partnership, Corporation or Association under the same or different names will not be considered. Reasonable grounds for believing that any Proposer is interested in more than one proposal for the same work will cause the rejection of all such proposals in which the Proposer is interested. If there are reasonable grounds for believing that collusion exists among the Proposers, the proposals of participants in such collusion will not be considered.
- c. A list of Proposers will be posted in the City’s eBid System. The list of Proposers will not be read over the phone.

14. SUBMISSION/FORMAT REQUIREMENTS

Sealed proposals must be submitted electronically through the eBid System on or before the due date and time indicated previously. Proposer shall upload response as one (1) file to the eBid System. The financial statements should be uploaded as a separate file from the proposal to the Response Attachments tab in the eBid System. The file size for uploads is limited to 250 MB. If the file size exceeds 250 MB, the response must be split and uploaded as two (2) separate files.

Information to be included in the proposal:

In order to maintain comparability and expedite the review process, it is required that proposals be organized in the manner specified below.

Title Page:

Show the project name and number, the name of the Proposer's company/firm, address, telephone number, name of contact person and the date.

Table of Contents:

Include a clear identification of the material by section and by page.

Letter of Transmittal:

Briefly explain the Proposer's understanding of the project and express a positive commitment to provide the services described herein. State the name(s) of the person(s) who will be authorized to make decisions for the Proposer, title(s), office and E-mail addresses and telephone numbers. Please limit this section to two pages.

Qualifications:

Proposer must present evidence that it is fully competent and has the necessary staff, equipment and financial resources to perform required services. Staff members with appropriate expertise must be noted.

Financial Information:

Provide a copy of the most recent audited financial statements for the proposing firm. If audited financial statements are not available, provide a copy of the most recent compiled financial statements, and a copy of the most recent tax form.

You may include additional information that will assist the City in the evaluation of the financial stability of your firm.

References:

Submit a client reference list, including the name of contact, company/firm and/or governmental entity, address, telephone number and type of service provided to each reference.

Litigation:

Disclose any litigation within the past five (5) years arising out of your company's/firm's performance.

Other Information: Any additional information to assist the City in its evaluation of each proposal must also be included. Proposer may submit any unique information that it believes the City should consider when evaluating its proposal.

City Forms:

The Proposer Information Page Form and any other required forms must be completed and submitted electronically through the City's eBid System. The City reserves the right to request additional information to ensure the Proposer is financially solvent and has sufficient financial resources to perform the contract and shall provide proof thereof of its financial solvency. The City may at its sole discretion ask for additional proof of financial solvency, including additional documents post proposal opening, and prior to evaluation that demonstrates the Proposer's ability to perform the resulting contract and provide the required materials and/or services.

15. MODIFICATION AND WITHDRAWAL OF PROPOSALS

- a. Proposals may be modified or withdrawn at any time prior to the due date and time of the opening of proposals by using the “Retract” feature of the City’s eBid System.
- b. Proposers that withdraw proposals after the due date and time of the opening of proposals may be banned from doing business with the City for a period of thirty-six (36) months from the proposal opening due date.

16. OPENING OF PROPOSALS

A list of Proposers will be read aloud in a public forum. To attend the virtual public meeting, go to <https://www.pompanobeachfl.gov/meetings> to find the Zoom link.

17. PROPOSALS TO REMAIN SUBJECT TO ACCEPTANCE

- a. All proposals will remain subject to acceptance for ninety (90) days after the day of the RFP opening, but the City may, in its sole discretion, release any proposal and return the Proposal Security before expiration of the ninety (90) days acceptance period.
- b. Extensions of time when proposals shall remain open beyond the ninety (90) day period may be made only by mutual agreement between the City, the awarded Proposer, and the surety, if any, for the Awarded Proposer.

18. AWARD OF CONTRACT

- a. The City reserves the right to reject any and all proposals, to waive any and all informalities not involving price, time and changes in the work and to negotiate contract terms with the Awarded Proposer, and the right to disregard all nonconforming nonresponsive, unbalanced or conditional proposals. Also, the City reserves the right to reject the proposal of any Proposer if the City believes that it would not be in the best interest of the Project to make an award to that Proposer, whether because the proposal is non-responsive and non-responsible or the Proposer is unqualified or of doubtful financial ability or fails to meet any other pertinent standard or criteria established by the City.
- b. In evaluating proposals, the City will consider the qualifications of the Proposers, whether or not the proposals comply with the prescribed requirements, and such alternates, unit prices and other data, as may be requested in the RFP or prior to the Notice of Award.
- c. The City may consider the qualifications and experience suppliers, and other persons and organizations must be submitted as provided in the Supplementary Conditions. The City also may consider the operating costs, maintenance requirements, performance data and guarantees of major items of materials and equipment proposed for incorporation in the work when such data is required to be submitted prior to the Notice of Award.

- d. The City may conduct such investigations as the City deems necessary to assist in the evaluation of any proposal and to establish the responsibility, qualifications and financial ability of Proposers, Proposed Suppliers and other persons and organizations to perform and furnish the work in accordance with the Contract Documents to the City's satisfaction within the prescribed time.
- e. The City reserves the right to award one, two, or more contracts to the highest ranked Proposers, which in the City's sole discretion will be in the best interest of the City.
- f. City reserves the right to postpone the award of the Contract for a period of time, which shall not exceed ninety (90) calendar days from the RFP opening date. City may, at its sole discretion, release any proposal and return the Proposal Security prior to that date. City also reserves the right to ask for additional postponement time, which the Proposer may provide written binding acceptance. An email to the purchasing representative from an authorized agent of the Proposer shall be considered a written binding acceptance of the postponement time.
- g. The Awarded Proposer will receive an automatically generated notice from the eBid System or an email notification from the City's Purchasing Division.
- h. The Awarded Proposer will be required to furnish the necessary additional bond(s) for the faithful performance of the Contract Documents. All Proposal Bonds, Contract Bonds, Insurance Contracts and Certificates of Insurance shall be either executed by or countersigned by a licensed resident agent of the surety or insurance company having his place of business in the State of Florida, and in all ways complying with the insurance laws of the State of Florida. Further, the said surety or insurance company shall be duly licensed and qualified to do business in the State of Florida. **Proposal Bonds, Performance and Payment Bonds are required. Performance and Payment Bonds must be recorded with Broward County. Insurance is required for all proposals.**

19. CONTRACT SECURITY

When the Awarded Proposer delivers the executed Contract to the City, it must be accompanied by the required Performance and Payment Bonds.

20. SIGNING OF CONTRACT

When the City gives a Notice of Award to the Awarded Proposer, it will be accompanied by the required number of unsigned counterparts of the Contract with all other written Contract Documents attached. Within ten (10) days thereafter, Contractor shall sign and deliver the required number of counterparts of the Contract and attached documents to the City with the required Bonds. Within fifteen (15) days thereafter, the City shall deliver one fully signed counterpart to Contractor. Each counterpart is to be accompanied by a complete set of the Drawings with appropriate identification.

21. COMPOSITION OF PROJECT TEAM

Company(ies)/Firm(s) are required to commit that the principals and personnel named in the proposal will perform the services throughout the agreement/contract term unless otherwise provided for by way of a negotiated agreement/contract/written amendment to same executed by both parties. No diversion or substitution of principals or personnel will be allowed unless a written request that sets forth the qualifications and experience of the proposed replacement(s) is submitted to and approved by the City in writing

22. TAXES

The Contractor shall pay all applicable sales, consumer, use and other similar taxes required by law. The Contractor is responsible for reviewing the pertinent state statutes involving the sales tax and complying with all requirements.

23. NOTICE TO CONTRACTOR

Pursuant to "Exhibit B - Chapter 8 CFR 274a.2" (found of the Attachments tab of the City's eBid system), the employment of unauthorized aliens by any Contractor is considered a violation of the Immigration and Nationality Act. If the Contractor knowingly employs unauthorized aliens, such violation shall be cause for unilateral cancellation of the Contract.

24. NON-DISCRIMINATION

There shall be no discrimination as to race, color, religion, gender, national origin, ancestry, and physical or mental disability in the operations conducted under the Contract. Included as applicable activities by the Contractor under this section are the RFP for, or purchase of, goods or services, or the subcontracting of work in performance of the Contract.

25. OCCUPATIONAL HEALTH AND SAFETY

In compliance with Section 442, Florida Statutes, any items included in the latest edition of "Florida Substance List", which are delivered from a Contract resulting from this RFP, must be accompanied by a Material Safety Data Sheet (MSDS). The MSDS must be maintained by the user agency and must include the following information:

- a. The chemical name and the common name of the toxic substance.
- b. The hazards or other risks in the use of toxic substance, including:
 - i. The potential for fire, explosion, corrosiveness, and reactivity;
 - ii. The known acute and chronic health effects of risks from exposure, including the medical conditions which are generally recognized as being aggravated by exposure to the toxic substance; and
 - iii. The primary routes of entry and symptoms of overexposure.

- c. The proper precautions, handling practices, necessary personal protective equipment, and other safety precautions in the use of or exposure to the toxic substances, including appropriate emergency treatment in case of overexposure.
- d. The emergency procedure for spills, fire disposal, and first aid.
- e. A description in lay terms of the known specific potential health risks posed by the toxic substance intended to alert any person reading this information.
- f. The year and month, if available, that the information was compiled and the name, address, and the emergency telephone number of the manufacturer responsible for preparing the information.

Any questions regarding Section 442, Florida Statutes should be directed to:

Department of Labor and Employment Security, Division of Safety, 2002 Old St. Augustine Road, Tallahassee, Florida, 32399; telephone: 1-800-367-4378.

ALL TOXIC SUBSTANCES MUST BE LABELED FOR IDENTIFICATION, IN ACCORDANCE WITH O.S.H.A. STANDARDS.

Notice: Federal I.D. Number must be referenced on your invoice for us to process payment. Please note I.D. Number on Proposal Response page.

26. WASTE REMOVAL SERVICES

The City has contracted with Coastal Waste & Recycling, Inc., for residential and commercial solid waste collection and disposal services. The City has granted to Coastal Waste & Recycling, Inc., the sole and exclusive right, franchise, license and privilege to provide non-hazardous solid waste collection, removal and disposal services within the corporate limits of the City, including collection and removal of certain Construction and Demolition Debris. The Awarded Proposer/Contractor shall coordinate with Coastal Waste & Recycling, Inc., the level and type of service to be provided and the manner of collection charges. Any Contractor or Subcontractor performing construction work within the City of Pompano Beach must use the City's franchised hauler for garbage removal services including removal of Construction and Demolition Debris generated over ten (10) cubic yards, with the exception of Source Separated Recovered Materials as defined in Section 403.703(24), Florida Statutes and Chapter 96 of the City Ordinance. The City's current franchised hauler is Coastal Waste & Recycling, Inc., which may be contacted directly for dumpsters and/or roll-offs at:

Coastal Waste & Recycling, Inc.
1840 NW 33rd Street
Pompano Beach, FL 33064
(954) 947-4000

27. PERMITS AND FEES

The Contractor awarded this RFP, shall be required to obtain and pay for the permits and/or fees indicated on the chart below in the amounts set forth or pursuant to the formula for percent or unit method which is indicated.

Fees cannot be waived and must be collected by the City from the Contractor. Contact the City department below for additional details regarding the required permit and fee.

FEE OR PERMIT	CITY DEPARTMENT	COST (SET FEE OR PERCENT OF PROJECT AMOUNT)
All construction within City right-of-way	Engineering	Waived
All utilities tie-ins to City water, sewers, and drainage	Engineering	Waived
Paving	Engineering	Waived
Fire plan review for new construction, additions and alterations	Building Inspection	See City Code of Ordinances 95.14
Fire alarm and fire sprinkler plan review (new installations)	Fire Plan Review	See City Code of Ordinances 95.14
Fire hydrant flow test	Fire Plan Review	See City Code of Ordinances 95.14
Business Tax Receipt (only if the Contractor has a temporary office in the City of Pompano Beach)	Zoning	See City Code of Ordinances
Site plan review	Zoning	See City Code of Ordinances
Rezoning	Zoning	See City Code of Ordinances
Variance	Zoning	See City Code of Ordinances
Tree Permit application fee	Zoning	See Zoning Code/City Code of Ordinances
Landscape reinspection fee	Zoning	See Zoning Code/City Code of Ordinances
Capital recovery fees	Customer Service	See City Code of Ordinances 50.13 and 51.11
Tapping fee	Customer Service	See City Code of Ordinances
Deposits (water bill)	Customer Service	Deposit based upon size of meter (only applies if Contractor responsible for water bills during period between meter installation and City acceptance of project.)
Administrative fee	Customer Service	See City Code of Ordinances
Building permit	Building Inspection	See Bldg Fee Schedule/City Code of Ordinances
Building Reinspection fee	Building Inspection	See Bldg Fee Schedule/City Code of Ordinances
Certificate of occupancy	Building Inspection	See Bldg Fee Schedule/City Code of Ordinances
Lien law	Building Inspection	\$5.00
Surcharge Bwd. Cty. Bd. of Rules & Appeals	Building Inspection	\$0.60 per \$1,000 valuation
Surcharge Fla. Statute 553.721	Building Inspection	1.5% of permit fees, minimum \$2.00
Surcharge Fla. Statute 468.631	Building Inspection	1.5% of permit fees, minimum \$2.00

D. PROPOSER'S RESPONSIVENESS AND RESPONSIBILITY

Award of RFP shall be to the highest-ranked Proposer(s). In determining responsiveness and responsibility in the Proposer(s), and the purchase(s) or contract(s) that will best serve the interests of the City, the Commission, City Manager, and General Services Director, as appropriate shall consider, but shall not be limited to, in addition to price the following:

1. Responsiveness:

Each proposal shall be reviewed in accordance with the conditions provided herein. If a Proposer fails to satisfy these conditions, the proposal may be deemed non-responsive by the City and not considered for further review.

- a. The proposal must be submitted prior to the deadline provided in the eBid System. Submission will not be accepted outside the eBid System, including but not limited to faxed, emailed, or hand delivered to the City's Purchasing Division of the General Services Department and/or any other City Department. Any uncertainty regarding the time a proposal is received will be resolved against the Proposer.
- b. Qualification of Proposer's form must be completed and uploaded to the Response Attachments tab of the City's eBid System.

2. Responsibility Documentation:

To demonstrate the Proposer's responsibility, the Proposer must submit to the City the information provided herein. Submittals requested pursuant to this paragraph are in addition to those required elsewhere.

- a. Bonding: Each proposal requires a cashier's check or Proposal Bond executed on the prescribed form, payable to the City of Pompano Beach, P.O. Box 1300, Pompano Beach, Florida, 33061, in an amount not less than five percent (5%) of the proposal amount. Proposer shall upload a copy of its Proposal Bond or a copy of the cashier's check to the Response Attachments tab in the eBid System. The Awarded Proposer will be required to submit the original executed Proposal Bond or cashier's check prior to the execution of the Contract and before the commencement of any work.

The Proposal Security of the Awarded Proposer will be retained until such Proposer has executed the Contract and furnished (if required) contract security, (if provided as a cashier's check or certified check), whereupon the Proposal Security will be returned. If the Awarded Proposer fails to execute and deliver the Contract and furnish the required contract security within ten (10) days after the Notice of Award, The City may annul the Notice of Award and the Proposal Security of that Proposer will be forfeited. The Proposal Security of other Proposers whom City believes to have reasonable chance of receiving the award may be retained by the City until a completed contract has been executed, whereupon Proposal Security furnished by such Proposers will be returned.

The executed Proposal Bond, if provided, shall be issued by an entity having a registered agent in the State of Florida. This check or bond shall be retained by the City as liquidated damages should

the Proposer refuse or fail to enter into a contract with the City for the execution of the work embraced in the proposal, in the event the proposal of the Proposer is accepted.

- b. Prior Project Experience and References: Proposer must provide the following verifiable information with the proposal at the time it is submitted:
 - i. Evidence that Proposer was the Prime Contractor on five (5) projects completed (final completion) within the last five (5) years. Each project must be within the continental United States and must have been in the amount of two hundred thousand dollars (\$200,000.00) each or more, and of similar complexity and scope.

Proposer must describe the following: 1) the project and the work actually completed by Proposer, 2) how the referenced project relates to this RFP, and 3) the amount paid to Proposer for the work completed; and

 - ii. At least one verifiable client reference for each project described previously. Proposer must provide the client name, client phone number, and client e-mail address for each project. If the Proposer has done work for the City, the City may at its discretion rely on the City's past performance records or may contact references. The City will only attempt to contact each reference three times.
 - iii. If the Proposer fails to provide the previously described items, or if the City is unable to reach a reference after three (3) attempts, the City may deem the Proposer non-responsible.
 - iv. The City reserves the right, at its sole discretion, to deem a Proposer's response non-responsible and reject it if the references submitted do not conform to the above, or the references are deemed unsatisfactory to the City.
- c. License Requirements - Be able to provide proof of required licensure. (Such licensure must have been obtained prior to the date of Proposal submission.)
- d. Corporations and Partnerships - The City will review the Proposer's business to confirm that it is in good standing with the Florida Department of State, Division of Corporations based on the information provided in the Construction Proposal Form.
- e. Have a satisfactory past and/or current performance record - based on the information gathered by the City regarding Proposer performance on past or current contracts. The City shall rely on the contractor's periodic performance evaluations and any other reasonable and reliable sources within City's organization and control from past and present City projects where applicable.
- f. Be financially solvent and have sufficient financial resources to perform the resulting Contract and shall provide proof thereof of its financial solvency. The City may as at its sole discretion ask for additional proof of financial solvency, including additional documents post RFP opening, and prior to award that demonstrated the Proposer's ability to perform the resulting contract and provide the required materials and/or services.

- g. Have the necessary production capacity, construction, and owned equipment, or the ability to obtain them.
- h. Provide satisfactory evidence that such elements as production control procedures, property control systems, quality assurance procedures, and safety programs applicable to work to be produced or services to be performed by the Proposer, Suppliers and Subcontractors are present.
- i. Have the necessary management organization, experience, technical skills, accounting and operational controls, plan, manpower, financial resources and be otherwise qualified and eligible to perform the work under applicable laws and regulations.

E. PROPOSER ACKNOWLEDGEMENT

- 1. The Proposer submits and agrees, if this proposal is accepted, to enter into a Contract with the City in the form included in the Contract Documents to perform and furnish all work as specified or indicated in the Contract Documents for the Contract Price and within the Contract Time indicated in this proposal and in accordance with the other terms and conditions of the Contract Documents.
- 2. Proposer accepts all of the terms and conditions of the RFP and Instructions to Proposers, including without limitation those dealing with the disposition of Proposal Security. This proposal will remain subject to acceptance for ninety (90) calendar days after the RFP Opening. Proposer will sign and submit the Contract with the bonds and other documents required by RFP Documents within ten (10) days after the date of City's Notice of Award.
- 3. In submitting this proposal, Proposer represents, as more fully set forth in the Contract, that:
 - a. Proposer has examined copies of all the RFP documents and the addendum/addenda.
 - b. Proposer has familiarized itself with the nature and extent of the Contract Documents, work, site, locality, and all local conditions and laws and regulations that in any manner may affect cost, progress, performance or furnishing of the work.
 - c. Proposer has studied carefully all reports and drawings of physical conditions, which are identified in the RFP.
 - d. Proposer has obtained and carefully studied (or assumes responsibility for obtaining and carefully studying) all such examinations, investigations, explorations, tests and studies [in addition to or to supplement those referred to in (c) above], which pertain to the subsurface or physical conditions at the site or otherwise may affect the cost, progress, performance or furnishing of the work as Proposer considers necessary for the performance or furnishing of the work at the Contract Price within the Contract Time and in accordance with the other terms and conditions of the Contract Documents, and no additional examinations, investigations, explorations, tests, reports or similar information or data are or will be required by Proposer for such purposes.

- e. Proposer has reviewed and checked all information and data shown or indicated on the Contract Documents with respect to existing site conditions and assumes responsibility for such. No additional examinations, investigations, explorations, tests, reports or similar information or data in respect of said site are or will be required by Proposer in order to perform and furnish the work at work Contract Price, within the Contract Time and in accordance with other terms and conditions of the Contract Documents.
 - f. Proposer has correlated the results of all such observations, examinations, investigations, explorations, tests, reports and studies with the terms and conditions of the Contract Documents.
 - g. Proposer has given City written notice of all conflicts, errors or discrepancies that it has discovered in the Contract Documents and the written resolution thereof by the City is acceptable to Proposer.
 - h. This proposal is genuine and not made in the interest or on behalf of any undisclosed person, firm or corporation and is not submitted in conformity with any agreement or rules of any group, or corporation; Proposer has not directly or indirectly induced or solicited any other Proposer to submit a false or sham proposal; Proposer has not solicited or induced any person, firm or corporation to refrain from proposing; and Proposer has not sought by collusion to obtain for itself any advantage over any other Proposer or over the City.
- 4. Proposer accepts the provisions of the Contract as per liquidated damages in the event of failure to complete the work on time.
 - 5. Proposer agrees that all Federal, State and Local sales and use taxes are included in the stated Proposal Prices for the work.
 - 6. Proposer further proposes to accept as full payment for the work proposed herein the amounts computed under the provisions of the Contract Documents and based on the unit prices herein (if applicable) represent a true measure of the labor, materials, equipment and any other incidentals required to perform the work, including all allowances for overhead and profit for each type and unit of work called for in these Contract Documents.
 - 8. The Proposal pricing includes all the necessary excavation, backfill, grading, restoration, and removal of materials attendant upon the construction of the work, complete in place, and the disposal of all excess materials, and the final cleaning up of the work.

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F. SELECTION/EVALUATION PROCESS

A Selection/Evaluation Committee (the “Committee”) will be appointed to recommend the most qualified company(ies)/firm(s). The Committee will present its findings to the City Commission. Proposals will be evaluated using the following criteria:

<u>Line</u>	<u>Criteria</u>	<u>Point Range</u>
1	Prior experience with projects of similar size: Number of similar projects Prior experience with the City of Pompano Five (5) references	0-15
2	Qualification of personnel: Number of staff Experience of staff in this type of environment	0-10
3	Availability of personnel:	0-15
4	Proximity of the nearest office to the City of Pompano Beach	0-5
5	Financial Responsibility	0-20
6	Owned Equipment Age of equipment	0-35
	Total	0-100

Financial statements or other financial information that are required as submittals to prequalify for a solicitation will be exempt from public disclosure; however, financial statements or other financial information submitted to prequalify for a solicitation, and were not required by the City, may be subject to public disclosure.

The Committee has the option to use the above criteria for the initial ranking to short-list Proposers and to use an ordinal ranking system to score short-listed Proposers following presentations (if deemed necessary) with a score of “1” assigned to the short-listed Proposer deemed most qualified by the Committee.

Each company/firm should submit documentation that evidences the company’s/firm’s capability to provide the services required for the Committee’s review for short-listing purposes. After an initial review of the Proposals, the City may invite Proposers for an interview to discuss the proposal and meet the company’s/firm’s representatives, particularly key personnel who would be assigned to the project. Should interviews be deemed necessary, it is understood that the City shall incur no costs as a result of this interview, nor bear any obligation in further consideration of the submittal.

When more than three responses are received, the Committee shall furnish the City Commission (for its approval) a listing, in ranked order, of no fewer than three companies/firms deemed to be the most highly qualified to perform the service. If three or less companies/firms respond to this RFP, the list will contain the ranking of all responses.

The City Commission has the authority to (including, but not limited to); approve the recommendation; reject the recommendation and direct staff to re-advertise the solicitation; or, review the responses itself and/or request oral presentations and determine a ranking order that may be the same or different from what was originally presented to the City Commission.

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QUALIFICATION OF PROPOSERS

COMPLETE THE QUALIFICATIONS OF PROPOSERS – CONSTRUCTION FORM IN THE EBID ATTACHMENTS TAB. PROPOSERS ARE TO COMPLETE FORM IN ITS ENTIRETY AND UPLOAD THE COMPLETED FORM TO THE RESPONSE ATTACHMENTS TAB FOR THE PROPOSAL IN THE EBID SYSTEM

To demonstrate qualifications to perform the Work, and to be considered for award, each Proposer must submit written evidence, such as previous experience, present commitments and other such data as may be called for below (or in SUPPLEMENTARY CONDITIONS). Each Proposal must contain evidence of Proposer's qualification to do business in the State where the Project is located or covenant to obtain such qualification prior to executing the Agreement.

1 How many years has your organization been in business as an Underground Utility and Excavation Contractor?

2 State of Florida Contractor's license # _____

Broward County Certificate of Competency #: _____

Expiration Date: _____

3 What is the last project of this nature that you have completed?

4 Have you ever failed to complete work awarded to you? If Yes, where and why?

5 List all work performed over the last year.

Project Name _____

Owner's Name _____

Owner's Address _____

Phone Number _____

Nature of Work _____

Original Contract Completion Time (Days) _____

Original Contract Completion Date _____

Actual Final Contract Completion Date _____

Original Contract Price _____

Actual Final Contract Price _____

(Attach additional information as required)

6 List all work of similar type, complexity, and comparable value over the past five (5) years and the nature of work performed. (Attach additional information on separate sheet)

Project Name _____

Owner's Name _____

Owner's Address _____

Phone Number _____

Nature of Work _____

Original Contract Completion Time (Days) _____

Original Contract Completion Date _____

Actual Final Contract Completion Date _____

Original Contract Price _____

Actual Final Contract Price _____

7 The following are names as three (3) individuals or corporations for which you have performed work of this nature and to which you list as references, excluding the City of Pompano Beach.

NAME

ADDRESS

TELEPHONE

CONTACT PERSON

8 Have you personally inspected the proposed work and have you a complete plan for its performance?

9 The following information shall be provided for this project:

(a) Estimated total construction manhours _____

(b) Percent manhours to be performed by Contractor's permanent staff _____

(c) Percent manhours to be performed by direct hire employees _____

Equipment

10 What equipment do you own that is available for the proposed work?

11 What equipment will you purchase for the proposed work, and the estimated delivery period from time order is placed for equipment?

CONFLICT OF INTEREST

REQUESTED INFORMATION BELOW IS ON THE ATTRIBUTES TAB FOR THE PROPOSAL IN THE EBID SYSTEM. PROVIDE THIS INFORMATION ELECTRONICALLY.

Conflict of Interest: For purposes of determining any possible conflict of interest, all proposers must disclose if any City of Pompano Beach employee is also an owner, corporate officer, or employee of their business. Indicate either "Yes" (a City employee is also associated with your business), or "No". If answer is "Yes", you must file a statement with the Supervisor of Elections, pursuant to Section 112.313, Florida Statutes.

No_____ Yes_____

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VENDOR CERTIFICATION REGARDING SCRUTINIZED COMPANIES LISTS

REQUESTED INFORMATION BELOW IS ON THE ATTRIBUTES TAB FOR THE PROPOSAL IN THE EBID SYSTEM. PROVIDE THIS INFORMATION ELECTRONICALLY.

Proposer's Name: _____

Vendor FEIN: _____

Section 215.4725, Florida Statutes, prohibits agencies from contracting (at any dollar amount) with companies on the Scrutinized Companies that Boycott Israel List, or with companies that are engaged in a boycott of Israel. As the person authorized to sign electronically on behalf of the Proposer, I hereby certify by selecting the box below that the company responding to this solicitation is not listed on the Scrutinized Companies that Boycott Israel List. I also certify that the company responding to this solicitation is not participating in a boycott of Israel, and is not engaged in business operations in Syria or Cuba. I understand that pursuant to Sections 287.135 and 215.4725, Florida Statutes, the submission of a false certification may subject company to civil penalties, attorney's fees, and/or costs.

I Certify



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**STATEMENT UNDER SECTION 287.087
FLORIDA STATUTES, ON DRUG-FREE WORKPLACE**

REQUESTED CERTIFICATION BELOW IS ON THE ATTRIBUTES TAB FOR THE BID IN THE EBID SYSTEM. THIS INFORMATION MUST BE PROVIDED ELECTRONICALLY.

Preference must be given to Contractors submitting certification with their bid or proposal, certifying they have a drug-free workplace in accordance with Section 287.087, Florida Statutes. This requirement affects all public entities of the State and becomes effective January 1, 1991.

Preference shall be given to businesses with drug-free workplace programs. Whenever two or more proposals which are equal with respect to price, quality and service are received by the State or by any political subdivision for the procurement of commodities or contractual services, a proposal received from a business that certifies that it has implemented a drug-free workplace program shall be given preference in the award process. Established procedures for processing tie proposals will be followed if none of the tied vendors have a drug-free workplace program. In order to have a drug-free workplace program, a business shall:

- (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 under proposal, a copy of the statement specified in subsection (1).
- (4) In the statement specified in subsection (1) notify the employees that as a condition of working on the commodities or contractual services that are under proposal, the employee will 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 an employee who is so convicted.
- (6) Make a good faith effort to continue to maintain a drug-free workplace through implementation of this section.

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

CONTRACTOR'S SIGNATURE

CONTRACTOR'S PRINTED NAME

Date: _____

Contractor Performance Report

CATEGORY	RATING	COMMENTS
1. Quality Assurance/Quality Control - Product/Services of high quality - Proper oversight - Communication	Poor =1 Satisfactory =2 Excellent =3	
2. Record Keeping -Accurate record keeping -Proper invoicing -Testing results complete	Poor =1 Satisfactory =2 Excellent =3	
3. Close-Out Activities - Restoration/Cleanup - Deliverables met - Punch list items addressed	Poor =1 Satisfactory =2 Excellent =3	
4. Customer Service - City Personnel and Residents - Response time - Communication	Poor =1 Satisfactory =2 Excellent =3	
5. Cost Control - Monitoring subcontractors - Change-orders - Meeting budget	Poor =1 Satisfactory =2 Excellent =3	
6. Construction Schedule - Adherence to schedule - Time-extensions - Efficient use of resources	Poor =1 Satisfactory =2 Excellent =3	
SCORE	_____	ADD ABOVE RATINGS/DIVIDE TOTAL BY NUMBER OF CATEGORIES BEING RATED

RATINGS

Poor Performance (1.0 – 1.59): Marginally responsive, effective and/or efficient; delays require significant adjustments to programs; key employees marginally capable; customers somewhat satisfied.

Satisfactory Performance (1.6 – 2.59): Generally responsive, effective and/or efficient; delays are excusable and/or results in minor program adjustments; employees are capable and satisfactorily providing service without intervention; customers indicate satisfaction.

Excellent Performance (2.6 – 3.0): Immediately responsive; highly efficient and/or effective; no delays; key employees are experts and require minimal direction; customer's expectations are exceeded.

Would you select/recommend this contractor again? _____ Yes _____ No

Please attach any supporting documents to this report to substantiate the ratings that have been provided.

Ratings completed by (print name)

Ratings completed by signature

Date

Department Head (print name)

Department Head Signature

Date

Vendor Representative (print name)

Contractor Representative Signature

Date

Comments, corrective actions etc., use additional page if necessary:

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PROPOSAL BOND

STATE OF FLORIDA)

ss

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KNOW ALL MEN BY THESE PRESENTS, that we , _____
 _____ as principal, and

hereinafter called Surety, are held and firmly bound unto The City of Pompano Beach, Pompano Beach, Florida, a political subdivision of the State of Florida, and represented by its City Commission hereinafter called OWNER, in the sum of _____ Dollars (\$ _____) lawful money of the United States of America, for the payment of which well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigned, jointly and severally, by these presents.

WHEREAS, the Principal contemplates submitting or has submitted a Proposal to the OWNER for the furnishing of all labor, materials, equipment, machinery, tools, apparatus, means of transportation for, and the performance of the work covered in the Proposal and the detailed Drawings and Specifications, entitled:

(RFP Name) _____

WHEREAS, it was a condition precedent to the submission of said proposal that a cashier's check or proposal bond in the amount of 5 percent of the base proposal be submitted with said proposal as a guarantee that the Proposer would, if awarded the Contract, enter into a written Contract with the OWNER for the performance of said Contract, within 10 consecutive calendar days after written notice having been given of the award of the Contract.

NOW, THEREFORE, the conditions of this obligation are such that is the Principal within 10 consecutive calendar days after written notice of such award being given to Principal, enters into the contract to such award and gives a Performance and Payment Bond, each in an amount equal to 100 percent of the base proposal, satisfactory to the OWNER, then this obligation shall be void; in the event of the failure of Principal to enter into such contract and bond, the sum herein stated shall be due and payable to the OWNER and the Surety herein agrees to pay the sum immediately upon demand of the OWNER in good and lawful money of the United States of America, as liquidated damages for failure thereof of said Principal; otherwise, it shall remain in full force and effect.

IN WITNESS WHEREOF, the said _____,
as Principal herein, has caused these presents to be signed in the name by its _____
_____ and attested by its _____ under its corporate seal,
and the said _____
_____ as Surety herein, has caused these presents to be signed in its name by
its _____
under its corporate seal, this _____ day of _____ A.D. _____
(year)

Signed, sealed and delivered in
the presence of:

As to Principal

Principal -

By: _____

Surety

By: _____

Attorney-in-Fact
(Power-of-Attorney to be attached)

By: _____

Resident Agent

END OF SECTION

SAMPLE AGREEMENT

THIS AGREEMENT is dated _____ by and between CITY OF POMPANO BEACH, FLORIDA (hereinafter called OWNER) and _____ (hereinafter called CONTRACTOR).

OWNER and CONTRACTOR, in consideration of the mutual covenants hereinafter set forth, agree as follows:

Article 1. WORK

The project consists of the furnishing of all labor, equipment and materials for: Trenchless pipe rehabilitation & related items and services

The Project for which the Work under the Contract Documents may be the whole or only a part is generally described as follows: (RFP Name) _____.

Article 2. ENGINEER

Not Applicable.

Article 3. CONTRACT TIME

This Contract shall be for a term of five (5) years or less beginning with the date this Agreement is fully executed by both parties. Contract term may be renewed for an additional five (5) year term, with City Commission approval, and written agreement by OWNER and CONTRACTOR. In addition to the requirements of Article 4 below, CONTRACTOR shall include, to the best of their ability, a substantial and final completion time with their plan to provide work under this Agreement. Specific assigned tasks performed pursuant to this Agreement shall be timely completed as directed by staff depending upon the emergent circumstances and as required to repair and protect the utility facilities and the public. Upon mutual agreement of substantial and final completion times for a project between both parties, failure of the CONTRACTOR to meet the substantial and final completion times for a project shall result in the application of liquidated damages as per Article 5 below.

Article 4. PRECONSTRUCTION PHASE REQUIREMENTS

Contractor shall be instructed to commence the Work by written instruction in the form of a Purchase Order issued by the OWNER's General Services Department and two or more Notices to Proceed issued by the Contract Administrator. The first Notice to Proceed and Purchase Order will not be issued until Contractor's submission to OWNER of all required documents and after execution of this Contract by both Parties. Preliminary work, including submission of a project schedule, schedule of values, submittals, submittal schedule, and other documents required for permitting, and performance of work that does not require permits, shall be commenced within ten (10) calendar days after the date of the first Notice to Proceed. Contractor shall have ten (10) days after receipt of signed and sealed contract drawings from Consultant to apply for construction permits to the applicable permitting authority. Issuance of all permits by the permitting authority shall be a condition precedent to the issuance of a

second Notice to Proceed for all other Work. Except for the reimbursement of permit application fees as may be provided in the Contract Documents, Contractor shall not be entitled to compensation of any kind during the permitting process. The Work to be performed pursuant to the second Notice to Proceed shall be commenced within ten (10) calendar days of the Project Initiation Date specified in the second Notice to Proceed.

Article 5. LIQUIDATED DAMAGES

OWNER and CONTRACTOR recognize that time is of the essence of the Agreement and that OWNER will suffer financial loss if the Work is not completed within the times specified in Article 3, above, plus any extensions thereof allowed in accordance with the EXHIBIT "B" GENERAL CONDITIONS. They also recognize the delays, expense and difficulties involved in the proving in a legal or arbitration proceeding the actual loss suffered by OWNER if the Work is not completed on time. Accordingly, instead of requiring any such proof, OWNER and CONTRACTOR agree that as liquidated damages for delay (but not as a penalty) CONTRACTOR shall pay OWNER two hundred and 00/100 dollars (\$200.00) for each day that expires after the time specified in Article 3 for Substantial Completion, plus any monies paid by the OWNER to the ENGINEER for additional engineering and inspection services until the Work is substantially complete. After Substantial Completion if CONTRACTOR shall neglect, refuse or fail to complete the remaining Work within the Contract Time or any proper extension thereof granted by OWNER, CONTRACTOR shall pay the OWNER one hundred and 00/100 (\$100.00) for each day that expires after the time specified in Article 3 for completion of Work and readiness for final payment, plus any monies paid by the OWNER to the ENGINEER for additional engineering and inspection services.

Article 6. CONTRACT PRICE

OWNER shall pay CONTRACTOR for completion of the Work in accordance with the Contract Documents in current funds as follows:

See PROPOSAL attached from RFP/contract documents.

Article 7. PAYMENT PROCEDURES

7.1 CONTRACTOR shall submit Applications for Payment in accordance with the EXHIBIT "B" GENERAL CONDITIONS. Applications for Payment will be processed by ENGINEER as provided in the EXHIBIT "B" GENERAL CONDITIONS.

7.2 Progress Payments. OWNER shall make progress payments on account of the Contract Price on the basis of CONTRACTOR'S Applications for Payment as recommended by ENGINEER, on or about the 1st day of each month during construction as provided below. All progress payments will be on the basis of the progress of the Work measured by the schedule of values established in the EXHIBIT "B" GENERAL CONDITIONS (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no schedule of values, as provided in the General Requirements.

7.2.1 Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below, but, in each case, less the aggregate of payments previously made and such

amounts as ENGINEER shall determine, or OWNER may withhold, accordance with the EXHIBIT "B" GENERAL CONDITIONS.

10% of Work completed will be withheld by OWNER as retainage.

7.2.2 Upon Substantial Completion, in an amount sufficient to increase total payments to CONTRACTOR to 90% of the Contract Price, less such amounts as ENGINEER shall determine, or OWNER may withhold, in accordance with the EXHIBIT "B" GENERAL CONDITIONS.

7.3 Final Payment. Upon final completion and acceptance of the Work in accordance with the EXHIBIT "B" GENERAL CONDITIONS, OWNER shall pay the remainder of the Contract Price as recommended by ENGINEER as provided in said EXHIBIT "B" GENERAL CONDITIONS.

Article 8. CONTRACTOR'S REPRESENTATIONS

In order to induce OWNER to enter into this Agreement, CONTRACTOR makes the following representations:

8.1 CONTRACTOR has familiarized itself with the nature and extent of the Contract documents,

Work, site, locality, and all local conditions and Laws and Regulations that in any manner may affect cost, progress, performance or furnishing of the Work.

8.2 CONTRACTOR has studied carefully all reports of explorations and tests of subsurface conditions and drawings of physical conditions which are identified in the RFP, and accepts the determination set forth in the RFP of the extent of the technical data contained in such reports and Drawings upon which CONTRACTOR is entitled to reply.

8.3 CONTRACTOR has obtained and carefully studied (or assumes responsibility for obtaining and carefully studying) all such examinations, investigations, explorations, tests, reports and studies in addition to or to supplement physical conditions at or contiguous to the site or otherwise may affect the cost, progress, performance or furnishing of the Work as CONTRACTOR considers necessary for the performance or furnishing of the Work at the Contract Price, within the Contract Time and in accordance with other terms and conditions of the Contract Documents, including specifically the provisions of the EXHIBIT "B" GENERAL CONDITIONS; and no additional examinations, investigations, explorations, tests, reports, studies or similar information or data are or will be required by CONTRACTOR for such purposes.

8.4 CONTRACTOR has reviewed and checked all information and data shown or indicated on the Contract Documents with respect to existing Underground Facilities at or contiguous to the site and assumes responsibility for the accurate location of said Underground Facilities. No additional examinations, or investigations, explorations, tests, reports, studies or similar information or data in respect of said Underground Facilities are or will be required by CONTRACTOR in order to perform and furnish the Work at the Contract Price, within the Contract Time and in accordance with the other terms and conditions of the Contract Documents.

8.5 CONTRACTOR has correlated the results of all such observations, examinations, investigations, explorations, tests, reports and studies with the terms and conditions of the Contract Documents.

8.6 CONTRACTOR has given ENGINEER written notice of all conflicts, errors or discrepancies that he has discovered in the Contract Documents and the written resolution thereof by ENGINEER is acceptable to CONTRACTOR.

8.7 By entering into this Contract, the CONTRACTOR becomes obligated to comply with the provisions of Section 448.095, Fla. Stat., "Employment Eligibility." This 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 to comply will lead to termination of this Contract, or if a subcontractor knowingly violates the statute, the subcontract must be terminated immediately. 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 this contract 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.

Article 9. CONTRACT DOCUMENTS

The Contract Documents which comprise the entire agreement between OWNER and CONTRACTOR concerning the Work consist of this Agreement and the following Exhibits, attached hereto and by reference incorporated herein and made a part hereof:

Exhibit "A" – Request for Proposals (RFP), including, but not limited to, original RFP, general conditions, specifications, drawings, exhibits to the RFP, insurance requirements, any addenda issued and all documentation submitted by the CONTRACTOR; including, but not limited to, CONTRACTOR's Proposal Pages, CONTRACTOR's sworn statement on drug-free workplace, CONTRACTOR'S insurance certificate, any documentation submitted by the CONTRACTOR prior and after award in relation to the RFP and this Agreement

Exhibit "B" – EXHIBIT "B" GENERAL CONDITIONS

Exhibit "C" – Supplementary Conditions

This Agreement and the exhibits listed above, including any approved amendments to the Agreement comprise the entirety of the contract documents between the OWNER and CONTRACTOR. This Agreement may only be amended, modified or supplemented as provided in Exhibit "B", General Conditions.

Any inconsistency in this Agreement and its exhibits listed above shall be resolved by giving precedence in the following order:

- a) This Agreement
- b) Exhibit "B", General Conditions
- c) Exhibit "C", Supplementary Conditions
- d) Exhibit "A", RFP, addenda and documentation

Article 10. MISCELLANEOUS

10.1 Terms used in this Agreement which are defined in the EXHIBIT "B" GENERAL CONDITIONS will have the meanings indicated in the EXHIBIT "B" GENERAL CONDITIONS.

10.2 No assignment by a party hereto of any rights under or interests in the Contract Documents will be binding on another party hereto without the written consent of the party sought to be bound; and specifically but without limitation moneys that may become due and moneys that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the Contrary in any written consent to an assignment no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

10.3 OWNER and CONTRACTOR each binds itself, its partners, successors, assigns and legal representatives to the other party hereto, its partners, successors, assigns and legal representatives in respect of all covenants, agreements and obligations contained in the Contract Documents.

10.4 Project Web Requirements:

- a. This project shall utilize e-Builder Enterprise (Software), a web-based project management software. OWNER shall use the Software to manage all project documents, communications and costs between the CONTRACTOR and OWNER. Training will be provided for the CONTRACTOR and all subcontractors that require access to the software.
- b. CONTRACTOR shall conduct project controls outlined by the OWNER utilizing the Software. **The designated web-based application license(s) shall be provided by the OWNER to the CONTRACTOR and subcontractors.** No additional software will be required.
- c. CONTRACTOR shall have the responsibility for logging in to the project web site on a daily basis, and as necessary to be kept fully apprised of project developments and required action items. These may include but are not limited to: Contracts, Contract Exhibits, Contract Amendments, Drawing Issuances, Addenda, Bulletins, Permits, Insurance & Bonds, Safety Program Procedures, Safety Notices, Accident Reports, Personnel Injury Reports, Schedules, Site Logistics, Progress Reports, Correspondence, Daily Logs, Non-Conformance Notices, Quality Control Notices, Punch Lists, Meeting Minutes, Requests for Information, Submittal Packages, Substitution Requests, Monthly Payment Request Applications, Supplemental Instructions, Owner Change Directives, Potential Change Orders, Change Order Requests, Change Orders and the like. All supporting data including but not limited to shop drawings, product data sheets, manufacturer data sheets and instructions, method statements, safety SDS sheets, Substitution Requests and the like will be submitted in digital format via the Software.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed the day and year hereinabove written.

CITY OF POMPANO BEACH

By: _____
REX HARDIN, MAYOR

By: _____
GREGORY P. HARRISON, CITY MANAGER

Attest:

ASCELETA HAMMOND, CITY CLERK

(SEAL)

Dated: _____

APPROVED AS TO FORM:

MARK E. BERMAN, CITY ATTORNEY

“CONTRACTOR”

Witnesses:

Company Name

By: _____
AUTHORIZED SIGNER, POSITION_____
(Print or Type Name)

(Print or Type Name)

STATE OF State of Incorporation

COUNTY OF _____

The foregoing instrument was acknowledged before me, by means of ☐ physical presence or ☐ online notarization this ____ day of _____, 20__, by AUTHORIZED SIGNER as _____ of Company Name, a State of Incorporation corporation on behalf of the corporation OR a \$state_of_incorporation limited liability company OR a foreign corporation authorized to do business in Florida. He/She is personally known to me or who has produced _____(type of identification) as identification.

NOTARY'S SEAL:

NOTARY PUBLIC, STATE OF \$state_of_incorporation_____
(Name of Acknowledger Typed, Printed or Stamped)_____
Commission Number

General Conditions of the Contract

ARTICLE 1. DEFINITIONS.

- 1.01 **The Contract Documents:** The Contract Documents consist of the Agreement Form, Addenda, Supplementary Conditions, General Conditions, Documents contained in the Project Manual, Drawings, Plans, Specifications, and all modifications issued after execution of the Contract.
- 1.02 **The Owner, the Contractor, and the Project Consultant:** are those mentioned as such in the Contract Documents.
- 1.02.01 **Owner:** The City of Pompano Beach, Florida, (also referred to as the "City").
- 1.02.02 **Contractor:** The "party of the second part" to the Contract. The person, firm or corporation with whom a contract has been made with the Owner for the performance of the work defined by the Contract Documents.
- 1.02.03 **Project Consultant:** The individual, partnership, corporation, association, joint venture, or any combination thereof, of properly registered professional architects, engineers or other design professionals who has entered into a contract with the Owner to provide professional services for development of the design and Contract Documents for the work of this Project and provide Construction Contract Administration as described in the Contract Documents.
- 1.03 **City Engineer:** City Engineer of the City of Pompano Beach, Florida.
- 1.04 **Final Completion:** Means that date subsequent to the date of Substantial Completion at which time the Contractor has completed all of the work (or designated portion thereof) in accordance with the Contract Documents as certified by the Project Consultant and/or approved by the Owner. In addition, Final Completion shall not be deemed to have occurred until any and all governmental bodies, boards, entities, etc., which regulate or have jurisdiction of the work, have inspected, approved and certified the work.
- 1.06 **Inspector:** An employee(s) of The City of Pompano Beach, Florida, referred to hereinafter as the “**Inspector,**” who(m) is/are assigned by the City Engineer to periodically inspect the Project during the construction process, and who assist(s) the City Engineer in reviewing field performance and its compliance with the Contract Documents.
- 1.06.01 **Resident Inspector:** An employee or subconsultant of the **Project Consultant** employed to perform either periodic or full-time specific inspection duties.
- 1.07 **Other Contractors:** Any person, firm or corporation with whom a Contract has been made by the Owner for the performance of any work on the site, which work is not a portion of the work covered by the Contract.
- 1.08 **Owner's Representative:** The City Official who has been delegated responsibility by the City Manager to act as the City's project coordinator. (In most cases, the City Engineer shall be assigned this duty.)
- 1.09 **Phase:** A designated subdivision of the work, usually with its own requirements for Substantial and Final Completion, and liquidated damages. A Phase may be designated for completion by the Owner's own forces, or by Other Contractors.
- 1.10 **The Project:** The total construction of which the work performed under the Contract Documents may be the whole or a part, and which may include construction by the Owner or by separate Contractors.
- 1.11 **Punch List:** A list of items of work required to render complete, satisfactory, and acceptable the construction services provided for in the Contract Documents and created pursuant to Florida Statute 218.735(7)(a).

- 1.12 **Subcontractor:** A person or entity other than a materialman or laborer who enters into a Contract with Contractor for the performance of any part of Contractor's work. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a separate Contractor or Subcontractors of a separate Contractor.
- 1.13 **Sub-Subcontractor:** A person or entity other than a materialman or laborer who enters into a contract with a Subcontractor for the performance of any part of such Subcontractor's contract. The term "Sub-Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-Subcontractor or an authorized representative of the Sub-Subcontractor. The term "Sub-Subcontractor" does not include separate Subcontractors of a separate Contractor.
- 1.14 **Submittals:** Are prepared by the Contractor or those working on his behalf (Subcontractors, material suppliers, and others) to show how a particular aspect of the work is to be fabricated and installed. The Contractor's submittals include shop drawings, product data, samples, mock-ups, test results, warranties, maintenance agreements, workmanship bonds, project photographs, record documents, field measurement data, operating and maintenance manuals, reports, certifications, periodic and final "as-builts", surveys, videos and other types of information described in the specifications.
- 1.15 **Substantial Completion:** The term Substantial Completion as used herein, shall mean that point at which, as certified in writing by the Project Consultant, the work, or a designated portion thereof, is at a level of completion in substantial compliance with the Contract Documents such that the Owner or its designee can enjoy use or occupancy and can use or operate it in all respects for its intended purpose. In the event the work includes more than one Phase, the Owner, at its discretion, may set Substantial Completion dates for each Phase and may impose provisions for liquidated damages for each Phase.
- 1.16 **Subconsultant:** A person or organization of properly registered professional architects, engineers or other design professionals who has entered an agreement with the Project Consultant to furnish professional services in support of the Project Consultant's Contract with the Owner.
- 1.17 **Superintendent:** The executive representative for the Contractor be present on the work at all times during progress, authorized to receive and fulfill instructions from the Owner and the Project Consultant and capable of superintending the work efficiently.
- 1.18 **Work:** The totality of the obligations, including construction and other services, imposed on the Contractor by the Contract Documents, whether completed or partially completed, and including all labor, materials, equipment, and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The work may constitute the whole or a part of the Project.
- 1.19 **Written Notice:** Shall be deemed to have been duly served if delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, if delivered at or sent by registered mail or other traceable delivery service to the last business address known to him who gives notice. Electronic, Fax or other telephonic transmission shall not be considered as written notice.

ARTICLE 2. THE WORK.

- 2.01 The Contractor shall perform all of the work required by the Contract Documents and shall provide materials, supplies, tools, equipment, labor and services directly related to the work, and shall perform the work in a good and workmanlike manner with sufficient manpower to perform the work in accordance with the time requirements set forth in the Contract Documents, and shall perform all other acts and supply all other things necessary to complete the work in strict accordance with the Contract Documents.
- 2.02 When completed the work shall conform to the requirements of the Contract Documents and be completely ready for occupancy and finally completed.
- 2.03 The Contractor represents and warrants to the Owner that:

- 2.03.01 It is financially solvent and has sufficient working capital to perform the obligations under this Construction Contract;
- 2.03.02 It is experienced and skilled in the construction of the type of project described in the Contract Document;
- 2.03.03 It is able to provide the labor, materials, equipment and machinery necessary to complete the work for the agreed upon price;
- 2.03.04 It is fully licensed under all applicable laws and authorized to do business in the State of Florida in the name of the entity identified as the "Contractor" in the Construction Contract, and is legally permitted to perform all the work set forth in this Construction Contract.
- 2.03.05 It has visited the jobsite and examined its nature and location, including without limitation: the surface conditions of the site and any structure or obstruction both natural or man-made; the surface water conditions and water ways of the site and surrounding area; the subsurface conditions of the land as disclosed by soil test borings; and the location of electric and utility lines and water, sanitary, sewer and storm drain lines, as well as site ingress and egress. The Contractor acknowledges receipt and has reviewed the site geotechnical report provided for the Owner.
- 2.03.06 It will comply with all federal, state and local governmental laws, rules and regulations relating to its responsibilities as set forth in the Contract Documents.

ARTICLE 3. COORDINATION AND CORRELATION OF DRAWINGS AND SPECIFICATIONS.

- 3.01 The Contractor represents that:
 - 3.01.01 The Contractor and Subcontractors have fully examined and compared all Drawings, Specifications and other Contract Documents including but not limited to those relating to the architectural, structural, mechanical, electrical, civil engineering and plumbing elements and have compared and reviewed all general and specific details on the Drawings and the various technical and administrative requirements of the Specifications.
 - 3.01.02 All construction materials, labor, methods, means, techniques, sequences and procedures required to carry out the work, all safety precautions and programs required in connection with carrying out the work, all conflicts, discrepancies, errors and omissions that Contractor is aware of as a result of the examination and comparison of the Contract Documents have been either corrected or clarified to the satisfaction of the Contractor prior to execution of this Construction Contract.
 - 3.01.03 The Contract Sum is reasonable compensation and represents the total lump sum cost for the work and that all systems and work shall be functional and in accordance with the requirements of the Contract Documents.
 - 3.01.04 The Contract Time is adequate for the performance of the work.
- 3.02 The Contractor is responsible for all means, methods, techniques and sequencing of construction.
- 3.03 If, after execution of this Construction Contract, the Contractor detects a conflict, discrepancy, error or omission in the Contract Documents then it shall immediately notify Project Consultant and Owner prior to proceeding with the specific portion of the work.

ARTICLE 4. INTENT AND INTERPRETATION.

- 4.01 With the respect to the intent and interpretation of this Contract, the Owner and the Contractor agree as follows:
 - 4.01.01 The Contractor shall have a continuing duty to read, examine, review, compare and contrast each of the documents which make up this Contract and shall immediately give written notice to the Owner and the Project Consultant of any conflict, ambiguity, error or omission which the Contractor may find with respect to these documents before proceeding with the affected work.

- 4.01.02 The Contract Documents are complementary, and what is called for by one shall be as binding as if called for by all.
- 4.01.03 The intent of the Contract Documents is to include all labor, materials, equipment services and transportation necessary for the proper execution of the work. The Contractor shall continually refer to drawing, specifications and other Contract Documents in this regard.
- 4.01.04 In the event of a conflict among the Contract Documents, the most stringent requirement to the Contractor shall control.
- 4.02 The Project Consultant shall be the initial interpreter of the requirements of the Contract Documents and the judge of the performance thereunder.
- 4.02.01 The Project Consultant shall render interpretations necessary for the proper execution or progress of the work with reasonable promptness on written request of either the Owner or the Contractor, and shall render written decisions, within a reasonable time, on all claims, disputes, change order requests, substitution requests, requests for interpretation and other matters in question between the Owner and the Contractor relating to the execution or progress of the work or the interpretation of the Contract Documents.
- 4.02.02 Interpretations and decisions of the Project Consultant shall be consistent with the intent of and reasonably inferable from the Contract Documents.
- 4.02.03 In the capacity of interpreter the Project Consultant shall endeavor to secure faithful performance by both the Owner and the Contractor, and shall not show partiality to either.

ARTICLE 5. CITYSHIP OF THE CONTRACT DOCUMENTS WHICH MAKE UP THE CONTRACT.

- 5.01 Subject to any rights the Project Consultant may have, the Contract Documents and each of them, as well as any other documents, intellectual property, software, computer-assisted material or disks relating to or regarding the work, shall be and remain the property of the Owner. This shall be the case even if prepared, created or provided by the Project Consultant, Contractor, Subcontractor or others.
- 5.02 The Contractor shall have the right to keep copies of same upon completion of the work; provided, however, that in no event shall the Contractor use, or permit to be used, any portion or all of same on other projects without the Owner's prior written authorization.
- 5.03 The Contractor agrees to provide any and all items referred to in this Paragraph to Owner upon demand by Owner. In the event Contractor fails to provide same to Owner as demanded, Contractor acknowledges that the Owner will need same and will be irreparably harmed and be subject to an injunction to provide same.

ARTICLE 6. TEMPORARY UTILITIES.

- 6.01 Water for Execution of the work: The Contractor shall provide temporary water lines sufficient to supply all water needed for the construction and other services required by the Contract Documents and shall pay for all service connections and water used by the Contractor or Subcontractors unless the contrary is provided for elsewhere in the Contract Documents.
- 6.02 Electrical Energy: The Contractor shall provide temporary electrical energy and power lines sufficient to supply all electricity needed for the construction and other services required by the Contract Documents and shall pay for all service connections and electricity used by the Contractor or Subcontractors unless the contrary is provided for elsewhere in the Contract Documents.
- 6.03 Temporary Sanitary Facilities and Sewers:
 - 6.03.01 The Contractor shall provide and maintain in a neat and sanitary condition such accommodations and facilities for the use of his employees as may be necessary to comply with the regulations of any governmental agencies, departments, etc. which address or govern these issues.

- 6.03.02 No nuisance will be permitted.
- 6.03.03 Upon completion of work, such facilities shall be removed and the premises left in a sanitary condition.
- 6.03.04 Contractor is not permitted to use restrooms or other sanitary facilities within the Owner's existing building or on-site facilities unless the contrary is provided for elsewhere in the Contract Documents.

ARTICLE 7. PROGRESS.

- 7.01 Contractor shall provide the Owner with full information in advance as to its plans for performing each part of the work. This shall include, but not be limited to, schedules provided to the Owner as Post-Award Information and subsequently updated schedules submitted to the Owner on a monthly basis as required in Article 10 below, as a condition precedent to payment(s).
- 7.01.01 Such schedule shall be in a form acceptable to the Owner.
- 7.01.02 The Contractor's schedule shall be updated no less frequently than monthly (unless the parties otherwise agree in writing) and shall be updated to reflect conditions encountered from time to time and shall apply to the total Project.
- 7.01.03 Each such revision shall be provided to the Owner and the Project Consultant.
- 7.01.04 Compliance with the requirements of this Subparagraph shall be a condition precedent to payment to the Contractor, and failure by the Contractor to comply with said requirements shall constitute a material breach of this Contract.
- 7.01.05 By providing these Schedules to Owner, Owner does not in any way acknowledge or consent that the Schedules are acceptable or reasonable, but it is simply reviewing same for its own informational purposes.
- 7.02 If at any time during the progress of work, the Contractor's actual progress is inadequate to meet the requirements of the Contract Documents, such as the required completion dates, the Owner may so notify Contractor who shall thereupon take such steps as may be necessary to improve its progress so as to complete the work on or before the required Substantial Completion Date.
- 7.02.01 If within a reasonable period as determined by Owner, the Contractor does not improve performance to meet the requirements of the Contract Documents, such as the required completion dates, then the Owner may require an increase in any or all of the following: Contractor's Subcontractor crews and Contractor's own labor force, the number of shifts, overtime operation, Contractor's supervision and additional days of work per week, all without cost to Owner.
- 7.02.02 Neither such notice by Owner nor Owner's failure to issue such notice shall relieve Contractor of its obligation to achieve the quality of work and rate of progress required by the Contract Documents.
- 7.03 Failure of Contractor to comply with the instructions of the Owner may be grounds for determination by Owner that Contractor is not prosecuting its work with such diligence as will assure completion within the time specified.
- 7.04 Upon such determination, Owner, in addition to any and all other rights set forth in the Contract Documents and remedies afforded Owner under the Contract Documents or at law, may:
 - 7.04.01 Elect to proceed with the work with its own employees, agents, Contractors, Subcontractors, Suppliers and assess all costs, expenses or fees for same against Contractors and/or
 - 7.04.02 Terminate for cause Contractor's right to proceed with the performance pursuant to the Contract Documents, or any separable part thereof, in accordance with the applicable provisions of the Contract Documents.

ARTICLE 8. EXPEDITING

- 8.01 The work, equipment and material provided under this Contract may be subject to expediting by Owner.
- 8.02 Owner shall be allowed reasonable access to the shops, factories and other places of business of the Contractor and/or Subcontractors for expediting purposes.
- 8.03 As required by Owner, Contractor shall supply schedules and progress reports for Owner's use in expediting, and Contractor shall cooperate with Owner and require Subcontractors to cooperate with Owner in such expediting.
- 8.04 Any expediting performance by Owner shall not relieve Contractor of its sole and primary responsibility for timeliness of delivery of the equipment and material to be provided under the Contract Document.

ARTICLE 9. COMPLETION.

- 9.01 When the Contractor considers that the work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Project Consultant a comprehensive Punch List of items to be completed or corrected prior to final payment. Failure to include an item on the Punch List does not alter the responsibility of the Contractor to complete all work in accordance with the Contract Documents.
 - 9.01.01 For a Project with an estimated cost of less than ten million dollars (\$10,000,000), the Punch List shall be completed within thirty (30) calendar days after Substantial Completion of the Project, as same is defined in the Contract Documents. If Substantial Completion is not defined in the Contract Documents, the list shall be completed upon reaching beneficial occupancy or use.
 - 9.01.02 For a Project with an estimated cost of ten million dollars (\$10,000,000) or more, the Punch List shall be completed within thirty (30) calendar days, unless otherwise extended elsewhere in the Contract Documents, but not to exceed sixty (60) calendar days, after reaching Substantial Completion, as same is defined in the Contract Documents. If Substantial Completion is not defined in the Contract Documents, the list shall be completed upon reaching beneficial occupancy or use.
- 9.02 For a Project involving the construction of more than one building or structure, or involving a multi-phased project, a Punch List shall be created for each building, structure, or phase of the Project pursuant to the limitations provided for above in 9.01.01 and 9.01.02, as applicable.
- 9.03 The failure to include any corrective work or pending items not yet completed on the List does not alter the responsibility of the Contractor to complete all the construction services purchased pursuant to the contract. All items that require correction under the Contract Documents and that are identified after the preparation and delivery of the Punch List remain the obligation of the Contractor as defined by the Contract Documents.
- 9.04 Upon completion of all of the items on the Punch List, the Contractor may submit a payment request for all remaining retainage withheld by the local governmental entity pursuant to this section. If a good faith dispute exists as to whether one or more items identified on the list have been completed pursuant to the Contract Documents, the Owner may continue to withhold an amount not to exceed one hundred-fifty percent (150%) of the total costs to complete the outstanding item.
- 9.05 In the event that the Contractor fails, in whole or in part, to comply with the obligations and responsibilities required hereunder in paragraph 9.01, the Owner need not pay or process any payment request for remaining retainage.

ARTICLE 10. CONTRACT PAYMENTS.

- 10.01 Schedule of Values:
- 10.01.01 The Contractor shall maintain and update the Schedule of Values originally provided to the Owner as Post-Award Information.
- 10.01.02 The Contractor's Schedule of Values apportions the Contract Price among the different elements of the required work for purposes of periodic and final payments and shall be submitted as detail in support of the Contractor's monthly Application for Payment.
- 10.01.03 The Schedule of values shall be presented with such detail, and supported with whatever information the Project Consultant or the Owner reasonably requests.
- 10.01.04 The Contractor shall not imbalance its Schedule of Values nor artificially inflate or exaggerate any element thereof. Contractor's failure to comply with this provision shall be grounds for Owner to terminate Contractor, as provided for elsewhere herein.
- 10.02 The Owner shall pay the Contract Price to the Contractor in accordance with the procedures provided herein.
- 10.02.01 On or before the **15th** day of each month after commencement of performance, but no more frequently than once monthly, the Contractor may submit an Application for Payment to the Owner for the period ending the last day of the previous month or other pay period as mutually defined and agreed to by the Contractor and Owner and as provided for in the Contract Documents. The Contractor shall also deliver a copy of the Application for Payment to the Project Consultant.
- 10.02.02 Said Application for Payment shall be in the format required elsewhere in the Contract Documents and include whatever supporting information as may be required by the Project Consultant, the Owner, or both.
- 10.02.03 The Owner shall not be required to pay for stored materials or equipment except as set forth in Article 25 below.
- 10.02.04 Each Application for Payment shall be signed by the Contractor and shall constitute the Contractor's representation that the quantity of work has reached the level for which payment is requested, that the work has been properly installed or performed in substantial compliance with the requirements of the Contract Documents, and that the Contractor knows of no reason why payment should not be made as requested.
- 10.02.05 Upon receipt of the Application for Payment, the Project Consultant shall:
- a. Within ten (10) days, review the Application for Payment and may also review the work at the Project site or elsewhere to determine whether the quantity and quality of the work is as represented in the Application for Payment and is as required by the Contract Documents.
 - b. Approve in writing the amount which, in the opinion of the Project Consultant, is properly owing to the Contractor.
- 10.02.06 The Owner shall make payment to the Contractor within fifteen (15) days following the Project Consultant's written approval of the Application for Payment but in no event later than twenty-five (25) days after the invoice was received by the Owner.
- 10.02.07 The Owner may reject the Application for Payment within twenty (20) business days after the date on which the Application for Payment is stamped as received. The rejection shall be in writing and shall specify the deficiency in the payment request or invoice and the action necessary to make the payment request or invoice proper.
- 10.02.08 If the Owner disputes a portion of an Application for Payment, the undisputed portion must be timely paid.

- 10.02.09 The Contractor may submit a corrected Application for Payment which corrects the deficiency or deficiencies specified in writing by the Owner. The Owner shall either pay or reject the corrected Application for Payment within ten (10) business days after receipt of same.
- 10.02.10 If a dispute regarding the Application for Payment cannot be resolved pursuant to the process outlined herein, it must be resolved in accordance with the dispute resolution procedures outlined in Article 45.
- 10.02.11 The amount of each monthly payment shall be the amount approved for payment by the Project Consultant less such amounts, if any, otherwise owing by the Contractor to the Owner or which the Owner shall have the right to withhold as authorized by the Contract Documents or reasonable business practices. In the event of a dispute with regard to a portion of the Application for Payment, the Owner shall pay the undisputed portion pursuant to the timeline established in this Section.
- 10.02.12 The Project Consultant's approval of the Contractor's Applications for Payment shall not preclude the Owner from the exercise of any of its rights as set forth in the Contract Documents.
- 10.02.13 The submission by the Contractor of an Application for Payment also constitutes an affirmative representation and warranty that all work for which the Owner has previously paid is free and clear of any lien, claim, or other encumbrance by any person whatsoever.
- 10.02.14 As a condition precedent to payment, the Contractor shall, as required elsewhere in the Contract Documents and as required by the Owner, also provide to the Owner documents relating to the Project, including but not limited to, updated schedules and daily logs, properly executed documents that all Subcontractors, materialmen, suppliers or others having rights, acknowledge receipt of all sums due pursuant to all prior Payment Requests and waive and relinquish any rights or other claims of any nature relating to the Project.
- 10.02.15 Furthermore, the Contractor warrants and represent that, upon payment of the Application for Payment submitted, title to all work included in such payment shall be vested in the Owner.
- 10.02.16 Dollar Value/Time Graphs: Each of the Contractor's Application for Payment shall be accompanied by a graph, prepared by the Contractor, that consecutively tracks the percentage of completion of both the Application for Payment's dollar value attained and the contract time (calendar days) elapsed, all coinciding with the date of the Application for Payment.
- 10.03 When payment is received from the Owner, the Contractor shall within five (5) days pay all Subcontractors, materialmen, laborers and suppliers the amounts they are due for all work covered by such payment. In the event such payments are not made in a timely manner the Owner may, in its discretion, invoke reasonable procedures in order to protect Owner's interest or Owner's desire to assist in having Subcontractors, laborers, suppliers, materialmen or others paid.
- 10.04 It is mutually agreed that payments made under this Contract shall not constitute acceptance of defective or improper materials or workmanship nor shall same act as a waiver or release of future performance in accordance with the Contract Documents.

ARTICLE 11. WITHHOLDING PAYMENT TO CONTRACTOR.

- 11.01 The Owner may withhold as retainage five percent (5%) of the payment owed to the Contractor until fifty percent (50%) completion of the Project. After fifty-percent (50%) completion is reached the owner may reduce the retainage withheld from each subsequent progress payment.
- 11.01.01 Fifty-percent (50%) completion shall be defined in the Contract Documents. If not defined, fifty percent (50%) completion shall be the point at which the Owner has expended fifty percent (50%) of the total cost of the construction services purchased with all costs associated with existing change orders and any other additions or modifications to the construction services provided for in the Contract Documents.
- 11.01.02 After fifty percent (50%) completion of the Project, the Contractor may present to the Owner an Application for Payment of up to one-half (1/2) of the retainage retained by the Owner prior to the fifty-percent completion date.

The Owner shall promptly make such payment unless the Owner has grounds for withholding the payment retainage as provided herein.

- 11.02 If the City pays the retainage amount upon the Contractor's request which is attributable to the labor, services, or materials supplied by one or more Contractors or suppliers, the Contractor shall timely remit payment of such retainage to those Subcontractors or suppliers.
- 11.03 Regardless of the provisions in this Article, in no event shall the Owner be required to pay or release any amounts that are the subject of a good faith dispute, a claim brought pursuant to Fla. Stat. § 255.05, or otherwise the subject of a claim or demand by the Owner.
- 11.04 In addition to the Retainage, payments, including but not limited to Final Payment, may be withheld or reduced by the Owner in its sole discretion if any of the following exists:
 - 11.04.01 The work is not proceeding in accordance with the Construction Documents Schedule as anticipated by the Project Consultant or the Owner. In that event, the Project Consultant or the Owner will assess the anticipated delay and the Owner will use the amounts specified for Liquidated Damages as the basis for amounts withheld. Said funds shall be held until such time as the Project Consultant or Owner determine that the work is back on schedule. By making said funds available to Contractor, Owner does not waive its right to assess liquidated damages at the completion of the Project;
 - 11.04.02 Liquidated Damages as set forth in this Contract;
 - 11.04.03 Defective work unremedied;
 - 11.04.04 Punch-List items unremedied;
 - 11.04.05 Subject to Owner's written notice to Contractor in accordance with the Contract Documents back charge items for work performed by Owner or another Contractor at the request of Owner, which work is within the scope of the work under this Construction Contract;
 - 11.04.06 Claims filed by Subcontractors, laborers, suppliers, materialmen or others;
 - 11.04.07 Failure to comply with any and all insurance requirements;
 - 11.04.08 Failure of the Contractor to make payment properly to Subcontractors or others;
 - 11.04.09 Damage to the Owner or another Contractor;
 - 11.04.10 Reasonable evidence that the work will not be completed on or before the Substantial Completion or Final Completion Date;
 - 11.04.11 Failure of the Contractor to carry out any of its obligations in accordance with the Contract Documents;
 - 11.04.12 Failure of the Contractor to submit the information or documents required by this Contract or reasonably required by Owner, including but not limited to schedules and daily logs.

ARTICLE 12. CONTRACTOR'S RIGHT UPON NONPAYMENT.

- 12.01 If within thirty (30) days of the date payment to the Contractor is due, the Owner, without cause or basis hereunder, fails to pay the Contractor any amounts then due and payable to the Contractor, the Contractor shall have the right to cease work until receipt of proper payment after first providing ten (10) days written notice of its intent to cease work to the Owner.

ARTICLE 13. INFORMATION AND MATERIAL SUPPLIED BY THE CITY.

- 13.01 The Owner shall furnish to the Contractor, prior to the execution of the Contract, any and all written and tangible material, including but not limited to surveys and other information concerning existing conditions on the Site.
- 13.02 The Owner shall also furnish, if appropriate, the legal description of the Project site, and any required survey.

ARTICLE 14. LICENSES AND PERMITS.

- 14.01 All licenses and permits necessary to commence and prosecute the work to completion shall be procured and paid for by the Contractor, unless expressly provided for elsewhere in the Contract Documents.
- 14.03 All easements and rights-of-way will be procured and paid for by the Owner unless otherwise specifically provided within the Contract Documents.

ARTICLE 15. CEASE AND DESIST ORDER.

- 15.01 In the event the Contractor fails or refuses to perform the work as required herein, the Owner may instruct the Contractor to cease and desist from performing the work in whole or in part. Upon receipt of such instruction, the Contractor shall immediately cease and desist as instructed by the Owner and shall not proceed further until the cause for the Owner's instructions has been corrected and the Owner instructs that the work may resume.
- 15.02 In the event the Owner issues such instruction to cease and desist, and in the further event the Contractor fails and refuses within seven (7) days of receipt of same to provide adequate assurance to the Owner that the cause of such instructions will be eliminated or corrected, then the Owner shall have the right, but not the obligation, to carry out the work with its own forces, or with the forces of another Contractor, and the Contractor shall be fully responsible and liable for the costs of performing such work by the Owner.
- 15.03 The rights set forth herein are in addition to, and without prejudice to, any other rights or remedies the Owner may have against the Contractor.

ARTICLE 16. DUTIES, OBLIGATIONS AND RESPONSIBILITIES OF THE CONTRACTOR.

- 16.01 The Contractor shall perform the work in accordance with the Contract Documents.
- 16.02 The Contractor shall supervise the work and bear full responsibility for any and all acts or omissions of those engaged in the work on behalf of the Contractor.
- 16.03 The Contractor hereby warrants that all labor provided under this Contract shall be competent to perform the tasks undertaken, that the product of such labor shall yield only first-class results, that all material and equipment provided shall be new and of high quality, that the work will be complete, of high quality, without defects, and in compliance with the requirements of the Contract Documents. Any work not complying with the requirements of this Subparagraph shall constitute a breach of the Contractor's warranty.
- 16.04 Unless expressly provided for elsewhere in the Contract Documents, the Contractor shall obtain and pay for all required permits, fees, and licenses and shall comply with all legal requirements applicable to the work.
- 16.05 The Contractor shall prepare and submit schedules and supporting documentation as required elsewhere in the Contract Documents.
- 16.06 Record Keeping on Site:
- 16.06.01 The Contractor shall keep a daily log, an updated copy of the Contract Documents, approved shop drawings and other submittals, and other documents and materials as required by the Contract Documents at the site.
- 16.06.02 All of these items shall be available to the Owner and the Project Consultant at all regular business hours.

- 16.06.03 Upon final completion of the work, all of these items shall be finally updated and provided to the Owner and shall become the property of the Owner.
- 16.07 Shop Drawings and Other Submittals:
 - 16.07.01 The Contractor shall submit for approval with reasonable promptness and in a timely manner so as to cause no delay in the work, various submittals including shop drawings as required for the work of the various trades.
 - 16.07.02 These shop drawings and other submittals shall be in accordance with the requirements of the Contract Documents and shall be carefully checked in every respect and signed by the Contractor before submitting same to the Project Consultant.
 - 16.07.03 Shop drawings and other submittals from the Contractor are not part of the Contract Documents but are documents prepared and utilized by the Contractor to coordinate the work.
 - 16.07.04 The Contractor shall not do any work requiring shop drawings or other submittals unless such have been approved in writing by the Project Consultant.
 - 16.07.05 All work requiring approved shop drawings or other submittal shall be done in compliance with such approved documents. However, approval by the Project Consultant or the Owner shall not be evidence that work installed pursuant thereto conforms with the requirements of the Contract Documents.
 - 16.07.06 The Owner and the Project Consultant shall have no duty to review partial submittal or incomplete submittal except as may be provided otherwise within the Contract Documents.
 - 16.07.07 The Contractor shall maintain a submittal log which shall include, at a minimum, the date of each submittal, the date of any resubmittal, the date of any approval or rejection, and the reason for any approval or rejection.
 - 16.07.08 The Contractor shall have the duty to carefully review, inspect and examine any and all submittal and resubmittals before submission of same to Owner or the Project Consultant.
- 16.08 The Contractor shall maintain the Project site in a reasonably clean condition during performance of the work. Upon final completion, the Contractor shall thoroughly clean the Project site of debris, trash and excess materials or equipment. In the event the Project is located at or near occupied facilities, then Owner may establish additional rules and regulations regarding condition at the Project, including but not limited to, keeping the Project and the occupied premises clean, safe and secure.
- 16.09 At all times, the Contractor shall permit the Owner and the Project Consultant to enter upon the Project site and to review or inspect the work.

ARTICLE 17. SUBCONTRACTS.

- 17.01 The Contract Documents make no attempt to fix the scope of the work of any Subcontractor nor the responsibilities of any such Subcontractor, it being understood that the Contractor shall fix the scope of all work and responsibilities of the Subcontractor. Contractor shall not replace Subcontractor without good cause.
- 17.02 The Contractor shall continuously update information concerning Subcontractors submitted to the Owner as Post-Award Information by submitting:
 - 17.02.01 The General form of Subcontract Agreement used by the Contractor within thirty (30) days of execution of the Construction Contract.
 - 17.02.02 Updated listings of Subcontractors denoting changes to the list submitted as Post-Award Information within ten (10) days of said change.
 - 17.02.03 Copies of executed Subcontractor Contracts within ten (10) days of their execution.

- 17.02.04 A complete accounting of all payments made to Subcontractors and the balances owed to the Subcontractors with each Application for Payment submitted by the Contractor.
- 17.03 All contracts with Subcontractors shall incorporate by reference the terms and conditions of this Construction Contract.
- 17.04 The Contractor shall cause and require to be included in all Subcontracts a provision for the benefit of the Owner binding the Subcontractors to remain bound by the Subcontracts in the event the Contractor is replaced by another Contractor pursuant to the terms of the Contract Documents. The Contractor shall also include in all Subcontracts a provision requiring the Subcontractor, in the event of the Contractor's termination, to consent to the assignment of their Subcontracts to the Owner.
- 17.05 The Owner may at any time request from the Subcontractors, or any of them, a sworn statement of account with the Contractor and the Contractor shall cause to be included in all Subcontracts a requirement that the Subcontractors provide said sworn statement upon Owner's request.
- 17.06 Each Subcontractor and supplier must agree to assign all of its warranties to Owner. In addition, each Subcontractor and supplier must warrant all of its work, equipment, materials and labor to Owner in accordance with the terms and provisions of its contractual obligations to Contractor and any legal or statutory provisions that apply to its work, materials or equipment.
- 17.07 Owner may at its discretion require Contractor to have major sub-Subcontractors or suppliers comply with the requirements of this Article 16 or other provisions of the Contract Documents.

ARTICLE 18. CONTRACTOR'S SUPERINTENDENT.

- 18.01 Before starting the work, Contractor shall designate an English speaking, competent, authorized representative (hereinafter Superintendent), acceptable to the Owner, to represent and act for the Contractor. The Contractor shall:
 - 18.01.01 Inform Owner, in writing, of the name and address of such representative together with a clear definition of the scope of his authority to represent and act for Contractor and shall specify any and all limitation on such authority.
 - 18.01.02 Keep the Owner informed of any subsequent changes in the foregoing.
- 18.02 The Superintendent shall be present (or be temporarily represented by a person familiar with the project work activities and schedule) at the site of the work at all times when the work is actually in progress.
- 18.04 All notices, determinations, instructions and other communications given to the Contractor's Superintendent shall be binding upon the Contractor.
- 18.05 The Superintendent shall maintain a daily log/report which shall include at least the following information: weather conditions; trades at site; manpower totals by trade; heavy equipment in use; activities in progress; and inspections at site. Copies of the daily entries shall be provided to the Owner once per month, or as required elsewhere in the Contract Documents.

ARTICLE 19. COOPERATION WITH OTHERS.

- 19.01 The Owner and other Contractors and Subcontractors may be working at the site during the performance of the Construction Contract, and Contractor's work may be interfered with as a result of such concurrent activities. Contractor shall fully cooperate with Owner and other Contractors to avoid any delay or hindrance of the work. Owner may require that certain facilities be used concurrently by Contractor and other parties and Contractor shall comply with such requirements.
- 19.02 If any part of the Contractor's work depends on proper execution or results from any work performed by the Owner or any separate Contractor, the Contractor shall, prior to proceeding with the work, promptly report to the Owner any apparent discrepancies or defects in such work that render it unsuitable for such proper execution and results. Failure of the Contractor to so report shall constitute an acceptance of the Owner or separate Contractor's work as fit

and proper to receive Contractor's work, except as to defects which may subsequently become apparent in such work performed by others.

ARTICLE 20. SITE CONDITIONS.

- 20.01 Contractor shall have the sole responsibility to conduct reasonable inspection of the site and to satisfy itself concerning the nature and location of the work and the general and local conditions, and particularly, but without limitation, with respect to the following: those affecting transportation, access, disposal, handling and storage of material; availability and quality of labor, water and electric power; availability and condition of roads; climatic conditions; location of underground utilities as depicted in the Contract Documents; governmental processes and requirements for obtaining permits other than issuance of the original building permits, certificates of occupancy and other regulatory/utility approvals; physical conditions at the work sites and the Project area as a whole; topography and ground surface conditions; subsurface geology, and nature and quality of surface and subsurface materials to be encountered; equipment and facilities needed preliminary to and during performance of the Construction Contract; and all other matter which can in any way affect performance of the Construction Contract, or the cost associated with such performance.
- 20.02 The failure of Contractor to acquaint itself with any applicable condition will not relieve it from the responsibility for properly estimating either the duration, difficulties, or the costs of successfully performing the work.
- 20.03 Contractor may reasonably rely upon site documentation provided by the Owner. In the event that during the course of the work Contractor encounters an underground utility facility that was not shown on the Contract Documents; or subsurface or concealed conditions at the Project site which differ materially from those shown on the Contract Documents and from those ordinarily encountered and Generally recognized as inherent in work of the character called for in the Contract Documents; or unknown physical conditions of the Project site, of an unusual nature, which differ materially from that ordinarily encountered and Generally recognized as inherent in work of the character called for in the Contract Documents, Contractor, without disturbing the conditions and before performing any work affected by such conditions, shall, within forty-eight (48) hours of their discovery, notify Owner and Project Consultant in writing of the existence of the aforesaid conditions. Project Consultant and Owner shall, within two (2) business days after receipt of Contractor's written notice, investigate the site conditions identified by Contractor. If, in the sole opinion of Project Consultant, the conditions do materially so differ and cause an increase or decrease in Contractor's cost of, or the time required for, the performance of any part of the work, whether or not changed as a result of the conditions, Project Consultant shall recommend an equitable adjustment to the Contract Price, or the Contract Time, or both. If Owner and Contractor cannot agree on an adjustment in the Contract price or the Contract time, the adjustment shall be referred to Project Consultant for determination. Should Project Consultant determine that the conditions of the Project site are not so materially different to justify a change in the terms of the Contract, Project Consultant shall so notify Owner and Contractor in writing, stating the reasons, and such determination shall be final and binding upon the parties hereto. No request by Contractor for an equitable adjustment to the Contract under this provision shall be allowed unless Contractor has given written notice in strict accordance with the provisions of this Article. No request for an equitable adjustment or changes to the Contract Price or Contract Time for differing site conditions shall be allowed if made after the date certified by Project Consultant as the date of substantial completion.

ARTICLE 21. RESPONSIBILITY FOR WORK SECURITY.

- 21.01 Contractor shall at all times conduct, at its expense, all operations under the Construction Contract in a manner to avoid the risk of loss, theft or damage by vandalism, sabotage or other means to any property.
- 21.01.01 Contractor shall promptly take such reasonable precautions as are necessary and adequate against any conditions which involve risk of a loss, theft or damage to its property.
- 21.01.02 Contractor shall continuously inspect all of its work, materials, equipment and facilities to discover and determine any such conditions and shall be solely responsible for discovery, determination and correction of any such condition.
- 21.02 Contractor shall comply with all applicable laws and regulations.

- 21.02.01 Contractor shall cooperate with Owner on all security matters as set forth elsewhere in the Contract Documents and shall promptly comply with any project security requirements established by Owner.
- 21.02.02 These security requirements may be more stringent in the event portions of the facilities or project are occupied or otherwise being used.
- 21.02.03 Such compliance with these security requirements shall not relieve Contractor of its responsibility for maintaining property security for the above noted items, nor shall it be constructed as limiting in any manner Contractor's obligation to undertake reasonable action as required to establish and maintain secure conditions at the site.
- 21.03 Contractor shall prepare and maintain accurate reports of incidents of loss, theft or vandalism and shall provide these reports to Owner in a timely manner.

ARTICLE 22. PROTECTION OF WORK IN PROGRESS, MATERIALS AND EQUIPMENT.

- 22.01 Contractor shall be responsible for and shall bear any and all risks of loss or damage to work in progress, all materials delivered to the site, and all materials and equipment involved in the work until completion and final acceptance of the work under this Contract.
- 22.02 Permanent openings for the introduction of work and materials to the structure and construction site shall be protected so that upon completion, the work will be delivered to the Owner in proper, whole and unblemished condition.

ARTICLE 23. ADMINISTRATION OF THE CONTRACT.

- 23.01 The Project Consultant will provide Administration of the Contract.
- 23.01.01 For those projects for which the City Engineer serves as the Project Consultant, all references to the Project Consultant shall be considered to be the City Engineer.
- 23.01.02 In the event the Owner should find it necessary to replace the Project Consultant, the Owner shall retain a replacement and the role of the replacement shall be the same as the role of the original Project Consultant.
- 23.02 Unless otherwise directed by the Owner in writing, the Project Consultant will perform those duties and discharge those responsibilities allocated to the Project Consultant by the Owner.
- 23.03 Neither the Project Consultant nor the Owner will be responsible for construction means, methods, techniques, sequences or procedures, safety precautions and programs in connection with the work or for the acts of omission or commission of the Contractor, its Subcontractors or their agents or employees.
- 23.04 The Project Consultant and Owner will each have the authority to reject work which does not conform to the Contract Documents and to require special inspection or testing with prior approval by the Owner. Neither the Project Consultant's nor the Owner's authority to act under this Paragraph, nor any decision made by them in good faith either to exercise or not to exercise such authority, shall give rise to any duty or responsibility of the Project Consultant or the Owner to the Contractor, any Subcontractor, any of their agents or employees, or any other person performing any of the work.
- 23.05 The Contractor shall forward all communications to the Project Consultant, with simultaneous copies to the Owner.
- 23.06 The Project Consultant will review and certify the Contractor's Application for Payments which the Owner must subsequently approve prior to Payment of the Contractor.
- 23.07 The Project Consultant shall approve shop drawings for design only, the Contractor being responsible for all dimensions, quantities, etc., necessary to complete the work in compliance with the Drawings and Specifications and other Contract Documents.

- 23.08 The duties, responsibilities and limitations of authority of the Project Consultant and the Owner will not be modified nor extended without written consent of the Contractor, the Project Consultant, and the Owner.
- 23.09 Notwithstanding anything to the Contrary in these General Conditions or any other "Contract Document" as that term is defined in the Professional Services Agreement between the City of Pompano Beach, Florida and the Project Consultant, it is not the intention nor shall any of the provisions of those documents act as a release, limitation or discharge of the obligations or responsibilities of the Project Consultant pursuant to its agreement with the Owner.
- 23.10 The Project Consultant will utilize the Contractor Performance Report to monitor and record the Contractor's performance for the work specified by the contract. The Contractor Performance Report has been included as an exhibit to the contract.

ARTICLE 24. MATERIALS.

- 24.01 The Contractor shall provide materials and equipment as required in the Contract Documents. No substitution will be permitted except in the instance where a material is no longer available during the progress of the work or is deemed by the Owner to be no longer suitable or appropriate for incorporation into the work or for obvious economic benefits accruable to the Owner.
 - 24.01.01 Any such substitution must be approved by the Project Consultant and Owner prior to incorporation of the proposed substitution into the work.
 - 24.01.02 Proposed substitutions must be submitted for consideration from the Contractor to the Project Consultant and the Owner. Documentation for the proposed substitution must include, but is not limited to substantiation of the Contractor's efforts to obtain the originally specified materials including documentary evidence from the original materials' manufacturer that such materials are not available.
 - 24.01.03 Product delivery lead times shall not serve as a basis for any substitution request except for where approved in advance by the Owner.
 - 24.01.04 All additional costs incurred by the Owner as the result of any substitution will be the direct responsibility of and borne by the Contractor.
- 24.02 The Contractor shall make written request to the Project Consultant for and obtain his written approval of the use of any materials proposed for use when "approval" materials are specified or a performance type specification is utilized without mentioning any standard by name.
- 24.03 If, in the opinion of the Project Consultant, a specified product or equipment no longer meets the quality of the products or equipment required for the work, Project Consultant shall request a Change Order Proposal from the Contractor for modifying the Contract to incorporate the respective changes to the work required, the Contract amount, and the Contract Time as beneficial to the Owner.

ARTICLE 25. STORED MATERIALS.

- 25.01 Contractor shall, at its expense, receive, unload, store in a secure place, and deliver from storage to the construction site all materials and equipment required for the performance of the Contract.
 - 25.01.01 Contractor is not entitled to payment for same except for those materials which in Owner's discretion are properly stored and are going to be installed or incorporated into the construction of the Project within thirty (30) days of delivery to the construction site.
 - 25.01.02 The storage facilities and methods of storing shall meet Owner's approval and shall be in accordance with manufacturer's recommendations, or Owner will not be obligated to pay for same.
 - 25.01.03 Materials and equipment subject to degradation by outside exposure shall be stored in a weather tight enclosure provided by Contractor at its expense.

- 25.01.04 Owner may at its discretion require material to be stored in an air-conditioned location.
- 25.02 Provided the above conditions are met, the stored materials may be included in a subsequent Application for Payment if the Contractor also complies with the following:
 - 25.02.01 An applicable purchase order is provided listing the materials in detail and identifying the Contract Documents, by name, with verification that the total value of the purchase order amount reconciles with the corresponding application for payment stored materials line item value.
 - 25.02.02 Evidence that proper storage security is provided.
 - 25.02.03 The Owner is provided legal title (free of liens or encumbrances of any kind) to the material that is stored or stockpiled.
 - 25.02.04 The Contractor and/or its Subcontractor have provided insurance for the Stored Materials against loss, damage (from whatever source), or disappearance, including loss or theft prior to incorporation into the work. By execution of the Contract, Contractor releases Owner from any responsibility for Stored Materials and assumes all liability for and risk of loss or damage, by whatever means, including Owner's alleged negligence, regardless of whether the Owner has paid for said Stored Materials.
- 25.03 Once any Stored Material is paid for by Owner, it shall not be removed from the designated storage area except for incorporation into the Project or upon subsequent written approval by Owner.
- 25.04 No Applications for Payment shall be submitted nor payments made based on the value of materials stored at locations other than the Project, unless otherwise approved in writing by the Owner.
- 25.05 It is further agreed between the parties that the transfer of title and the Owner's payment for any Stored Material pursuant to the Contract Documents shall in no way relieve the Contractor of the responsibility for providing and installing such material in accordance with the requirements of the Contract Documents.
- 25.06 The Contractor warrants that title to all of the work or Stored Materials covered by the Application for Payment will pass to the Owner either by incorporation in the Project or upon receipt of payment by the Contractor, whichever occurs first, free and clear of all liens, claims, security, interest or encumbrance; and that none of the work and none of the Stored Materials covered by the Application for Payments will have been acquired by the Contractor, or by any other person performing the work at the site or providing materials and equipment to the Project, subject to an agreement under which an interest therein or encumbrance thereon is retained by the seller or otherwise imposed by the Contractor or such person.
- 25.07 In the event stored materials which Owner is paying for in advance of their being installed or incorporated into the Project pursuant to this Paragraph are not installed or incorporated into the Project within thirty (30) days of when they are delivered to the site, Contractor shall not be entitled to payment for any future stored materials on this Project and the amounts previously approved for payment for said materials shall be deducted from the Contractor's next application for payment..

ARTICLE 26. INSPECTION: REJECTION OF MATERIALS AND WORKMANSHIP.

- 26.01 All material and equipment provided and work performed shall be properly inspected by Contractor, at its expense, and shall at all times be subject to quality surveillance, inspections, observations or quality audit by Owner, Project Consultant and any inspectors conducting an inspection pursuant to code, law, regulations, etc.
 - 26.01.01 Contractor shall provide safe and adequate facilities, and all samples, drawings, lists and documents necessary for such quality surveillance, observation or quality audit.
 - 26.01.02 The Contractor shall permit and facilitate inspection of the work by the Owner, Project Consultant, Inspectors for any governmental agency, authority, or board.

- 26.01.03 Owner also reserves the right to designate others such as consultants, commissioning authorities, test and balance agents, forensic specialists, etc. to conduct inspections during or subsequent to the work as Owner in its discretion desires.
- 26.01.04 Owner and Project Consultant shall be afforded full and free access to the shops, factories or places of business of Contractor and its Subcontractors for such quality surveillance, observation or quality audit and to determine the status of the work.
- 26.01.05 In the event the Project Consultant or Owner requires a factory inspection, the Contractor shall notify the suppliers that the material shall not be produced or fabricated without due notice to the Project Consultant and Owner and an opportunity for such inspection.
- 26.02 If any work should be covered up without approval or consent of the Project Consultant or Owner, it must, if required by the Project Consultant or Owner, be uncovered for examination at the Contractor's expense.
- 26.03 If any material, equipment or workmanship is determined by Owner, City Engineer, Project Consultant or Inspector either during performance of the work or on final quality surveillance, or during any applicable warranty period, to be defective or not complying with the requirements of this Construction Contract, Owner, City Engineer, Project Consultant or Inspector will notify Contractor in writing that such material, equipment or portions of the work is rejected and Owner reserves the right to withhold payment on any such item or seek compensation from Contractor for same. Thereupon, Contractor shall, at its own expense, immediately remove, replace or correct such defective material, equipment or portions of the work by making the same comply strictly with all requirements of the Contract Documents. The Contractor shall be responsible for the costs of any additional site observations, special inspections and/or testing, or other activities of either the Project Consultant or the Owner made necessary by the correction of such defective materials, equipment or portions of the work.
- 26.04 Neither the failure to make such quality surveillance, observation or quality audit, nor to discover defective workmanship, materials, or equipment, shall prejudice the rights of Owner to correct or reject the same as hereinafter provided.

ARTICLE 27. WARRANTY.

- 27.01 Unless otherwise provided elsewhere in the Contract Documents, all material and equipment incorporated into any work covered by the Contract Documents shall be new and, where not specified, of the most suitable grade of their respective kinds for their intended use, and all workmanship shall be in accordance with construction practices acceptable to Owner and Project Consultant.
- 27.02 Unless otherwise provided in the Contract Documents, Contractor warrants all work, equipment, materials and workmanship to be in accordance with the Contract Documents, any and all applicable codes, proper and workmanlike, first class and free from defects for a period of twelve (12) months (unless longer guarantees or warranties are provided for elsewhere in the Contract Documents in which case the longer periods of time shall prevail) from and after Final Completion of the work under the Contract Documents, regardless of whether the same were provided or performed by Contractor or by any Subcontractor.
- 27.03 Contractor's warranty with respect to latent defects shall be in accordance with Chapter 95, Florida Statutes, and other applicable provisions of State law.
- 27.04 In the event of damage or injury to persons or property or other consequential or resultant damages result from Contractor's breach of any warranties, then the Contractor will be responsible for same.

ARTICLE 28. OFFICE SPACE FOR THE CITY'S PERSONNEL.

- 28.01 The Contractor shall provide, at Contractor's expense, for the duration of the work, a suitable lockable office for any Owner designated personnel.

ARTICLE 29. PROJECT RECORD DOCUMENTS AND SURVEY.

- 29.01 A marked up record set of the Contract Documents and other project records as required elsewhere within the Contract Documents will be kept up to date by the Contractor on the jobsite at all times. These documents will be given to the Project Consultant at the completion of the work as required by the Contract Documents, and properly labeled as "Project Record Documents."
- 29.02 In addition to the "Project Record Documents", the Contractor will cause to have prepared by a Surveyor, registered in the State of Florida, a site survey clearly representing all work done under this Contract and updating the original survey as may have been provided by the Owner.
- 29.03 The Contractor shall submit Project Record Documents and Survey in the manner and format specified elsewhere in the Contract Documents.
- 29.04 This is a critical item and final payment will be withheld from the Contractor until "Project Record Documents" and survey are provided by the Contractor and approved by the Project Consultant.

ARTICLE 30. SALVAGE.

- 30.01 Any salvage resulting from clearing, grubbing, grading, draining, remodeling or altering any existing facilities on this site shall be the property of the Owner; and this material shall be piled or stacked on the site if the Owner desires this material.
- 30.02 If this material is not desired by the Owner, it shall be disposed of by the Contractor at his expense.

ARTICLE 31. CLAIMS BY THE CONTRACTOR.

- 31.01 Although Contractor acknowledges the No Damage for Delay clause set forth in Article 6 of the Contract between Owner and Contractor, in the event the Contractor is entitled to assert any other claim against Owner for any reason, claims by the Contractor against the Owner (except for claims asserted under Article 20 which are treated as set forth therein), are subject to the following terms and conditions:
- 31.01.01 All Contractor claims against the Owner shall be initiated by a written claim submitted to the Owner, c/o the City Engineer, and the Project Consultant. Such claim shall be received by the Owner and the Project Consultant no later than fifteen (15) calendar days after the event, or the first appearance of the circumstances causing the claim, and same shall set forth in detail all known facts and circumstances supporting the claim and the actual damages or injuries suffered;
- 31.01.02 The Contractor shall continue diligently with its performance hereunder regardless of the existence of any claims submitted by the Contractor;
- 31.01.03 In the event the Contractor seeks to make a claim, as a condition precedent to any such claim the Contractor shall strictly comply with the notice requirements above and such claim shall be made by the Contractor before proceeding to execute any additional or changed work. Failure of the condition precedent to occur, i.e., providing notice as required in Article 31.01.01 above, shall constitute a complete waiver by the Contractor of any claim for additional compensation or extension of time. This written notice requirement may not be waived by verbal representations or the acts of representatives of the Owner or Project Consultant;
- 31.01.04 In connection with any claim by the Contractor against the Owner for compensation in excess of the Contract Price, any liability of the Owner for the Contractor's cost shall be strictly limited to direct cost of labor and materials incurred by the Contractor at the jobsite and shall in no event include indirect cost, overhead, loss of profit, or consequential damages of the Contractor. The Owner shall not be liable to the Contractor for claims of third parties including, but not limited to, Subcontractors, suppliers, laborers, etc.

ARTICLE 32. CHANGE ORDERS.

- 32.01 One or more changes to the work within the General scope of this Contract may be ordered by the Owner by Change Order, Project Consultant's Supplementary Instructions, and Construction Change Directives.
- 32.02 The Contractor shall proceed with any extra work or changes which alter the Contract by adding to, or deducting from the Contract Sum or Contract Time in strict accordance with the following terms and conditions:
- 32.02.01 Change Order shall mean a written order to the Contractor executed by the Owner and the Project Consultant after execution of this Contract, directing a change in the work and may include a change in the Contract Price or the time for the Contractor's performance, or any combination thereof;
- 32.02.02 Any change in the Contract Price or time resulting from a Change Order shall be determined as follows:
- a. By mutual agreement between the Owner and the Contractor as evidenced by (a) the change in the Contract Price or time being set forth in Change Order in accordance with Article 32.02.08 below, and (b) the execution of the Change Order; or,
 - b. If no mutual agreement occurs between the Owner and the Contractor, the change in the Contract Price, if any, shall be derived based upon the Cost-Plus Price basis (as set forth in Article 32.02.08 below) by determining the "total actual costs" (in accordance with Article 32.02.09 below), incurred or savings achieved, resulting from revisions in the work. Such total actual costs or savings shall include a component for direct jobsite overhead and profit but under no circumstances shall it include non-job site overhead expenses or costs or any other indirect costs or components. Any such costs or savings shall be documented in the format, and with such content and detail as the Owner or the Project Consultant requires. If agreement is not reached as to the change in time, Contractor shall be given a reasonable time based upon the scope of work required by the change.
- 32.02.03 The execution of a Change Order by the Contractor shall constitute conclusive evidence of the Contractor's Contract to the ordered changes in the work and the change in the Contract Price and the time for performance by the Contractor. The Contractor, by executing the Change Order, waives and forever releases any claim against the Owner for additional time or compensation for issues or matters relating to or arising out of or resulting from the work included within or affected by the executed Change Order.
- 32.02.04 The Contractor shall notify and obtain the consent and approval of the Contractor's surety with reference to all Change Orders if such notice, consent or approval are required by the Owner, the Project Consultant, the Contractor's surety or by law. The Contractor's execution of the Change Order shall constitute the Contractor's warranty to the Owner that the surety has been notified of, and consents to, such Change Order and the surety shall be conclusively deemed to have been notified of such Change Order and to have expressly consented thereto, and that the penal sums of the performance and payment bonds furnished by Contractor and Surety are adjusted coextensively with the amount of the Change Order.
- 32.02.05 The Owner, without invalidating the Contract, may require the change for any reason whatsoever. All such work shall be executed under the terms of the original Contract.
- 32.02.06 All change orders and adjustments shall be in writing and executed by the Contractor and Owner; otherwise, no claim for additional compensation or time will be allowed.
- 32.02.07 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change which results in a net decrease in the Contract Sum shall be the total actual cost (as set forth in Article 32.02.09 below) saved as confirmed by the Project Consultant. The amount shall not include an amount for the overhead and profit of the Contractor which the Owner is not required to pay as a result of the deletion or decrease. When both additions and credits covering related work or substitutions are involved in a change, the overhead and profit shall be calculated on the basis of net increase, if any, with respect to that change.

- 32.02.08 The value of any change ordered under the Contract for extra work and/or any reductions in work required, shall be determined under one or more of the following procedures before a written Change Order is issued.
- a. By **UNIT PRICES** named in the Contract or subsequently agreed upon by the Owner and the Contractor, which prices shall include Contractor's overhead and profit.
 - b. By **LUMP SUM PRICE** agreed upon actual reasonable costs and direct job site overhead by the Owner and the Contractor, which price shall include Contractor's overhead and profit but under no circumstances shall it include non-job site overhead, expenses or costs or any other indirect costs; a breakdown of the estimated costs comprising the lump sum price may be required by the Project Consultant for his review. Percentage for overhead and profit shall be determined in accordance with the method listed for **COST PLUS PRICE**, subparagraph (c.) below.
 - c. By a **COST PLUS PRICE** based on total actual costs as defined in Article 32.02.09 below, plus an added percentage, all determined as follows:

OVERHEAD AND PROFIT:

JOB SITE OVERHEAD, including supervision and the furnishing, use and maintenance of small tools and ordinary equipment incidental to and required for the work of Subcontractors (whether performed by them or others) shall be considered to be just and fully compensated for, by adding an amount equal to five percent (5%) of the sum of material costs (as defined under Article 34.08.09(a) below) and labor costs (as defined under Article 34.08.09(b) below), and rentals (as defined under Article 32.08.09(c) below). There shall be no compensation for any non-job site overhead, expenses or costs.

PROFIT, may then be added by the Subcontractor to the above material costs and labor costs, including the JOB SITE OVERHEAD allowance, at the rate of ten percent (10%) of the sum of those costs.

JOB SITE OVERHEAD, including General supervision and the furnishing, use and maintenance of small equipment incidental to and required for the work of the General Contractor (including that of his Subcontractors) shall be considered to be just and fully compensated for by adding an amount equal to ten percent (10%) of the sum of material costs (as defined under Article 32.08.09(a) below) and labor costs (as defined under Article 32.08.09(b) below) and rentals (as defined under Article 32.08.09(c) below). There shall be no compensation for any non-job site overhead expenses or costs.

PROFIT may then be added by the Contractor to the above material costs and labor costs, including the JOB-SITE OVERHEAD allowance, at the rate of five percent (5%) of the sum of those costs.

- d. **BOND ALLOWANCE**, for maintaining the Performance Bond at one hundred percent (100%) of the contract amount, a sum of one percent (1%) of the total cost of the change, (including material, labor, overhead and profit, and equipment rentals) shall be allowed on all change orders.
- 32.02.09 The total actual costs of materials, labor and equipment rentals may include the following only:
- a. Material costs actually recorded by the Contractor and/or Subcontractors as they are delivered to the site and as evidenced from originally receipted invoices, listing appropriate quantities and unit prices. Records in proper form shall be maintained and available to the Project Consultant at all times.
 - b. Labor costs represented by the actual wages paid to all laborers, apprentices, journeymen, and foremen involved in and necessary to completing the particular construction operations, for each day and every hour such labor teams and foremen are actually employed and on the extra work required, including the net cost of insurance, Social Security and Workmen's Compensation. The furnishing, use and maintenance of small tools and ordinary equipment normal to the work of individual workmen in the trades will be considered part of the labor costs. Records in proper form shall be maintained and available to the Project Consultant at all times.

- c. Rentals for special equipment or machinery such as power-driven roller, tractors, trucks, shovels, drills, mixers, pumps, hoists, etc., required for the economical performance of the work, at reasonable rental prices agreed upon before work commences, shall be allowed the Contractor and/or his Subcontractors by the Project Consultant for each and every hour such special equipment is in use on the particular work.
- 32.02.10 The Contractor is obligated to proceed with the work for a Change Order, even though there has not been an agreement reached with the Owner as to an adjustment to the Contract Price or time, and even if there is a dispute as to same. In such instances the Owner, City Engineer or Project Consultant will issue a Construction Change Directive to Contractor providing for the scope of work to be performed and the payment therefore based on 32.02.09 above. A Change Order or proposed Change Order shall not be the basis of the Contractor not performing pursuant to the Contract Documents.
- 32.02.11 The Contractor, Owner and Project Consultant shall administer and document the Change Order process by utilizing the documentation specified elsewhere in the Contract Documents, including a Construction Change Directive.
- 32.03 The Project Consultant will have authority to order minor changes in the work not involving an adjustment to the Contract Sum or Contract Time and not inconsistent with the intent of the Contract Documents. Such changes shall be effected by written order of the Project Consultant and such changes shall be binding on the Owner and the Contractor.
- 32.04 The Owner has authorized the following approval thresholds for Change Orders in the Name of The City of Pompano Beach, Florida under its General Services Manual, the rules of which are incorporated below:
- A. The City Manager is authorized to approve change orders up to the cumulative total of 10 percent (10%) of the original construction contract amount, not to exceed seventy-five thousand dollars (\$75,000) in the aggregate.
 - B. When the cumulative total of all change orders on a project has exceeded the ceiling established in 32.04A above, all subsequent change orders will require prior City Commission approval, except in emergency cases as declared by the City Manager, or where the change order in question would be in the form of a credit, thereby reducing the adjusted contract amount.
 - C. Approval of change orders under this policy shall be for the purposes of expediting the work in progress and shall be confirmed by City Commission action at the next regular meeting of the City Commission.

ARTICLE 33. DISCOVERING AND CORRECTING DEFECTIVE OR INCOMPLETE WORK.

- 33.01 In the event that the Contractor covers, conceals or obscures its work in violation of this Contract or in violation of a directive from the Owner or the Project Consultant, such work shall be uncovered and displayed for the Owner's or Project Consultant's inspection upon request, and shall be reworked at no cost in time or money to the Owner.
- 33.02 If any of the work is covered, concealed or obscured in a manner not covered by Subparagraph (A) above, it shall, if directed by the Owner or the Project Consultant, be uncovered and displayed for the Owner's or Project Consultant's inspection. If the uncovered work conforms substantially with this Contract, the costs incurred by the Contractor to uncover and subsequently replace such work shall be borne by the Owner; otherwise, such costs shall be borne by the Contractor.
- 33.03 The Contractor shall, at no additional cost in money to the Owner or extension of time correct work rejected by the Owner or by the Project Consultant as defective or failing to conform to this Contract. Additionally, the Contractor shall reimburse the Owner for all testing, inspections and other expenses incurred as a result thereof.
- 33.04 In addition to its warranty obligations set forth elsewhere herein, the Contractor shall be specifically obligated to correct any and all defective or nonconforming work for a period of twenty-four (24) months following final completion upon written direction from the Owner.

- 33.05 The Owner may, but shall in no event be required to, choose to accept defective or nonconforming work.
- 33.05.01 In such event, the Contract Price shall be reduced, at Owner's option, by the greater of (i) the reasonable costs of removing and correcting the defective or nonconforming work, or (ii) the difference between the fair market value of the Project as constructed and the fair market value of the Project had it not been constructed in such a manner as to include defective or nonconforming work.
- 33.05.02 If the remaining portion of the unpaid Contract Price, if any, is insufficient to compensate the Owner for the acceptance of defective or nonconforming work, the Contractor shall, upon written demand from the Owner, pay the owner such remaining compensation for accepting defective or nonconforming work.

ARTICLE 34. SAFETY, PROTECTION OF WORK AND PROPERTY.

- 34.01 Contractor shall be fully and solely responsible for conducting all operations under this Construction Contract at all times in such a manner as to avoid the risk of bodily harm to persons and damage to property. Contractor shall continuously and diligently inspect all work, material and equipment to discover any conditions which might involve such risks and shall be solely responsible for discovery and correction of any such conditions.
- 34.02 Contractor shall instruct its personnel on the requirements of the Contractor's safety program and shall coordinate with other Contractors and Subcontractors on safety matters.
- 34.03 Contractor shall provide safety equipment and enforce the use of such equipment by its employees.
- 34.04 Contractor shall maintain accurate accident and injury reports and shall provide to Owner a monthly summary of injuries and man hours lost due to injuries.
- 34.05 Contractor shall maintain all portions of the work in a neat, clean and sanitary condition at all times.
- 34.06 Contractor shall assure that all Subcontractors shall, without expense to Owner, comply with the foregoing.
- 34.07 Contractor shall comply with any and all rules, regulations, laws, etc., which apply to safety requirements, including but not limited to OSHA requirements.
- 34.08 Safety Precautions and Programs:
- 34.08.01 The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the performance of the Contract.
- 34.08.02 In the event the Contractor encounters on the site material reasonably believed to be asbestos or polychlorinated biphenyl (PCB) which has not been rendered harmless, the Contractor shall immediately stop work in the area affected and report the condition to the Owner and Project Consultant in writing. The work in the affected area shall not thereafter be resumed except by written notice from the Owner. The work in the affected area shall be resumed in the absence of asbestos or polychlorinated biphenyl (PCB), or when it has been rendered harmless, by written agreement of the Owner, Contractor and Project Consultant.
- 34.08.03 The Contractor shall not be required to perform without consent any work relating to asbestos or polychlorinated biphenyl (PCB).
- 34.09 Safety of Persons and Property
- 34.09.01 The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury or loss to:
- a. Employees on the work and other persons who may be affected thereby;

- b. The work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody or control of the Contractor or the Contractor's Subcontractors or Sub-Subcontractors; and
 - c. Other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.
- 34.09.02 The Contractor shall give notices and comply with applicable laws, ordinances, rules, regulations and lawful orders of public authorities bearing on safety of person or property or their protection from damage, injury or loss.
 - a. The Contractor and his Subcontractors shall comply with and conform in all respects to the standard set forth in the Occupational Safety and Health Act (OSHA) of 1970.
 - b. The Contractor shall prominently post and maintain on the jobsite:
 - 1) OSHA 200: Log and summary of occupational injuries and illnesses.
 - 2) OSHA 2203: Provisions of the Act poster.
- 34.09.03 The Contractor shall implement and maintain a continuing safety program applicable to all Contractor employees, Subcontractors, and Sub-Subcontractors, to include:
 - a. Designating a responsible member of the Contractor's organization at the site as the Contractor's "Safety Officer" whose duty shall be the prevention of accidents, safety inspections, and accident documentation. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner and the Project Consultant.
 - b. Holding weekly safety meetings with employees and Subcontractors.
 - c. Implementing OSHA Voluntary Protection Programs.
 - d. Ensuring the presence of an American Red Cross (or other organization acceptable to the Owner) certified Cardiopulmonary Resuscitation (CPR) and first-aid trained individual on site at all times.
 - e. Compliance with the Drug Free work Place Act of 1988, the Federal Omnibus Transportation Employee Testing Act of 1991, and the certification of compliance with the same as required by the Owner in Document 00457, Drug-Free Workplace Certification.
 - f. Erecting and maintaining reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards, promulgating safety regulations and notifying owners and users of adjacent sites and utilities.
 - g. Ensuring that employees are not discriminated against or discharged for filing reasonable safety or health complaints or for otherwise exercising their rights in these regards.
- 34.09.04 When use of hazardous materials or equipment or unusual methods are necessary for execution of the work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.
- 34.09.05 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to properly caused in whole or in part by the Contractor, a Subcontractor or a Sub-Subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is reasonable, except damage or loss attributable to acts or omissions of the Owner or Project Consultant or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault of negligence of the Contractor.
- 34.09.06 The Contractor shall not load or permit any part of the construction or site to be loaded so as to endanger its safety.

- 34.09.07 Building materials, Contractor's equipment and other supplies may be stored on the premises, but the placing of same shall be in substantial, watertight storage sheds upon the premises where directed in which he shall store all materials which would be damaged by weather. This shall in no manner relieve the Contractor from full responsibility for such materials. Sheds and other storage structures must be secured and anchored in a manner sufficient to withstand hurricane force winds as defined by applicable codes but not less than a one hundred twenty (120) mile per hour wind uplift force.
- 34.10 **Emergencies:** In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury or loss.

ARTICLE 35. ROYALTIES AND PATENTS.

- 35.01 The Contractor shall pay all royalties and license fees.
- 35.02 The Contractor shall be responsible for all infringement of patent rights and shall assume the defense, including payment of attorney fees and costs, of any suit brought against Contractor and/or Owner for infringement of any United States patent or for wrongful use of proprietary information of any third party.
- 35.03 Contractor hereby indemnifies and shall defend and hold harmless Owner and its representatives, respectively, from and against all claims, losses, costs, damages, and expenses, including attorney's fees, incurred by Owner and its representatives, respectively, as a result of or in connection with any claims or actions based upon infringement or alleged infringement of any patent, and arising out of the use of the equipment or materials provided under this Construction Contract by Contractor, or out of the process of actions employed by, or on behalf of Contractor in connection with the performances of this Construction Contract. Contractor shall, at its sole expense, promptly defend against any such claim or action unless directed otherwise by Owner or its representatives; provided that Owner or its representatives shall have notified Contractor upon becoming aware of such claims or actions, and provided further, that Contractor's aforementioned obligations shall not apply to equipment, materials, or processes furnished or specified by Owner or its representatives.
- 35.04 Contractor shall have the right, in order to avoid such claims or actions, to substitute at its expense non-infringing equipment, materials, or processes, or to modify such infringing equipment, materials and processes so they become non-infringing, or obtain the necessary licenses to use the infringing equipment, materials or processes, provided that such substituted and modified equipment, materials and processes shall meet all the requirements and be subject to all the provisions of the Contract Documents.
- 35.05 The indemnification pursuant to Florida Statute 725.06 and other Florida laws, etc., shall have a separate consideration of one dollar (\$1.00), receipt of which is hereby acknowledged and incorporated into the project sum. This is incorporated by reference into the Solicitation Documents and Specifications if any.

ARTICLE 36. TAXES.

- 36.01 Contractor shall pay all taxes, levies, duties and assessments of every nature which may be applicable to any work under this Contract.
- 36.02 The Contract Sum and any agreed changes thereto shall include all taxes imposed by law. Contractor shall make any and all payroll deductions as required by law.
- 36.03 Contractor herein indemnifies and holds the Owner harmless from any liability on account of any and all such taxes, levies, duties, assessments and deductions.

ARTICLE 37. INDEMNITY AND HOLD HARMLESS.

- 37.01 To the fullest extent permitted by law, the Contractor shall defend, indemnify and hold harmless the Owner, its agents and employees and each of them hereinafter collectively referred to as the Owner, from and against any and all judgments, demands, claims, causes of action, liability, expenses, losses, costs, fines, and damages (including reasonable attorney's fees and expert's fees) of every kind and character brought against the Owner by any person, party or entity of any kind or nature whatsoever arising out of, incident to, relating or regarding the Contractor's

performance under this Contract, the condition of the premises, and/or the Contractor's acts of omission or commission.

- 37.02 Contractor, however, shall not be responsible to Owner for damages resulting out of bodily injury or damages to property which a Court of competent jurisdiction determines as being attributed to the negligence of Owner, its respective agents, servants, employees or officers.
- 37.03 Said indemnifications by Contractor shall be extended to include all "Subcontractors", deliverers, suppliers, furnishers of material or anyone acting for, on behalf of, or at the request of the Contractor.
- 37.04 Contractor recognized the broad nature of this indemnifications and hold harmless clause and voluntarily makes this covenant and expressly acknowledge the receipt of ten dollars (\$10.00), which payment is incorporated into the Contract Sum, and such other good and valuable consideration provided by Owner in support of this indemnification in accordance with the laws of the State of Florida.
- 37.05 This clause shall survive termination of this Contract and pursuant to Florida Statute 725.06 be incorporated by reference into any and all Solicitation Documentation or Specifications.

ARTICLE 38. TERMINATION BY THE CONTRACTOR.

- 38.01 If the Owner repeatedly fails to perform its material obligations to the Contractor for a period of 30 days after receiving written notice from the Contractor of its intent to terminate hereunder, the Contractor may terminate performance under this Contract by written notice to the Owner and the Project Consultant.
- 38.02 In such event, the Contractor shall be entitled to recover from the Owner as though the Owner had terminated the Contractor's performance for convenience pursuant to the terms and conditions of this Contract.

ARTICLE 39. CITY'S RIGHT TO SUSPEND CONTRACTOR'S PERFORMANCE.

- 39.01 The Owner shall have the right at any time to direct the Contractor to suspend its performance, or any designated part thereof, for any reason whatsoever, or without reason. If any such suspension is directed by the Owner, the Contractor shall immediately comply with same;
- 39.02 In the event the Owner directs a suspension of performance under this Paragraph through no fault of the Contractor, the Owner shall pay the Contractor as full compensation for such suspension the Contractor's reasonable costs, actually incurred and paid, of the following items only:
 - 39.02.01 Demobilization and remobilization, including such costs paid to Subcontractors;
 - 39.02.02 Preserving and protecting work in place;
 - 39.02.03 Storage of materials or equipment purchased for the Project, including insurance thereon;
 - 39.02.04 Performing in a later, or during a longer, time frame than that contemplated by this Contract.

ARTICLE 40. TERMINATION BY THE CITY.

- 40.01 The Owner may, at the Owner's option, for any reason and at any time terminate for convenience, any work under this Contract, in whole or, from time to time, in part, in accordance with the following terms and conditions:
- 40.02 The Owner shall give written notice of such termination to Contractor seven (7) days before it becomes effective.
 - 40.02.01 The Contractor shall incur no further obligations in connection with the work and the Contractor shall stop work when such termination becomes effective.
 - 40.02.02 The Contractor shall also terminate outstanding orders and subcontracts.

- 40.02.03 The Contractor shall settle the liabilities and claims arising out of the termination of subcontracts and orders.
- 40.02.04 The Owner may direct the Contractor to assign the Contractor's right, title and interest under termination orders or subcontracts to the Owner or its designee.
- 40.02.05 The Contractor shall transfer title and deliver to the Owner such completed or partially completed work and materials, equipment, parts, fixtures, information and Contract rights as the Contractor has.
- 40.02.06 When terminated for convenience, the Contractor shall be compensated as follows:
- a. The Contractor shall submit a termination claim within one year to the Owner and the Project Consultant specifying the amounts due because of the termination for convenience together with costs, pricing or other data required by the Owner or the Project Consultant. If the Contractor fails to file a termination claim with the Owner's Project Consultant within one (1) year from the effective date of termination, the Owner shall have no further obligation to the Contractor and Contractor waives any and all rights for compensation based upon the termination.
 - b. The Owner and the Contractor may agree to the compensation, if any, due to the Contractor hereunder;
 - c. Absent agreement to the amount due to the Contractor, the Owner shall pay the Contractor the following amounts:
 1. Contract prices for labor, materials, equipment and other services accepted under this Contract;
 2. Reasonable costs incurred in preparing to perform and in performing the terminated portion of the work, and in terminating the Contractor's performance, plus a fair and reasonable allowance for direct jobsite overhead (and not home office or other overhead) and profit thereon (such profit shall not include anticipated profit or consequential damages); provided, however, that if it appears that the Contractor would have not profited or would have sustained a loss if the entire Contract would have been completed, no profit shall be allowed or included and the amount of compensation shall be reduced to reflect the anticipated rate of loss, if any;
 3. Reasonable costs of settling and paying legitimate claims arising out of the termination of Subcontractors or orders pursuant to this Paragraph. These costs shall not include amounts paid in accordance with other provisions hereof.
 4. The total sum to be paid the Contractor under this Subparagraph shall not exceed the total Contract Price, as properly adjusted, reduced by the amount of payments otherwise made, and shall in no event include duplication of payment.
- 40.03 The Owner may terminate this Contract for cause in accordance with the following terms and conditions:
- 40.03.01 If the Contractor does not perform the work, or any part thereof, in a timely manner, supply adequate labor, supervisory personnel or proper equipment or materials, or if it fails to timely discharge its obligations for labor, equipment and materials or proceeds to disobey applicable law, or otherwise commits a violation of a material provision of this Contract, then the Owner, in addition to any other rights it may have against the Contractor or others, may terminate the performance of the Contractor for cause upon seven (7) days written notice and assume possession of the Project site and of all materials and equipment at the site and may complete the work.
- 40.03.02 In such case, the Contractor shall not be paid further until the work is complete.
- 40.03.03 After final completion has been achieved, if any portion of the Contract Price (as it may be modified hereunder) remains after the cost to the Owner of completing the work, including all costs and expenses of every nature incurred, has been deducted by the Owner, such remainder shall be paid to the Contractor. Otherwise, the Contractor shall pay the Owner any and all costs, fees, damages or expenses which the Owner has paid or is obligated to pay in excess of the contract price (as it may be modified hereunder). This obligation for payment shall

survive the termination of the Contract. In the event the employment of the Contractor is terminated by the Owner for cause pursuant to this Subparagraph and it is subsequently determined by a Court of competent jurisdiction that such termination was without cause, such termination shall thereupon be deemed a Termination for Convenience and the terms of Article 40.02 shall apply.

ARTICLE 41. CONTRACTOR'S INSURANCE.

- 41.01 The Contractor shall maintain such insurance as will protect the Contractor and Owner from claims under Workmen's Compensation Acts, and from any other claims or damages for personal injury, including death and property damage, which may arise from operations under this Contract, whether such operations be by himself or by any Subcontractor or anyone directly or indirectly employed by either, as more fully set forth below and in the amounts provided herein. Prior to commencement of the work, all Certificates of Insurance executed by authorized representatives of the insurance company shall be filed with the Owner and shall be subject to its approval for accuracy of protection. In addition, the Owner may at any time require that Contractor or its insurer provide any other documentation regarding insurance to Owner including, but not limited to, the policy. The Contractor shall not commence work under this Contract until the provisions of this paragraph have been complied with. Owner may withhold payments due to Contractor in accordance with this Contract or terminate or suspend this Contract with all costs or expenses associated with same to be paid by Contractor in the event Contractor fails to comply with any requirement in the Contract regarding insurance. In the event of cancellation of any policy, Contractor is obligated to immediately notify Owner of same and obtain policy(s) in accordance with the Contract Documents.
- 41.02 Contractor shall comply with any and all insurance obligation required by law, rules, regulations, etc., including but not limited to those required by State Regulations for Educational Facilities.
- 41.03 The Contractor will be required to provide a Certificate of Insurance indicating that Workers' Compensation has been provided for all employees in compliance with Chapter 440, Florida Statutes.
- 41.04 The Contractor shall procure and carry Comprehensive General Liability insurance including contractual and indemnification liability covering this Contract and Products/Completed Operations Liability Insurance covering personal injury and bodily injury in limits of not less than one million dollars (\$1,000,000) for injury or death to any one person and not less than two million dollars (\$2,000,000) each occurrence; and shall carry insurance against property damage in limits of not less than one million dollars (\$1,000,000) per claimant and two million dollars (\$2,000,000) per occurrence as a minimum coverage. The Contractor shall also procure and carry Owner's and Contractor's protective liability insurance. In the event that work to be performed hereunder by Contractor involves the removal and disposal of asbestos-related materials, Contractor shall, in addition to the foregoing coverages, also provide and carry Asbestos Liability-Occurrence form only, with one million dollars (\$1,000,000) per occurrence, two million dollars (\$2,000,000) aggregate. All insurance shall name the Owner as an additional insured, and shall remain in full force and effect for two (2) years following Contractor's completion of the work.
- 41.05 The Contractor shall carry at no additional expense to the Owner, Builders' Risk Insurance for the perils of fire, vandalism, malicious mischief and those included in extended coverage in the amount of one hundred percent (100%) of the values at risk. Such policies shall be written to protect the Contractor and the Owner as their interest may appear.
- 41.06 All Contractors shall maintain automobile liability insurance against bodily injury and property damage in at least the amounts of one million dollars (\$1,000,000) per claimant, one million dollars (\$1,000,000) per occurrence.
- 41.07 The insurance coverage amounts provided for in this Section are the minimum required insurance amounts. The Owner may require additional insurance or coverage on a case-by-case basis. Any insurance or coverage amounts in addition to those provided for herein shall be specified in the Contract Documents.
- 41.07 The Owner is not maintaining any insurance on behalf of Contractor covering against loss or damage to the work or to any other property of Contractor. In the event Contractor maintains insurance against physical loss

or damage to Contractor's construction equipment and tools, such insurance shall include an insurer's waiver or rights of subrogation in favor of Owner.

- 41.08 The requirements contained herein as to types and limits, as well as Owner's approval of insurance coverage to be maintained by Contractor, are not intended to and shall not in any manner limit or qualify the liabilities and obligations assumed by Contractor under the Contract.
- 41.09 The policies of such insurance in force, shall be issued by companies qualified to do business in the State of Florida and be acceptable to the Owner and shall provide that the Owner be given thirty (30) days advance written notice of the cancellation, expiration or any material change in the coverage afforded thereunder. The companies must be rated at least A-VI by AM Best or Aa3 by Moody's Investor Service. All policies must remain in effect during performance of the work and for a period of one year after final completion.
- 41.10 Uninsured Claims. If any action by any person, firm or corporation is brought or threatened against the Owner or against the Contractor and the Owner for any alleged loss, damage or injury arising out of or in the consequence of the performance or nonperformance of the Contract which, in the reasonable opinion of the Owner, may not be covered by the contingent liability, public liability or property damage insurance policy, or, which together with other such actions or claims seeks a recovery in excess of the amount payable under such policies, the amount of such recovery sought or so much thereof as the Owner reasonably deems necessary, may be withheld by the Owner from any money due the Contractor. The Owner in its sole discretion may permit the Contractor to substitute other satisfactory security in lieu of the monies so withheld. If the liability of the Owner is determined by judgment or award of a court or other tribunal of competent jurisdiction, or if such recovery sought shall have been admitted by the Contractor to be valid, the Owner may pay such judgment, award of admitted recovery out of the monies retained by the Owner under the provisions of this subparagraph and return the remaining balance, if any, to the Contractor.
- 41.11 Adequate funds shall be retained for the insurance costs listed in the Schedule of Values attached to the Contractor's respective Applications for Payment to account for insurance coverage renewals on multi-year projects coupled with invoices to substantiate the annual costs.

ARTICLE 42. PERFORMANCE BOND AND PAYMENT BOND.

- 42.01 For a Project with an estimated cost of two million dollars (\$2,000,000) or more, the Contractor shall furnish bonds covering faithful performance of the Contract and payment of obligations arising thereunder as specifically required in the Contract Documents on the date of execution of the Contract.

ARTICLE 43. RIGHT TO AUDIT PROVISIONS.

- 43.01 Contractor's records which shall include but not be limited to accounting records, written policies and procedures, computer records, disks and software, videos, photographs, subcontract files (including proposals of awarded and non-awarded Proposers), originals estimates, estimating worksheets, correspondence, change order files (including documentation covering negotiated settlements), and any other supporting evidence necessary to substantiate charges related to this contract (all the foregoing hereinafter referred to as "records") shall be open to inspection and subject to audit and/or reproduction, during normal working hours, by Owner's agent or its authorized representative to the extent necessary to adequately permit evaluation and verification of any invoices, payments or claims submitted by the Contractor or any of his payees pursuant to the execution of the contract. Such records subject to examination shall also include, but not be limited to, those records necessary to evaluate and verify direct and indirect costs (including overhead allocations) as they may apply to costs associated with this contract.
- 43.02 For the purpose of such audits, inspections, examinations and evaluations, the Owner's agent or authorized representative shall have access to said records from the effective date of this contract, for the duration of the work, and until five (5) years after the date of final payment by Owner to Consultant pursuant to this contract.
- 43.03 Owner's agent or its authorized representative shall have access to the Contractor's facilities, shall have access to all necessary records, and shall be provided adequate and appropriate work space, in order to conduct audits in

compliance with this article. Owner's agent or its authorized representative shall give auditees reasonable advance notice of intended audits.

- 43.04 Contractor shall require all Subcontractors, insurance agents, and material suppliers (payees) to comply with the provisions of this article by insertion of the requirements hereof in any written contract agreement. Failure to obtain such written contracts which include such provisions shall be reason to exclude some or all of the related payees' costs from amounts payable to the Contractor pursuant to this contract.
- 43.05 If an audit inspection or examination in accordance with this article, discloses overcharges (of any nature) by the Contractor to the Owner in excess of ten percent 10% of the total contract billings, the actual cost of the Owner's audit shall be paid by the Contractor.

ARTICLE 44. LAWS AND REGULATIONS.

- 44.01 Contractor and its employees and representative shall at all times, comply with all applicable laws, ordinances, statutes, rules and regulations in effect at the time work is performed pursuant to the Contract Documents.
- 44.02 If, during the term of this Construction Contract, there are any changed or new laws, ordinances or regulations not in existence at the time of signing this Construction Contract which become effective and which affect the cost or time of performance of the Construction Contract, Contractor shall within fifteen (15) days of the discovery of said law, ordinance or regulation, notify Owner in writing and submit detailed documentation of such effect in terms of both time and cost of performing the Construction Contract. Upon concurrence by Owner as to the effect of such changes, an adjustment in the compensation and/or time of performance may be made at Owner's discretion.
- 44.03 If any discrepancy or inconsistency should be discovered between the Contract Documents and any law, ordinance, regulation, order or decree, Contractor shall within fifteen (15) days of discovery of same report the same in writing to Owner who will issue such instructions as may be necessary.

ARTICLE 45. DISPUTE RESOLUTION.

- 45.01 The Owner and Contractor agree that, in the event of a dispute, the parties will attempt to resolve such dispute without litigation and that resolution through mediation procedures will be encouraged.
- 45.02 The existence of a dispute between the parties shall not be the basis of the Contractor unilaterally electing not to continue performance pursuant to the terms of the Contract Documents.

ARTICLE 46. GOVERNING LAW AND ATTORNEYS FEES.

- 46.01 The Construction Contract shall be governed by the laws of the State of Florida.
- 46.02 In the event either party institutes litigation regarding or relating to this Contract or for breach of any of its terms all litigation and appeals shall have venue in Broward County, Florida or in the U.S. District Court for the Southern District of Florida.
- 46.03 To the fullest extent permitted by law, Owner, Contractor, and Contractor's Surety do hereby each waive the right to trial by jury in any action or proceeding, including any counterclaims/crossclaims/third (or more remote) party complaints which may be brought by Owner, Contractor, or Surety, jointly and/or severally, arising out of or in any way related to this Construction Contract and/or attendant suretyship including, without limiting the Generality thereof, any claim for damages resulting from any act or omission of Owner, Contractor, or Surety, jointly or severally, in any way connected with this Construction Contract.

ARTICLE 47. RIGHTS AND REMEDIES.

- 47.01 The duties and obligations imposed by the Contract Documents and the rights and remedies available thereunder shall be in addition to and not a limitation of any duties, obligations, rights and remedies otherwise imposed or available by law.

ARTICLE 48. SUCCESSORS, ASSIGNS AND ASSIGNMENT.

- 48.01 The Owner and the Contractor each binds itself, its partners, successors, assigns and legal representatives to the other party in respect to all covenants, agreements and obligations contained in the Construction Contract. It is agreed that the Contractor shall not assign, transfer, convey or otherwise dispose of the contract or its right, title and interest in and to the same or any part thereof, without previous consent of the Owner and concurred to by the Sureties.
- 48.02 If requested by Owner the Contractor agrees to assign all Subcontracts required for performance of this Contract to the Owner upon the Owner or Project Consultant's determination that Contractor has defaulted under the Contract Documents. The Contractor shall include in all Subcontracts, equipment leases and purchase orders a provision requiring the Subcontractor, equipment lessor or supplier, in the event of Contractor's default under this Contract, to consent to the assignment of their subcontracts to the Owner.

ARTICLE 49. PUBLIC RECORDS.

- 49.01 A. The City of Pompano Beach is a public agency subject to Section 119, Florida Statutes. The Contractor shall comply with Florida's Public Records Law, as amended. Specifically, the Contractor shall:
- a. Keep and maintain public records required by the City in order to perform the service;
 - b. Upon request from the City's custodian of public records, provide the City with a copy of requested records or allow the records to be inspected or copied within a reasonable time at a cost that does not exceed the cost provided in Chapter 119, Florida Statutes or as otherwise provided by law;
 - c. Ensure that public records that are exempt or that are confidential and exempt from public record requirements are not disclosed except as authorized by law;
 - d. Ensure that public records that are exempt or confidential and exempt from public records disclosure requirements are not disclosed except as authorized by law for the duration of the contract term and following completion of the contract if the Contractor does not transfer the records to the City; and
 - e. Upon completion of the contract, transfer, at no cost to the City, all public records in possession of the Contractor, or keep and maintain public records required by the City to perform the service. If the Contractor transfers all public records to the City upon completion of the contract, the Contractor shall destroy any duplicate public records that are exempt or confidential and exempt from public records disclosure requirements. If the Contractor keeps and maintains public records upon completion of the contract, the Contractor shall meet all applicable requirements for retaining public records. All records stored electronically must be provided to the City, upon request from the City's custodian of public records in a format that is compatible with the information technology systems of the City.
- 49.02 The failure of Contractor to comply with the provisions set forth in this Article shall constitute a Default and Breach of this Contract and the City shall enforce the Default in accordance with the provisions set forth in Article 40.

PUBLIC RECORDS CUSTODIAN

IF THE CONTRACTOR HAS QUESTIONS REGARDING THE APPLICATION OF CHAPTER 119, FLORIDA STATUTES, TO THE CONTRACTOR'S DUTY TO PROVIDE PUBLIC RECORDS RELATING TO THIS CONTRACT, CONTACT THE CUSTODIAN OF PUBLIC RECORDS AT:

CITY CLERK

**100 W. Atlantic Blvd., Suite 253
Pompano Beach, Florida 33060
(954) 786-4611
RecordsCustodian@copbfl.com**

PROJECT RECORD DOCUMENTS

PART 1 GENERAL

1.01 THE REQUIREMENT

A. The Contractor shall at all times maintain at the site of the project a record copy of the following:

1. Drawings
2. Specifications
3. Addenda
4. Change Orders and other modifications to the Contract.
5. Approved Shop Drawings, Product Data and Samples.
6. Field Test Records.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. All applicable sections of the Specifications.

B. General Conditions.

1.03 MAINTENANCE OF DOCUMENTS AND SAMPLES

A. Store documents and samples in Contractor's field office apart from documents used for construction.

1. Provide files and racks for storage of documents.
2. Provide locked cabinet or secure storage space for storage of samples.

B. File documents and samples in accordance with Construction Specifications Institute (CSI) format.

C. Maintain documents in a clean, dry, legible condition and in good order. Do not use record documents for construction purposes.

D. Make documents and samples available at all times for inspection by the City's Representatives.

1.04 MARKING DEVICES

A. Provide felt tip marking pens for recording information in the color code designated by Project Manager.

1.05 RECORDING

Definition: The Project Record is the updated and revised plans and specifications, including a running account of all known revisions and changes made to the original plans and specifications, complete with copies of any field sketches and clarifications, issued over the course of construction. The Project Record is the responsibility of the Contractor.

- A. The Contractor shall label each document, "Project Record" in neat large printed letters, or by rubber stamp.
- B. Record information concurrently with construction progress. Do not conceal any work until required information is recorded.
- C. Drawings: Legibly mark to record actual construction:
 - 1. Horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - 2. Location of internal utilities and appurtenances concealed in the construction, referenced to visible and accessible features of the structure.
 - 3. Field changes of dimension and detail.
 - 4. Changes made by Field Order or by Change Order.
 - 5. Details not on original Contract Drawings.
 - 6. The Record Drawing set shall show benchmark positions and their vertical values. Benchmarks are optional for Plan Views, but required for Profile Views.
- D. Specifications and Addenda; Legibly mark each Section to record:
 - 1. Manufacturer, trade name, catalog number, and supplier of each produce and item of equipment actually installed.
 - 2. Changes made by field order or by Change Order.

1.06 RECORD DRAWINGS

Definition: The Record Drawings are a revised set of drawings submitted by a Contractor upon completion of a project. They reflect all changes made in the specifications and working drawings during the construction process, and show the exact dimensions, geometry, and location of all elements of the work completed under the Contract.

- A. The Contractor shall maintain full size (24"X 36") project record to reflect the "record" items of work as the work progresses. Upon completion of the work, the Contractor shall prepare a set of record drawings on full-size, reproducible material and an electronic file in (DWG format, AutoCAD, Version 2011 or more recent version OR GIS). The record drawings will, in the greatest possible detail, reproduce the exact final conditions of the entire project. Including, but not limited to, final

survey, utilities, architecture, structural, civil conditions, electrical, mechanical, paving, landscaping, irrigation, updating all details and all notes, parking, and any other plans related to a specific project. For the purpose of producing the final record drawings, based on the project record, the Consultant will furnish one set of full-size design drawings on reproducible material and an electronic file (DWG format, AutoCAD, Version 2011 or more recent version OR GIS) to the Contractor on compact disk or any other electronic means.

Definition: Design drawings or construction drawings are subject to clarifications, but are complete with enough information (plan, sections, dimensions, details, and notes, etc.) to enable the depicted item's construction or replication without additional information.

- B. At a minimum the project record shall be reviewed on the 20th working day of every third month, or more often, as deemed necessary by Project Manager, after the month in which the final Notice-to Proceed is given as well as on completion of work. Failure to maintain the project record up-to-date shall be grounds for withholding monthly progress payments until such time as the record drawings are brought up-to date.
- C. The project record shall be accessible to the City at all times during construction period.
- D. The cost of maintaining record changes, and preparation of the record drawings shall be included in the unit prices proposed for the affected items. Upon completion of the work, the Contractor shall furnish the Project Manager the set of record drawings on full-size, reproducible material and an electronic file in (DWG format, AutoCAD, Version 2011 or more recent version OR GIS) Pay request quantities must match this same set of record drawings. The completed Record drawings shall be delivered to the Program Manager at least forty-eight (48) hours prior to final inspection of the work. The Final Inspection will not be conducted unless the Record Drawings are in the possession of the Project Manager.
- E. The completed (or final) record drawings shall be certified by a Professional Land Surveyor, a registered and licensed Architect, a registered and licensed Engineer, a registered and licensed Landscape Architect, registered in the State of Florida. This certification shall consist of the professional discipline official's embossed seal bearing the professional discipline official's registration number, signature and date on each sheet of the drawing set. In addition, the key sheet, cover sheet or first sheet of the plans set shall list the business address and telephone number for all of the professional discipline officials.
- F. Representative items of work that should be shown on the record drawings as verified, changed or added are shown below:
 - 1. All deviations from condition shown in the Construction Documents including Change Orders, Field Orders and other varying conditions.

2. Every utility (gas, telephone, power, water, force main, etc.) encountered and/or crossing drainage, water or sanitary sewer facilities (whether it is a conflict or has sufficient clearances) shall be located, both horizontally and vertically. The clearance between the facilities horizontal and vertical shall be noted. For instance, if a two inch (2") gas main crosses over the top of a six inch (6") potable water main, the bottom elevation of the gas main shall be noted and the top of the water main shall be noted. The difference between the two facilities will be the clearance between the two facilities. Parallel mains shall note the clearance between the outside of the mains. It shall be the Contractor's responsibility to note these crossings on a daily basis and ensure that this information is reflected on the Record Drawing plan set. Crossings will not require state plane coordinates.
3. Pipelines that are "dead" or have been abandoned shall be located during construction and shall be annotated Record Drawing Plans.
4. As-built survey drawings shall meet applicable minimum technical standards for land surveys as outlined in Section 61G17 (<https://www.flrules.org/gateway/Division.asp?DivID=269>) of the Florida Administrative Code.

NOTE: For technical information on AutoCAD and GIS, please refer to the "Electronic As-Built Requirements" located on the City Engineering Website:

[https://cdn.pompanobeachfl.gov/city/pages/engineering/downloadslinks/06_Digital%20Record%20Drawing%20Standards%20and%20Requirements%20\(2019\).pdf](https://cdn.pompanobeachfl.gov/city/pages/engineering/downloadslinks/06_Digital%20Record%20Drawing%20Standards%20and%20Requirements%20(2019).pdf)

END OF SECTION

Title 29—LABOR

Subtitle A—Office of the Secretary of Labor

PART 3—CONTRACTORS AND SUBCONTRACTORS ON PUBLIC BUILDING OR PUBLIC WORK FINANCED IN WHOLE OR IN PART BY LOANS OR GRANTS FROM THE UNITED STATES

Sec.

- 3.1 Purpose and scope.
- 3.2 Definitions.
- 3.3 Weekly statement with respect to payment of wages.
- 3.4 Submission of weekly statements and the preservation and inspection of weekly payroll records.
- 3.5 Payroll deductions permissible without application to or approval of the Secretary of Labor.
- 3.6 Payroll deductions permissible with the approval of the Secretary of Labor.
- 3.7 Applications for the approval of the Secretary of Labor.
- 3.8 Action by the Secretary of Labor upon applications.
- 3.9 Prohibited payroll deductions.
- 3.10 Methods of payment of wages.
- 3.11 Regulations part of contract.

AUTHORITY: The provisions of this Part 3 issued under R.S. 161, sec. 2, 48 Stat. 848; Reorg. Plan No. 14 of 1950, 64 Stat. 1267; 5 U.S.C. 22, 133z-15 note; 40 U.S.C. 276c.

SOURCE: The provisions of this Part 3 appear at 29 F.R. 97, Jan. 4, 1964, unless otherwise noted.

Title 29—Labor

Subtitle A—Office of the Secretary of Labor

PART 3—CONTRACTORS AND SUBCONTRACTORS ON PUBLIC BUILDING OR PUBLIC WORK FINANCED IN WHOLE OR IN PART BY LOANS OR GRANTS FROM THE UNITED STATES

Section 3.1 Purpose and scope.

This part prescribes “anti-kickback” regulations under section 2 of the Act of June 13, 1934, as amended (40 U.S.C. 276c), popularly known as the Copeland Act. This part applies to any contract which is subject to Federal wage standards and which is for the construction, prosecution, completion, or repair of public buildings, public works or buildings or works financed in whole or in part by loans or grants from the United States. The part is intended to aid in the enforcement of the minimum wage provisions of the Davis-Bacon Act and the various statutes dealing with Federally-assisted construction that contain similar minimum wage provisions, including those provisions which are not subject to Reorganization Plan No. 14 (e.g., the College Housing Act of 1950, the Federal Water Pollution Control Act, and the Housing Act of 1959), and in the enforcement of the overtime provisions of the Contract Work Hours Standards Act whenever they are applicable to construction work. The part details the obligation of contractors and subcontractors relative to the weekly submission of statements regarding the wages paid on work covered thereby; sets forth the circumstances and procedures governing the making of payroll deductions from the wages of those employed on such work; and delineates the methods of payment permissible on such work.

Section 3.2 Definitions.

As used in the regulations in this part:

(a) The terms “building” or “work” generally include construction activity as distinguished from manufacturing, furnishing of materials, or

servicing and maintenance work. The terms include, without limitation, buildings, structures, and improvements of all types, such as bridges, dams, plants, highways, parkways, streets, subways, tunnels, sewers, mains, powerlines, pumping stations, railways, airports, terminals, docks, piers, wharves, ways, lighthouses, buoys, jetties, breakwaters, levees, and canals; dredging, shoring, scaffolding, drilling, blasting, excavating, clearing, and landscaping. Unless conducted in connection with and at the site of such a building or work as is described in the foregoing sentence, the manufacture or furnishing of materials, articles, supplies, or equipment (whether or not a Federal or State agency acquires title to such materials, articles, supplies, or equipment during the course of the manufacture or furnishing, or owns the materials from which they are manufactured or furnished) is not a “building” or “work” within the meaning of the regulations in this part.

(b) The terms “construction,” “prosecution,” “completion,” or “repair” mean all types of work done on a particular building or work at the site thereof, including, without limitation, altering, remodeling, painting and decorating, the transporting of materials and supplies to or from the building or work by the employees of the construction contractor or construction subcontractor, and the manufacturing or furnishing of materials, articles, supplies, or equipment on the site of the building or work, by persons employed at the site by the contractor or subcontractor.

(c) The terms “public building” or “public work” include building or work for whose construction, prosecution, completion, or repair, as defined above, a Federal agency is a contracting party, regardless of whether title thereof is in a Federal agency.

(d) The term “building or work financed in whole or in part by loans or grants from the United States” includes building or work for whose construction, prosecution, completion, or

repair, as defined above, payment or part payment is made directly or indirectly from funds provided by loans or grants by a Federal agency. The term does not include building or work for which Federal assistance is limited solely to loan guarantees or insurance.

(e) Every person paid by a contractor or subcontractor in any manner for his labor in the construction, prosecution, completion, or repair of a public building or public work or building or work financed in whole or in part by loans or grants from the United States is "employed" and receiving "wages," regardless of any contractual relationship alleged to exist between him and the real employer.

(f) The term "any affiliated person" includes a spouse, child, parent, or other close relative of the contractor or subcontractor; a partner or officer of the contractor or subcontractor; a corporation closely connected with the contractor or subcontractor as parent, subsidiary or otherwise, and an officer or agent of such corporation.

(g) The term "Federal agency" means the United States, the District of Columbia, and all executive departments, independent establishments, administrative agencies, and instrumentalities of the United States and of the District of Columbia, including corporations, all or substantially all of the stock of which is beneficially owned by the United States, by the District of Columbia, or any of the foregoing departments, establishments, agencies, and instrumentalities.

Section 3.3 Weekly statement with respect to payment of wages.

(a) As used in this section, the term "employee" shall not apply to persons in classifications higher than that of laborer or mechanic and those who are the immediate supervisors of such employees.

(b) Each contractor or subcontractor engaged in the construction, prosecution, completion, or repair of any public building or public work, or building or work financed in whole or in part by loans or grants from the United States, shall furnish each week a statement with respect to the wages paid each of its employees engaged on work covered by 29 CFR Parts 3 and 5 during the preceding weekly payroll period. This statement shall be executed by the contractor or subcontractor or by an authorized officer or employee of the con-

tractor or subcontractor who supervises the payment of wages, and shall be on form WH 348, "Statement of Compliance", or on an identical form on the back of WH 347, "Payroll (For Contractors Optional Use)" or on any form with identical wording. Sample copies of WH 347 and WH 348 may be obtained from the Government contracting or sponsoring agency, and copies of these forms may be purchased at the Government Printing Office.

(c) The requirements of this section shall not apply to any contract of \$2,000 or less.

(d) Upon a written finding by the head of a Federal agency, the Secretary of Labor may provide reasonable limitations, variations, tolerances, and exemptions from the requirements of this section subject to such conditions as the Secretary of Labor may specify.

[29 F.R. 95, Jan. 4, 1964, as amended at 33 F.R. 10186, July 17, 1968]

Section 3.4 Submission of weekly statements and the preservation and inspection of weekly payroll records.

(a) Each weekly statement required under § 3.3 shall be delivered by the contractor or subcontractor, within seven days after the regular payment date of the payroll period, to a representative of a Federal or State agency in charge at the site of the building or work, or, if there is no representative of a Federal or State agency at the site of the building or work, the statement shall be mailed by the contractor or subcontractor, within such time, to a Federal or State agency contracting for or financing the building or work. After such examination and check as may be made, such statement, or a copy thereof, shall be kept available, or shall be transmitted together with a report of any violation, in accordance with applicable procedures prescribed by the United States Department of Labor.

(b) Each contractor or subcontractor shall preserve his weekly payroll records for a period of three years from date of completion of the contract. The payroll records shall set out accurately and completely the name and address of each laborer and mechanic, his correct classification, rate of pay, daily and weekly number of hours worked, deductions made, and actual wages paid. Such payroll records shall be made available at all times

for inspection by the contracting officer or his authorized representative, and by authorized representatives of the Department of Labor.

Section 3.5 Payroll deductions permissible without application to or approval of the Secretary of Labor.

Deductions made under the circumstances or in the situations described in the paragraphs of this section may be made without application to and approval of the Secretary of Labor:

(a) Any deduction made in compliance with the requirements of Federal, State, or local law, such as Federal or State withholding income taxes and Federal social security taxes.

(b) Any deduction of sums previously paid to the employee as a bona fide prepayment of wages when such prepayment is made without discount or interest. A "bona fide prepayment of wages" is considered to have been made only when cash or its equivalent has been advanced to the person employed in such manner as to give him complete freedom of disposition of the advanced funds.

(c) Any deduction of amounts required by court process to be paid to another, unless, the deduction is in favor of the contractor, subcontractor or any affiliated person, or when collusion or collaboration exists.

(d) Any deduction constituting a contribution on behalf of the person employed to funds established by the employer or representatives of employees, or both, for the purpose of providing either from principal or income, or both, medical or hospital care, pensions or annuities on retirement, death benefits, compensation for injuries, illness, accidents, sickness, or disability, or for insurance to provide any of the foregoing, or unemployment benefits, vacation pay, savings accounts, or similar payments for the benefit of employees, their families and dependents: *Provided, however, That the following standards are met:* (1) The deduction is not otherwise prohibited by law; (2) it is either: (i) Voluntarily consented to by the employee in writing and in advance of the period in which the work is to be done and such consent is not a condition either for the obtaining of or for the continuation of employment, or (ii) provided for in a bona fide collective bargaining agreement between the contractor or subcontractor and representatives of its employees; (3) no profit or other benefit is otherwise obtained, di-

rectly or indirectly, by the contractor or subcontractor or any affiliated person in the form of commission, dividend, or otherwise; and (4) the deductions shall serve the convenience and interest of the employee.

(e) Any deduction contributing toward the purchase of United States Defense Stamps and Bonds when voluntarily authorized by the employee.

(f) Any deduction requested by the employee to enable him to repay loans to or to purchase shares in credit unions organized and operated in accordance with Federal and State credit union statutes.

(g) Any deduction voluntarily authorized by the employee for the making of contributions to governmental or quasi-governmental agencies, such as the American Red Cross.

(h) Any deduction voluntarily authorized by the employee for the making of contributions to Community Chests, United Givers Funds, and similar charitable organizations.

(i) Any deductions to pay regular union initiation fees and membership dues, not including fines or special assessments: *Provided, however, That a collective bargaining agreement between the contractor or subcontractor and representatives of its employees provides for such deductions and the deductions are not otherwise prohibited by law.*

(j) Any deduction not more than for the "reasonable cost" of board, lodging, or other facilities meeting the requirements of section 3(m) of the Fair Labor Standards Act of 1938, as amended, and Part 531 of this title. When such a deduction is made the additional records required under § 516.27(a) of this title shall be kept.

Section 3.6 Payroll deductions permissible with the approval of the Secretary of Labor.

Any contractor or subcontractor may apply to the Secretary of Labor for permission to make any deduction not permitted under § 3.5. The Secretary may grant permission whenever he finds that:

(a) The contractor, subcontractor, or any affiliated person does not make a profit or benefit directly or indirectly from the deduction either in the form of a commission, dividend, or otherwise;

(b) The deduction is not otherwise prohibited by law;

(c) The deduction is either (1) voluntarily con-

sented to by the employee in writing and in advance of the period in which the work is to be done and such consent is not a condition either for the obtaining of employment or its continuance, or (2) provided for in a bona fide collective bargaining agreement between the contractor or subcontractor and representatives of its employees; and

(d) The deduction serves the convenience and interest of the employee.

Section 3.7 Applications for the approval of the Secretary of Labor.

Any application for the making of payroll deductions under § 3.6 shall comply with the requirements prescribed in the following paragraphs of this section:

(a) The application shall be in writing and shall be addressed to the Secretary of Labor.

(b) The application shall identify the contract or contracts under which the work in question is to be performed. Permission will be given for deductions only on specific, identified contracts, except upon a showing of exceptional circumstances.

(c) The application shall state affirmatively that there is compliance with the standards set forth in the provisions of § 3.6. The affirmation shall be accompanied by a full statement of the facts indicating such compliance.

(d) The application shall include a description of the proposed deduction, the purpose to be served thereby, and the classes of laborers or mechanics from whose wages the proposed deduction would be made.

(e) The application shall state the name and business of any third person to whom any funds obtained from the proposed deductions are to be transmitted and the affiliation of such person, if any, with the applicant.

Section 3.8 Action by the Secretary of Labor upon applications.

The Secretary of Labor shall decide whether or not the requested deduction is permissible under provisions of § 3.6; and shall notify the applicant in writing of his decision.

Section 3.9 Prohibited payroll deductions.

Deductions not elsewhere provided for by this part and which are not found to be permissible under § 3.6 are prohibited.

Section 3.10 Methods of payment of wages.

The payment of wages shall be by cash, negotiable instruments payable on demand, or the additional forms of compensation for which deductions are permissible under this part. No other methods of payment shall be recognized on work subject to the Copeland Act.

Section 3.11 Regulations part of contract.

All contracts made with respect to the construction, prosecution, completion, or repair of any public building or public work or building or work financed in whole or in part by loans or grants from the United States covered by the regulations in this part shall expressly bind the contractor or subcontractor to comply with such of the regulations in this part as may be applicable. In this regard, see § 5.5(a) of this subtitle.

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§ 274a.2 Verification of identity and employment authorization.

(a) General. This section establishes requirements and procedures for compliance by persons or entities when hiring, or when recruiting or referring for a fee, or when continuing to employ individuals in the United States.

(1) Recruiters and referrers for a fee. For purposes of complying with section 274A(b) of the Act and this section, all references to recruiters and referrers for a fee are limited to a person or entity who is either an agricultural association, agricultural employer, or farm labor contractor (as defined in section 3 of the Migrant and Seasonal Agricultural Worker Protection Act, Pub. L. 97-470 (29 U.S.C. 1802)).

(2) Verification form. Form I-9, Employment Eligibility Verification Form, is used in complying with the requirements of this 8 CFR 274a.1-274a.11. Form I-9 can be in paper or electronic format. A fillable electronic Form I-9 as well as a paper format Form I-9 may be obtained and downloaded from <http://www.uscis.gov>. Paper forms may also be ordered at <https://www.uscis.gov/forms/forms-by-mail> or by contacting the USCIS Contact Center at 1-800-375-5283 or 1-800-767-1833 (TTY). Alternatively, Form I-9 can be electronically generated or retained, provided that the resulting form is legible; there is no change to the name, content, or sequence of the data elements and instructions; no additional data elements or language are inserted; and the standards specified under 8 CFR 274a.2(e), (f), (g), (h), and (i), as applicable, are met. When copying or printing the paper Form I-9, the text of the two-sided form may be reproduced by making either double-sided or single-sided copies.

(3) Attestation Under Penalty and Perjury. In conjunction with completing the Form I-9, an employer or recruiter or referrer for a fee must examine documents that evidence the identity and employment authorization of the individual. The employer or recruiter or referrer for a fee and the individual must each complete an attestation on the Form I-9 under penalty of perjury.

(b) Employment verification requirements -

(1) Examination of documents and completion of Form I-9.

(i) A person or entity that hires or recruits or refers for a fee an individual for employment must ensure that the individual properly:

(A) Completes section 1 - "Employee Information and Verification" - on the Form I-9 at the time of hire and signs the attestation with a handwritten or electronic signature in accordance with paragraph

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(h) of this section; or if an individual is unable to complete the Form I-9 or needs it translated, someone may assist him or her. The preparer or translator must read the Form I-9 to the individual, assist him or her in completing Section 1 - "Employee Information and Verification," and have the individual sign or mark the Form I-9 by a handwritten signature, or an electronic signature in accordance with paragraph (h) of this section, in the appropriate place; and

(B) Present to the employer or the recruiter or referrer for a fee documentation as set forth in paragraph (b)(1)(v) of this section establishing his or her identity and employment authorization within the time limits set forth in paragraphs (b)(1)(ii) through (b)(1)(v) of this section.

(ii) Except as provided in paragraph (b)(1)(viii) of this section, an employer, his or her agent, or anyone acting directly or indirectly in the interest thereof, must within three business days of the hire:

(A) Physically examine the documentation presented by the individual establishing identity and employment authorization as set forth in paragraph (b)(1)(v) of this section and ensure that the documents presented appear to be genuine and to relate to the individual; and

(B) Complete section 2 - "Employer Review and Verification" - on the Form I-9 within three business days of the hire and sign the attestation with a handwritten signature or electronic signature in accordance with paragraph (i) of this section.

(iii) An employer who hires an individual for employment for a duration of less than three business days must comply with paragraphs (b)(1)(ii)(A) and (b)(1)(ii)(B) of this section at the time of the hire. An employer may not accept a receipt, as described in paragraph (b)(1)(vi) of this section, in lieu of the required document if the employment is for less than three business days.

(iv) A recruiter or referrer for a fee for employment must comply with paragraphs (b)(1)(ii)(A) and (b)(1)(ii)(B) of this section within three business days of the date the referred individual is hired by the employer. Recruiters and referrers may designate agents to complete the employment verification procedures on their behalf including but not limited to notaries, national associations, or employers. If a recruiter or referrer designates an employer to complete the employment verification procedures, the employer need only provide the recruiter or referrer with a photocopy or printed electronic image of the Form I-9, electronic Form I-9, or a Form I-9 on microfilm or microfiche.

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(v) The individual may present either an original document which establishes both **employment** authorization and identity, or an original document which establishes **employment** authorization and a separate original document which establishes identity. Only unexpired documents are acceptable. The identification number and expiration date (if any) of all documents must be noted in the appropriate space provided on the **Form** I-9.

(A) The following documents, so long as they appear to relate to the individual presenting the document, are acceptable to evidence both identity and **employment** authorization:

(1) A **United States** passport;

(2) An **Alien** Registration Receipt Card or Permanent Resident Card (Form I-551);

(3) A foreign passport that contains a temporary I-551 stamp, or temporary I-551 printed notation on a machine-readable immigrant visa;

(4) An **Employment** Authorization Document which contains a photograph (Form I-766);

(5) In the case of an individual who is **employment**-authorized incident to status or parole with a specific **employer**, a foreign passport with an Arrival/Departure Record, **Form** I-94 (as defined in **8 CFR 1.4**) or **Form** I-94A, bearing the same name as the passport and containing an endorsement by DHS indicating such **employment**-authorized status or parole, as long as the period of endorsement has not yet expired and the **employment** is not in conflict with the individual's **employment**-authorized status or parole;

(6) A passport from the Federated States of Micronesia (FSM) or the Republic of the Marshall Islands (RMI) with **Form** I-94 or **Form** I-94A indicating nonimmigrant admission under the Compact of Free Association Between the **United States** and the FSM or RMI;

(7) In the case of an individual lawfully enlisted for military **service** in the Armed Forces under **10 U.S.C. 504**, a military identification card issued to such individual may be accepted only by the Armed Forces.

(B) The following documents are acceptable to establish identity only:

(1) For individuals 16 years of age or older:

(i) A driver's license or identification card containing a photograph, issued by a state (as defined in section 101(a)(36) of

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the Act) or an outlying possession of the [United States](#) (as defined by section 101(a)(29) of the Act). If the driver's license or identification card does not contain a photograph, identifying information shall be included such as: name, date of birth, sex, height, color of eyes, and address;

(ii) School identification card with a photograph;

(iii) Voter's registration card;

(vi) U.S. military card or draft record;

(v) Identification card issued by federal, state, or local government agencies or entities. If the identification card does not contain a photograph, identifying information shall be included such as: name, date of birth, sex, height, color of eyes, and address;

(vi) Military dependent's identification card;

(vii) Native American tribal documents;

(viii) United States Coast Guard Merchant Mariner Card;

(ix) Driver's license issued by a Canadian government authority;

(2) For individuals under age 18 who are unable to produce a document listed in paragraph (b)(1)(v)(B)(1) of this section, the following documents are acceptable to establish identity only:

(i) School record or report card;

(ii) Clinic doctor or hospital record;

(iii) Daycare or nursery school record.

(3) Minors under the age of 18 who are unable to produce one of the identity documents listed in paragraph (b)(1)(v)(B) (1) or (2) of this section are exempt from producing one of the enumerated identity documents if:

(i) The minor's parent or legal guardian completes on the [Form I-9](#) Section 1 - "Employee Information and Verification" and in the space for the minor's signature, the parent or legal guardian writes the words, "minor under age 18."

(ii) The minor's parent or legal guardian completes on the [Form I-9](#) the "Preparer/Translator certification."

(iii) The [employer](#) or the recruiter or referrer for a fee writes in Section 2 - "Employer Review and Verification" under List B in the

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space after the words "Document Identification #" the words, "minor under age 18."

(4) Individuals with handicaps, who are unable to produce one of the identity documents listed in paragraph (b)(1)(v)(B) (1) or (2) of this section, who are being placed into **employment** by a nonprofit organization, association or as part of a rehabilitation program, may follow the procedures for establishing identity provided in this section for minors under the age of 18, substituting where appropriate, the term "special placement" for "minor under age 18", and permitting, in addition to a parent or legal guardian, a **representative** from the nonprofit organization, association or rehabilitation program placing the individual into a position of **employment**, to fill out and sign in the appropriate section, the **Form** I-9. For purposes of this section the term *individual with handicaps* means any person who

(i) Has a physical or mental impairment which substantially limits one or more of such person's major life activities,

(ii) Has a record of such impairment, or

(iii) Is regarded as having such impairment.

(C) The following are acceptable documents to establish **employment** authorization only:

(1) A Social Security account number card other than one that specifies on the face that the issuance of the card does not authorize **employment** in the **United States**;

(2) Certification or report of birth issued by the Department of State, including **Forms** FS-545, DS-1350, FS-240;

(3) An original or certified copy of a birth certificate issued by a State, county, municipal authority or outlying possession of the **United States** bearing an official seal;

(4) Native American tribal document;

(5) **United States** Citizen Identification Card, **Form** I-197;

(6) Identification card for use of resident citizen in the **United States**, **Form** I-179;

(7) An **employment** authorization document issued by the Department of Homeland Security.

(D) The following are acceptable documents to establish both identity and **employment** authorization in the Commonwealth of the Northern

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Mariana Islands only, for a two-year period starting from the transition program effective date (as defined in 8 CFR 1.1), in addition to those documents listed in paragraph (b)(1)(v)(A) of this section:

(1) In the case of an alien with employment authorization in the Commonwealth of the Northern Mariana Islands incident to status for a period of up to two years following the transition program effective date that is unrestricted or otherwise authorizes a change of employer:

(i) The unexpired foreign passport and an Alien Entry Permit with red band issued to the alien by the Office of the Attorney General, Division of Immigration of the Commonwealth of the Northern Mariana Islands before the transition program effective date, as long as the period of employment authorization has not yet expired, or

(ii) An unexpired foreign passport and temporary work authorization letter issued by the Department of Labor of the Commonwealth of the Northern Mariana Islands before the transition program effective date, and containing the name and photograph of the individual, as long as the period of employment authorization has not yet expired and the proposed employment is not in conflict with any restrictions or limitations identified on the Temporary Work Authorization letter;

(iii) An unexpired foreign passport and a permanent resident card issued by the Commonwealth of the Northern Mariana Islands.

(2) [Reserved]

(vi) Special rules for receipts. Except as provided in paragraph (b)(1)(iii) of this section, unless the individual indicates or the employer or recruiter or referrer for a fee has actual or constructive knowledge that the individual is not authorized to work, an employer or recruiter or referrer for a fee must accept a receipt for the application for a replacement document or a document described in paragraphs (b)(1)(vi)(B)(1) and (b)(1)(vi)(C)(1) of this section in lieu of the required document in order to comply with any requirement to examine documentation imposed by this section, in the following circumstances:

(A) Application for a replacement document. The individual:

(1) Is unable to provide the required document within the time specified in this section because the document was lost, stolen, or damaged;

(2) Presents a receipt for the application for the replacement document within the time specified in this section; and

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(3) Presents the replacement document within 90 days of the hire or, in the case of reverification, the date employment authorization expires; or

(B) Form I-94 or I-94A indicating temporary evidence of permanent resident status. The individual indicates in section 1 of the Form I-9 that he or she is a lawful permanent resident and the individual:

(1) Presents the arrival portion of Form I-94 or Form I-94A containing an unexpired "Temporary I-551" stamp and a photograph of the individual, which is designated for purposes of this section as a receipt for Form I-551; and

(2) Presents the Form I-551 by the expiration date of the "Temporary I-551" stamp or, if the stamp has no expiration date, within one year from the issuance date of the arrival portion of the Form I-94 or Form I-94A; or

(C) Form I-94 or I-94A indicating refugee status. The individual indicates in section 1 of the Form I-9 that he or she is an alien authorized to work and the individual:

(1) Presents the departure portion of Form I-94 or I-94A containing an unexpired refugee admission stamp, which is designated for purposes of this section as a receipt for the Form I-766, or a social security account number card that contains no employment restrictions; and

(2) Presents, within 90 days of the hire or, in the case of reverification, the date employment authorization expires, either an unexpired Form I-766, or a social security account number card that contains no employment restrictions and a document described under paragraph (b)(1)(v)(B) of this section.

(vii) If an individual's employment authorization expires, the employer, recruiter or referrer for a fee must reverify on the Form I-9 to reflect that the individual is still authorized to work in the United States; otherwise, the individual may no longer be employed, recruited, or referred. Reverification on the Form I-9 must occur not later than the date work authorization expires. If an Employment Authorization Document (Form I-766) as described in § 274a.13(d) was presented for completion of the Form I-9 in combination with a Notice of Action (Form I-797C), stating that the original Employment Authorization Document has been automatically extended for up to 180 days, reverification applies upon the expiration of the automatically extended validity period under § 274a.13(d) and not upon the expiration date indicated on the

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face of the individual's **Employment** Authorization Document. In order to reverify on the **Form I-9**, the **employee** or referred individual must present a document that either shows continuing **employment** eligibility or is a new grant of work authorization. The **employer** or the recruiter or referrer for a fee must review this document, and if it appears to be genuine and relate to the individual, reverify by noting the document's identification number and expiration date, if any, on the **Form I-9** and signing the attestation by a handwritten signature or electronic signature in accordance with **paragraph (i)** of this section.

(viii) An **employer** will not be deemed to have **hired** an individual for **employment** if the individual is continuing in his or her **employment** and has a reasonable expectation of **employment** at all times.

(A) An individual is continuing in his or her **employment** in one of the following situations:

- (1)** An individual takes approved paid or unpaid leave on account of study, illness or disability of a family member, illness or pregnancy, maternity or paternity leave, vacation, union business, or other temporary leave approved by the **employer**;
- (2)** An individual is promoted, demoted, or gets a pay raise;
- (3)** An individual is temporarily laid off for lack of work;
- (4)** An individual is on strike or in a labor dispute;
- (5)** An individual is reinstated after disciplinary suspension for wrongful termination, found unjustified by any court, arbitrator, or administrative body, or otherwise resolved through reinstatement or settlement;
- (6)** An individual transfers from one distinct unit of an **employer** to another distinct unit of the same **employer**; the **employer** may transfer the individual's **Form I-9** to the receiving unit;
- (7)** An individual continues his or her **employment** with a related, successor, or reorganized **employer**, provided that the **employer** obtains and maintains from the previous **employer** records and **Forms I-9** where applicable. For this purpose, a related, successor, or reorganized **employer** includes:
 - (i)** The same **employer** at another location;
 - (ii)** An **employer** who continues to employ some or all of a previous **employer's** workforce in cases involving a corporate reorganization, merger, or sale of stock or assets;

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(iii) An **employer** who continues to employ any **employee** of another **employer's** workforce where both **employers** belong to the same multi-employer association and the **employee** continues to work in the same bargaining unit under the same collective bargaining agreement. For purposes of this subsection, any agent designated to complete and maintain the **Form I-9** must record the **employee's** date of **hire** and/or termination each time the **employee** is **hired** and/or terminated by an **employer** of the multi-employer association; or

(8) An individual is engaged in seasonal **employment**.

(B) The **employer** who is claiming that an individual is continuing in his or her **employment** must also establish that the individual expected to resume **employment** at all times and that the individual's expectation is reasonable. Whether an individual's expectation is reasonable will be determined on a case-by-case basis taking into consideration several factors. Factors which would indicate that an individual has a reasonable expectation of **employment** include, but are not limited to, the following:

(1) The individual in question was employed by the **employer** on a regular and substantial basis. A determination of a regular and substantial basis is established by a comparison of other workers who are similarly employed by the **employer**;

(2) The individual in question complied with the **employer's** established and published policy regarding his or her absence;

(3) The **employer's** past history of recalling absent **employees** for **employment** indicates a likelihood that the individual in question will resume **employment** with the **employer** within a reasonable time in the future;

(4) The former position held by the individual in question has not been taken permanently by another worker;

(5) The individual in question has not sought or obtained benefits during his or her absence from **employment** with the **employer** that are inconsistent with an expectation of resuming **employment** with the **employer** within a reasonable time in the future. Such benefits include, but are not limited to, severance and retirement benefits;

(6) The financial condition of the **employer** indicates the ability of the **employer** to permit the individual in question to resume **employment** within a reasonable time in the future; or

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(7) The oral and/or written communication between employer, the employer's supervisory employees and the individual in question indicates that it is reasonably likely that the individual in question will resume employment with the employer within a reasonable time in the future.

(2) Retention and Inspection of Form I-9.

(i) A paper (with original handwritten signatures), electronic (with acceptable electronic signatures that meet the requirements of paragraphs (h) and (i) of this section or original paper scanned into an electronic format, or a combination of paper and electronic formats that meet the requirements of paragraphs (e), (f), and (g) of this section), or microfilm or microfiche copy of the original signed version of Form I-9 must be retained by an employer or a recruiter or referrer for a fee for the following time periods:

(A) In the case of an employer, three years after the date of the hire or one year after the date the individual's employment is terminated, whichever is later; or

(B) In the case of a recruiter or referrer for a fee, three years after the date of the hire.

(ii) Any person or entity required to retain Forms I-9 in accordance with this section shall be provided with at least three business days notice prior to an inspection of Forms I-9 by officers of an authorized agency of the United States. At the time of inspection, Forms I-9 must be made available in their original paper, electronic form, a paper copy of the electronic form, or on microfilm or microfiche at the location where the request for production was made. If Forms I-9 are kept at another location, the person or entity must inform the officer of the authorized agency of the United States of the location where the forms are kept and make arrangements for the inspection. Inspections may be performed at an office of an authorized agency of the United States. A recruiter or referrer for a fee who has designated an employer to complete the employment verification procedures may present a photocopy or printed electronic image of the Form I-9 in lieu of presenting the Form I-9 in its original paper or electronic form or on microfilm or microfiche, as set forth in paragraph (b)(1)(iv) of this section. Any refusal or delay in presentation of the Forms I-9 for inspection is a violation of the retention requirements as set forth in section 274A(b)(3) of the Act. No Subpoena or warrant shall be required for such inspection, but the use of such enforcement tools is not precluded. In addition, if the person or entity has not complied with a request to present the Forms I-9, any officer listed in 8 CFR 287.4 may

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compel production of the [Forms](#) I-9 and any other relevant documents by issuing a subpoena. Nothing in this section is intended to limit the subpoena power under section 235(d)(4) of the [Act](#).

(iii) The following standards shall apply to [Forms](#) I-9 presented on microfilm or microfiche submitted to an officer of the [Service](#), the Special Counsel for Immigration-Related Unfair [Employment](#) Practices, or the Department of Labor: Microfilm, when displayed on a microfilm reader (viewer) or reproduced on paper must exhibit a high degree of legibility and readability. For this purpose, legibility is defined as the quality of a letter or numeral which enables the observer to positively and quickly identify it to the exclusion of all other letters or numerals. Readability is defined as the quality of a group of letters or numerals being recognizable as words or whole numbers. A detailed index of all microfilmed data shall be maintained and arranged in such a manner as to permit the immediate location of any particular record. It is the responsibility of the [employer](#), recruiter or referrer for a fee:

(A) To provide for the processing, storage and maintenance of all microfilm, and

(B) To be able to make the contents thereof available as required by law. The person or [entity](#) presenting the microfilm will make available a reader-printer at the examination site for the ready reading, location and reproduction of any record or records being maintained on microfilm. Reader-printers made available to an officer of the [Service](#), the Special Counsel for Immigration-Related Unfair [Employment](#) Practices, or the Department of Labor shall provide safety features and be in clean condition, properly maintained and in good working order. The reader-printers must have the capacity to display and print a complete page of information. A person or [entity](#) who is determined to have failed to comply with the criteria established by this regulation for the presentation of microfilm or microfiche to the [Service](#), the Special Counsel for Immigration-Related Unfair [Employment](#) Practices, or the Department of Labor, and at the time of the inspection does not present a properly completed [Form](#) I-9 for the [employee](#), is in violation of section 274A(a)(1)(B) of the [Act](#) and § 274a.2(b)(2).

(iv) Paragraphs (e), (f), (g), (h), and (i) of this section specify the standards for electronic [Forms](#) I-9.

(3) Copying of documentation. An [employer](#), or a recruiter or referrer for a fee may, but is not required to, copy or make an electronic image of a document presented by an individual solely for the purpose of complying with the verification requirements of this section. If such a copy or

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electronic image is made, it must either be retained with the [Form I-9](#) or stored with the [employee's](#) records and be retrievable consistent with paragraphs (e), (f), (g), (h), and (i) of this section. The copying or electronic imaging of any such document and retention of the copy or electronic image does not relieve the [employer](#) from the requirement to fully complete section 2 of the [Form I-9](#). An [employer](#), recruiter or referrer for a fee should not, however, copy or electronically image only the documents of individuals of certain national origins or citizenship statuses. To do so may violate section 274B of the [Act](#).

(4) *Limitation on use of Form I-9.* Any information contained in or appended to the [Form I-9](#), including copies or electronic images of documents listed in [paragraph \(c\)](#) of this section used to verify an individual's identity or [employment](#) eligibility, may be used only for enforcement of the [Act](#) and sections [1001](#), [1028](#), [1546](#), or [1621](#) of title [18](#), United States Code.

(c) Employment verification requirements in the case of hiring an individual who was previously employed.

(1) When an [employer hires](#) an individual whom that person or [entity](#) has previously employed, if the [employer](#) has previously completed the [Form I-9](#) and complied with the verification requirements set forth in [paragraph \(b\)](#) of this section with regard to the individual, the [employer](#) may (in lieu of completing a new [Form I-9](#)) inspect the previously completed [Form I-9](#) and:

(i) If upon inspection of the [Form I-9](#), the [employer](#) determines that the [Form I-9](#) relates to the individual and that the individual is still eligible to work, that previously executed [Form I-9](#) is sufficient for purposes of section 274A(b) of the [Act](#) if the individual is [hired](#) within three years of the date of the initial execution of the [Form I-9](#) and the [employer](#) updates the [Form I-9](#) to reflect the date of rehire; or

(ii) If upon inspection of the [Form I-9](#), the [employer](#) determines that the individual's [employment](#) authorization has expired, the [employer](#) must reverify on the [Form I-9](#) in accordance with paragraph (b)(1)(vii); otherwise the individual may no longer be employed.

(2) For purposes of retention of the [Form I-9](#) by an [employer](#) for a previously employed individual [hired](#) pursuant to [paragraph \(c\)\(1\)](#) of this section, the [employer](#) shall retain the [Form I-9](#) for a period of three years commencing from the date of the initial execution of the [Form I-9](#) or one year after the individual's [employment](#) is terminated, whichever is later.

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(d) *Employment verification requirements in the case of recruiting or referring for a fee an individual who was previously recruited or referred.*

(1) When a recruiter or referrer for a fee refers an individual for whom that recruiter or referrer for a fee has previously completed a [Form I-9](#) and complied with the verification requirements set forth in [paragraph \(b\)](#) of this section with regard to the individual, the recruiter or referrer may (in lieu of completing a new [Form I-9](#)) inspect the previously completed [Form I-9](#) and:

(i) If upon inspection of the [Form I-9](#), the recruiter or referrer for a fee determines that the [Form I-9](#) relates to the individual and that the individual is still eligible to work, that previously executed [Form I-9](#) is sufficient for purposes of section 274A(b) of the [Act](#) if the individual is referred within three years of the date of the initial execution of the [Form I-9](#) and the recruiter or referrer for a fee updates the [Form I-9](#) to reflect the date of rehire; or

(ii) If upon inspection of the [Form I-9](#), the recruiter or referrer determines that the individual's [employment](#) authorization has expired, the recruiter or referrer for a fee must reverify on the [Form I-9](#) in accordance with [paragraph \(b\)\(1\)\(vii\)](#) of this section; otherwise the individual may no longer be recruited or referred.

(2) For purposes of retention of the [Form I-9](#) by a recruiter or referrer for a previously recruited or referred individual pursuant to [paragraph \(d\)\(1\)](#) of this section, the recruiter or referrer shall retain the [Form I-9](#) for a period of three years from the date of the rehire.

(e) *Standards for electronic retention of Form I-9.*

(1) Any person or [entity](#) who is required by this section to complete and retain [Forms I-9](#) may complete or retain electronically only those pages of the [Form I-9](#) on which [employers](#) and [employees](#) enter data in an electronic generation or storage system that includes:

(i) Reasonable controls to ensure the integrity, accuracy and reliability of the electronic generation or storage system;

(ii) Reasonable controls designed to prevent and detect the unauthorized or accidental creation of, addition to, alteration of, deletion of, or deterioration of an electronically completed or stored [Form I-9](#), including the electronic signature if used;

(iii) An inspection and quality assurance program evidenced by regular evaluations of the electronic generation or storage system, including

Exhibit A

periodic checks of the electronically stored [Form](#) I-9, including the electronic signature if used;

(iv) In the case of electronically retained [Forms](#) I-9, a retrieval system that includes an indexing system that permits searches consistent with the requirements of [paragraph \(e\)\(6\)](#) of this section; and

(v) The ability to reproduce legible and readable hardcopies.

(2) All documents reproduced by the electronic retention system must exhibit a high degree of legibility and readability when displayed on a video display terminal or when printed on paper, microfilm, or microfiche. The term "legibility" means the observer must be able to identify all letters and numerals positively and quickly, to the exclusion of all other letters or numerals. The term "readability" means that the observer must be able to recognize any group of letters or numerals that [form](#) words or numbers as those words or complete numbers. The [employer](#), or recruiter or referrer for a fee, must ensure that the reproduction process maintains the legibility and readability of the electronically stored document.

(3) An electronic generation or storage system must not be subject, in whole or in part, to any agreement (such as a contract or license) that would limit or restrict access to and use of the electronic generation or storage system by an agency of the [United States](#), on the premises of the [employer](#), recruiter or referrer for a fee (or at any other place where the electronic generation or storage system is maintained), including personnel, hardware, software, files, indexes, and software documentation.

(4) A person or [entity](#) who chooses to complete or retain [Forms](#) I-9 electronically may use one or more electronic generation or storage systems. Each electronic generation or storage system must meet the requirements of this paragraph, and remain available as long as required by the [Act](#) and these regulations. [Employers](#) may implement new electronic storage systems provided:

(i) All systems meet the requirements of paragraphs (e), (f), (g), (h) and (i) of this section; and

(ii) Existing [Forms](#) I-9 are retained in a system that remains fully accessible.

(5) For each electronic generation or storage system used, the person or [entity](#) retaining the [Form](#) I-9 must maintain, and make available upon request, complete descriptions of:

(i) The electronic generation and storage system, including all procedures relating to its use; and

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(ii) The indexing system.

(6) An "indexing system" for the purposes of paragraphs (e)(1)(iv) and (e)(5) of this section is a system that permits the identification and retrieval for viewing or reproducing of relevant documents and records maintained in an electronic storage system. For example, an indexing system might consist of assigning each electronically stored document a unique identification number and maintaining a separate database that contains descriptions of all electronically stored books and records along with their identification numbers. In addition, any system used to maintain, organize, or coordinate multiple electronic storage systems is treated as an indexing system. The requirement to maintain an indexing system will be satisfied if the indexing system is functionally comparable to a reasonable hardcopy filing system. The requirement to maintain an indexing system does not require that a separate electronically stored documents and records description database be maintained if comparable results can be achieved without a separate description database.

(7) Any person or [entity](#) choosing to retain completed [Forms](#) I-9 electronically may use reasonable data compression or formatting technologies as part of the electronic storage system as long as the requirements of [8 CFR 274a.2](#) are satisfied.

(8) At the time of an inspection, the person or [entity](#) required to retain completed [Forms](#) I-9 must:

(i) Retrieve and reproduce (including printing copies on paper, if requested) only the [Forms](#) I-9 electronically retained in the electronic storage system and supporting documentation specifically requested by an agency of the [United States](#), along with associated audit trails. Generally, an audit trail is a record showing who has accessed a computer system and the actions performed within or on the computer system during a given period of time;

(ii) Provide a requesting agency of the [United States](#) with the resources (e.g., appropriate hardware and software, personnel and documentation) necessary to locate, retrieve, read, and reproduce (including paper copies) any electronically stored [Forms](#) I-9, any supporting documents, and their associated audit trails, reports, and other data used to maintain the authenticity, integrity, and reliability of the records; and

(iii) Provide, if requested, any reasonably available or obtainable electronic summary file(s), such as a spreadsheet, containing all of the information fields on all of the electronically stored [Forms](#) I-9 requested by a requesting agency of the [United States](#).

(f) Documentation.

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(1) A person or [entity](#) who chooses to complete and/or retain [Forms](#) I-9 electronically must maintain and make available to an agency of the [United States](#) upon request documentation of the business processes that:

- (i) Create the retained [Forms](#) I-9;
- (ii) Modify and maintain the retained [Forms](#) I-9; and
- (iii) Establish the authenticity and integrity of the [Forms](#) I-9, such as audit trails.

(2) Insufficient or incomplete documentation is a violation of section 274A(a)(1)(B) of the [Act](#).

(3) Any officer listed in [8 CFR 287.4](#) may issue a subpoena to compel production of any documentation required by [8 CFR 274a.2](#). Nothing in this section is intended to limit the subpoena power of an agency of the [United States](#) under section 235(d)(4) of the [Act](#).

(g) *Security.*

(1) Any person or [entity](#) who elects to complete or retain [Forms](#) I-9 electronically must implement an effective records security program that:

- (i) Ensures that only authorized personnel have access to electronic records;
- (ii) Provides for backup and recovery of records to protect against information loss, such as power interruptions;
- (iii) Ensures that [employees](#) are trained to minimize the risk of unauthorized or accidental alteration or erasure of electronic records; and
- (iv) Ensure that whenever the electronic record is created, completed, updated, modified, altered, or corrected, a secure and permanent record is created that establishes the date of access, the identity of the individual who accessed the electronic record, and the particular action taken.

(2) An action or inaction resulting in the unauthorized alteration, loss, or erasure of electronic records, if it is known, or reasonably should be known, to be likely to have that effect, is a violation of section 274A(b)(3) of the [Act](#).

(h) *Electronic signatures for employee.*

(1) If a [Form](#) I-9 is completed electronically, the attestations in [Form](#) I-9 must be completed using a system for capturing an electronic signature that meets the standards set forth in this paragraph. The system used to

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capture the electronic signature must include a method to acknowledge that the attestation to be signed has been read by the signatory. The electronic signature must be attached to, or logically associated with, an electronically completed [Form I-9](#). In addition, the system must:

- (i) Affix the electronic signature at the time of the transaction;
- (ii) Create and preserve a record verifying the identity of the person producing the signature; and
- (iii) Upon request of the [employee](#), provide a printed confirmation of the transaction to the person providing the signature.

(2) Any person or [entity](#) who is required to ensure proper completion of a [Form I-9](#) and who chooses electronic signature for a required attestation, but who has failed to comply with the standards set forth in this paragraph, is deemed to have not properly completed the [Form I-9](#), in violation of section 274A(a)(1)(B) of the [Act](#) and [8 CFR 274a.2\(b\)\(2\)](#).

(i) *Electronic signatures for employer, recruiter or referrer, or representative.* If a [Form I-9](#) is completed electronically, the [employer](#), the recruiter or referrer for a fee, or the [representative](#) of the [employer](#) or the recruiter or referrer, must attest to the required information in [Form I-9](#). The system used to capture the electronic signature should include a method to acknowledge that the attestation to be signed has been read by the signatory. Any person or [entity](#) who has failed to comply with the criteria established by this regulation for electronic signatures, if used, and at the time of inspection does not present a properly completed [Form I-9](#) for the [employee](#), is in violation of section 274A(a)(1)(B) of the [Act](#) and [8 CFR 274a.2\(b\)\(2\)](#).

[[52 FR 16221](#), May 1, 1987, as amended at [53 FR 8612](#), Mar. 16, 1988; [55 FR 25932](#), June 25, 1990; [56 FR 41784](#), Aug. 23, 1991; [58 FR 48780](#), Sept. 20, 1993; [61 FR 46537](#), Sept. 4, 1996; [61 FR 52236](#), Oct. 7, 1996; [62 FR 51005](#), Sept. 30, 1997; [64 FR 6189](#), Feb. 9, 1999; [64 FR 11533](#), Mar. 9, 1999; [71 FR 34514](#), June 15, 2006; [73 FR 76511](#), Dec. 17, 2008; [74 FR 2838](#), Jan. 16, 2009; [74 FR 7995](#), Feb. 23, 2009; [74 FR 10455](#), Mar. 11, 2009; [74 FR 55739](#), Oct. 28, 2009; [74 FR 62207](#), Nov. 27, 2009; [75 FR 42578](#), July 22, 2010; [78 FR 18472](#), Mar. 27, 2013; [81 FR 82491](#), Nov. 18, 2016; [82 FR 5289](#), Jan. 17, 2017; [85 FR 29317](#), May 14, 2020]

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SECTION 01005
TECHNICAL PROVISIONS**PART 1 GENERAL****1.1 SCOPE**

- A. Work under this contract includes furnishing materials, labor, tools, equipment, supervision, and incidentals necessary to construct infrastructure improvements.

1.2 GENERAL

- A. TECHNICAL SPECIFICATIONS consists of this section, Section 01005, described as TECHNICAL PROVISIONS, pages 01005-1 to 01005-7 and the applicable sections of the City of Fort Lauderdale Design and Construction Standards, the Florida Building Code, Florida Department of Environmental Protection, Broward County Environmental Protection and Growth Management Department and the Florida Department of Transportation (FDOT) latest revision.
- B. In case of a conflict between the City of Fort Lauderdale Design and Construction Standards, the project drawings and these TECHNICAL PROVISIONS, the City of Fort Lauderdale Standards will govern.
- C. CITY, OWNER and CONTRACT ADMINISTRATOR are described as one in the same and used interchangeably throughout this document.
- D. DBF refers to Design Build Firm.

1.3 ITEMS SPECIFIED ON DRAWINGS

- A. Items of material, equipment, machinery, and the like may be specified on the Drawings and not in the Technical Specifications. The DBF shall provide such items in accordance with the General Notes on the Drawings.

1.4 FIELD LAYOUT OF THE WORK AND RECORD DRAWINGS

- A. After completion of construction, the DBF shall provide two sets of As-Built Drawings with all the As-Built information; all locations, coordinates, dimensions, and elevations of the constructed facilities, certified, signed and sealed thereon by a Professional Surveyor and Mapper per Florida Statute 472.001-472.037. All elevations shall refer to N.A.V.D. 88 (North American Vertical Datum of 1988) and all state plane coordinates shall be NAD 83 (with 1990 adjustment). The cost of such field layout and recording work shall be the responsibility of the DBF. The As-Built utility information shall meet the requirements of the City of Fort Lauderdale.

1.5 SALVAGE

- A. Any existing equipment or material, including but not limited to valves, pipes, fittings, couplings, etc., which is removed as a result of construction under this project may be designated as salvage by the CITY, and if so, shall be delivered clean to the CITY at a location directed by the CONTRACT ADMINISTRATOR. Any equipment or material not worthy of salvaging shall be disposed of by the DBF at a suitable location in accordance with all applicable regulations, ordinances and laws at no additional cost to the CITY.

1.6 POWER

- A. The DBF shall furnish and pay for all electrical power required for the construction,

testing and trial operation, prior to final acceptance by the CITY.

1.7 WATER SUPPLY

- A. All water required for testing, flushing, and construction shall be furnished by the CITY and paid for by the DBF. The purchase price shall be the prevailing rate as published by the CITY. The quantity of water used shall be determined by reading the meter at the start and at the finish of construction. The DBF shall make all arrangements and incur all expense involved in having the CITY furnish and install the necessary water meters. Each water service line shall be provided with a vacuum relief or backflow preventer which shall meet the requirements of ASA A40.6, latest revision, and the local administrative authority.

1.8 MAINTENANCE

- A. The DBF shall fully cooperate at all times with the CITY in order to maintain the operation of the existing water and/or sewer system with the least amount of interference and interruption possible. The schedule, plans, and work of the DBF shall at all times be subject to alteration and revision if necessary for public health and safety considerations. The creation of a public nuisance will not be permitted.
- B. It may be necessary to interrupt the operation of the existing water and/or sewer system. In all cases where the DBF must cause an interruption, DBF shall prepare and submit to the CITY four (4) working days prior to commencing the work, a complete description of the proposed procedure and a time schedule, which DBF will be required to guarantee. At least forty-eight (48) hours prior to the time proposed for starting the work, the CITY will notify the DBF whether or not the work will be permitted as proposed.
 - 1. The CITY reserves the right to require the DBF to work 24 hours per day in all cases where, in CITY'S opinion, interference with operation of the system may result in dangerous health hazards or offensive conditions.
 - 2. In no case will the DBF be permitted to interfere with the existing system until all materials, supplies, equipment, tools, and incidentals necessary to complete the work are on the site. Backup equipment on key equipment items shall be required on work necessitating interference with the existing system.

1.9 SITE RESTORATION

- A. The DBF shall remove all excess material and shall clean up and restore the site to its original condition or better. All damage, as a result of work under this Contract, done to existing structures, pavement, driveways, paved areas, curbs and gutters, sidewalks, shrubbery, grass, trees, utility poles, utility pipelines, conduits, drains, catch basins, flagstones, rocked, graveled, or stabilized areas of driveways, and including all obstructions not specifically named herein, shall be repaired, or replaced, as determined by the CITY. Site restoration shall be done in a timely manner as the work progresses. Site restoration work shall be completed on private property within 30 days after being disturbed.

1.10 SANITARY FACILITIES

- A. The DBF shall provide temporary facilities at the site as directed by the CITY.

SECTION 01005
TECHNICAL PROVISIONS

1.11 STANDARDS

- A. Wherever in these TECHNICAL SPECIFICATIONS or in the drawings name and/or number refer to certain standards or regulations, the applicable publication shall be the latest revision thereof. Reference by abbreviation is made in accordance with the Section 01070, "Abbreviations of Institutions."

1.12 QUALITY OF ITEMS

- A. All material furnished for this project shall be new and unused. Any material, which has become excessively weathered or damaged since manufacture, shall not be considered as new. CITY shall be the sole judge as to what constitutes excessive weathering or damage.

1.13 TESTING

- A. The City of Fort Lauderdale may require that materials and equipment supplied meet given standards, and testing may be required to demonstrate conformance to the standards. The cost of these tests shall be the obligation of the DBF, and no extra charge shall be made to the CITY on account of such testing.
- B. The CITY can select a recognized, independent testing laboratory to perform tests on concrete, reinforcing steel, soils, and other materials for the construction phase, to determine conformity with the TECHNICAL SPECIFICATIONS. The DBF shall supply the necessary samples for this testing without cost to the CITY. The costs for actual testing shall be paid by the CITY except for tests which fail to meet the minimum specified tolerances set forth in the drawings and the TECHNICAL SPECIFICATIONS. The cost of the tests that fail will be charged to the DBF by deducting the cost from the Contract price or will be paid directly to the testing laboratory by the DBF.
- C. Construction in areas where installation and restoration must satisfy the additional requirements of a local, state, or federal authority may require testing to demonstrate conformance. The DBF shall ascertain the extent of testing required by regulatory agencies within these areas. The DBF is responsible for performing such tests, including
but not limited to, tests of compaction, and all costs for these tests shall be the obligation of the DBF and no extra charge shall be made to the CITY on account of such testing.

1.14 UTILITY CROSSINGS

- A. It is intended that wherever existing utilities must be crossed that the pipe may be deflected up to 75% of the manufacturer's recommended limits but shall not exceed the allowable limits of the CITY. Adequate cover shall be used to adequately clear the obstruction. However, when in the opinion of the CITY, this procedure is not feasible CITY may direct the use of fittings to clear a utility crossing as detailed on the Drawings.
The cost of such crossing including joint restraints shall be on the basis of the schedule of pay items applied.
- B. Deflections and adjustments of the proposed water and/or sewer mains to avoid all other existing utilities shall be verified/determined in the field during construction.

1.15 BASIS OF MEASUREMENT

- A. Where mains are to be paid for on a unit price per linear foot basis, the number of linear feet will be determined by measurement along the centerline of the pipe in place, including fittings. Square yardage will be determined by the actual number of square yards installed.

1.16 ADJUSTMENT AND RELOCATION OF EXISTING LINES

- A. See Paragraph 1.14 of this Section. This does not apply to connections to existing system, which is described in Paragraph 1.17, this Section.

1.17 CONNECTION TO EXISTING SYSTEM

- A. The DBF shall perform all work necessary to locate, excavate and prepare for connection to the existing mains as shown on the Drawings. The cost of this work and for the actual connection to the existing main shall be based upon the unit prices for installing the pipe and appurtenances and shall not result in any additional cost to the CITY. The cost of ductile iron sleeves shall be included in the fittings unit price.
- B. Additional valves used for the DBF's convenience shall not be considered as an extra cost payable by the CITY for the tie-in to the existing system.
- C. During all phases of the work, (i.e., installation, testing and restoration), the DBF shall ensure at all times the safe operation of the existing water and/or sewage systems. Service to the customers shall be maintained with the least amount of interference and interruption as possible.

1.18 RELOCATIONS

- A. The DBF shall be responsible for the coordination and/or performance of relocated structures that are shown on the drawings, including, but not limited to, light poles, signs, fences, piping, conduits and drains that interfere with the proposed positioning of the water/sewer mains. The cost of all such relocations shall be included in the prices bid for the appropriate items.

1.19 UTILITIES

- A. Existing utilities are shown on the Drawings insofar as information is reasonably available; however, it will be the responsibility of the DBF to preserve all existing utilities whether shown on the Drawings or not. DBF is directed to pothole ahead of utility installation to avoid conflict and/or damage to existing facilities. If utility conflicts are encountered by the DBF during construction, DBF shall give sufficient notice to their owners so that they may make the necessary adjustments. Damage to any utility, which in the opinion of the CITY is caused by carelessness on the part of the DBF shall be repaired at the expense of the DBF.

1.20 GUARANTEE

- A. The DBF shall guarantee the equipment, material and labor performed under the Contract against any and all failures in proper use and operation for a period of one (1) year from date of written acceptance by the CITY.

SECTION 01005
TECHNICAL PROVISIONS

- B. The DBF shall also obtain warranties from manufacturers for each piece of equipment furnished so that the manufacturer's warranty fully covers the equipment for a period of one (1) year from the date of written acceptance by the CITY.

1.21 PERFORMANCE OF WORK

- A. The DBF shall provide all personnel and equipment required to complete all work specified herein and on the Drawings.
- B. DBF shall provide forty-eight (48) hours advance written notice to the CITY for approval of DBF'S intention to work overtime on weekdays or to work on the weekends.

1.22 BARRICADING (SAFETY)

- A. The DBF shall be responsible for the furnishing and maintaining of all required barricades, either the lighted or the reflector type, to ensure the public's safety during open trench work or for any other potentially unsafe or hazardous construction activities. Barricades shall be located and displayed in conformance with the most stringent regulations required by the governing agencies. All costs for barricading, including any permits, shall be the responsibility of the DBF.
- B. All work in public rights-of-way and on private property shall be done in strict compliance with these specifications. Failure to comply will result in cessation of operations and the removal of project related obstructions from the right-of-way until compliance is achieved.

1.23 EMERGENCY ACCESS AND SECURITY

- A. In order to provide protection to the workers and residents, the DBF shall maintain emergency access to all adjacent properties at all times during construction. If a road is required to be closed to vehicular traffic and the distance of the closure exceeds 150 feet between stabilized surfaces or prevents access to properties for a distance that exceeds 150 feet, the DBF shall provide a 10-foot-wide stabilized access way on one side of the trench capable of supporting a Fire Truck. The DBF shall also provide stabilized access ways across the trench or unstabilized area a minimum of 6 feet in width at a spacing not to exceed 100 feet capable of supporting foot traffic. These access ways shall be protected and delineated with lighted barricades, or other such devices as approved by the regulatory agency. Both ends of the emergency access way shall be blocked in accordance with the MOT permit approved by the CITY with signage indicating that this access way is to be used by emergency vehicles only.
- B. No trenches or holes shall be left open after working hours. In the event a trench must be left open after hours, it shall be done so only with the express written permission from the CITY, and it shall be the DBF'S responsibility to provide proper protection of the open trench or hole as required by the regulatory agency. In addition, the DBF shall provide a security guard at the site whenever the DBF'S personnel are not present, 24 hours per day/ 7 days per week. It shall be the Security Guard's responsibility to protect the open trench or hole from trespassers and to direct emergency personnel on site.

The Security Guard shall not have any other responsibilities such as operating pumps or equipment but shall be dedicated to protecting the trench or open hole. The Security Guard shall be equipped with a wireless telephone capable of calling 911 to report an emergency and shall keep that telephone on their person at all times. In addition to this provision the DBF shall maintain trench safety and comply with current OSHA regulations and the Trench Safety Act. The DBF shall maintain and keep all safety barricades, signage, flashers, and detours, in operating condition. A copy of the approved MOT plans, and details, shall be on site at all times.

- C. Measurement and payment for security guard services shall be included in the utility pipe installation unit price.
- D. All roads are to be maintained during the described construction as to always allow Emergency Access. This item will be paid for under the bid item for Mobilization as named in the Bid Schedule.

1.24 DEWATERING

- A. The DBF shall be aware that there may be contaminated sites, per Broward County Environmental Protection and Growth Management Department (EPD) Pollution Prevention and Remediation Division, located within a one-quarter (1/4) mile radius of the proposed work. Please see Section 02140 Dewatering and dewatering permit requirements. The DBF will be responsible for all costs associated with the means and methods of dewatering which are set forth by EPD dewatering permit including costs for cleaning existing drainage facilities if used for discharge, installation of injection or monitoring wells and groundwater monitoring testing costs. The CITY has paid for dewatering permit fees as required.

1.25 VIBRATORY COMPACTION

- A. The use of vibratory compaction equipment shall be limited to a total gross weight of three (3) tons. The use of vibratory equipment shall be limited to compacting backfill of utility trenches and subgrade of roadways only. If approved in writing by the CITY, larger vibratory compaction equipment may be allowed if operated in a static mode only.

1.26 REPORTING OF DAMAGE CLAIMS

- A. The DBF shall keep the CITY informed of any damage claims made against the DBF during the construction period. All claims for automobile damage, property damage/bodily injury will be reported within 24 hours of receipt of notice. DBF will conduct a timely investigation of the claim and determine if they will honor the claim and/or report to their insurance carrier. DBF will advise the CITY in writing of their decision/referral to carrier. The project is a sewer force main replacement project. As such, the DBF will have close contact with the community. The DBF shall notify the CITY of any and all community concerns or claims arising from the DBF's operations. The claims referenced herein are exclusive of damages or property claims as outlined.

SECTION 01005
TECHNICAL PROVISIONS

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

END OF SECTION 01005

SECTION 01010
SUMMARY OF WORK**PART 1 GENERAL****1.1 SCOPE**

- A. The WORK to be performed under this Contract shall consist of furnishing and installing all tools, equipment, materials, supplies, and manufactured articles and furnishing all labor, transportation, and services, including fuel, power, water, and essential communications, and performing all work, or other operations required for the fulfillment of the Contract in strict accordance with the Contract Documents. The WORK shall be complete, and all work, materials, and services not expressly indicated or called for in the Contract Documents which may be necessary for the complete and proper construction of the WORK in good faith shall be provided by the DBF as though originally so indicated, at no increase in cost to the OWNER.

1.2 WORK COVERED BY CONTRACT DOCUMENTS

- A. The work of this Contract comprises the construction of the infrastructure site work. The work will include but not be limited to site preparation, earthwork, sanitary sewer system installation, water systems installation, roadway and walkway restoration and construction, landscape restoration, restoring existing irrigation systems, pavement marking restoration and site furnishings.
- B. The general location of the Pumping Station A-24 in Flagler Village project is bounded North, to the north right of way lines of NE 6th Street; East, to the center of the line of NE 4th Avenue; South, to the southernly boundaries of the park; and West, along the 3rd Avenue right of way, and from the north right of way of NE 5th street to the northern right of way line of NE 6th Street. The project includes the design, permitting, construction, start up, and testing of a new pump station, sanitary sewer gravity line, forcemain, and related work. It includes a new 16-inch internal diameter forcemain connecting from the proposed A-24 pump station to the existing forcemain on NE 5th Street and NE 3rd Avenue. A new 18-inch gravity sewer and manhole on NE 6th Avenue north of Peter Feldman Park. A new triplex pump station with a capacity of no less than 90 hp per pump, running two pumps at the same time, to handle the flow entering the lift station in the range of 720 to 2520 gpm and a pressure at the connection point to the existing forcemain from 15 to 45 psi. For more detail information about the project, refer to the conceptual layout in **Exhibit C**.

1.3 NOTICE OF BIDDERS

- A. The successful bidder, in order to be considered responsive, must possess the appropriate License as described in Volume 1 of this document.
- B. DBF shall have past experience with large scale utility projects in the right of way of existing residential communities.

1.4 STANDARD SPECIFICATION

- A. All materials and labor shall meet the requirements of the "The Minimum Standards Applicable to Public Rights-of-Way under City of Fort Lauderdale Jurisdiction", (to be referred to as "Minimum Standards") and the Florida Department of Transportation "Roadway and Traffic Design Standards" latest revision, and

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SUMMARY OF WORK

"Structures Standard Drawings," latest revisions:

1. These Special Provisions are supplemental to the above Specifications and Standards.

1.5 SITE INVESTIGATION

- A. The DBF, by virtue of signing the Contract, acknowledges that DBF and all subcontractors have satisfied themselves to the nature and location of the work, the general and local conditions including, but not restricted to: those bearing upon transportation; demolition, disposal, handling and storage of materials; access roads to the site; the conformation and conditions of the work area; and the character of equipment and facilities needed preliminary to and during the performance of the work. Failure on the part of the DBF to completely or properly evaluate the site conditions shall not be grounds for additional compensation.
- B. Only the soil boring information included in these contract documents will be provided to the DBF for reference. The DBF, by virtue of signing the Contract, acknowledges that DBF and subcontractors are responsible for investigating and satisfying themselves as to the nature and extent of soil and (underground) water conditions on the project site. No additional payment will be made to the DBF because of differences between actual conditions and those shown by the boring logs. Boring logs are attached as Exhibit G.

1.6 WORKS BY OTHERS

- A. Concurrent Work by Other CONTRACTORS. The DBF'S attention is directed to the fact that other CONTRACTORS may conduct work at the site during the performance of the WORK under this Contract. The DBF shall conduct its operations so as to cause little or no delay to WORK of such other CONTRACTORS and shall cooperate fully with such CONTRACTORS to provide continued safe access to their respective portions of the site, as required to perform work under their respective contracts.
- B. Interference with Work On Utilities. The DBF shall cooperate fully with all utility forces of the OWNER or forces of other public or private agencies engaged in the relocation, altering, or otherwise rearranging of any facilities which interfere with the progress of the WORK, and shall schedule the WORK so as to minimize interference with said relocation, altering, or other rearranging of facilities.

1.7 WORK SEQUENCE

- A. The DBF shall schedule and perform the work in such a manner as to result in the least possible disruption to the public's use of roadways, driveways, and utilities. Utilities shall include but not be limited to water, sewerage, drainage structures and pipe, ditches and canals, gas, electric, television and telephone. Prior to commencing with the WORK, DBF shall perform a location investigation of existing underground utilities and facilities in accordance with Section 01530 entitled "Protection of Existing Facilities" and shall have obtained all required permits and permissions, DBF shall also deliver written notice to the CITY and property occupants (private and public) of all planned disruption to roadway, driveways,

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temporary displacement of fences, mailboxes, street signs and traffic signs, and utilities 72 hours in advance of disruption.

- B. Because other projects will be connected to portions of work constructed as part of this project, it will be necessary to sequence portions of this project. The DBF shall be responsible to coordinate construction activities with DBF of adjacent phases and sections.

1.8 WORK SCHEDULE

- A. Time is of the essence in completing this project. Because time is of the essence the DBF shall commit the necessary resources to this project to complete it in a timely manner. Those resources may include multiple working crews, working overtime, etc. Because time is of the essence, the DBF'S construction progress will be monitored closely on a weekly basis. The Construction progress will be measured with the construction schedule submitted by the DBF. If the CITY determines that the DBF does not meet the construction schedule, the DBF will be required to commit those resources necessary to ensure the completion of the project in a timely manner including working overtime, adding other work crews, etc. All costs incurred to implement measure to complete the work in timely manner will be borne by the DBF at no additional cost to the OWNER.
- B. SCHEDULE
1. DBF shall submit scheduling information for the work as required by the city.
 2. No separate payment shall be made for preparation and/or revision of the schedule.

1.9 COMPUTATION OF CONTRACT TIME

- A. It is the DBF'S responsibility to provide clear and convincing documentation to the CITY as to the effect additional work will have with respect to additional contract time extension that may be justified. If additional quantities of work can be carried out concurrent with other existing construction activities without disrupting the critical path of the project, then no contract time extension will be granted. The DBF is obligated to provide documentation to the CITY if additional elements of work affect the critical path of the project. If work set forth in the original scope of the project is deleted, the contract time may be reduced. This contract is a calendar day contract. While the DBF may be granted time to suspend work operations for vacations or holidays, contract time will not be suspended. During suspensions, the DBF shall be responsible for all maintenance of traffic and liability without additional compensation from the CITY.

1.10 DBF USE OF PREMISES

- A. The DBF's use of the project site shall be limited to its construction operations. The DBF will arrange for storage of materials. A copy of an agreement for use of other property shall be furnished to the CITY prior to its use.

1.11 PRE-CONSTRUCTION CONFERENCE

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SUMMARY OF WORK

- A. After the award of Contract, a Pre-construction Work Conference will be held between the DBF, the CITY, other interested Agencies, representatives of Utility Companies and others affected by the work. The CITY will set the time and place of this conference. The DBF shall bring to the conference a copy of the proposed work schedule for the approval by the CITY of the proposed methods and manner of executing the work including sequences of operation and time schedule. The work shall be performed in accordance with such schedule or approved amendments thereto.

1.12 UTILITY LOCATIONS

- A. As far as possible, all existing utility lines in the project area have been shown on the plans. However, the City of Fort Lauderdale does not guarantee that all lines are shown, or that said lines are in their true location and the depicted size. It shall be the DBF'S responsibility to identify and locate all underground or overhead utility lines or equipment affected by the project. No additional payment will be made to the DBF because of discrepancies in actual and plan location of utilities and damages suffered as a result thereof.
- B. The DBF shall notify each utility company involved at least thirty (30) days prior to the start of construction to arrange for positive underground location, relocation or support of its utility where that utility may be in conflict with or endangered by the proposed construction. The DBF shall pay for relocation of water mains or other utilities for the convenience of the DBF. The DBF shall pay for all charges by utility companies for temporary support of its utilities. All costs of permanent utility relocations to avoid conflict shall be the responsibility of the DBF and the utility company involved.
- C. The DBF shall schedule and coordinate their work in such a manner that they are not delayed by the utility companies relocating or supporting their utilities. No compensation will be paid to the DBF for any loss of time or delay.
- D. All overhead, surface, and underground structures and/or utilities encountered are to be carefully protected from damage or displacement. All damage to said structures and/or utilities is to be completely repaired within a reasonable time; needless delay will not be tolerated. The CITY reserves the right to remedy any damage by ordering outside parties to make repairs at the expense of the DBF. All repairs made by the DBF are to be made to the satisfaction of the utility owner and shall be inspected by a representative of the utility owner and the CITY.
- E. The DBF should be aware of the Sunshine State One Call Center, which has a free locating service for CONTRACTORS and excavators. Within forty-eight hours before excavating, dial toll free 1-800-432-4770, and a locator will be dispatched to the work location. DBF shall reasonably notify other utility companies not notified by Sunshine State One Call Center.
- F. The DBF is responsible for compliance with any and all permit conditions. Permit conditions are attached as Exhibit H of this document, further information regarding permit conditions can be obtained from the CITYS office.
- G. The DBF shall obtain construction permit and applicable building and other permits from each City jurisdictions within the project area, if required.

SECTION 01010
SUMMARY OF WORK**1.13 LINE AND GRADE**

- A. DBF shall develop and make all detailed surveys needed for construction and shall establish all working points, lines, and elevations necessary to perform the work. A Professional Surveyor and Mapper per Florida Statute 472.001-472.037 shall supervise this surveying work.

1.14 PROTECTION AND RESTORATION OF SURVEY MONUMENTS

- A. The DBF shall carefully protect from disturbance all survey monuments, stakes and benchmarks, whether or not established by DBF, and shall not remove or destroy any surveying point until it has been properly witnessed by the CITY. All major survey monuments that have been damaged by the DBF such as section corners, 1/4 section corners, property corners or block control points shall be replaced at the DBF'S expense with markers of a size and type approved by the CITY. The replacement shall be under the supervision of a Professional Surveyor and Mapper per Florida Statute 472.001-472.037, where directed by the CITY.

1.15 EQUIPMENT

- A. All equipment necessary and required for the proper construction of all facilities shall be on the construction site, in first-class working condition.

1.16 STORAGE SITES

- A. The DBF shall furnish, at DBF's expense, properly zoned areas suitable for field office, material storage and equipment service and storage. No material may be stored in the public right of way without prior authorization by the agency having jurisdiction. The DBF shall keep these areas in a clean and orderly condition so as not to cause a nuisance or sight obstruction to motorists or pedestrians.

1.17 OWNERSHIP OF EXISTING MATERIAL

- A. All materials removed or excavated from the job site shall remain the property of the City of Fort Lauderdale until released by the CITY, at which time it shall become the property of the DBF, who shall dispose of it in a manner satisfactory to the CITY.

1.18 EXCESS MATERIAL

- A. Upon direction of the CITY, all vegetation, debris, concrete or other unsuitable materials shall be disposed of in areas provided by the DBF and approved by the CITY. Any excess material desired to be retained by the CITY shall be delivered by the DBF to a designated area within a 5-mile radius of the project, at no extra cost to the CITY.

1.19 ADJUSTING EXISTING VALVES, METERS, CATCH BASINS, AND MAS

- A. It shall be the DBF'S responsibility to coordinate and have all adjustments made to existing water meters, valves, and structures encountered during construction, in order to meet all final grades, unless otherwise instructed by the CITY or the

SECTION 01010
SUMMARY OF WORK

respective utility owner. All valves and MAS shall be accessible during all phases of the work for emergency access. Omission of such structures from the Contract Plans does not relieve the DBF from making such adjustments as may be deemed necessary. The DBF shall take this provision into account when personally investigating the site. No additional payment shall be made for these adjustments.

1.20 CONFLICT STRUCTURES

- A. The DBF shall abide by the following criteria concerning conflicts between new drainage, water, or sewer construction and existing utilities.
 - 1. The DBF shall verify the location of all utilities suspected of being potential conflicts prior to ordering drainage or sewer structures for these locations and inform the CITY as to DBF'S findings.
 - 2. The CITY shall have full authority to direct the placement of conflict structures, the relocation of structures shown in the plans, and the addition, deletion, or relocation of any pipe or structure shown in the plans in order to facilitate construction, expedite completion and avoid conflicts with existing utilities.
 - 3. Where an existing utility is to pass through a conflict structure, the DBF shall protect the utility from damage by whatever means the utility owner and the CITY deem necessary.
 - 4. In no case shall there be less than six (6) inches between any two (2)-pipe lines within the structure or between pipelines and the structure.

1.21 ENVIRONMENTAL PROTECTION

- A. The DBF shall furnish all labor and equipment and perform all work required for the prevention of environmental pollution during and as a result of the work under this contract. For the purpose of this contract, environmental pollution is defined as the presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life, affect other species of importance to humankind, or degrade the utility of the environment for aesthetic and recreational purposes. The control of environmental pollution requires consideration of air, water, land and involves noise, solid waste management and management of radiant energy and radioactive materials, as well as other pollutants. Environmental pollution prevention shall be in accordance with NPDES requirements with no additional cost to the CITY.
- B. The DBF shall take all steps necessary to protect water quality in the connected waters around the project and shall utilize such additional measures as directed by the CITY. Silt screens adjacent to outfall construction shall not be removed until the turbidity of the affected waters is equal to or lower than the ambient turbidity of undisturbed segments of the surface water body. Any discharge into existing drainage facilities shall require the approval of the owner of the system. This may require the DBF to obtain an engineered plan to be furnished at no additional cost to the CITY.

1.22 MAINTENANCE AND PROTECTION OF TRAFFIC

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SUMMARY OF WORK

- A. The DBF shall provide all necessary traffic control devices in order to redirect, protect, warn or maintain existing vehicular and pedestrian traffic during the course of construction.

1. CONSTRUCTION PHASING REQUIREMENTS

Following are general requirements for construction phasing to minimize resident disruption yet maximize cost effectiveness of the construction scheduling.

- a. No two adjacent roadways may be under construction at the same time (i.e., construction shall be on alternating roadways, and every other roadway shall remain open for access). In no case shall more than 35% of all roadways in a section be under construction at one time. At least 35% of all roadways shall have an asphalt surface, either original or new asphalt, at all times. The DBF shall make every effort to provide access to driveways at the end of the working day. If a driveway is not accessible, the homeowner should have access to a neighboring swale area for temporary parking. When vehicular access to homes is not possible for parking of vehicles, an area for parking shall be provided within one block of the furthest home effected. This condition is to be avoided whenever possible and shall last no longer than five (5) working days. The DBF, with the CITY's approval, shall coordinate the parking area location.

The DBF shall lease the property from the landowner, and will provide a compacted, graded parking surface acceptable to the CITY.

- 1) The DBF shall not begin construction on subsequent roadways until the initial roadways under construction are substantially complete. A roadway shall be considered substantially complete when all work is complete except for the last lift of asphalt. All work on private property and landscaping must also be complete before a road is considered substantially complete.
 - 2) Site restoration work shall be complete on private property within 30 days after being disturbed.
- b. Construction within the right of way of affected roads shall be scheduled so that all improvements are completed at once, and the residents are only disrupted for one time period.
- c. All affected residents and property owners shall be notified by the DBF in writing a minimum of two (2) weeks, or earlier if required by the CITY, prior to any disruption to or construction in road right of way adjacent to their homes. The notification shall also indicate any special parking or traffic conditions that will affect residents.
- d. All affected residents shall be notified by the DBF a minimum of forty-eight (48) hours, or earlier if required by the CITY, prior to a shut off of water supply. Any water supply interruptions shall be rescheduled to be as short as possible and not exceed twelve (12) hours.
- e. All affected residents shall be notified by the DBF a minimum of forty-eight (48) hours, or earlier if required by the CITY, prior to work on the sanitary

SECTION 01010
SUMMARY OF WORK

sewer main. Any sewer supply interruptions shall be rescheduled to be as short as possible and not exceed twelve (12) hours.

- f. At any time, the entire length of two north-south streets and one east-west street shall remain unobstructed and open to through-traffic for the area around each project. Access for emergency vehicles shall be maintained at all times to all homes and businesses. Excavation must be backfilled or barricaded at the end of each workday to prevent hazardous conditions. If a trench, excavation or structure is to be left open, it must be covered with a steel plate and barricaded at the end of each workday or when work will be suspended for more than eight (8) hours.
- g. Transportation provisions for handicapped or disabled residents shall be made
by the DBF if construction prevents access to homes.
- h. The DBF shall also make provisions with local bus, school bus, garbage collection, mail delivery and other agencies for continuation of service. A traffic maintenance plan indicating proposed street closings, schedules, and alternate routes, approved by the CITY, shall be submitted to all affected agencies for coordination and routing purposes.
- i. Materials and equipment shall be stored in a fenced or otherwise enclosed area during non-working hours. Pipe and material shall not be strung out along installation routes for longer than two (2) weeks prior to installation.

B. TRAFFIC CONTROL

- 1. The DBF is required to submit a conceptual Traffic Control Plan at the Pre-Construction Conference. This preliminary plan should identify the phases of construction that the DBF plans to proceed with and identify traffic flows during each phase. The CITY will have ten (10) days to notify the DBF of any comments. Once the conceptual plan for maintaining traffic has been approved, the DBF will be required to submit a detailed plan showing each phase's Maintenance and Protection Plan prior to starting construction of any phase.
- 2. The "Maintenance of Traffic" plan shall include pedestrian traffic as well as vehicular traffic.
- 3. A safe walk route for all schools within the vicinity of the construction zone shall be maintained during the arrival and dismissal of school. DBF shall not block bus access to schools during school hours.
- 4. In the case that a designated crossing of any portion of the designated walk route
cannot be maintained, then the DBF shall notify the City of Fort Lauderdale and the "School Safety Coordinator" at Broward County Traffic Engineering Division, (954) 484- 9600 a minimum of ten (10) working days prior to ceasing that route so that an alternate route can be established with the school and the enforcing agency.
- 5. It shall be the responsibility of the DBF for any necessary Construction, Pavement Marking and Signage or any Pedestrian Signalization and/or

SECTION 01010
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- Signal Modification to accommodate an alternate safe walk route.
6. Thirty (30) days prior to the beginning of construction the DBF shall notify the City of Fort Lauderdale and the "School Safety Coordinator" at Broward County Traffic Engineering Division (954) 484-9600, to set up a pre-work meeting.
 7. The DBF, at all times, shall conduct the work in such a manner as to insure the least obstruction to traffic as is practical. Convenience of the general public and of the residents adjacent to the work shall be provided for in a satisfactory manner, as determined by the CITY.
 8. Sidewalks, gutters, drains, fire hydrants and private drives shall, insofar as practical, be kept in condition for their intended uses. Fire hydrants on or adjacent to the work shall be kept accessible to fire apparatus at all times, and no material or obstruction shall be placed within twenty (20) feet of any such hydrant.
 9. Construction materials stored upon the public street shall be placed so as to cause as little obstruction to the general public as is reasonably possible. Stored materials shall not impede pedestrian or vehicular traffic at any time.
 10. Streets may be closed only as permitted by the approved Maintenance of Traffic Plan, and as directed by the CITY and, whenever the street is not closed, the work must be conducted with the provision for a safe passageway for traffic at all times. The DBF shall make all necessary arrangements with the CITY concerning maintenance of traffic and selection of detours required.
 11. All existing stop and street name signs will be maintained as long as deemed necessary by the CITY.
 12. When permission has been granted to close an existing roadway, the DBF shall furnish and erect signs, barricades, lights, flags and other protective devices, which shall conform to the requirements, and be subject to the approval of the CITY. The DBF shall furnish and maintain proper protective devices at such location for the entire time of closure as the CITY may direct. Signage shall be affected one week before closure.
 13. The DBF shall furnish a sufficient number of protective devices to protect and divert the vehicular and pedestrian traffic from working areas closed to traffic, or to protect any new work. Failure to comply with this requirement will result in the CITY shutting down the work until the DBF provides the necessary protection.
 14. Any time traffic is diverted for a period of time that will exceed one-work day temporary pavement markings will be required. Existing pavement markings that conflict with the new work zone traffic pattern must be obliterated. Painting over existing pavement markings (black out) is not permitted.
 15. The DBF may be required to reposition existing traffic signal heads in order to maintain traffic flows at diverted intersections. If this should be necessary, the DBF must submit a plan for approval showing the course of work and the planned repositioning. The Broward County Traffic Engineering Division must approve the plan prior to implementation. No separate payment for repositioning the existing traffic signal heads will be made. The cost of this work shall be included in the bid item for Maintenance of Traffic.

SECTION 01010
SUMMARY OF WORK

16. If there are schools within the project area: The DBF will be required to shut down all equipment during the school zone commute time periods (approximately 15 minutes prior to and after school is in session).

1.23 MAINTENANCE AND PROTECTION OF EXISTING DRAINAGE SYSTEM

- A. It shall be the responsibility of the DBF to maintain positive drainage on the surface and to ensure that the existing underground drainage system continues to function as intended during the construction of the new drainage system. The DBF shall submit a plan to maintain the existing drainage patterns and underground system for the approval of the CITY prior to beginning any work on the existing or new drainage systems. The cost of maintaining positive drainage and preparing the maintenance plan shall be included under maintenance of traffic and existing drainage system, of the Schedule of Prices Bid.

1.24 APPLICATION FOR PAYMENT FOR STORED MATERIALS

- A. Application for payment for stored materials may not be made by DBF.

1.25 SPECIAL CONDITIONS FOR CONSTRUCTION BY OTHER AGENCIES

- A. It will be the DBF's responsibility to coordinate construction schedules with other contractors so as to minimize disruptions, and inconveniences. The project site shall be safe at all times for construction workers and residents.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

END OF SECTION 01010

SECTION 01045
CUTTING AND PATCHING**PART 1 GENERAL****1.1 REQUIREMENTS INCLUDED**

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

1.2 RELATED REQUIREMENTS

- A. All applicable sections of the Specifications.
- B. Conditions of the Contract.

1.3 SUBMITTALS

- A. Submit a written request to CITY well in advance of executing any cutting or alteration, which affects:
 - 1. Work of the OWNER or any separate DBF.
 - 2. Structural value of integrity of any element of the project.
 - 3. Integrity of effectiveness of weather-exposed or moisture-resistant elements or systems.
 - 4. Efficiency, operational life, maintenance or safety of operational elements.
 - 5. Visual qualities of sight-exposed elements.
- B. Request shall include:
 - 1. Identification of the project.
 - 2. Description of the affected work.
 - 3. The necessity for cutting, alteration or excavation.
 - 4. Effect on work of Owner or any separate DBF, or on structural or weatherproof integrity of project.
 - 5. Description of proposed work:
 - a. Scope of cutting, patching, alteration or excavation.
 - b. Trades who will execute the work.
 - c. Products proposed to be used.
 - d. Extent of refinishing to be done.
 - 6. Alternatives to cutting and patching.
 - 7. Cost proposal, when applicable.
 - 8. Written permission of any separate DBF whose work will be affected.
- C. Should conditions of work or the schedule indicate a change of products from original installation, DBF shall submit request for substitution as specified in Section 01600, Paragraph 1.08.
- D. Submit written notice to CITY designating the date and time the work will be uncovered.

SECTION 01045
CUTTING AND PATCHING

PART 2 PRODUCTS

2.1 MATERIALS

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

PART 3 EXECUTION

3.1 INSPECTION

- A. Inspect existing conditions of project, including elements subject to damage or to movement during cutting and patching.
- B. After uncovering the work, inspect conditions affecting installation of products, or performance of work.
- C. Report unsatisfactory or questionable conditions affecting installation of products, or performance of work.

3.2 PREPARATION

- A. Provide adequate temporary support as necessary to assure structural value or integrity of affected portion of work.
- B. Provide devices and methods to protect other portions of project from damage.
- C. Provide protection from elements for that portion of the project, which may be exposed by cutting and patching, work, and maintain excavations free from water.

3.3 PERFORMANCE

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

END OF SECTION 01045

SECTION 01070
REGULATORY REQUIREMENTS & PERMITS

PART 1 GENERAL**1.1 REQUIREMENTS INCLUDED**

- A. DBF shall comply with all building codes and regulations appropriate to the project, including those but not limited to:
 - 1. City of Fort Lauderdale
 - a. Florida Building Code (Latest Revision)
 - b. Broward County Traffic Engineering Division
 - c. Broward County Environmental Protection and Growth Management Department
 - d. Broward County Highway Construction and Engineering Department
 - e. Florida Department of Environmental Protection
 - f. South Florida Water Management District
 - g. Florida Department of Environmental Protection
 - h. OSHA
- B. DBF shall comply with these codes, laws, regulations, rules, directives of all agencies, boards, districts, and governmental bodies having jurisdiction. The most recent guidelines of the regulatory agencies shall be utilized for the design and construction of the project.
- C. DBF shall obtain and pay the cost of all building permits, fees, tie-in, or connection charges associated with the project.
- D. DBF is responsible for compliance with all agencies and shall obtain all the necessary permits to complete the project. In the event that the CITY must obtain permits in addition to those listed below, the DBF shall not have any claim for damages arising from any delay caused by the CITY'S obtaining said additional permits.

1.2 RELATED REQUIREMENTS

- A. All applicable sections of the Specifications.
- B. Conditions of the Contract.

PART 2 PRODUCTS (NOT APPLICABLE)**PART 3 EXECUTION (NOT APPLICABLE)****END OF SECTION 01060**

SECTION 01070
ABBREVIATIONS OF INSTITUTIONS

PART 1 GENERAL

1.1 GENERAL

Wherever in these Specifications references are made to the standards, specifications, or other published data of the various international, national, regional, or local organizations, such organizations may be referred to by their acronym or abbreviation only. As a guide to the user of these Specifications, the following acronyms or abbreviations, which may appear in these Specifications, shall have the meanings indicated herein.

1.2 ABBREVIATIONS

AAMA	Architectural Aluminum Manufacturer's Association
AAR	Association of American Railroads
AASHTO	American Association of State Highway and Transportation Officials
AATCC	American Association of Textile and Colorists
ACI	American Concrete Institute
AFBMA	Anti-Friction Bearing Manufacturer's Association, Inc.
AGA	American Gas Association
AGMA	American Gear Manufacturers Association
AHAM	Association of Home Appliance Manufacturers
AI	The Asphalt Institute
AIA	American Institute of Architects
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AITC	American Institute of Timber Construction
AMCA	Air Moving and Conditioning Association
ANS	American Nuclear Society
ANSI	American National Standards Institute, Inc.
APA	American Plywood Association
API	American Petroleum Institute
APWA	American Public Works Association
ASA	American Standards Association
ASAE	American Society of Agricultural Engineers
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigerating, and Air Conditioning Engineers
ASLE	American Society of Lubricating Engineers
ASME	American Society of Mechanical Engineers
ASQC	American Society for Quality Control
ASSE	American Society of Sanitary Engineers
ASTM	American Society for Testing and Materials
AWPA	American Wood Preservers Association
AWPI	American Wood Preservers Institute
AWS	American Welding Society
AWWA	American Water Works Association
BBC	Basic Building Code, Building Officials and Code Administrators International

SECTION 01070
ABBREVIATIONS OF INSTITUTIONS

BCEPD	Broward County Environmental Protection Department (now known as Broward County Environmental Protection and Growth Management Department)
BCHCED	Broward County Highway Construction & Engineering Division
BCHD	Florida Department of Health of Broward County
BCPHU	Broward County Public Health Unit
BCTED	Broward County Traffic Engineering Division
BCWRMD	Broward County Water Resource Management Division
BCWWS	Broward County Water & Wastewater Services Division
BHMA	Builders Hardware Manufacturer's Association
CBM	Certified Ballast Manufacturers
CEMA	Conveyors Equipment Manufacturer's Association
CGA	Compressed Gas Association
CLFMI	Chain Link Fence Manufacturer's Institute
CMA	Concrete Masonry Association
CRSI	Concrete Reinforcing Steel Institute
CSI	Construction Specification Institute
DIPRA	Ductile Iron Pipe Research Association
EIA	Electronic Industries Association
ETL	Electrical Test Laboratories
EPA	Environmental Protection Agency
FAC	Florida Administrative Code
FBC	Florida Building Code
FDEP	Florida Department of Environmental Protection
FDOT	Florida Department of Transportation
FM	Factory Mutual System
FPL	Florida Power & Light
FS	Federal Specifications
HI	Hydraulics Institute
IAPMO	International Association of Plumbing and Mechanical Officials
ICBO	International Conference of Building Officials
IEEE	Institute of Electrical and Electronics Engineers
IES	Illuminating Engineering Society
IME	Institute of Makers of Explosives
IP	Institute of Petroleum (London)
IPC	Institute of Printed Circuits
IPCEA	Insulated Power Cable Engineers Association
ISA	Instrument Society of America
ISO	International Organization for Standardization
ITE	Institute of Traffic Engineers
MBMA	Metal Building Manufacturer's Association
MPTA	Mechanical Power Transmission Association
MSS	Manufacturers Standardization Society
MTI	Marine Testing Institute
NAAMM	National Association of Architectural Metal Manufacturer's
NACE	National Association of Corrosion Engineers

SECTION 01070
ABBREVIATIONS OF INSTITUTIONS

NBS	National Bureau of Standards
NCCLS	National Committee for Clinical Laboratory Standards
NEC	National Electrical Code
NEMA	National Electrical Manufacturer's Association
NFPA	National Fire Protection Association
NFPA	National Forest Products Association
N.I.C.	Not In Contract
NLGI	National Lubricating Grease Institute
NMA	National Microfilm Association
NSF	National Sanitation Foundation
NWMA	National Woodwork Manufacturers Association
NPDES	National Pollutant Discharge Elimination System
OSHA	Occupational Safety and Health Administration
PCA	Portland Cement Association
PPI	Plastics Pipe Institute
RCRA	Resource Conservation and Recovery Act
RIS	Redwood Inspection Service
RVIA	Recreational Vehicle Industry Association
RWMA	Resistance Welder Manufacturer's Association
SAE	Society of Automotive Engineers
SAMA	Scientific Apparatus Makers Association
SB	Southern Bell
SFWMD	South Florida Water Management District
SMA	Screen Manufacturers Association
SMACCNA	Sheet Metal and Air Conditioning Contractors National Association
SPI	Society of the Plastics Industry, Inc.
SPIB	Southern Pine Inspection Bureau
SPR	Simplified Practice Recommendation
SSA	Swedish Standards Association
SSBC	Southern Standard Building Code, Southern Building Code Congress
SSPC	Steel Structures Painting Council
SSPWC	Standard Specifications for Public Works Construction
TAPPI	Technical Association of the Pulp and Paper Industry
TFI	The Fertilizer Institute
UL	Underwriters Laboratories, Inc.
WCLIB	West Coast Lumber Inspection Bureau
WCRSI	Western Concrete Reinforcing Steel Institute
WEF	Water Environment Federation
WIC	Woodwork Institute of California
WRI	Wire Reinforcement Institute, Inc.
WWED	Broward County Water and Wastewater Engineering Division
WWPA	Western Wood Products Association

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

SECTION 01070
ABBREVIATIONS OF INSTITUTIONS

END OF SECTION 01070

SECTION 01090
REFERENCE STANDARDS

PART 1 GENERAL

1.1 GENERAL

- A. Titles of Sections and Paragraphs: Captions accompanying specification sections and paragraphs are for convenience of reference only, and do not form a part of the Specifications.
- B. Applicable Publications: Whenever in these Specifications references are made to published specifications, codes, standards, or other requirements, it shall be understood that wherever no date is specified, only the latest specifications, standards, or requirements of the respective issuing agencies which have been published as of the date that the WORK is advertised for bids, shall apply; except to the extent that said standards or requirements may be in conflict with applicable laws, ordinances, or governing codes. No requirements set forth herein or shown on the Drawings shall be waived because of any provision of, or omission from, said standards or requirements.

1.2 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

- A. Without limiting the generality of other requirements of the Specifications, all work specified herein shall conform to or exceed the requirements of applicable codes and the applicable requirements of the following documents.
- B. References herein to "Building Code" shall mean "Florida Building Code". References to "Mechanical Code" or "Uniform Mechanical Code," "Plumbing Code" or "Uniform Plumbing Code," "Fire Code" or "Uniform Fire Code," shall mean Uniform Mechanical Code, Uniform Plumbing Code and Uniform Fire Code of the International Conference of the Building Officials (ICBO). "Electric Code" or "National Electric Code (NEC)" shall mean the National Electric Code of the National Fire Protection Association (NFPA). The latest edition of the codes as approved by the Municipal Code and used by the local agency as of the date that the WORK is advertised for bids, as adopted by the agency having jurisdiction, shall apply to the WORK herein, including all addenda, modifications, amendments, or other lawful changes thereto.
- C. In case of conflict between codes, reference standards, drawings and the other Contract Documents, the most stringent requirements shall govern. All conflicts shall be brought to the attention of the CITY for clarification and directions prior to ordering or providing any materials or furnishing labor. The DBF shall bid for the most stringent requirements.
- D. The DBF shall construct the WORK specified herein in accordance with the requirements of the Contract Documents and the referenced portions of those referenced codes, standards, and specifications listed herein.
- E. References herein to "OSHA Regulations for Construction" shall mean Title 29, Part 1926, Construction Safety and Health Regulations, Code of Federal Regulations (OSHA), including all changes and amendments thereto.
- F. References herein to "OSHA Standards" shall mean Title 29, Part 1910, Occupational Safety and Health Standards, Code of Federal Regulations (OSHA), including all changes and amendments thereto.
- G. References to "Minimum Standards" shall mean the City of Fort Lauderdale Minimum Standards.

SECTION 01090
REFERENCE STANDARDS

1.3 REGULATIONS RELATED TO HAZARDOUS MATERIALS

- A. The DBF is responsible that all work included in the Contract Documents, regardless if shown or not, shall comply with all EPA, OSHA, RCRA, NFPA, and any other Federal, State, and Local Regulations governing the storage and conveyance of hazardous materials, including petroleum products.
- B. Where no specific regulations exist, all chemical, hazardous, and petroleum product piping and storage in underground locations must be installed with double containment piping and tanks, or in separate concrete trenches and vaults, or with an approved lining which cannot be penetrated by the chemicals, unless waived in writing by the OWNER.
 - 1. The DBF may be required to reposition existing traffic signal heads in order to maintain traffic flows at diverted intersections. If this should be necessary, the DBF must submit a plan for approval showing the course of work and the planned repositioning. The Broward County Traffic Engineering Division must approve the plan prior to implementation. No separate payment for repositioning the existing traffic signal heads will be made. The cost of this work shall be included in the bid item for Maintenance of Traffic.
 - 2. If there are schools within the project area: The DBF will be required to shut down all equipment during the school zone commute time periods (approximately 15 minutes prior to and after school is in session).

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

END OF SECTION 01090

SECTION 01200
PROJECT MEETINGS**PART 1 GENERAL****1.1 REQUIREMENTS INCLUDED**

- A. DBF shall schedule and administer a preconstruction meeting, progress meetings at a minimum of once a month on a day established by the OWNER's Representative and specially called meetings throughout progress of the work.
 - 1. Prepare agenda meetings.
 - 2. Distribute written notice of each meeting five (5) days in advance of meeting date.
 - 3. Preside at meetings.
 - 4. Record the minutes; include significant proceedings and decisions.
 - 5. Reproduce and distribute copies of minutes within three (3) days after each meeting.
 - a. To participants in the meeting.
 - b. To parties affected by decisions made at the meeting.
 - c. Furnish digital copies of minutes to OWNER.
- B. DBF is to secure a meeting location for progress meetings that is in accordance with the requirements of the Contract Documents.
- C. Representative of DBF, subcontractor and suppliers attending meetings shall be qualified and authorized to act on behalf of the entity each represents.

1.2 RELATED REQUIREMENTS

- A. All applicable sections of the Specifications.
- B. Conditions of the Contract.

1.3 PRE-CONSTRUCTION MEETING

- A. Schedule after date of Notice to Proceed.
- B. Location: A central site, convenient for all parties, designated by OWNER's Representative.
- C. Attendance:
 - 1. The DBF and its superintendent.
 - 2. ENGINEER
 - 3. Resident Project Representative.
 - 4. Representative of the OWNER.
 - 5. Major subcontractors.
 - 6. Major Suppliers.
 - 7. Governmental representatives as appropriate.
 - 8. Others as requested by DBF, OWNER, or Engineer.
- D. Suggested Agenda:
 - 1. Distribution and discussion of:
 - a. List of major subcontractors and suppliers.
 - b. Projected Construction Schedules.
 - c. Shop Drawings and other submittals.
 - d. Traffic maintenance plan.
 - e. Community Public Relations.
 - 2. Critical work sequencing.

SECTION 01200
PROJECT MEETINGS

3. Procurement of major equipment and materials requiring a long lead time.
4. Project Coordination.
 - a. Designation of responsible personnel.
5. Procedures and processing of:
 - a. Field decisions.
 - b. Proposal requests.
 - c. Submittals.
 - d. Change orders.
 - e. Applications for Payment.
6. Adequacy of distribution of Contract Documents.
7. Procedures of maintaining Record Documents.
8. Use of premises:
 - a. Office, work, and storage areas.
 - b. OWNER requirements.
9. Construction facilities, controls, and construction aids.
10. Temporary utilities.
11. Safety procedures
12. Security procedures.
13. Housekeeping procedures.

1.4 PROGRESS MEETINGS

- A. Schedule regular monthly meetings on a day established by the OWNER's Representative as required.
- B. Hold called meetings as required by progress of the work.
- C. Location of meetings: Project field office or as designated by OWNER.
- D. Attendance
 1. OWNER's Representative and OWNER's professional consultants as needed.
 2. ENGINEER
 3. Subcontractors as active on the site.
 4. Suppliers as appropriate to the agenda.
 5. Governmental representatives as appropriate.
 6. Others, as requested by DBF, OWNER, or ENGINEER.
- E. Suggested Agenda:
 1. Review, approval of minutes of previous meeting.
 2. Review of work progress since previous meeting.
 3. Field observations, problems, and conflicts.
 4. Problems, which impeded Construction Schedule.
 5. Review of off-site, delivery schedules.
 6. Corrective measures and procedures to regain projected schedule.
 7. Revisions to Construction Schedules.
 8. Progress, schedule, during succeeding work period.
 9. Coordination of schedules.
 10. Community Public Relations.
 11. Review submittal schedules; expedite as required.

SECTION 01200
PROJECT MEETINGS

12. Maintenance of quality standards.
13. Pending changes and substitutions.
14. Review proposed changed for:
 - a. Effect on Construction Schedule and on completion date.
 - b. Effect on other contracts of the Project.
15. Other business.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

END OF SECTION 01200

SECTION 01300
SUBMITTALS**PART 1 GENERAL****1.1 SCOPE:**

- A. Summary of Work: This SECTION includes definitions, descriptions, transmittal, and review of "Compliance" and "Miscellaneous" Submittals.

1.2 GENERAL INFORMATION:

- A. Definitions:
1. Compliance Submittals include Shop Drawings, product data, and samples which are prepared by the DBF, Subcontractor, MANUFACTURER, or Supplier and submitted by the DBF to the CITY as a basis for approval of the use of Equipment and Materials proposed for incorporation in the WORK or needed to describe installation, operation, maintenance, or technical properties.
 - a. Shop Drawings include custom-prepared data of all types including drawings, diagrams, performance curves, material schedules, templates, instructions, and similar information not in standard printed form applicable to other projects.
 - b. Product data includes standard printed information on materials, products and systems not custom-prepared for this Project, other than the designation of selections from available choices.
 - c. Samples include both fabricated and unfabricated physical examples of materials, products, and WORK; both as complete units and as smaller portions of units of WORK; either for limited visual inspection or (where indicated) for more detailed testing and analysis. Mock-ups are a special form of samples which are too large to be handled in the specified manner for transmittal of sample Submittals.
 2. Miscellaneous Submittals are those technical reports, administrative Submittals, certificates, and warranties not defined as Shop Drawings, product data, or samples.
 - a. Technical reports include laboratory reports, tests, technical procedures, technical records, DBF's design analysis and DBF's survey field notes for construction staking, before cross-sections and after cross-sections, and similar type Submittals.
 - b. Administrative Submittals are those nontechnical Submittals required by the Contract Documents or deemed necessary for administrative records. These Submittals include maintenance agreements, workmanship bonds, Project photographs, physical work records, statements of applicability, copies of industry standards, as-constructed data, security/protection/safety data, and similar type Submittals also listed in SECTION 01700 and elsewhere in the Contract Documents.
 - c. Certificates and warranties are those Submittals on Equipment and Materials where a written certificate or guarantee from the MANUFACTURER or Supplier is called for in the Specifications.
 - d. Reports as required by Contract describing DBF's means and methods for items such as dewatering, earth and water retaining, erosion/turbidity

SECTION 01300
SUBMITTALS

control, safety plans, and similar type Submittals.

3. Refer to ARTICLE 1.03 and 1.04 of this Part for detailed lists of documents and specific requirements.

B. Quality Requirements:

1. Submittals such as Shop Drawings and product data shall be of the quality for legibility and reproduction purposes. Every line, character, and letter shall be clearly legible. Drawings such as reproducible shall be useable for further reproduction to yield legible hard copy.
2. Documents submitted to the CITY that do not conform to these requirements shall be subject to rejection by the CITY, and upon request by CITY, DBF shall resubmit conforming documents. If conforming Submittals cannot be obtained, such documents shall be retraced, redrawn, or photographically restored as may be necessary to meet such requirements. DBF's (or his Subcontractor's) failure to initially satisfy the legibility quality requirements will not relieve DBF (or his Subcontractors) from meeting the required schedule for Submittal of Shop Drawings and product data.

C. Language and Dimensions:

1. All words and dimensional units shall be in the English language.
2. Metric dimensional unit equivalents may be stated in addition to the English units.

D. Submittal Completeness:

1. Submittals shall be complete with respect to dimensions, design criteria, materials of construction, and other information specified to enable the CITY to review the information effectively.
2. Where standard drawings are furnished which cover variations of the general class of equipment, each such drawing shall be individually annotated to describe exactly which parts of the drawing apply to the equipment being furnished. Use hatch marks to indicate variations that do not apply to the Submittal. The use of "highlighting" is not an acceptable means of annotating Submittals. Such annotation shall also include proper identification of the Submittal permanently attached to the drawing.
3. Reproduction or copies of Drawings or portions thereof will not be accepted as complete fabrication or erection drawings. The DBF may use a reproduction of the CITY-prepared Drawings for erection drawings such as to indicate information on erection or to identify detail drawing references. Where the Drawings are revised to show this additional DBF information, the CITY's title block shall be replaced with a DBF's title block and the CITY's professional seal shall be removed from the Drawing. The DBF shall revise these erection drawings for subsequent CITY revisions to the Drawings.

1.3 COMPLIANCE SUBMITTALS:

A. Items shall include, but not be limited to, the following:

1. MANUFACTURER's specifications
2. Catalogs, or parts thereof, of manufactured equipment
3. Shop fabrication and erection drawings

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SUBMITTALS

4. General outline drawings of equipment showing overall dimensions, location of major components, weights, and location of required building openings and floor plates
 5. Detailed equipment installation drawings, showing foundation details, anchor bolt sizes and locations, baseplate sizes, location of CITY's connections, and all clearances required for erection, operation, and disassembly for maintenance
 6. Schematic diagrams for electrical items, showing external connections, terminal block numbers, internal wiring diagrams, and one-line diagrams
 7. Bills of material and spare parts list
 8. Instruction books and operating manuals
 9. Material lists or schedules
 10. Performance tests on equipment by MANUFACTURERS
 11. Concrete mix design information
 12. Samples and color charts
 13. All drawings, calculations, catalogs or parts thereof, MANUFACTURER's specifications and data, samples, instructions, and other information specified or necessary:
 - a. For CITY to determine that the Equipment and Materials conform with the design concept and comply with the intent of the Contract Documents.
 - b. For the proper erection, installation, operation and maintenance of the Equipment and Materials which the CITY will review for general content but not for substance.
 - c. For the CITY to determine what supports, anchorages, structural details, connections, and services are required for the Equipment and Materials, and the effects on contiguous or related structures and Equipment and Materials.
- B. Compliance Submittal Action Stamps or Designation: The CITY's review action stamp or designation, appropriately completed, will appear on all Compliance Submittals of DBF when returned by the CITY. Review status designations listed on CITY's action designation are defined as follows:
1. "ACCEPTED AS SUBMITTED": Signifies Equipment or Material represented by the Submittal conforms with the design concept and complies with the intent of the Contract Documents and is acceptable for incorporation in the WORK. DBF is to proceed with fabrication or procurement of the items and with related WORK.
 2. "ACCEPTED AS NOTED": Signifies Equipment and Material represented by the Submittal conforms with the design concept and complies with the intent of the Contract Documents and is acceptable for incorporation in the WORK subject to the condition that as constructed it shall be in accordance with all notations and/or corrections indicated. DBF is to proceed with fabrication or procurement of the items and with related WORK in accordance with CITY's notations.
 3. "RETURNED FOR REVISION": Means that deviations from the requirements

SECTION 01300
SUBMITTALS

of the Contract Documents exist in the Submittal. DBF is to resubmit revised information responsive to CITY's annotations on the returned Submittal or written in the letter of transmittal. Fabrication or procurement of items represented by the Submittal and related WORK is not to proceed until the Submittal is approved.

4. "NOT ACCEPTABLE (SUBMIT ANEW)": Signifies Equipment and Material represented by the Submittal does not conform with the design concept or comply with the intent of the Contract Documents and is disapproved for use in the WORK. DBF is to resubmit Compliance Submittals responsive to the Contract Documents.
5. "PRELIMINARY SUBMITTAL": Signifies Submittals of such preliminary nature that a determination of conformance with the design concept or compliance with the intent of the Contract Documents must be deferred until additional information is furnished. DBF is to submit such additional information to permit layout and related activities to proceed.
6. "FOR REFERENCE ONLY": Signifies Submittals which are for supplementary information only; pamphlets, general information sheets, catalog cuts, standard sheets, bulletins and similar data, all of which are useful to the CITY in design, operation, or maintenance, but which by their nature do not constitute a basis for determining that items represented thereby conform with the design concept or comply with the intent of the Contract Documents. The CITY reviews such Submittals for general content but not for substance.
7. Resubmit Compliance Submittals the number of times required for CITY's "ACCEPTED AS SUBMITTED" or "FOR REFERENCE ONLY". However, any need for more resubmittals than the number set forth in the accepted schedule, or any other delay in obtaining acceptance of Submittals, will not be grounds for extension of the Contract Time, provided the CITY completes its reviews within the times stated above.

C. Schedule and Log of Compliance Submittals:

1. Prepare for the CITY, a schedule and log for submission of all Compliance Submittals specified or necessary for CITY's review of the use of Equipment and Materials proposed for incorporation in the WORK or needed for proper installation, operation or maintenance. Submit the schedule and log with the procurement schedule and WORK progress schedule. Schedule submission of all Compliance Submittals to permit review, fabrication, and delivery in time to not cause a delay in the WORK of DBF or his Subcontractors or any other contractors as described herein.
2. In establishing schedule for Compliance Submittals, allow 15 working days in CITY's office for reviewing original Submittals that have been deemed complete and ten (10) working days for reviewing resubmittals of previously reviewed submittals.
3. The schedule shall indicate the anticipated dates of original submission and shall be prepared in accordance with SECTION 01310 and submitted in accordance with this SECTION.
4. Schedule all Compliance Submittals required prior to fabrication or manufacture for submission within [90] days of the Notice to Proceed [NTS:

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SUBMITTALS

Engineer should coordinate with the Project/Construction Manager to determine this time period]. Schedule Compliance Submittals pertaining to storage, installation and operation at the Site for CITY's acceptance prior to delivery of the Equipment and Materials.

D. Transmittal of Compliance Submittals:

1. All Compliance Submittals of Equipment and Materials furnished by Subcontractors, MANUFACTURERS, and Suppliers shall be submitted to the CITY by DBF in electronic PDF format as indicated below. After checking and verifying all field measurements, transmit all Compliance Submittals to the CITY for acceptance as follows:
 - a. Identify each Compliance Submittal by Submittal Number, Project name and number, Contract title and number, and the Specification SECTION and article number marked thereon or in the letter of transmittal. Unidentifiable Submittals will be returned for proper identification.
 - b. Check and certify Compliance Submittals of Subcontractors, Suppliers, and MANUFACTURERS with DBF's approval prior to transmitting them to the CITY. DBF's certification of approval shall constitute a representation to the CITY that DBF has either determined and verified all quantities, dimensions, field construction criteria, materials, catalog numbers, and similar data, or he assumes full responsibility for doing so, and that he has coordinated each Compliance Submittal with the requirements of the WORK and the Contract Documents.
 - c. At the time of each submission, call to the attention of CITY in the letter of transmittal any deviations from the requirements of the Contract Documents.
 - d. Provide all Submittals in electronic format, compatible with Adobe Professional, Version 8 (or higher), and submitted as a single file, using PDF bookmarks and/or chapters to identify divisions within the Submittal package.
 - e. Make all modifications noted or indicated by CITY and return revised copies, or samples until accepted. Revised Submittals must be complete and conformed, including all pages/sheets with the required revisions and any additional or replacement pages/sheets. Direct specific attention in writing, or on revised Submittals, to changes other than the modifications called for by the CITY on previous Submittals. Subsequent review cycles for returned or revised Submittals shall replicate the process described in items d. through e. above.
 - f. If the CITY's review action is "ACCEPTED AS NOTED", the Submittal will be designated such, and electronically transmitted back to the DBF. Upon receipt of this notification from the CITY, The DBF shall resubmit one (1) conformed electronic copy in PDF file format to the CITY for final distribution. If the Submittal is required to be signed and sealed by a Professional Engineer registered in the State of Florida, this version of the submittal shall be signed and sealed. Submittal will not be considered final until all copies have been received by the CITY. Submittal will be designated "DISTRIBUTION COPY (PREVIOUSLY ACCEPTED)" by

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the CITY. Accepted Submittals transmitted for final distribution will not be further reviewed and are not to be revised. If errors are discovered during manufacture or fabrication, correct the Submittal and resubmit for review.

- g. Following completion of the WORK and prior to final payment, furnish those drawings necessary to indicate "AS CONSTRUCTED" conditions, including field modifications. Furnish additional copies for insertion in equipment instruction books as required. All such copies shall be clearly marked "AS BUILT DRAWING."
 - h. WORK requiring a Compliance Submittal shall not be commenced or shipped until the Submittal has been designated "ACCEPTED AS SUBMITTED" or "ACCEPTED AS NOTED" by the CITY.
 - i. Keep a legible copy or sample of each Compliance Submittal at the Site.
- 2. Copies of the equipment DBF's erection drawings and other Compliance Submittals required for the installation of equipment furnished by others under separate Contract for installation under this Contract will be transmitted to DBF by the CITY in the final distribution of such Submittals.
 - 3. Information to MANUFACTURER's District Office: MANUFACTURERS and Suppliers of Equipment and Materials shall furnish copies of all agreements, drawings, specifications, operating instructions, correspondence, and other matters associated with this Contract to the MANUFACTURER's district office servicing the CITY. Insofar as practicable, all business matters relative to Equipment and Materials included in this Contract shall be conducted through such local district offices.

E. CITY's Review:

- 1. The CITY will review and return Compliance Submittals to DBF with appropriate notations. Instruction books and similar Submittals will be reviewed by the CITY for general content but not for substance.
- 2. The CITY's acceptance of Compliance Submittals will not relieve DBF from his responsibility as stated in the Section 00700 – General Terms and Conditions.

F. Instruction Books / Operation & Maintenance Manuals:

- 1. Equipment instruction books and manuals shall be prepared by the MANUFACTURER and shall include the following:
 - a. Index and tabs
 - b. Instructions for installation, start-up, operation, inspection, maintenance, parts lists and recommended spare parts, and data sheets showing model numbers
 - c. Applicable drawings
 - d. Name of contact person, phone number, and address of the nearest authorized service facility
 - e. Attached to the above shall be a notice of the exact warranty effective dates, beginning and ending.
 - f. All additional data specified
- 2. Information listed above shall be submitted electronically in a PDF file format.

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- a. Instruction Books/Operation & Maintenance Manuals shall contain the following:
 - 1) Equipment name
 - 2) MANUFACTURER's name
 - 3) Project name
 - 4) Contract number
 - 5) Reference to applicable Drawing No. & Technical Specifications Section
- b. Format: The overall manual should be constructed around certain types of structures or equipment in the Project, and not merely assembled by technical specification section, so that all pertinent data needed by personnel to operate or maintain the equipment or structure is in one (1) manual (as far as is practical). The DBF shall coordinate with the CITY as to how the manuals are to be assembled (Bookmarked).
- G. Samples: Office samples shall be of sufficient size and quantity to clearly illustrate the following:
 - 1. Functional characteristics of the product, with integrally related parts and attachment devices
 - 2. Full range of color, texture, and pattern

1.4 MISCELLANEOUS SUBMITTALS:

- A. Miscellaneous Submittals are comprised of technical reports, administrative Submittals, and warranties which relate to the WORK, but do not require CITY's approval prior to proceeding with the WORK. Miscellaneous Submittals may include but are not limited to (at CITY's discretion):
 - 1. Welder qualification tests
 - 2. Welding procedure qualification tests
 - 3. X-ray and radiographic reports
 - 4. Field test reports
 - 5. Concrete cylinder test reports
 - 6. Certification on Materials:
 - a. Steel mill tests
 - b. Paint lab tests
 - c. Cement tests
 - 7. Soil test reports
 - 8. Temperature records
 - 9. Shipping or packing lists
 - 10. Job progress schedules
 - 11. Equipment and Material delivery schedules
 - 12. Progress photographs
 - 13. Warranties
 - 14. Fire protection and hydraulic calculations
 - 15. Surveying field notes, preliminary and final Surveyor's Reports
 - 16. Pump tests
 - 17. Traffic control plan

SECTION 01300
SUBMITTALS

18. Technical Reports
19. Written Certificates and Warranties
- B. Transmittal of Miscellaneous Submittals:
 - a. All Miscellaneous Submittals furnished by Subcontractors, MANUFACTURERS, and Suppliers shall be submitted to CITY by DBF in an electronic PDF file format, unless otherwise specified.
 - b. Identify each miscellaneous Submittal by Project name and number, Contract title and number, and the specification section and article number marked thereon or in the letter of transmittal. Unidentifiable Submittals will be returned for proper identification.
 - c. Check and certify Miscellaneous Submittals of Subcontractors, Suppliers, and MANUFACTURERS with DBF's approval prior to transmitting them to the CITY. DBF's certification of approval shall constitute a representation to the CITY that DBF has either determined and verified all information, or he assumes full responsibility for doing so, and that he has coordinated Miscellaneous Submittal with the requirements of the WORK and the Contract Documents.
 - d. At the time of each submission, call to the attention of the CITY in the letter of transmittal any deviations from the requirements of the Contract Documents.
 - e. Make all modifications noted or indicated by CITY and return revised copies until accepted. Direct specific attention in writing, or on revised Submittals, to changes other than the modifications called for by the CITY on previous Submittals. After Submittals have been accepted, submit copies thereof for final distribution.
2. Test Reports:
 - a. Responsibilities of DBF and CITY regarding tests and inspections of Equipment and Materials and completed WORK are set forth elsewhere in these Contract Documents.
 - b. The party specified responsible for testing or inspection shall in each case, unless otherwise specified, arrange for the testing laboratory or reporting agency to distribute test reports in an electronic PDF file format to the following parties, unless otherwise specified:
 - 1) CITY
 - 2) Resident Project Representative
 - 3) DBF
 - 4) MANUFACTURER or supplier
- C. CITY'S Review:
 1. CITY will review Miscellaneous Submittals for indications of WORK or material deficiencies within fifteen (15) working days in CITY's office for original Submittals and ten (10) working days for reviewing resubmittals.
 2. CITY will respond to DBF on those Miscellaneous Submittals which indicate WORK or material deficiency.

1.5 WEN BASED CONSTRUCTION DOCUMENT MANAGEMENT:

SECTION 01300
SUBMITTALS

- A. The CITY, and DBF shall use the internet Web Based Project Construction Document Management tool (the Construction Document Management tool), e-Builder® ASP software, and protocols included in that software during this Project for submission of all documents specified in this SECTION and elsewhere in the Contract Documents. The use of Construction Document Management as herein described does not replace or change any contractual responsibilities of the DBF.
- B. The intent of using the Construction Document Management tool (i.e. e-Builder®) is to improve the Project work efforts by promoting timely initial communications and responses. This will also reduce the number of paper documents while providing improved record keeping by creation of electronic document files.
- C. The Construction Document Management tool is available through e-Builder® in the form and manner required by the CITY.
- D. The Construction Document Management tool is on-line and fully functional. User registration, electronic and computer equipment, and Internet connections are the responsibility of CITY, Engineer of Record and DBF.
- E. DBF's Responsibility:
 - 1. DBF shall be responsible for the validity of their information placed in Construction Document Management tool and for the abilities of their personnel.
 - 2. Entry of information exchanged and transferred between the DBF and its subcontractors and suppliers on Construction Document Management tool shall be the responsibility of the DBF.
 - 3. Accepted users shall be knowledgeable in the use of computers, including Internet Browsers, email programs, cad drawing applications, and Adobe Portable Document Format (PDF) document distribution program.
 - 4. DBF shall utilize the existing forms in Construction Document Management tool (i.e. e-Builder®) to the maximum extent possible. If a form does not exist in Construction Document Management tool, the DBF must include a form of their own (subject to review and acceptance by CITY) or provided by CITY as an attachment to a submittal.
 - 5. Adobe PDF documents shall be created through electronic conversion to be searchable, rather than optically scanned, whenever possible. DBF is responsible for the training of their personnel in the use of the Construction Document Management tool (outside training that is provided by CITY) and the other programs indicated above as needed.
 - 6. User Access Limitations:
 - a. Provide a list of DBF's key the Construction Document Management tool personnel for the CITY's acceptance. The CITY reserves the right to perform a security check on all potential users. The DBF will be allowed to add additional personnel and subcontractors to Construction Document Management tool.
 - b. The CITY will grant initial access to the Construction Document Management tool by creating user profiles to accepted DBF personnel.
- F. Authorized Users: The DBF shall:
 - 1. Request the User Application form from the CITY Project Manager.

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2. Submit completed User Application Form to the CITY Construction Document Management tool (i.e. e-Builder®) Administrator.
 3. Authorized users will be contacted directly by the web site provider, e-Builder®, who will assign the temporary user password.
 4. Authorized users shall be responsible for the proper use of their passwords and access to data as agents of the company in which they are employed.
 5. Sharing usernames and passwords are strictly prohibited.
- G. Training: Group training sessions will be scheduled by the CITY on as needed bases. Users are required to attend the scheduled training sessions they are assigned to.
- H. Support: e-Builder® will provide on-going support through online help files. The second level of help will be to contact the CITY Construction Document Management tool Administrator with the help of CITY Project Manager.
- I. Copyrights and Ownership: Nothing in this Specification or the subsequent communications supersedes the DBF's obligations and rights for copyright or document ownership as established by the Contract Documents. The use of CAD files, processes or design information distributed in this system is intended only for the Project specified herein.
- J. Communications: The use of fax, email and courier communication for this Project is discouraged in favor of using the Construction Document Management tool to send messages. Communication functions are as follows:
1. Document Integrity and Revisions:
 - a. Documents, comments, drawings and other records posted on the Construction Document Management tool will remain for the Project record. The authorship time and date will be recorded for each document submitted to the system. Submitting a new document or record with a unique ID, authorship, and time stamp will be the method used to make modifications or corrections.
 - b. The Construction Document Management tool will make it easy to identify revised or superseded documents and their predecessors.
 2. Document Security: The Construction Document Management tool will provide a method for communication of documents. Do not post private or your company confidential items in the database.
 3. Notifications and Distribution:
 - a. Document distribution to Project members shall be accomplished both within the Construction Document Management tool and via email as appropriate. Project document distribution to parties outside of the Construction Document Management tool shall be accomplished by secure email of outgoing documents and attachments, readable by a standard email client.
 - b. Minimum Equipment and Internet Connection: DSL, local cable company's Internet connection or T1 connection is required.
 4. Automated System Notification and Audit Log Tracking:
 - a. Review comments made (or lack thereof) by CITY on DBF submitted documentation shall not relieve DBF from compliance with requirements

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SUBMITTALS

of the Contract Documents.

- b. DBF is responsible for managing, tracking, and documenting the Work to comply with the requirements of the Contract Documents. CITY's acceptance via the Construction Document Management tool notifications or audit logs extends only to the face value of the submitted documentation and does not constitute validation of the DBF's submitted information.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

3.1 SUBMITTAL LOG:

- A. DBF shall maintain an accurate Submittal Log and a Distribution List for the duration of the WORK, showing current status of all Submittals and Distributees at all times in a form acceptable to the CITY. DBF shall make the Submittal Log available to the CITY for its review on request and shall bring a copy of the Submittal Log to all Progress Meetings.

END OF SECTION 01300

SECTION 01340
SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

PART 1 GENERAL

1.1 REQUIREMENTS INCLUDED

- A. Submit Shop Drawings, Product Data and Samples required by the Contract Documents.

1.2 RELATED REQUIREMENTS

- A. All applicable sections of the Specifications.
- B. Conditions of the Contract.
- C. Designate in the construction schedule, or in a separate coordinated schedule, the dates for submission and the dates that reviewed Shop Drawings, Product Data and Samples will be needed.

1.3 SHOP DRAWINGS

- A. Drawings shall be presented in a readable and thorough condition.
 - 1. Drawing size shall be in standard sizes 8 ½ inch X 11 inch through 24 inch X 36 inch as appropriate for detail.
 - 2. Details shall be identified by reference to City of Fort Lauderdale Project Number, sheet, detail, specification section, equipment numbers, I.D. numbers and schedule numbers shown on Contract Drawings.

1.4 PRODUCT DATA

- A. Preparation
 - 1. Clearly mark each copy to identify pertinent products or models.
 - 2. Show performance characteristics and capacities.
 - 3. Show dimensions and clearances required.
 - 4. Show wiring or piping diagrams and controls.
- B. Manufacturer's standard schematic drawings and diagrams:
 - 1. Modify drawings and diagrams to delete information, which is not applicable to the work.
 - 2. Supplement standard information to provide information specifically applicable to the work

1.5 SAMPLES

- A. Office samples shall be of sufficient size and quantity to clearly illustrate:
 - 1. Functional characteristics of the product with integrally related parts and attachment devices.
 - 2. Full range of color, texture and pattern.

1.6 DBF RESPONSIBILITIES

- A. Review Shop Drawings, Product Data and samples prior to submission.
- B. Determine and verify:
 - 1. Field measurements.
 - 2. Field construction criteria.
 - 3. Catalog numbers and similar data.
 - 4. Conformance with specifications.
- C. Coordinate each submittal with requirements of the work and of the Contract

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SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

Documents.

- D. Notify the OWNER's Representative in writing, at time of submission, of any deviations in the submittals from requirements of the Contract Documents.

1.7 **SUBMISSION REQUIREMENTS**

- A. DBF shall furnish the CITY for review, 3 copies of each shop drawing submittal. The term "Shop Drawing" as used herein shall be understood to include detail design calculations, shop drawings, fabrication and installation drawings, erection drawings, lists, graphs, catalog sheets, data sheets, and similar items.
- B. Normally, a separate transmittal form shall be used for each specific item or class of material or equipment for which a submittal is required. Transmittal of a submittal of various items using a single transmittal form will be permitted only when the items taken together constitute a manufacturer's "package" or are so functionally related that expediency indicates review of the group or package as a whole. A multiple-page submittal shall be collated into sets, and each set shall be stapled or bound, as appropriate, prior to transmittal to the CITY. In any case, every separate item submitted for shop drawing approval will be uniquely numbered and dated, between the submittal and transmittal for proper tracking.
- C. Except as may otherwise be indicated herein, the CITY will return prints of each submittal to the DBF with its comments noted thereon, within twenty-one (21) calendar days following their receipt by the DBF. It is considered reasonable that the DBF shall make a complete and acceptable submittal to the CITY by the second submission of a submittal item. The CITY's maximum review period for each submittal, including all resubmittals, will be 15 days per submittal. In other words, for a submittal that required two resubmittals before it is complete, the maximum review period for that submittal could be 45 days.
- D. If 3 copies of a submittal are returned to the DBF marked "NO EXCEPTIONS TAKEN", formal revision and resubmission of said submittal will not be required.
- E. If 3 copies of a submittal are returned to the DBF marked "MAKE CORRECTIONS NOTED," formal revision and resubmission of said submittal will not be required.
- F. If a submittal is returned to the DBF marked "REVISE AND RESUBMIT" or "AMEND- RESUBMIT," the DBF shall revise said submittal and shall resubmit the required number of copies of said revised submittal to the CITY.
- G. If a submittal is returned to the DBF marked "REJECTED-RESUBMIT", the DBF shall revise said submittal and shall resubmit the required number of copies of said revised submittal to the CITY.
- H. Fabrication of an item shall be commenced only after the CITY has reviewed the pertinent submittals and returned copies to the DBF marked either 'NO EXCEPTIONS TAKEN' or 'MAKE CORRECTIONS NOTED.' Corrections indicated on submittals shall be considered as changes necessary to meet the requirements of the Contract Documents and shall not be taken as the basis for changes to the contract requirements.
- I. All DBF shop drawing submittals shall be carefully reviewed by an authorized representative of the DBF, prior to submission to the CITY. Each submittal shall be dated, signed, and certified by the DBF, as being correct and in strict conformance with the Contract Documents. In the case of shop drawings, each sheet shall be so

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SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

dated, signed, and certified. No consideration for review by the CITY of any DBF submittals will be made for any items, which have not been so certified by the DBF. All non-certified submittals will be returned to the DBF without action taken by the CITY, and any delays caused thereby shall be the total responsibility of the DBF.

- J. The CITY's review of DBF shop drawing submittals shall not relieve the DBF of the entire responsibility for the correctness of details and dimensions. The DBF shall assume all responsibility and risk for any misfits due to any errors in DBF submittals. The DBF shall be responsible for the dimensions and the design of adequate connections and details.
- K. Submittals shall contain:
 - 1. The date of submission and the dates of any previous submissions.
 - 2. The project title and Project Number.
 - 3. Contract identification.
 - 4. The names of:
 - a. Contactor
 - b. Supplier
 - c. Manufacturer
 - 5. Identification of the product, with specification section number.
 - 6. Field dimensions clearly identified as such.
 - 7. Relation to adjacent or critical features of the work or materials.
 - 8. Applicable standards, such as ASTM or Federal Specification numbers.
 - 9. Identification of deviations from Contract Documents.
 - 10. Identification of revisions on resubmittals.
 - 11. DBF's stamp, initialed or signed, certifying to review of submittal, verification of products, field measurements and field construction criteria, and coordination of the information within the submittal with requirements of the work and of Contract Documents.

1.8 RESUBMISSION REQUIREMENTS

- A. Make any corrections or changes in the submittals required by OWNER's Representative and resubmit until approved.
- B. Shop Drawings and Product Data:
 - 1. Revise initial drawings or data and resubmit as specified for the initial submittal.
 - 2. Indicate any changes which have been made other than those requested by the OWNER's Representative.
- C. Samples: Submit new samples as required for initial submittal.

1.9 DISTRIBUTION

- A. Distribute reproduction of Shop Drawings and copies of Product Data, which carry the OWNER's Representative or ENGINEER's stamp of approval to:
 - 1. Job site file.
 - 2. Record Document File.
 - 3. Other affected CONTRACTORS.
 - 4. Subcontractors.

SECTION 01340
SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

- 5. Supplier or Fabricator.
- B. Distribute samples which carry the OWNER's Representative or ENGINEER's stamp of approval as directed by the CITY.

1.10 OWNER'S REPRESENTATIVE OR ENGINEER DUTIES

- A. Review submittals with reasonable promptness and in accord with schedule.
- B. Affix stamp and initials or signature, and indicate requirements for submittals, or approval of submittal.
- C. Return submittals to DBF for distribution

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

END OF SECTION 01340

SECTION 01380
CONSTRUCTION PHOTOGRAPHS

PART 1 GENERAL

1.1 GENERAL

- A. Employ competent photographer to take construction record photographs periodically, monthly at a minimum, during course of the work.

1.2 RELATED REQUIREMENTS

- A. Section 01010: Summary of Work.
- B. Section 01720: Project Record Documents.

1.3 PHOTOGRAPHY REQUIRED

- A. Provide photographs taken on cutoff date for each scheduled application for Payment.
- B. Provide photographs taken at each major stage of construction.
- C. Provide photographs taken of change order work.
- D. Provide five prints of each view.
- E. Digital Images:
 - 1. Remain property of photographer.
 - 2. Require that photographer maintain digital images for a period of two years from Date of Substantial Completion of entire Project.
 - 3. Photographer shall agree to furnish additional prints to OWNER and the ENGINEER at commercial rates applicable at time of purchase.

1.4 COSTS OF PHOTOGRAPHY

- A. DBF shall pay costs for specified photography and prints.
 - 1. Parties requiring additional photography or prints will pay photographer directly.

1.5 DIGITAL PHOTOGRAPHY

- A. At OWNER and ENGINEER's discretion, digital photography may be used for all construction photographs except aerial progress photographs.

PART 2 PRODUCTS

2.1 PRINTS

- A. Color:
 - 1. Paper: Single weight, color print paper.
 - 2. Finish: Smooth surface, glossy.
 - 3. Size: 8-inch x 10-inch.
- B. Identify each print on back, listing:
 - 1. Name of Project.
 - 2. Specific Location.
 - 3. Date and time of exposure.
 - 4. Name and address of photographer.
 - 5. Photographer's numbered identification of exposure.

SECTION 01380
CONSTRUCTION PHOTOGRAPHS

PART 3 EXECUTION

3.1 TECHNIQUE

- A. Factual presentation.
- B. Correct exposure and focus.
 - 1. High resolution and sharpness.
 - 2. Maximum depth-of-field.
 - 3. Minimum distortion.

3.2 VIEWS REQUIRED

- A. Photograph from locations to adequately illustrate condition of construction and state of progress.

3.3 DELIVERY OF PRINTS

- A. Deliver prints to the ENGINEER to accompany each Application for Payment.
- B. Distribution of prints as soon as processed, is anticipated to be as follows:
 - 1. OWNER (one set).
 - 2. ENGINEER (two sets).
 - 3. Project Record File (one set to be stored by DBF).
 - 4. DBF (one set).

END OF SECTION 01380

SECTION 01400
QUALITY CONTROL**PART 1 GENERAL****1.1 DEFINITION**

- A. Specific quality control requirements for the WORK are indicated throughout the Contract Documents. The requirements of this Section are primarily related to performance of the WORK beyond furnishing of manufactured products. The term "Quality Control" includes inspection, sampling and testing, and associated requirements.

1.2 INSPECTION AT PLACE OF MANUFACTURE

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

1.3 SAMPLING AND TESTING

- A. Unless otherwise indicated, 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 OWNER reserves the right to use any generally-accepted system of sampling and testing which, in the opinion of the CITY will insure the OWNER that the quality of the work is in full accord with the Contract Documents.
- B. Any waiver by the OWNER of any specific testing or other quality assurance measures, whether or not such waiver is accompanied by a guarantee of substantial performance as a relief from the specified testing or other quality assurance requirements as originally specified, and whether or not such guarantee is accompanied by a performance bond to assure execution of any necessary corrective or remedial WORK, shall not be construed as a waiver of any requirements of the Contract Documents.
- C. Notwithstanding the existence of such waiver, the CITY reserves the right to make independent investigations and tests, and failure of any portion of the WORK to meet any of the requirements of the Contract Documents, shall be reasonable cause for the CITY to require the removal or correction and reconstruction of any such work in accordance with the General Conditions.

1.4 INSPECTION AND TESTING LABORATORY SERVICE

- A. Inspection and testing laboratory service shall comply with the following:
 - 1. DBF will appoint, employ, and pay for services of an independent firm to perform inspection and testing or will perform inspection and testing itself.
 - 2. The DBF or independent firm will perform inspections, testing, and other services specified in individual specification sections and as required by the CITY.
 - 3. Reports will be submitted to the CITY in duplicate, indicating observations

SECTION 01400
QUALITY CONTROL

- and results of tests and indicating compliance or non-compliance with Contract Documents.
4. The DBF shall cooperate with the independent firm and furnish samples of materials, design mix, equipment, tools, storage and assistance as requested.
 5. The DBF shall notify CITY 48 hours prior to the expected time for operations requiring inspection and laboratory testing services.
 6. Retesting required because of non-conformance to specified requirements shall be performed by the same independent firm on instructions by the CITY.
 7. The DBF shall bear all costs from such retesting at no additional cost to the CITY.
 8. For samples and tests required for DBF's use, the DBF shall make arrangements with an independent firm for payment and scheduling of testing. The cost of sampling and testing for the DBF'S use shall be included in the Contract Price.
 9. DBF shall bear all costs if materials for testing are not ready for testing at time specified by DBF for the test.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

1.1 INSTALLATION

- A. Inspection: The DBF shall inspect materials or equipment upon the arrival on the job site and immediately prior to installation and reject damaged and defective items.
- B. Measurements: The DBF shall verify measurements and dimensions of the WORK, as an integral step of starting each installation.
- C. Manufacturer's Instructions: Where installations include manufactured products, the DBF shall comply with manufacturer's applicable instructions and recommendations for installation, to whatever extent these are more explicit or more stringent than applicable requirements indicated in Contract Documents.

END OF SECTION 01400

**SECTION 01505
MOBILIZATION****PART 1 GENERAL****1.1 GENERAL**

- A. Mobilization shall include the obtaining of all permits; moving onto the site of all equipment; temporary buildings, and other construction facilities; and implementing security requirements; all as required for the proper performance and completion of the WORK. Mobilization shall include the following principal items:
1. Moving on to the site of all DBF's equipment required for first month operations.
 2. Installing temporary construction power, wiring, and lighting facilities.
 3. Developing construction water supply.
 4. Providing all on-site communication facilities, including cellular telephones and internet service.
 5. Providing on-site sanitary facilities and potable water facilities
 6. Arranging for and erection of DBF's work, site access, and storage.
 7. Obtaining all required permits.
 8. Having all OSHA required notices and establishment of safety programs.
 9. Having the DBF's superintendent at the job site full time.
 10. Submitting initial submittals.
 11. Project identification and signs as described in Section 01580.

PART 2 PRODUCTS (NOT APPLICABLE)**PART 3 EXECUTION****3.1 PAYMENT FOR MOBILIZATION**

- A. The DBF's attention is directed to the condition that no payment for mobilization, or any part thereof will be approved for payment under the Contract until all mobilization items listed in Paragraph 1.01.A. above have been completed as specified. Furthermore, if DBF does not have required trailer, sanitary and potable facilities in order within the first month of construction, a prorated amount of mobilization will be removed from the mobilization line item, for the extent of time taken to furnish said facilities.

END OF SECTION 01505

SECTION 01510
TEMPORARY UTILITIES

PART 1 GENERAL

1.1 GENERAL REQUIREMENTS

- A. The types of utility services required for general temporary use at the project site include the following:
 - 1. Water service (potable for certain uses)
 - 2. Storm sewer
 - 3. Sanitary sewer
 - 4. Electrical power service
 - 5. Telephone service/Cellular service
 - 6. Internet service
 - 7. Gas service
- B. It shall be the DBF's responsibility to provide equipment that is adequate for the performance of the WORK under this Contract within the time specified. All equipment shall be kept in satisfactory operating condition, shall be capable of safety and efficiently performing the required WORK, and shall be subject to inspection and approval by the OWNER's representative at any time within the duration of the Contract. All work hereunder shall conform to the applicable requirements of the OSHA Standards for Construction.

1.2 JOB CONDITIONS

- A. Scheduled Uses: The DBF shall, in conjunction with establishment of job progress schedule, establish a schedule for implementation and termination of service for each temporary utility or facility; at earliest feasible time, and when acceptable to OWNER change over from use of temporary utility service to permanent service.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

3.1 INSTALLATION OF POWER DISTRIBUTION SYSTEM

- A. Power: The DBF shall provide all necessary power required for its operations under the Contract and shall provide and maintain all temporary power lines required to perform the WORK in a safe and satisfactory manner.

3.2 INSTALLATION OF LIGHTING

- A. Construction Lighting: All WORK conducted at night or under conditions of deficient daylight shall be suitably lighted to insure proper WORK and to afford adequate facilities for inspection and safe working conditions.

3.3 WATER SUPPLY

- A. General: The OWNER will furnish reasonable quantities of water required by the DBF for performance of the WORK under the Contract; however, the DBF shall provide all facilities necessary to convey the water from the OWNER-designated source to the points of use in accordance with the requirements of the Contract Document. The DBF shall pay all permit and water charges.
- B. Potable Water: All drinking water on the site during construction shall be furnished

SECTION 01510
TEMPORARY UTILITIES

by the DBF and shall be bottled water or water furnished in acceptable metal dispensers. Notices shall be posted conspicuously throughout the site warning the DBF's personnel that piped water may be contaminated.

- C. Water Connections: The DBF shall not make connection to, or draw water from, any fire hydrant or pipeline without first obtaining permission of the authority having jurisdiction over the use of said fire hydrant or pipeline and from the agency owning the affected water system. For each such connection made, the DBF shall first attach to the fire hydrant or pipeline a valve and a meter, if required by the said authority, of a size and type acceptable to said authority and agency. The DBF shall pay all permit and water charges.
- D. Removal of Water Connections: Before final acceptance of the WORK on the project, all temporary connections and piping installed by the DBF shall be entirely removed, and all affected improvements shall be restored to their original condition, or better, to the satisfaction of the CITY and to the agency owning the affected utility.

3.4 INSTALLATION OF SANITARY FACILITIES

- A. Toilet Facilities: Fixed or portable chemical toilets shall be provided wherever needed for the use of DBF's employees. Toilets at construction job sites shall conform to the requirements of Subpart D, Section 1926.51 of the OSHA Standards for Construction.
- B. Sanitary and Other Organic Wastes: The DBF shall establish a regular daily collection of all sanitary and organic wastes. All wastes and refuse from sanitary facilities provided by the DBF or organic material wasted from any other source related to the DBF's operations shall be disposed of away from the site in a manner satisfactory to the CITY and in accordance with all laws and regulations pertaining thereto.

3.5 INSTALLATION OF FIRE PROTECTION

- A. Fire Protection: The construction of the WORK shall be connected with the DBF's water supply system and shall be adequately protected against damage by fire. Hose connections and hose, water casks, chemical equipment, or other sufficient means shall be provided for fighting fires in the temporary structures and other portions of the WORK, and responsible persons shall be designated and instructed in the operation such fire apparatus so as to prevent or minimize the hazard of fire. The DBF's fire protection program shall conform to the requirements of Subpart F of the OSHA Standards for Construction.

3.6 INSTALLATION OF COMMUNICATIONS

- A. Telephone and Internet Services: The DBF shall provide and maintain at all time during the progress of the WORK not less than one telephone and one internet connection in good working order, at CITY's field office and its own field construction office which shall be located at or near the site of the WORK included in the Contract.
- B. Telephone Use: The DBF shall permit the CITY, the OWNER, or their authorized representatives or employees free and unlimited use of said telephone facilities for

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TEMPORARY UTILITIES

all calls that do not involve extended long-distance charges.

END OF SECTION 01510

SECTION 01520
CONSTRUCTION AIDS

PART 1 GENERAL

1.1 REQUIREMENTS INCLUDED

- A. Furnish, install and maintain required construction aids, remove on completion of work.

1.2 RELATED REQUIREMENTS

- A. All applicable sections of the Specifications.
- B. Conditions of the Contract.

PART 2 PRODUCTS

2.1 MATERIALS, GENERAL

- A. Materials may be new or used, suitable for the intended purpose, but must not violate requirements of applicable codes and standards.

2.2 CONSTRUCTION AIDS

- A. Provide construction aids and equipment required by personnel and to facilitate execution of the work; scaffolds, staging, ladders, stairs, ramps, runways, platforms, railings, hoists, cranes, chutes and other such facilities and equipment.
 - 1. Refer to respective sections for particular requirements for each trade.
 - 2. Provide protective coverings for finished surfaces.
- B. Maintain facilities and equipment in first-class condition.

PART 3 EXECUTION

3.1 PREPARATION

- A. Consult with OWNER's Representative, review site conditions and factors which affect construction procedures and construction aids including adjacent properties and public facilities which may be affected by execution of the work.

3.2 GENERAL

- A. Comply with applicable requirements specified in sections of Division 2 through 4 (as applicable).
- B. Relocate construction aids as required by progress of construction, by storage or work requirements, and to accommodate legitimate requirements of OWNER and other Contractors employed at the site.

3.3 REMOVAL

- A. Completely remove temporary materials, equipment and services:
 - 1. When construction needs can be met by use of permanent construction.
 - 2. At completion of project.
- B. Clean, repair damage caused by installation or by use of temporary facilities.
 - 1. Remove foundations and underground installations for construction aids.
 - 2. Grade areas of site affected by temporary installations to required elevations and slopes and clean the area.
- C. Restore permanent facilities used for temporary purposed to specified condition.

SECTION 01520
CONSTRUCTION AIDS

END OF SECTION 01520

SECTION 01530
PROTECTION OF EXISTING FACILITIES

PART 1 GENERAL

1.1 GENERAL

- A. The DBF shall protect all existing utilities and improvements not designated for removal and shall restore damaged or temporarily relocated utilities and improvements to a condition equal to or better than they were prior to such damage or temporary relocation, all in accordance with requirements of the Contract Documents.
- B. The DBF shall verify the exact locations and depths of all utilities shown and the DBF shall make exploratory excavations of all utilities that may interfere with the WORK. All such exploratory excavations shall be performed as soon as practicable after award of the contract and, in any event, a sufficient time in advance of construction to avoid possible delays to the DBF's work. When such exploratory excavations show the utility location as shown to be in error, the DBF shall so notify the CITY.
- C. The number of exploratory excavations required shall be that number which is sufficient to determine the alignment and grade of the utility.

1.2 RIGHTS-OF-WAY

- A. The DBF shall not do any work that would affect any oil, gas, sewer, or water pipeline; any telephone, cable or electric transmission line; any fence; or any other structure, nor shall the DBF enter upon the rights-of-way involved until notified that the OWNER has secured authority from the proper party. After authority has been obtained, the DBF shall give said party due notice of its intention to begin work, if required by said party, and shall remove, shore, support or otherwise protect such pipeline, transmission line, ditch, fence, or structure or replace the same. When two or more contracts are being executed at one time on the same or adjacent land in such manner that work on one contract may interfere with that on another, the OWNER shall determine the sequence and order of the WORK. When the territory of one contract is the necessary or convenient means of access for the execution of another contract, such privilege of access or any other reasonable privilege may be granted by the OWNER to the DBF so desiring, to the extent, amount, in the manner, and at the times permitted. No such decision as to the method or time of conducting the WORK or the use of territory shall be made the basis of any claim for delay or damage, except as provided for temporary suspension of the WORK in the General Conditions of the Contract.

1.3 PROTECTION OF STREET OR ROADWAY MARKERS

- A. The DBF shall not destroy, remove, or otherwise disturb any existing survey markers or other existing street or roadway markers without proper authorization. No pavement breaking, or excavation shall be started until all survey or other permanent marker points that will be disturbed by the construction operations have been properly referenced. All survey markers or points disturbed by the DBF shall be accurately restored after all street or roadway resurfacing has been completed.

1.4 RESTORATION OF PAVEMENT

- A. General: All paved areas including asphaltic concrete berms cut or damaged during construction shall be replaced with similar materials and of equal thickness

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PROTECTION OF EXISTING FACILITIES

to match the existing adjacent undisturbed areas, except where specific resurfacing requirements have been called for in the Contract Documents or in the requirements of the agency issuing the permit. All temporary and permanent pavement shall conform to the requirements of the affected pavement OWNER. All pavements which are subject to partial removal shall be neatly saw cut in straight lines.

- B. Temporary Resurfacing: Wherever required by the public authorities having jurisdiction, the DBF shall place temporary surfacing promptly after backfilling and shall maintain such surfacing for the period of time fixed by said authorities before proceeding with the final restoration of improvements.
- C. Permanent Resurfacing: In order to obtain a satisfactory junction with adjacent surfaces, the DBF shall saw cut back and trim the edge so as to provide a clean, sound, vertical joint before permanent replacement of an excavated or damaged portion of pavement. Damaged edges of pavement along excavations and elsewhere shall be trimmed back by saw cutting in straight lines. All pavement restoration and other facilities restoration shall be constructed to finish grades compatible with adjacent undisturbed pavement.
- D. Restoration of Sidewalks or Private Properties: Wherever sidewalks or private properties and driveways have been removed for purposes of construction, the DBF shall place suitable temporary sidewalks or driveways promptly after backfilling and shall maintain them in satisfactory condition for the period of time fixed by the authorities having jurisdiction over the affected portions before proceeding with the final restoration or, if no such period of times is so fixed, the DBF shall maintain said temporary sidewalks or driveways until the final restoration thereof has been made. The DBF shall restore all private properties within thirty (30) days after a complaint is received by the OWNER.

1.5 **EXISTING UTILITIES AND IMPROVEMENTS**

- A. General: The DBF shall protect all Underground Utilities and other improvements which may be impaired during construction operations. It shall be the DBF's responsibility to ascertain the actual location of all existing utilities and other improvements that will be encountered in its construction operations, and to see that such utilities or other improvements are adequately protected from damage due to such operations. The DBF shall take all possible precautions for the protection of unforeseen utility lines to provide for uninterrupted service and to provide such special protection as may be necessary.
- B. Utilities to be Moved: In the case it shall be necessary to move the property of any public utility or franchise holder, such utility company or franchise holder will, upon request of the DBF, be notified by the OWNER to move such property within a specified reasonable time. When utility lines that are to be removed are encountered within the area of operations, the DBF shall notify the CITY a sufficient time in advance for the necessary measures to be taken to prevent interruption of service.
- C. Where the proper completion of the WORK requires the temporary or permanent removal and/or relocation of an existing utility or other improvement which is indicated, the DBF shall remove and, without unnecessary delay, temporarily

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PROTECTION OF EXISTING FACILITIES

replace or relocate such utility or improvement in a manner satisfactory to the OWNER of the facility. In all cases of such temporary removal or relocation, restoration to former location shall be accomplished by the DBF in a manner that will restore or replace the utility or improvement as nearly as possible to its former locations and to as good or better condition than found prior to removal.

- D. OWNER's Right of Access: The right is reserved to the OWNER and to the OWNERS of public utilities and franchises to enter at any time upon any public street, alley, right-of-way, or easement for the purpose of making changes in their property made necessary by the WORK of this Contract.
- E. Underground Utilities Indicated: Existing utility lines that are indicated or the locations of which are made known to the DBF prior to excavation and that are to be retained, and all utility lines that are constructed during excavation operations shall be protected from damage during excavation and backfilling and, if damaged, shall be immediately repaired or replaced by the DBF at no cost to the CITY.
- F. Underground Utilities Not Indicated: In the event that the DBF damages any existing utility lines that are not indicated or the locations of which are not made known to the DBF prior to excavation, a written report thereof shall be made immediately to the CITY. If directed by the CITY, repairs shall be made by the DBF under the provisions contained in these Contract Documents.
- G. All costs of locating, repairing damage not due to failure of the DBF to exercise reasonable care, and removing or relocating such utility facilities not shown in the Contract Documents with reasonable accuracy, and for equipment on the project which was actually working on that portion of the work which was interrupted or idled by removal or relocation of such utility facilities, and which was necessarily idled during such work will be paid for in accordance with the provisions of the Contract Documents.
- H. Approval of Repairs: All repairs to a damaged utility or improvement are subject to inspection and approval by an authorized representative of the utility or improvement OWNER before being concealed by backfill or other work.
- I. Maintaining in Service: All oil and gasoline pipelines, power, and telephone or the communication cable ducts, gas and water mains, irrigation lines, sewer lines, storm drain lines, poles, and overhead power and communication wires and cables encountered along the line of the WORK shall remain continuously in service during all the operations under the Contract, unless other arrangements satisfactory to the CITY are made with the owner of said pipelines, duct, main, irrigation line, sewer, storm drain, pole, or wire or cable. The DBF shall be responsible for and shall repair all damage due to its operations, and the provisions of this Section shall not be abated even in the event such damage occurs after backfilling or is not discovered until after completion of the backfilling.
- J. Existing Water Services: DBF shall protect and provide temporary support for existing water services. Any water service damaged by the DBF, shall be replaced at the DBF's expense, with a new water service complete with new water main tap.

1.6 TREES WITHIN STREET RIGHTS-OF-WAY AND PROJECT LIMITS

- A. General: The DBF shall exercise all necessary precautions so as not to damage or destroy any trees or shrubs, including those lying within street rights-of-way and

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PROTECTION OF EXISTING FACILITIES

project limits, and shall not trim or remove any trees unless such trees have been approved for trimming or removal by the jurisdictional agency or OWNER. All existing trees and shrubs which are damaged during construction shall be trimmed or replaced by the DBF or a certified tree company under permit from the jurisdictional agency and/or the OWNER. Tree trimming and replacement shall be accomplished in accordance with the following paragraphs.

- B. Trimming: Symmetry of the tree shall be preserved; no stubs or splits or torn branches left; clean cuts shall be made close to the trunk or large branch. Spikes shall not be used for climbing live trees. All cuts over 1-1/2 inches in diameter shall be coated with an asphaltic emulsion material. There shall be no additional compensation for trees that require trimming due to damage by the DBF's operation.
- C. Replacement: The DBF shall immediately notify the jurisdictional agency and/or the OWNER if any tree is damaged by the DBF's operations. If, in the opinion of said agency or the OWNER, the damage is such that replacement is necessary, the DBF shall replace the tree at DBF's own expense. The tree shall be of a like size and variety as the tree damaged, or, if of a smaller size, the DBF shall pay to the OWNER of said tree a compensatory payment acceptable to the tree OWNER, subject to the approval of the jurisdictional agency or OWNER. The size of the trees shall be not less than 1-inch diameter, nor less than 6 feet in height.

1.7 NOTIFICATION BY THE DBF

- A. Prior to any excavation in the vicinity of any existing underground facilities, including all water, sewer, storm drain, gas, petroleum products, or other pipelines; all buried electric power, communications, or television cables; all traffic signal and street lighting facilities; and all roadway and state highway rights-of-way the DBF shall notify the respective authorities representing the OWNERS or agencies responsible for such facilities not less than 3 days nor more than 7 days prior to excavation so that a representative of said OWNERS or agencies can be present during such work if they so desire. The DBF shall also notify the Sunshine State One Call Center 1-800-432-4770 at least 2 days, but no more than 14 days, prior to such excavation.

PART 2 PRODUCTS

2.1 MATERIALS, GENERAL

- A. Materials may be new or used, suitable for the intended purpose, but must not violate requirements of applicable codes and standards.

2.2 FENCING

- A. Materials to DBF's option, minimum fence height = 6 feet.

2.3 BARRIERS

- A. Materials to DBF's option, as appropriate to serve required purpose.

PART 3 EXECUTION

3.1 GENERAL

SECTION 01530
PROTECTION OF EXISTING FACILITIES

- A. Install facilities with a neat and reasonable uniform appearance, structurally adequate for required purposes.
- B. Maintain barriers during entire construction period.
- C. Relocate barriers as required by progress of construction.

3.2 TREE AND PLANT PROTECTION

- A. Preserve and protect existing trees and plants adjacent to work areas.
- B. Consult with OWNER's Representative and remove agreed-on roots and branches which interfere with work.
 - 1. Employ qualified tree surgeon to remove branches, and to treat cuts.
- C. Protect root zones of trees and plants.
 - 1. Do not allow vehicular traffic and parking.
 - 2. Do not store materials or products.
 - 3. Prevent dumping of refuse or chemically injurious materials or liquids.
 - 4. Prevent puddling or continuous running water.
 - 5. Provide temporary tree protection in accordance with City/County requirements.
- D. Carefully supervise all work to prevent damage.
- E. Replace trees and plants which are damaged or destroyed due to work operations under this contract.

3.3 REMOVAL

- A. Completely remove barricades, including foundations, when construction has progressed to the point that they are no longer needed, and when approved by OWNER's Representative.
- B. Clean and repair damage caused by installation, fill and grade areas of the site to required elevations and slopes, and clean the area

END OF SECTION 01530

SECTION 01550
SITE ACCESS AND STORAGE

PART 1 GENERAL

1.1 HIGHWAY LIMITATIONS

- A. The DBF shall make its own investigation of the condition of available public and private roads and of clearances, restrictions, bridge load limits, and other limitations affecting transportation and ingress and egress to the site of the WORK. It shall be the DBF's responsibility to construct and maintain any haul roads required for its construction operations.

1.2 TEMPORARY CROSSINGS

- A. General: Continuous, unobstructed, safe, and adequate pedestrian and vehicular access shall be provided to fire hydrants, commercial and industrial establishments, churches, schools, parking lots, service stations, motels, fire and police stations, and hospitals. Safe and adequate public transportation stops and pedestrian crossings at intervals not exceeding 300 feet shall be provided. The DBF shall cooperate with parties involved in the delivery of mail and removal of trash and garbage so as to maintain existing schedules for such services. Vehicular access to residential driveways shall be maintained to the property line except, when necessary, construction precludes such access for reasonable periods of time.
- B. Temporary Bridges: Wherever necessary, the DBF shall provide suitable temporary bridges or steel plates over unfilled excavations, except in such cases as the DBF shall secure the written consent of the individuals or authorities concerned to omit such temporary bridges or steel plates, which written consent shall be delivered to the CITY prior to excavation. All such bridges or steel plates shall be maintained in service until access is provided across the backfilled excavation. Temporary bridges or steel plates for street and highway crossing shall conform to the requirements of the authority having jurisdiction in each case, and the DBF shall adopt designs furnished by said authority for such bridges or steel plates, or shall submit designs to said authority for approval, as may be required.
- C. Street Use: Nothing herein shall be construed to entitle the DBF to the exclusive use of any public street, alleyway, or parking area during the performance of the WORK hereunder, and it shall so conduct its operations as not to interfere unnecessarily with the authorized work of utility companies or other agencies in such streets, alleyways, or parking areas. No street shall be closed to the public without first obtaining permission of the CITY and proper governmental authority. Where excavation is being performed in primary streets or highways, one lane in each direction shall be kept open to traffic at all times unless otherwise indicated. Toe boards shall be provided to retain excavated material if required by the CITY or the agency having jurisdiction over the street or highway. Fire hydrants on or adjacent to the WORK shall be kept accessible to fire-fighting equipment at all times. Temporary provisions shall be made by the DBF to assure the use of sidewalks and the proper functioning of all gutters, storm drain inlets, and other drainage facilities.
- D. Traffic Control: For the protection of traffic in public or private streets and ways, the DBF shall provide, place, and maintain all necessary barricades, traffic cones,

SECTION 01550
SITE ACCESS AND STORAGE

warning signs, lights, and other safety devices in accordance with the requirements of The City of Fort Lauderdale and the "Manual of Uniform Traffic Control Devices, Part VI - Traffic Controls for Street and Highway Construction and Maintenance Operations," published by U.S. Department of Transportation, Federal Highway Administration (ANSI D6.1).

- E. The DBF shall take all necessary precautions for the protection of the WORK and the safety of the public. All barricades and obstructions shall be illuminated at night, and all lights shall be kept burning from sunset until sunrise. The DBF shall station such guards or flaggers and shall conform to such special safety regulations relating to traffic control as may be required by the public authorities within their respective jurisdictions. All signs, signals, and barricades shall conform to the requirements of the Florida Department of Transportation.
- F. The DBF shall submit 3 copies of a traffic control plan to the CITY for approval a minimum of 2 weeks prior to construction. The CITY reserves the right to observe these traffic control plans in use and to make any changes as field conditions warrant. Any changes shall supersede these plans and be done solely at the DBF's expense. Submittal to CITY of traffic control plan does not alleviate DBF from requirements of submitting plan to authorizing authority.
- G. The DBF shall remove traffic control devices when no longer needed, repair all damage caused by installation of the devices, and shall remove post settings and backfill the resulting holes to match grade.
- H. Temporary Driveway Closure: The DBF shall notify the OWNER or occupant (if not OWNER-occupied) of the closure of the driveways to be closed more than one eight-hour workday at least 3 working days prior to the closure. The DBF shall minimize the inconvenience and minimize the time period that the driveways will be closed. The DBF shall fully explain to the OWNER/occupant how long the work will take and when closure is to start. Total closure time shall not exceed 5 days.

1.3 DBF'S WORK AND STORAGE AREA

- A. The DBF shall designate and arrange for the use of a portion of the property, adjacent to the WORK for its exclusive use during the term of the Contract as a storage and shop area for its construction operations relative to this Contract.
- B. The DBF's use of the project site shall be limited to its construction operations. The DBF shall make its own arrangements for any necessary off-site storage or shop areas necessary for the proper execution of the WORK. A copy of an agreement for use of other property shall be furnished to the CITY. No material may be stored in the public right of way without prior authorization by the agency having jurisdiction. No material shall be stored within the public right of way in excess of 15 days. The DBF shall keep these areas in a clean and orderly condition so as not to cause a nuisance or sight obstruction to motorists or pedestrians.
- C. The DBF shall construct and use a separate storage area for hazardous materials used in constructing the WORK.
 - 1. For the purpose of this paragraph, hazardous materials to be stored in the separate area are all products labeled with any of the following terms: Warning, Caution, Poisonous, Toxic, Flammable, Corrosive, Reactive, or Explosive. In addition, whether or not so labeled, the following materials shall

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SITE ACCESS AND STORAGE

be stored in the separate area: diesel fuel, gasoline, new and used motor oil, hydraulic fluid, cement, paints and paint thinners, two-part epoxy coatings, sealants, asphaltic products, glues, solvents, wood preservatives, sand blast materials, and spill absorbent.

2. Hazardous materials shall be stored in groupings according to the Material Safety Data Sheets.
3. The DBF shall develop and submit to the CITY a plan for storing and disposing of the materials above.
4. The DBF shall obtain and submit to the CITY a single EPA number for wastes generated at the site.
5. The separate storage area shall meet all the requirements of all authorities having jurisdiction over the storage of hazardous materials.
6. All hazardous materials which are delivered in containers shall be stored in the original containers until use. Hazardous materials which are delivered in bulk shall be stored in containers which meet the requirements of authorities having jurisdiction.

1.4 PARKING

A. The DBF shall:

1. The DBF shall direct its employees to park in designated areas secured by the DBF.
2. Traffic and parking areas shall be maintained in a sound condition, free of excavated material, construction equipment, mud, and construction materials. The DBF shall repair breaks, potholes, low areas which collect standing water, and other deficiencies.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

END OF SECTION 01550

SECTION 01560
TEMPORARY CONTROLS

PART 1 GENERAL

1.1 REQUIREMENTS INCLUDED

- A. Provide and maintain methods, equipment, and temporary construction, as necessary, to provide controls over environmental conditions at the construction site and related area under DBF's control; remove physical evidence of temporary facilities at completion of work.

1.2 RELATED REQUIREMENTS

- A. All applicable sections of the Specifications.
- B. Conditions of the Contract.

1.3 NOISE CONTROL

- A. Provide all necessary requirements for noise control during the construction period.
 - 1. Noise procedures shall conform to all applicable OSHA requirements and local ordinances having jurisdiction on the work.
 - 2. Noise levels during nighttime hours shall not exceed 55 db measured at the property line of a residence.

1.4 DUST CONTROL

- A. Provide positive methods and apply dust control materials to minimize raising dust from construction operations and provide positive means to prevent air-borne dust from dispersing into the atmosphere.

1.5 WATER CONTROL

- A. Provide methods to control surface water to prevent damage to the project, the site, or adjoining properties.
 - 1. Control fill, grading and ditching to direct surface drainage away from excavations, pits, tunnels and other construction areas; and to direct drainage to proper runoff.
- B. Provide, operate and maintain hydraulic equipment of adequate capacity to control surface and water.
- C. Dispose of drainage water in a manner to prevent flooding, erosion, or other damage to any portion of the site or to adjoining areas.

1.6 PEST CONTROL

- A. Provide pest control as necessary to prevent infestation of construction or storage area.
 - 1. Employ methods and use materials which will not adversely affect conditions at the site or on adjoining properties.
 - 2. Should the use of pesticides be considered necessary, submit an informational copy of the proposed program to OWNER with a copy to CITY. Clearly indicate:
 - a. The area or areas to be treated.
 - b. The pesticide to be used, with a copy of the manufacturer's printed instructions.

SECTION 01560
TEMPORARY CONTROLS

- c. The pollution preventative measures to be employed.
- B. The use of any pesticide shall be in full accordance with the manufacturer's printed instructions and recommendations.

1.7 RODENT CONTROL

- A. Provide rodent control as necessary to prevent infestation of construction or storage area.
 - 1. Employ methods and use materials, which will not adversely affect conditions at the site or on adjoining properties.
 - 2. Should the use of rodenticide be considered necessary, submit an informational copy of the proposed program to OWNER with a copy to OWNER's Representative. Clearly indicate:
 - a. the area or areas to be treated.
 - b. the rodenticide to be used, with a copy of the manufacturer's printed instructions.
 - c. the pollution preventative measures to be employed.
- B. The use of any rodenticide shall be in full accordance with the manufacturer's printed instructions and recommendations.

1.8 DEBRIS CONTROL

- A. Maintain all areas under DBF's control free of extraneous debris.
- B. Initiate and maintain a specific program to prevent accumulation of debris at construction site, storage and parking area, or along access roads and haul routes.
 - 1. Provide containers for deposit of debris as specified in Section 01710 - Cleaning.
 - 2. Prohibit overloading of trucks to prevent spillage on access and haul routes
 - a. Provide periodic inspection of traffic areas to enforce requirements.
- C. Schedule periodic collections and disposal of debris as specified in Section 01710 - Cleaning.
 - 1. Provide additional collections and disposal of debris whenever the periodic schedule is inadequate to prevent accumulation.

1.9 POLLUTION CONTROL

- A. Provide methods, means and facilities required to prevent contamination of soil, water, or atmosphere by the discharge of noxious substances from construction operations.
- B. Provide equipment and personnel, perform emergency measures required to contain any spillage, and to remove contaminated soils or liquids.
 - 1. Excavate and dispose of any contaminated earth off-site and replace with suitable compacted fill and topsoil.
- C. Take special measures to prevent harmful substances from entering public waters.
 - 1. Prevent disposal of wastes, effluents, chemicals, or other such substances adjacent to streams or in sanitary or storm sewers.
- D. Provide systems for control of atmospheric pollutants.
 - 1. Prevent toxic concentrations of chemicals.

SECTION 01560
TEMPORARY CONTROLS

2. Prevent harmful dispersal of pollutants into the atmosphere.

1.10 EROSION CONTROL

- A. Plan and execute construction and earthwork, by methods to control surface drainage from cuts and fills, and from borrow and waste disposal areas to prevent erosion and sedimentation.
 1. Hold the areas of bare soil exposed at one time to a minimum.
 2. Provide temporary control measures such as berms, dikes and drains.
 3. Provide silt screens as required preventing surface water contamination.
- B. Construct fills and waste areas by selective placement to eliminate surface silts or clays, which will erode.
- C. Periodically inspect earthwork to detect any evidence of the start of erosion, apply corrective measures as required to control erosion.
- D. All erosion control procedures must comply with the National Pollutant Discharge Elimination System (NPDES). The DBF shall develop and implement a Stormwater Pollution Prevention Plan as outlined by NPDES.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

END OF SECTION 01560

SECTION 01570
TRAFFIC REGULATIONS

PART 1 GENERAL

1.1 REQUIREMENTS INCLUDED

- A. Provide, operate, and maintain equipment, services and personnel, with traffic control and protective devices, as required to expedite vehicular traffic flow on haul routes, at site entrances, on-site access roads, and parking areas.
- B. Remove temporary equipment and facilities when no longer required, restore grounds to original, or specified conditions.

1.2 RELATED REQUIREMENTS

- A. All applicable sections of the Specifications.
- B. Conditions of the Contract.

1.3 TRAFFIC SIGNALS AND SIGNS

- A. Provide and operate traffic control and directional signals or signs required to direct and maintain an orderly flow of traffic in all areas under DBF's control or affected by DBF's operations.

1.4 FLAGPERSON

- A. Provide qualified and suitably equipped flag-person when construction operations encroach on traffic lanes, as required for regulation of traffic.

1.5 FLARES AND LIGHTS

- A. Provide flares and lights during periods of low visibility:
 - 1. To clearly delineate traffic lanes and to guide traffic.
 - 2. For use of flag-person in directing traffic.
- B. Provide illumination of critical traffic and parking areas.
 - 1. Maintain free vehicular access to and through parking areas.
 - 2. Prohibit parking on or adjacent to access roads, or in non-designated areas.

1.6 HAUL ROUTES

- A. Consult with OWNER and governing authorities, establish public thoroughfares which will be used as haul routes and site access.
- B. Confine construction traffic to designated haul routes.
- C. Provide traffic control at critical areas of haul routes to expedite traffic flow, to minimize interference with normal public traffic.

1.7 EMERGENCY ACCESS

- A. In order to provide protection to the workers and residents, the DBF shall maintain emergency access to all adjacent properties at all times during construction. If a road is required to be closed to vehicular traffic and the distance of the closure exceeds 150 feet between stabilized surfaces or prevents access to properties for a distance that exceeds 150 feet, the DBF shall provide a 10-foot-wide stabilized access way on one side of the trench capable of supporting a Fire Truck. DBF shall also provide stabilized access ways across the trench or unstabilized area a

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TRAFFIC REGULATIONS

minimum of 6 feet in width at a spacing not to exceed 100 feet capable of supporting foot traffic. These access ways shall be protected and delineated with lighted barricades, or other such devices as approved by the regulatory agency. Both ends of the emergency access way shall be blocked in accordance with the MOT permit approved by the applicable permitting agency (i.e. City of Fort Lauderdale) with signage indicating that this access way is to be used by emergency vehicles only.

- B. No trenches or holes shall be left open after working hours. In the event a trench must be left open after hours, it shall be done so only with the express written permission from the Engineer and CITY, and it shall be the DBF's responsibility to provide proper protection of the open trench or hole as required by the regulatory agency. In addition, the DBF shall provide a security guard at the site whenever the DBF's personnel are not present, 24 hours per day/ 7 days per week. It shall be the Security Guard's responsibility to protect the open trench or hole from trespassers and to direct emergency personnel on site. The Security Guard shall not have any other responsibilities such as operation pumps or equipment but shall be dedicated to protecting the trench or open hole. The Security Guard shall be equipped with a wireless telephone capable of calling 911 to report an emergency and shall keep that telephone on their person at all times. In addition to this provision the DBF shall maintain trench safety and comply with current OSHA regulations and the Trench Safety Act. The DBF shall maintain and keep all safety barricades, signage, flashers, and detours, in operation condition. A copy of the approved MOT plans, and details, shall be on site at all times.
- C. Measurement and payment for security guard services shall be included in the utility pipe installation unit price. Measurement for temporary emergency access ways will be paid for under the specified line item at the unit price described in the Bid Schedule.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

END OF SECTION 01570

SECTION 01700
CONTRACT CLOSEOUT**PART 1 GENERAL****1.1 REQUIREMENTS INCLUDED**

- A. Material and equipment incorporated into the work:
 - 1. Conform to applicable specifications and standards.
 - 2. Comply with size, make, type and quality specified, or as specifically approved in writing by the OWNER's Representative.
 - 3. 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. Two or more items of the same kind shall be identical, by the same manufacturer.
 - d. Products shall be suitable for service conditions.
 - e. Equipment capacities, sizes and dimensions shown or specified shall be adhered to unless variations are specifically approved in writing.
 - 4. Do not use material or equipment for any purpose other than that for which it is designed or is specified.

1.2 RELATED REQUIREMENTS

- A. All applicable sections of the Specifications.
- B. Conditions of the Contract.

1.3 MANUFACTURER'S INSTRUCTIONS

- A. When Contract Documents require that installation of work shall comply with manufacturer's printed instructions, obtain and distribute copies of such instructions to parties involved in the installation prior to installation, including two copies to OWNER's Representative. Maintain one set of complete instructions at the job site during installation and until completion.
- B. Handle, install, connect, clean, condition and adjust products in strict accordance with such instructions and in conformity with specified requirements.
 - 1. Should job conditions or specified requirements conflict with manufacturer's instructions, consult with OWNER's Representative for further instructions.
 - 2. Do not proceed with work without clear instructions.
- C. Perform work in accord with manufacturer's instructions. Do not omit any preparatory step or installation procedure unless specifically modified or exempted by Contract Documents.

1.4 TRANSPORTATION AND HANDLING

- A. Arrange deliveries of products in accordance with construction schedules, coordinate to avoid conflict with work and conditions at the site. Products shall be delivered to the job site on an "as needed" basis.
 - 1. Pipe and materials shall not be strung out along installation routes for longer than two (2) weeks prior to installation.
- B. Provide equipment and personnel to handle products by methods which prevent

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MATERIAL AND EQUIPMENT

- soiling or damage to products or packaging.
- C. Coordinate deliveries to avoid conflict with Work and conditions at site such as:
 - 1. Work of other contractors, or OWNER
 - 2. Limitations of storage space.
 - 3. Availability of equipment and personnel for handling products.
 - 4. OWNER's use of premises.
- D. Deliver products in undamaged condition in original containers or packaging, with identifying labels intact and legible.
- E. Partial deliveries of component parts of equipment shall be clearly marked to identify the equipment, to permit easy accumulation of parts and to facilitate assembly.
- F. Immediately on delivery, inspect shipment to assure:
 - 1. Product complies with requirements of Contract Documents and approved submittals.
 - 2. Quantities are correct.
 - 3. Containers and packages are intact, labels are legible.
 - 4. Products are properly protected and undamaged.
- G. Provide equipment and personnel necessary to handle products, including those products provided by OWNER, by methods which prevent soiling or damage to products or packaging.
- H. Provide additional protection during handling as necessary to prevent scraping, marring or otherwise damaging products or surrounding surfaces.
- I. Handle products by methods to prevent bending or overstressing.
- J. Lift heavy components only at designated lifting points.

1.5 **STORAGE**

- A. Store products in accord with manufacturer's instructions, with seals and labels intact and legible.
 - 1. Store products subject to damage by the elements in weather-tight enclosures.
 - 2. Maintain temperature and humidity within the ranges required by manufacturer's instructions.
 - 3. Store unpacked products on shelves, in bins or in neat piles, accessible for inspection.
- B. Exterior Storage
 - 1. Provide substantial platforms, blocking or skids to support fabricating products above ground, prevent soiling or staining.
 - a. Cover products, subject to discoloration or deterioration from exposure to the elements, with impervious sheet coverings. Provide adequate ventilation to avoid condensation.
 - 2. Store loose granular materials on solid surface such as paved areas or provide plywood or sheet materials to prevent mixing with foreign matter.
 - 3. Provide surface drainage to prevent flow or ponding of rainwater.
 - 4. Prevent mixing of refuse or chemically injurious materials or liquids.

1.6 **MAINTENANCE OF STORAGE**

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CONTRACT CLOSEOUT

- A. Maintain periodic system of inspection of stored products on scheduled basis to assure that:
 - 1. State of storage facilities is adequate to provide required conditions.
 - 2. Required environmental conditions are maintained on continuing basis.
 - 3. Surfaces of products exposed to elements are not adversely affected.
 - a. Any weathering of products, coatings and finishes is not acceptable under requirements of Contract Documents.
- B. Mechanical and electrical equipment which requires servicing during long term storage shall have complete manufacturer's instructions for servicing accompanying each item, with notice of enclosed instructions shown on the exterior of packaging.

1.7 PROTECTION AFTER INSTALLATION

- A. Provide protection of installed products to prevent damage from subsequent operations. Remove when no longer needed, prior to completion of work.
- B. Control traffic to prevent damage to equipment and surfaces.
- C. Provide coverings to protect finished surfaces from damage.
 - 1. Cover projections, wall corners, and jambs, sills and soffits of openings, in areas used for traffic and for passage of products in subsequent work.
 - 2. Protect finished floors and stairs from dirt and damage.
 - a. In areas subject to foot traffic, secure heavy paper, sheet goods, or other materials in place.
 - b. For movement of heavy products, lay planking or similar materials in place.
 - c. Cover wall and floor surfaces in the vicinity of construction personnel activities and all finished surfaces used by construction personnel.
- D. Waterproofed surfaces
 - 1. Prohibit use of surfaces for traffic of any kind, and for storage of any products.
 - 2. When some activity must take place in order to carry out the Contract, obtain recommendations of installer for protection of surface.
 - a. Install recommended protection; remove on completion of that activity.
 - b. Restrict use of adjacent unprotected areas.
- E. Lawns and landscaping
 - 1. Prohibit traffic of any kind across planted lawn and landscaped areas.
- 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.

1.8 SUBSTITUTIONS AND PRODUCT OPTIONS

- A. Products List
 - 1. Within 15 days after Contract Date submit to CITY a complete list of major products proposed to be used, with the name of the manufacturer and the installing Subcontractor.
- B. DBF Options
 - 1. For products specified only by reference standard, select any product

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meeting that standard.

2. For products specified by naming several products or manufacturers, select any one of the products or manufacturers named or approved equal, which complies with the Specifications.
3. For products specified by naming one or more products or manufacturers and "or approved equal," DBF must submit a request as for substitutions for any product or manufacturer not specifically named.

C. Substitutions

1. For a period of 15 days after Contract Date, CITY will consider written request from DBF for substitution of products.
2. Identify product by specification Section and Article Numbers. Provide manufacturer's name and address, trade name of product, and model or catalog number. List fabricators and suppliers as appropriate.
3. List similar projects using product, dates of installation, and name of OWNER.
4. List availability of maintenance services and replacement materials.
5. Submit a separate request for each product, supported with complete data, with drawings and samples as appropriate, including:
 - a. Comparison of the qualities and performance of the proposed substitution with that specified.
 - b. Changes required in other elements of the work because of the substitution.
 - c. Effect on the construction schedule.
 - d. Cost data comparing the proposed substitution with the product specified.
 - e. Any required license fees or royalties.
 - f. Availability of maintenance services, and source of replacement materials.
6. The burden of proof as to the type, function, and quality of any such substitute material or equipment shall be upon the DBF.
7. The CITY will be the sole judge as to the type, function, and quality of any such substitute material or equipment and the CITY's decision shall be final.
8. The CITY may require the DBF to furnish at the DBF's expense additional data about the proposed substitute.
9. The OWNER may require the DBF to furnish at the DBF's expense a special performance guarantee or other surety with respect to any substitute.
10. Acceptance by the CITY of a substitute item proposed by the DBF shall not relieve the DBF of the responsibility for full compliance with the Contract Documents and for adequacy of the substitute item.
11. The DBF shall be responsible for resultant changes and all additional costs which the accepted substitution requires in the DBF work, the work of its Subcontractors and of other Contractors, and shall effect such changes without cost to the OWNER.

D. DBF's Representation

1. A request for a substitution constitutes a representation that DBF:
 - a. Has investigated the proposed product and determined that it is equal to or superior in all respects to that specified.

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- b. Will provide the same guarantees or bonds for the substitution as for the product specified.
 - c. Will coordinate the installation of an accepted substitution into the work and make such other changes as may be required to make the work complete in all respects.
 - d. Waives all claims for additional costs, under DBF'S responsibility, which may subsequently become apparent.
- E. Submittal Procedures
- 1. Submit three (3) copies of request for substitution.
 - 2. CITY will review requests for substitutions with reasonable promptness, and notify DBF, in writing, of the decision to accept or reject the requested substitution

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

END OF SECTION 01600

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CONTRACT CLOSEOUT**PART 1 GENERAL****1.1 REQUIREMENTS INCLUDED**

- A. Comply with requirements stated in Conditions of the Contract and in specifications for administrative procedures in closing out the work.

1.2 RELATED REQUIREMENTS

- A. All applicable sections of the Specifications.
- B. Conditions of the Contract.

1.3 SUBSTANTIAL COMPLETION

- A. When DBF considers the work is substantially complete, DBF shall submit to OWNER's Representative:
 - 1. A written notice that the work, or designated portion thereof is substantially complete.
 - 2. A list of items to be completed or corrected.
- B. Within a reasonable time after receipt of such notice, OWNER's Representative will make an inspection to determine the status of completion.
- C. Should OWNER's Representative determine that the work is not substantially complete:
 - 1. OWNER's Representative will promptly notify the DBF in writing, giving the reasons, therefore.
 - 2. DBF shall remedy the deficiencies in the work and send a second written notice of substantial completion to the OWNER's Representative.
 - 3. OWNER's Representative will re-inspect the work.
- D. When OWNER's Representative and ENGINEER concur that the work is substantially complete, OWNER's Representative will:
 - 1. Prepare a Certificate of Substantial Completion accompanied by DBF's list of items to be completed or corrected, as verified and amended by the OWNER's Representative.
 - 2. Submit the Certificate to the OWNER and the DBF for their written acceptance of the responsibilities assigned to them in the Certificate.

1.4 FINAL INSPECTION

- A. When DBF considers the work is complete, DBF shall submit written certification that:
 - 1. Contract Documents have been reviewed.
 - 2. Work has been inspected for compliance with Contract Documents.
 - 3. Work has been completed in accordance with Contract Documents.
 - 4. Equipment and systems have been tested in the presence of the OWNER's Representative and are operational.
 - 5. Work is completed and ready for final inspection.
- B. OWNER's Representative and ENGINEER will make an inspection to verify the status of completion with reasonable promptness after receipt of such certification.
- C. Should OWNER's Representative and ENGINEER consider that the work is incomplete and defective:

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1. OWNER's Representative will promptly notify the DBF, in writing, listing the incomplete or defective work.
 2. DBF shall take immediate steps to remedy the stated deficiencies and send a second written certification to OWNER's Representative that the work is complete.
 3. OWNER's Representative and ENGINEER will re-inspect the work.
- D. When the OWNER's Representative finds that the work is acceptable under the Contract Documents, OWNER's Representative shall request the DBF to make closeout submittals.

1.5 REINSPECTION FEES

- A. Should OWNER's Representative perform re-inspections due to failure of the work to comply with the claims of status of completion made by the DBF:
1. OWNER will compensate OWNER's Representative and ENGINEER for such additional services.
 2. OWNER will deduct the amount of such compensation from the final payment to the DBF.

1.6 DBF'S CLOSEOUT SUBMITTALS TO OWNER'S REPRESENTATIVE

- A. Evidence of compliance with requirements of governing authorities.
1. Certificate of Occupancy (as applicable).
 2. Certificates of Inspection (as applicable).
 - a. Mechanical.
 - b. Electrical.
 - c. City of Fort Lauderdale Public Works.
 - d. Other, as may be required.
- B. Project Record Documents.
- a. As-builts
 - b. Approved Shop Drawings
 - c. O&M Manuals
 - d. Warranties
 - e. Construction Photos
 - f. Permits
- C. Guarantees and Bonds.
- D. Evidence of Payment and Release of Liens: To requirements of General and Supplementary General Conditions.
- E. Certificate of Insurance for Products and Completed Operations.
- F. Permit closeouts and certifications.

1.7 FINAL ADJUSTMENT OF ACCOUNTS

- A. Submit a final statement of accounting to OWNER's Representative.
- B. Statement shall reflect all adjustments to the Contract Sum.
1. The original Contract Sum.
 2. Additions and deductions resulting from:
 - a. Previous change orders.

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- b. Allowances.
 - c. Unit Prices.
 - d. Deductions for uncorrected work.
 - e. Penalties and Bonuses.
 - f. Deductions for liquidated damages.
 - g. Deductions for re-inspection payments.
 - h. Other adjustments.
- 3. Total Contract Sum, as required.
- 4. Previous payments.
- 5. Sum remaining due.
- C. OWNER's Representative will prepare a final Change Order, reflecting approved adjustments to the Contract Sum, which were not previously made by Change Orders.

1.8 FINAL APPLICATION FOR PAYMENT

- A. DBF shall submit the final Application for Payment in accordance with procedures and requirements stated in the Conditions of the Contract.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

END OF SECTION 01700

**SECTION 01710
CLEANING****PART 1 GENERAL****1.1 REQUIREMENTS INCLUDED**

- A. Execute cleaning, during progress of the Work, and at completion of the Work, as required by the General Conditions.

1.2 RELATED REQUIREMENTS

- A. All applicable sections of the Specifications.
- B. Conditions of the Contract.

1.3 DISPOSAL REQUIREMENTS

- A. Conduct cleaning and disposal operations to comply with codes, ordinances, regulations, and anti-pollution laws.

PART 2 PRODUCTS**2.1 MATERIALS**

- A. Use only those cleaning materials which will not create hazards to health or property and which will not damage surfaces.
- B. Use only those cleaning materials and methods recommended by cleaning material manufacturer.

PART 3 EXECUTION**3.1 DURING CONSTRUCTION**

- A. Execute periodic cleaning to keep the work, the site and adjacent properties free from accumulation of waste material, rubbish and windblown debris, resulting from Construction Work.
- B. Provide on-site containers for the collection of waste materials, debris and rubbish.
- C. Remove waste materials, debris and rubbish from the site periodically and dispose of at legal disposal areas away from the site.
- D. The OWNER's Representative reserves the right to direct the DBF to remove waste materials, after which waste shall be removed within 24 hours.
- E. Mechanical Sweeping: DBF shall maintain on site a mechanical sweeping device for removing debris from existing, temporary and permanent pavement.

3.2 DUST CONTROL

- A. Perform operations so that dust and other contaminants resulting from Construction Work operations will not cause any damages or maintenance problems to adjacent properties.
- B. Schedule operations so that dust and other contaminants resulting from cleaning process will not fall on wet or newly coated surfaces.

3.3 FINAL CLEANING

- A. Employ skilled laborers for final cleaning.
- B. Remove grease, mastic, adhesives, dust, dirt, stains, fingerprints, labels, and other foreign materials from sight-exposed interior and exterior surfaces.
- C. Polish glossy surfaces to a clear shine.

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- D. Broom clean exterior paved surfaces; rake clean other surfaces of the grounds.
- E. Prior to final completion, or OWNER occupancy, DBF shall conduct an inspection of sight- exposed interior and exterior surfaces, and all work areas, to verify the entire work is clean.
- F. All storage and staging areas shall be cleaned and returned to prior conditions or better as per requirements of this section.

3.4 MEASURE AND PAYMENT

- A. There shall be no special measurement or payment for the work under this section; it shall be included in the price of all other work.

END OF SECTION 01710

SECTION 02010
SUB-SURFACE INVESTIGATION

PART 1 GENERAL

1.1 REQUIREMENTS INCLUDED

- A. All applicable provisions of the Bidding and Contract Requirements, and Division 1- General Requirements shall govern the WORK under this section.

1.2 WORK INCLUDED

- A. Provide all labor, materials, necessary equipment and services to complete the sub- surface investigation work, as indicated on the drawings, as specified herein or both, except as for items specifically indicated as "NIC ITEMS".
- B. The sub-surface investigation for conditions of the project site is the sole responsibility of the DBF. In preparing the Bid, the DBF shall make all sub-surface or surface investigations necessary to provide proper background and knowledge to determine the nature and extent of work required.
- C. OWNER or OWNER's Representative provides limited sub-surface information, and makes no warranties or guarantees concerning the nature of materials to be encountered on the site.

1.3 RELATED WORK

- A. Section 02110 - Clearing.
- B. Section 02200 – Earthwork.
- C. All applicable sections under Divisions 1, 2, 3, and 4.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

END OF SECTION 02010

SECTION 02050
DEMOLITION**PART 1 GENERAL****1.1 REQUIREMENTS INCLUDED**

- A. All applicable provisions of the Bidding and Contract Requirements, and Division 1- General Requirements shall govern the WORK under this section.

1.2 WORK INCLUDED

- A. Provide all labor, materials, necessary equipment and services to complete the site demolition work, as indicated on the drawings, as specified herein or both, except as for items specifically indicated as "NIC ITEMS".

1.3 RELATED WORK

- A. Section 02200 - Earthwork.
- B. All applicable Sections under Divisions 1, 2, and 3.

1.4 QUALITY ASSURANCE

- A. DBF Qualifications: Minimum of five years of experience in demolition of comparable nature.
- B. Requirements of All Applicable Regulatory Agencies:
 - 1. All applicable Building Codes and other Public Agencies having jurisdiction upon the work.

1.5 SUBMITTALS

- A. Permits and notices authorizing building demolition.
- B. Certificates of severance of utility services.
- C. Permit for transport and disposal of debris.
- D. Demolition procedures and operational sequence for review and acceptance by CITY.

1.6 JOB CONDITIONS

- A. Existing Conditions
 - 1. The demolition work shall be done as indicated on the construction plans.
 - 2. Remove all demolition debris from the site the same day the work is performed. Leave no deposits of demolished material on site overnight.
 - 3. Structural demolition, excavation, backfill and compaction as indicated in drawings.
- B. Protection:
 - 1. Erect barriers, fences, guardrails, enclosures, and shoring to protect personnel, structures, and utilities remaining intact.
 - 2. Protect designated trees and plants from damages.
 - 3. Use all means necessary to protect existing objects and vegetation designated to remain, and, in the event of damage, immediately make all repairs, replacements and dressings to damaged plants necessary, to the approval of the CITY at no additional cost to the OWNER.
- C. Maintaining Traffic:
 - 1. Ensure minimum interference with roads, streets, driveways, sidewalks, and

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- adjacent facilities.
- 2. Do not close or obstruct streets and sidewalks without written approval from the CITY.
- 3. If required by governing authorities, provide alternate routes around closed or obstructed traffic ways.
- D. Dust Control
 - 1. Use all means necessary for preventing dust from demolition operations from being a nuisance to adjacent property owners. Methods used for dust control are subject to approval by the CITY prior to use.
- E. Burning
 - 1. On-site burning will not be permitted.

1.7 GENERAL ITEMS

- A. Scope of work shall comprise the following: Provide all labor, materials, necessary equipment and services to complete the demolition and clearing work, as indicated on the contract plans, and as specified herein.
- B. The DBF shall provide references to the OWNER to demonstrate that they are well versed in demolition of a comparable nature. Current occupational licenses held by DBF shall be submitted to OWNER.
- C. The DBF shall be responsible for adherence to all applicable codes of all regulatory agencies having jurisdiction upon the works.

1.8 PRE-DEMOLITION MEETING

- A. A meeting shall be held with the OWNER or OWNER's representative at the jobsite to describe intended demolition and cleaning procedures and schedules. This shall include identifying access routes for bringing necessary equipment in, removing debris from site, and designation of any trees, drives or other items to remain.

1.9 EXISTING CONDITIONS

- A. The DBF shall become thoroughly familiar with the site, and of existing utilities and their connections, and note all conditions, which may influence the work.
- B. By submitting a bid, the DBF affirms that DBF has carefully examined the site and all conditions affecting work. No claim for additional costs will be allowed because of lack of full knowledge of existing conditions.
- C. The OWNER shall be responsible for removal of all hazardous materials such as asbestos, chemicals, etc., from the site prior to DBF mobilizing on site. The OWNER shall be notified immediately should the DBF discover any further hazardous materials during demolition.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

3.1 INSPECTION

- A. DBF shall verify that structures to be demolished are discontinued in use and ready for removal.

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- B. DBF shall not commence work until all conditions and requirements of all applicable public agencies are complied with.

3.2 PREPARATION

- A. Arrange for and verify termination of utility services to include removing meters and capping lines.
- B. Notification:
 - 1. Notify the OWNER at least three full working days prior to commencing the work of this Section.
- C. The drawings do not purport to show all objects existing on the site; at the pre-demolition meeting before commencement of the work, verify with the OWNER all objects to be removed and all objects to be preserved.

3.3 CLARIFICATION

- A. The drawings do not purport to show all objects existing on the site.
- B. Before commencing the work of this Section, verify with the OWNER all objects to be removed and all objects to be preserved.

3.4 SCHEDULING

- A. Schedule all work in a careful manner with all necessary consideration for the public and the OWNER.
- B. Avoid interference with the use of, and passage to and from, adjacent facilities.

3.5 DISCONNECTION OF UTILITIES

- A. Before starting site operations, disconnect or arrange for the disconnection of all affected utility service.
 - 1. Arrange and pay for disconnecting, removing, capping, and plugging utility services. Disconnect and stub off. Notify affected utility company in advance and obtain approval before starting this work.
 - 2. Do not interrupt existing utilities serving occupied or used facilities, except when authorized in writing by authorities having jurisdiction.
 - 3. Place markers to indicate location of disconnected services.
 - 4. On-site drainage structures and drain fields shall be removed in their entirety by methods approved by the OWNER's representative.

3.6 PROTECTION OF EXISTING STRUCTURES AND UTILITIES

- A. Utility Services: Maintain existing offsite utilities, keep in service, and protect against damage during demolition operations.
- B. Prevent movement or settlement of adjacent structures. Provide and place bracing or shoring and be responsible for safety and support of structures. Assume liability for such movement, settlement, damage, or injury.
- C. Cease operations and notify OWNER immediately if safety of adjacent structures appears to be endangered. Take precautions to properly support structures. Do not resume operations until safety is restored.
- D. Prevent movement, settlement, damage, or collapse of adjacent services,

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sidewalks, driveways and trees. Assume liability for such movement, settlement, or collapse. Promptly repair damage at no cost to the OWNER.

- E. Ensure safe passage of persons around areas of demolition.

3.7 MAINTAIN TRAFFIC

- A. Do not interfere with use of adjacent buildings and facilities. Maintain free and safe passage to and from. Conduct demolition operations and removal of debris to ensure minimum interference with roads, streets, walks, and other adjacent occupied or used facilities. Do not close or obstruct streets, walks, or other occupied or used facilities without permission from authorities having jurisdiction. Provide alternate routes around closed or obstructed travel ways if required by governing authorities.

3.8 POLLUTION CONTROLS

- A. Use water sprinkling, temporary enclosures, and other suitable methods to limit dust and dirt rising and scattering in air to lowest practical level. Comply with governing regulations pertaining to environmental protection.
- B. Clean adjacent structures and improvements of dust, dirt, and debris caused by demolition operations as directed by the OWNER or their representative or governing authorities. Return adjacent areas to condition existing prior to start of work.

3.9 DEMOLITION

- A. Pull out any existing utility lines designated for abandonment, irrigation, electrical lines, pull boxes and splice boxes, Maintenance Access Structure (MAS) and catch basins to be removed and all other objects designated to be removed or interfering with the work. Contact the utility company or agency involved for their requirements for performing this work. All removed equipment and materials shall be removed from the work area the same day as removed.
- B. Remove all debris from the site and leave the site in a neat, orderly condition to the full acceptance of the OWNER. No debris shall be left on the site overnight.
- C. Clear and Grub and dispose of all hedges, shrubs and other organic matter not otherwise addressed on tree removal and relocation plans and specifications.

3.10 DEMOLITION OF SITE STRUCTURES

- A. Demolish all site structure items designated to be removed or which are required to be removed to perform the work. This item does not include buildings.

3.11 REMOVAL OF DEBRIS AND DISPOSAL OF MATERIAL

- A. Material resulting from demolition and not scheduled for salvaging shall become the property of the DBF and shall be removed from site and legally disposed of off-site. Disposal shall be timely, performed as promptly as possible and not left until the final cleanup. Material shall not be left on the job site for more than 60 days.
- B. Remove from site contaminated, vermin infested, or dangerous materials encountered and disposed of by safe means so as not to endanger health of

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workers and public.

- C. Burning of removed materials from demolished structures will not be permitted on-site.

3.12 COMPLETION OF WORK

- A. Leave the site in a neat, orderly condition to the full acceptance of the OWNER.
- B. Dirt remaining after demolition shall be graded level and compacted, in preparation for filling operations to follow demolition. Trenches shall be filled in layers of 12-inch maximum thickness and compacted in accordance with the technical specifications applicable to backfilling of trenches.

END OF SECTION 02050

**SECTION 02110
CLEARING****PART 1 GENERAL****1.1 RELATED DOCUMENTS**

- A. All applicable provisions of the Bidding and Contract Requirements, and Division 1- General Requirements shall govern the WORK under this section.

1.2 WORK INCLUDED

- A. Provide all labor, materials, necessary equipment and services to complete the clearing work, as indicated on the drawings, as specified herein or both, except as for items specifically indicated as "NIC ITEMS".
- B. Under this section, the DBF shall do all clearing, grubbing, root-raking, and necessary clean-up operations in connection with the construction of the work and its related site work.
- C. The work shall consist of the removal and disposal of plants, shrubs, hedges, stumps, roots, limbs, brush, fences, asphalt, etc. from all project areas as designated on the drawings and specified herein, and as directed by the CITY on the site.
- D. The DBF shall remove all refuse, asphalt pavement, concrete pavement, glass, metal, stone, plaster, lumber, paper materials, and any and all trash found in clearing project area and in adjacent areas as directed by the CITY.
- E. The DBF shall furnish all services, labor, transportation, materials, and equipment necessary for the performance of these operations. All clearing and cleanup operations shall be accomplished to the complete satisfaction of the CITY.

1.3 RELATED WORK

- A. Section 02010 – Sub-surface Investigation.
- B. Section 02200 - Earthwork.

PART 2 PRODUCTS (NOT APPLICABLE)**PART 3 EXECUTION****3.1 TREE REMOVAL AND TREE PRESERVATION**

- A. No trees shall be removed if located outside of the right-of-way and dedicated easement.
- B. Within the rights-of-way and easements, no trees with a trunk diameter of 3 inch or greater at 4-1/2 inch above grade shall be removed without the approval of the CITY with the exception of Australian Pines, Meleleuca or Florida Holly. Trees shall be evaluated on an individual basis in accordance with following:
 - 1. Type and size of tree.
 - 2. Proximity to proposed and/or existing utility lines and/or exfiltration trench.
 - 3. Change in adjacent grades for swale excavation.
 - 4. Proximity to proposed sidewalk.
 - 5. Proximity to proposed edge of roadway.
 - 6. Living condition of the tree.
- C. If trees are determined to remain, Biobarrier shall be installed in accordance with the Biobarrier detail as shown on the Landscape Plans.

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CLEARING

END OF SECTION 02110

**SECTION 02140
DEWATERING****PART 1 GENERAL****1.1 RELATED DOCUMENTS**

- A. All applicable provisions of the Bidding and Contract Requirements, and Division 1- General Requirements shall govern the WORK under this section.

1.2 WORK INCLUDED

- A. Provide all labor, materials, necessary equipment and services to complete the dewatering work, as indicated in the Contract Documents or listed in permit requirements, as specified herein or both, except as for items specifically indicated as "NIC ITEMS".

1.3 RELATED WORK

- A. Section 02200 - Earthwork.
- B. Section 02221 - Excavation and Backfilling for Utilities.
- C. Section 02601 - Subterranean Structures.
- D. Section 02610 - Piping, General Section.

PART 2 PRODUCTS**2.1 EQUIPMENT**

- A. Dewatering, where required, may include the use of temporary reservoirs and diking, well points, sump pumps, temporary pipelines for water disposal, rock or gravel placement, and other means. Standby pumping equipment must be maintained on the job site and operate within any local noise ordinance limits. All safety requirements, fencing, etc. shall be installed and maintained by the DBF.

PART 3 EXECUTION**3.1 GENERAL REQUIREMENTS**

- A. The DBF shall provide all equipment necessary for dewatering. It shall have on hand, at all times, sufficient pumping equipment and machinery in good working condition and shall have available, at all times, competent laborers for the operation of the pumping equipment. Adequate standby equipment shall be kept available at all times to insure efficient dewatering and maintenance of dewatering operation during power failure.
- B. Dewatering for structures and pipelines shall commence when groundwater is first encountered, and shall be continuous until such times as water can be allowed to rise in accordance with the provisions of this Section or other requirements.
- C. At all times, site grading shall promote drainage. Surface runoff shall be diverted from excavations. Water entering the excavation from surface runoff shall be collected in shallow ditches around the perimeter of the excavation, drained to sumps, and be pumped or drained by gravity from the excavation to maintain a bottom free from standing water.
- D. Dewatering shall at all times be conducted in such a manner as to preserve the undisturbed bearing capacity of the subgrade soils at proposed bottom of excavation.
- E. If foundation soils are disturbed or loosened by the upward seepage of water or an

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DEWATERING

uncontrolled flow of water, the affected areas shall be excavated and replaced with pea rock at no additional cost to the CITY.

- F. The DBF shall maintain the water level below the bottom of excavation in all work areas where groundwater occurs during excavation construction, backfilling, and up to acceptance.
- G. The DBF shall prevent flotation by maintaining positive and continuous removal of water. The DBF shall be fully responsible and liable for all damages which may result from failure to adequately keep excavations dewatered.
- H. If well points or wells are used, they shall be adequately spaced to provide the necessary dewatering and shall be sand-packed and/or other means used to prevent pumping of fine sands or silts from the sub-surface. A continual check by the DBF shall be maintained to ensure that the sub-surface soil is not being removed by the dewatering operation.
- I. The DBF shall dispose of water from the WORK in a suitable manner without damage to adjacent property. DBF shall be responsible for obtaining any permits that may be necessary to dispose of water. No water shall be drained into work built or under construction without prior consent of the CITY. Water shall be filtered using a silt box or another approved method to remove sand and fine-sized soil particles before disposal into any drainage system. The dewatering disposal points shall be approved by the CITY prior to being used. Storm drains facilities used by the DBF for dewatering shall be cleaned by a jet vac, or other method approved by the CITY after dewatering is complete.
- J. The release of groundwater to its static level shall be performed in such a manner as to maintain the undisturbed state of the natural foundation soils, prevent disturbance of compacted backfill and prevent flotation or movement of structures, pipelines, and sewers.
- K. Dewatering of trenches and other excavations shall be considered, as incidental to the construction of the WORK and all costs thereof shall be included in the various contract prices in the Bid Forms, no separate bid item has been established for dewatering.
- L. The DBF shall submit a dewatering plan to the CITY for review. The DBF is advised that the Broward County Environmental Protection and Growth Management Department (BCEPD) and/or SFWMD permits are to be obtained and will require that the DBF follow certain dewatering constraints. The dewatering plan shall be prepared by a State of Florida licensed Professional Engineer or Registered Professional Geologist and shall meet dewatering permit requirements. SPECIAL INSTRUCTIONS are noted on approved dewatering permit.
- M. The DBF is advised that the BCEPD may have identified contaminated sites within 1/4- mile radius of the project site. The DBF will be required to provide testing and monitoring of the dewatering operations, and to institute dewatering methods and controls, as required by BCEPD, as noted in permit documents.

3.2 QUALITY CONTROL

- A. It shall be the sole responsibility of the DBF to control the rate and effect of the dewatering in such a manner as to avoid all objectionable settlement and subsidence.

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- B. All dewatering operations shall be adequate to assure the integrity of the finished project and shall be the responsibility of the DBF.
- C. Where critical structures or facilities exist immediately adjacent to areas of proposed dewatering, reference points shall be established and observed at frequent intervals to detect any settlement, which may develop. The responsibility for conducting the dewatering operation in a manner, which will protect adjacent structures and facilities, rests solely with the DBF. The cost of repairing any damage to adjacent structures and restoration of facilities shall be the responsibility of the DBF.

3.3 DBF SUBMITTALS

- A. Prior to commencement of excavation, the DBF shall submit a detailed plan and operation schedule for dewatering of excavations. The DBF may be required to demonstrate the system proposed and to verify that adequate equipment, personnel, and materials are provided to dewater the excavations at all locations and times. The DBF's dewatering plan is subject to review by the CITY and regulatory agencies.

3.4 SPECIAL INSTRUCTIONS

- A. See permit documents.

END OF SECTION 02140

SECTION 02200
EARTHWORK**PART 1 GENERAL****1.1 RELATED DOCUMENTS**

- A. All applicable provisions of the Bidding and Contract Requirements, and Division 1- General Requirements shall govern the WORK under this section.

1.2 WORK INCLUDED

- A. Provide all labor, materials, necessary equipment and services to complete the Earthwork, as indicated on the drawings, as specified herein or both, except as for items specifically indicated as "NIC ITEMS".
- B. Including but not necessarily limited to the following:
 - 1. Excavation, including demucking.
 - 2. Backfilling,
 - 3. Filling.
 - 4. Grading, general site and building pads.
 - 5. Compaction.
- C. There shall be no classification of excavation for measurement of payment regardless of materials encountered.
- D. The work of this Section includes all earthwork required for construction of the WORK. Such earthwork shall include, but not be limited to, the loosening, removing, loading, transporting, depositing, and compacting in its final location of all materials wet and dry, as required for the purposes of completing the work specified in the Contract Documents, which shall include, but not be limited to, the furnishing, placing, and removing of sheeting and bracing necessary to safely support the sides of all excavation; all pumping, ditching, draining, and other required measures for the removal or exclusion of water from the excavation; the supporting of structures above and below the ground; all backfilling around structures and all backfilling of trenches and pits; the disposal of excess excavated materials; borrow of materials to makeup deficiencies for fills; and all other incidental earthwork, all in accordance with the requirement of the Contract Documents.

1.3 RELATED WORK

- A. All applicable sections of Division 1, 2, 3, and 4.

1.4 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS.

- A. Codes: All codes, as referenced herein, are specified in Section 01090, "Reference Standards".
- B. Commercial Standards:

SECTION 02200
EARTHWORK

ASTM D 1556	Method for Particle-Size Analysis of Soils
ASTM D 698	Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 5.5-lb (2.49-kg) Rammer and 12-in (304.8-mm) Drop.
ASTM D 1556	Test Method for Density of Soil in Place by the Sand Cone Method.
ASTM D 1557	Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10-lb (4.54-kg) Rammer and 18-in (457-mm) Drop
ASTM D 1633	Test Method for Compressive Strength of Molded Soil-Cement Cylinders
ASTM D 2419	Test Method for Sand Equivalent Value of Soils and Fine Aggregate.
ASTM D 2487	Classification of Soils for Engineering Purposes.
ASTM D 2901	Test Method for Cement Content of Freshly-Mixed Soil-Cement.
ASTM D 2922	Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
ASTM D 4253	Test Methods for Maximum Index Density of Soils Using a Vibratory Table.
ASTM D 4254	Test Methods for Minimum Index Density of Soils and Calculation of Relative Density.

1.5 SUBSOIL INFORMATION

- A. There are no representations of any type made as to sub-surface conditions.

1.6 SITE INSPECTION

- A. DBF shall visit the site and acquaint with all existing conditions. DBF shall investigate the site and sub-surface conditions with no cost to the OWNER if DBF chooses to. Such sub-surface investigations shall be performed only under time schedules and arrangements approved in advance by the OWNER's Representative.

1.7 TOPOGRAPHIC INFORMATION

- A. The existing grades shown on the drawings are approximate only and no representation is made as to their accuracy or consistency. The DBF shall verify all existing grades to the extent necessary to insure completion of the job to the proposed grades indicated on the drawings.

1.8 DISPOSAL OF SURPLUS OR UNSUITABLE MATERIAL

- A. Unsuitable material encountered during the course of construction shall be removed from the construction site at the expense of the DBF. Unsuitable material shall not be stockpiled on-site. All suitable material shall be stockpiled on-site at areas designated by the CITY.

1.9 BENCHMARKS AND MONUMENTS

- A. DBF shall employ a registered Professional Surveyor and Mapper per Florida Statute 472.001-472.037 to lay out lines and grades as indicated. The surveyor

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shall establish benchmarks. Benchmarks shall be permanent and easily accessible and maintained and replaced if disturbed or destroyed. All benchmarks shall be NAVD88.

1.10 UTILITIES

- A. Before starting site operations, disconnect or arrange for the disconnection of all utility services designated to be removed.
- B. Locate all existing active utility lines traversing the site and determine the requirements for their protection. Preserve in operating condition all active utilities adjacent to or traversing the site which are designated to remain.
- C. Observe rules and regulations governing respective utilities when working under requirements of this section. Adequately protect utilities from damage, remove or replace as indicated, specified or required. Remove, plug or cap inactive or abandoned utilities encountered in excavation. Record the location of all utilities.

1.11 QUALITY ASSURANCE

- A. The DBF shall re-adjust all work performed that does not meet technical or design requirements but make no deviations from the Contract Documents without specific and written acceptance of the CITY.
- B. Where soil material is required to be compacted to a percentage of maximum density, the maximum density at optimum moisture content will be determined in accordance with ASTM D 1557. Where cohesionless, free draining soil material is required to be compacted to a percentage of relative density, the calculation of relative density will be determined in accordance with ASTM D 4253 and D 4254. Field density in-place tests will be performed in accordance with ASTM D 1556, ASTM D 2922, or by such other means acceptable to the CITY.
- C. In case the tests of the fill or backfill show non-compliance with the required density, the DBF shall accomplish such remedy as may be required to insure compliance. Subsequent testing to show compliance shall be by a testing laboratory selected by the OWNER and shall be at the DBF's expense.
- D. Particle size analysis of soils and aggregates will be performed using ASTM D422.
- E. Determination of sand equivalent value will be performed using ASTM D2419.
- F. Unified Soil Classification System: References in these specifications to soil classification types and standards are set forth in ASTM D 2487. The DBF shall be bound by all applicable provisions of said ASTM D 2487 in the interpretation of soil classifications.
- G. Requirements of all applicable building codes and other public agencies having jurisdiction upon the work.

PART 2 PRODUCTS**2.1 SUITABLE FILL AND BACKFILL MATERIAL REQUIREMENTS**

- A. General: Fill, backfill, and embankment materials shall be suitable selected or processed clean, fine earth, rock, or sand, free from grass, roots, brush, or other vegetation.
- B. Fill and backfill materials to be placed within 6 inches of any structure or pipe shall

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be free of rocks or unbroken masses of earth materials having a maximum dimension larger than 3 inches.

- C. Suitable Materials: Soils not classified as unsuitable as defined in the Paragraph entitled, "Unsuitable Material" herein, are defined as suitable materials and may be used in fills, backfilling, and embankment construction subject to the specified limitations. In addition, when acceptable to the CITY, some of the material listed as unsuitable may be used when thoroughly mixed with suitable material to form a stable composite.
- D. Suitable materials may be obtained from on-site excavations, may be processed on-site materials, or may be imported. If imported materials are required to meet the requirements of this Section or to meet the quantity requirements of the project the DBF shall provide the imported materials at no additional expense to the OWNER, unless a unit price item is included for imported materials in the bidding schedule.
- E. The following types of suitable materials are designated and defined as follows:
1. Type A (one inch minus granular backfill): Crushed rock, gravel, or sand with 100 percent passing a 1-inch sieve and a sand equivalent value not less than 50.
 2. Type B (one half inch minus granular backfill): Crushed rock, gravel, or sand with 100 percent passing a 1/2-inch sieve and a sand equivalent value not less than 50.
 3. Type C (sand backfill): Sand with 100 percent passing a 3/8-inch sieve, at least 90 percent passing a number 4 sieve, and a sand equivalent value not less than 30.
 4. Type D (coarse rock backfill): Crushed rock or gravel with 100 percent passing a 1-inch sieve and not more than 10 percent passing a Number 4 sieve.
 5. Type E (pea gravel backfill): Crushed rock or gravel with 100 percent passing a 1/2-inch sieve and not more than 10 percent passing a Number 4 sieve.
 6. Type F (coarse drainrock): Crushed rock or gravel meeting the following gradation requirements:

<u>Sieve Size</u>	<u>Percentage Passing</u>
2-inch	100
1-1/2-inch	90-100
1-inch	20-55
3/4-inch	0-15
No. 200	0-3
 7. Type G (aggregate base): Crushed rock aggregate base material of such nature that it can be compacted readily by watering and rolling to form a firm, stable base for pavements. At the option of the DBF, the grading for either the 1-1/2-inch maximum size or 3/4-inch maximum size shall be used. The sand equivalent value shall be not less than 22, and the material shall meet the following gradation requirements.

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<u>Sieve Size</u>	<u>Percent Passing</u>	
	<u>1-1/2-inch Max.</u>	<u>3/4-inch Max.</u>
2-inch	100	-
1-1/2-inch	90-100	-
1-inch	-	100
3/4-inch	50-85	90-100
No. 4	25-45	35-55
No. 30	10-25	10-30
No. 200	2-9	2-9

8. Type H (graded drainrock): Drainrock shall be crushed rock or gravel, durable and free from slaking or decomposition under the action of alternate wetting or drying. The material shall be uniformly graded and shall meet the following gradation requirements.

<u>Sieve Size</u>	<u>Percentage Passing</u>
2-inch	100
3/4-inch	90-100
3/8-inch	10-100
No. 4	25-40
No. 8	18-33
No. 30	5-15
No. 50	0-7
No. 200	0-3

The drainrock shall have a sand equivalent value not less than 75. The finish-graded surface of the drainrock immediately beneath hydraulic structures shall be stabilized to provide a firm, smooth surface upon which to construct reinforced concrete floor slabs. The DBF shall use, at its option, one of the asphalt types listed below:

	<u>Type 1</u>	<u>Type 2</u>	<u>Type 3</u>
Designation	SC-70	SC-250RS-1	
Spray Temperature (°F)	135-175	165-200	70-120
Coverage (gal/sq yd)	0.50	0.50	0.50

9. Type I: Any other suitable material as defined herein.
10. Type J (cement-treated backfill): Material which consists of Type H material, or any mixture of Types B, C, G and H materials which has been cement-treated so that the cement content of the material is not less than 5 percent by weight when tested in accordance with ASTM D 2901. The ultimate compressive strength at 28 days shall be not less than 400 psi when tested in accordance with ASTM D 1633.
11. Type K (topsoil): Stockpiled topsoil materials, which have been obtained at the site by removing soil to a depth not exceeding 2 feet. Removal of the topsoil shall be done after the area has been stripped of vegetation and debris as specified.

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12. Type L (Class I crushed stone): Manufactured angular, granular crushed stone, rock, or slag, with 100 percent passing a 1-inch sieve and less than 5 percent passing a Number 4 sieve.
13. Type M (aggregate subbase): Crushed rock aggregate subbase material that can be compacted readily by watering and rolling to form a firm stable base. The sand equivalent value shall be not less than 18 and shall meet the following gradation requirements.

<u>Sieve Size</u>	<u>Percentage Passing</u>
3-inch	100
2-1/2-inch	87-100
No. 4	35-95
No. 200	0-29

14. Type N (trench plug): Low permeable fill material, a non-dispersible clay material having a minimum plasticity index of 10.

2.2 UNSUITABLE MATERIAL

- A. Unsuitable soils for fill material shall include soils which, when classified under ASTM D 2487, fall in the classifications of PT, OH, CH, MH or OL.
- B. In addition, any soil, which cannot be compacted sufficiently to achieve the percentage of maximum density specified for the intended use, shall be classed as unsuitable material.

2.3 USE OF FILL, BACKFILL, AND EMBANKMENT MATERIAL TYPES

- A. The DBF shall use the types of materials as designated herein for all required fill, backfill, and embankment construction hereunder.
- B. Where these Specifications conflict with the requirements of any local agency having jurisdiction, or with the requirements of a material manufacture, the CITY shall be immediately notified. In case of conflict therewith, the DBF shall use the most stringent requirement, as determined by the CITY.
- C. Fill and backfill types shall be used in accordance with the following provisions:
 1. Embankment fills shall be constructed of Type I material, as defined herein, or any mixture of Type I and Type A through Type H materials.
 2. Pipe zone backfill, as defined under "Pipe and Utility Trench Backfill" herein, shall consist of the following materials for each pipe material listed below. Where pipelines are installed on grades exceeding 4 percent, and where backfill materials are graded such that there is less than 10 percent passing a Number 4 sieve, trench plugs of Type J or N material shall be provided at maximum intervals of 200 feet or as shown on the Drawings.
 - a. Mortar coated pipe, concrete pipe, and uncoated ductile iron pipe shall be provided Type A, B, C, D, E, or L pipe zone backfill material.
 - b. Coal tar enamel coated pipe, polyethylene encased pipe, tape wrapped pipe, and other non-mortar coated pipe shall be backfilled with Type C pipe zone backfill material.
 - c. Plastic pipe and vitrified clay pipe shall be backfilled with Type L pipe

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zone backfill material.

3. Trench zone backfill for pipelines as defined under "Pipe and Utility Trench Backfill" shall be Type I backfill material or any of Types A through H backfill materials or any mixture thereof, except that Type K material may be used for trench zone backfill in agricultural areas unless otherwise shown or specified.
4. Final backfill material for pipelines under paved area, as defined under "Pipe and Utility Trench Backfill" shall be Type G backfill material. Final backfill under areas not paved shall be the same material as that used for trench backfill, except that Type K material shall be used for final backfill in agricultural areas unless otherwise shown or specified.
5. Trench backfill, and final backfill for pipelines under structures shall be the same material as used in the pipe zone, except where concrete encasement is required by the Contract Documents.
6. Aggregate base materials under pavements shall be Type G material constructed to the thickness shown or specified. Where specified or shown, aggregate subbase shall be Type M Material.
7. Backfill around structures shall be Type I material, or Types A through Type H materials, or any mixture thereof.
8. Backfill materials beneath structures shall be as follows:
 - a. Drainrock materials under hydraulic structures or other water retaining structure with underdrain systems shall be Type H material.
 - b. Under concrete hydraulic structures or other water retaining structures without underdrain systems, Types G or H materials shall be used.
 - c. Under structures where groundwater must be removed to allow placement of concrete, Type F material shall be used.
 - d. Under all other structures, Type D, E, G, or H material shall be used.
9. Backfill used to replace pipeline trench over-excavation shall be a layer of Type F material with a 6-inch top filter layer of Type E material or filter fabric to prevent migration of fines for wet trench conditions or the same material as used for the pipe zone backfill if the trench conditions are not wet. Filter fabric shall be Mirafi 140 N, Mirafi 700X, or approved equal.
10. The top 6 inches of fill on reservoir roofs, embankment fills around hydraulic structures, and all other embankment fills shall consist of Type K material, topsoil.

2.4 **EMBANKMENT**

- A. The maximum sizes of rock, which will be permitted in the completed fill areas, are as follows:

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<u>Depth Below Finish Grade</u>	<u>Maximum Allowable Diameter</u>
Top 4 inches	1 inch
4 inches to 12 inches	3-1/2-inches
12 inches to 2 feet	6 inches
2 feet to 4 feet	12 inches
4 feet to 8 feet	24 inches
Below 8 feet	36 inches

- B. Embankments shall be constructed of material containing no muck, stumps, roots, brush, vegetable matter, rubbish or other material that will not compact into a suitable and enduring roadbed, and material designated as undesirable shall be removed from the site. Where embankments are constructed adjacent to bridge end bents or abutments, rock larger than 3-1/2 inches in diameter shall not be placed within three feet of the location of any abutment.
- C. Fill material containing debris, sod, and biodegradable materials shall not be used as fill in construction areas.
- D. Fill material required for the building pads and for pavement subgrade shall be granular fill, free of organic material.
- E. Fill material required for pervious and sodded areas shall have a maximum organic component of 10%. DBF shall provide, at DBF'S cost, organic content test results for approval by the CITY.

PART 3 EXECUTION

3.1 JOB CONDITIONS

- A. Protection: Use all means necessary to protect existing objects and vegetation. In the event of damage, immediately make all repairs, and replacements necessary to the acceptance of the OWNER's Representative at no cost to the OWNER.

3.2 BACKFILL, FILLING, & GRADING

- A. Grades:
 - 1. Cut, backfill, fill and grade to proper grade levels indicated. The existing grades shown on the drawings are to be matched for finished grade over the site.
- B. Filling:
 - 1. Fill material shall be placed in horizontal layers and spread to obtain a uniform thickness.
 - 2. After compaction, layers of fill are not to exceed twelve (12) inches for cohesive soils or eight (8) inches for non-cohesive soils.

3.3 STRUCTURE, ROADWAY, AND EMBANKMENT EXCAVATION

- A. General: Except when specifically provided to the contrary, excavation shall include the removal of all materials of whatever nature encountered, including all obstructions of any nature that would interfere with the proper execution and completion of the work. The removal of said materials shall conform to the lines and grades shown or ordered. Unless otherwise provided, the entire construction site

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shall be stripped of all vegetation and debris, and such material shall be removed from the site prior to performing any excavation or placing any fill. The DBF shall furnish, place, and maintain all supports and shoring that may be required for the sides of the excavations, and all pumping, ditching, or other measure for the removal or exclusion of water, including taking care of storm water, groundwater, and wastewater reaching the site of the work from any source so as to prevent damage to the work or adjoining property. Excavations shall be sloped or otherwise supported in a safe manner in accordance with applicable State safety requirements and the requirements of OSHA Safety and Health Standards for Construction (29CFR1926).

- B. **Excavation Beneath Structures and Embankments:** Except where otherwise specified for a particular structure or ordered by the CITY, excavation shall be carried to the grade of the bottom of the footing or slab. Where shown or ordered, areas beneath structures or fills shall be over-excavated. The subgrade areas beneath embankments shall be excavated to remove not less than the top [6 inches] of native material and where such subgrade is sloped, the native material shall be benched. When such over excavation is shown, the DBF shall perform both over-excavation and subsequent backfill to the required grade. When such over-excavation is not shown but is ordered by the CITY, such over-excavation and any resulting backfill will be paid for under a separate unit price bid item if such bid item has been established; otherwise payment will be made in accordance with a negotiated price. After the required excavation or over-excavation has been completed, the exposed surface shall be scarified to a depth of 6 inches, brought to optimum moisture content, and rolled with heavy compaction equipment to obtain density as specified in Paragraph 3.14.I.
- C. **Excavation Beneath Paved Areas:** Excavation under areas to be paved shall extend to the bottom of the aggregate base or subbase, if such base is called for; otherwise it shall extend to the paving thickness. After the required excavation has been completed, the top 12 inches of exposed surface shall be scarified, brought to optimum moisture content, and rolled with heavy compaction equipment to obtain density as specified in Paragraph 3.14.I. The finished subgrade shall be even, self-draining, and in conformance with the slope of the finished pavement. Areas that could accumulate standing water shall be regraded to provide a self-draining subgrade.
- D. **Notification:** The DBF shall notify the CITY at least 3 days in advance of completion of any structure excavation and shall allow the CITY a review period of at least one day before the exposed foundation is scarified and compacted or is covered with backfill or with any construction materials.

3.4 PIPELINE AND UTILITY TRENCH EXCAVATION

- A. **General:** Unless otherwise shown or ordered, excavation for pipelines and utilities shall be open-cut trenches. Trench widths shall be kept as narrow as is practical for the method of pipe zone densification selected by the DBF but shall have a minimum width at the bottom of the trench equal to the outside diameter of the pipe plus 24 inches for mechanical compaction methods and 18 inches for water consolidation methods.

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- B. Trench Bottom: Except when pipe bedding is required, the bottom of the trench shall be excavated uniformly to the grade of the bottom of the pipe. The trench bottom shall be given a final trim, using a string line for establishing grade, such that each pipe section when first laid will be continually in contact with the ground along the extreme bottom of the pipe. Rounding out the trench to form a cradle for the pipe will not be required. Excavations for pipe bells and welding shall be made as required.
- C. Open Trench: The maximum amount of open trench permitted in any one location shall be 300 feet, or the length necessary to accommodate the amount of pipe installed in a single day, whichever is greater. All trenches shall be fully backfilled at the end of each day or, in lieu thereof, shall be covered by heavy steel plates adequately braced and capable of supporting vehicular traffic in those locations where it is impractical to backfill at the end of each day. The above requirements for backfilling or use of steel plate will be waived in cases where the trench is located further than 100 feet from any traveled roadway or occupied structure. In such cases, however, barricades and warning lights meeting OSHA requirements shall be provided and maintained.
- D. Trench Over-Excavation: Where the Drawings indicate that trenches shall be over-excavated, they shall be excavated to the depth shown, and then backfilled to the grade of the bottom of the pipe.
- E. Over-Excavation: When ordered by the CITY, whether indicated on the Drawings or not, trenches shall be over-excavated beyond the depth shown. Such over-excavation shall be to the depth ordered. The trench shall then be backfilled to the grade of the bottom of the pipe. All work specified in this Section shall be performed by the DBF when the over- excavation ordered by the CITY is less than 6 inches below the limits shown. When the over-excavation ordered by the CITY is 6 inches or greater below the limits shown, additional payment will be made to the DBF for that portion of the work which is located below said 6-inch distance. Said additional payment will be made under separate unit price bid items for over-excavation and bedding if such bid items have been established; otherwise payment will be made in accordance with a negotiated price.
- F. Where pipelines are to be installed in embankment or structure fills, the fill shall be constructed to a level at least one foot above the top of the pipe before the trench is excavated.

3.5 OVER-EXCAVATION NOT ORDERED, SPECIFIED, OR SHOWN

- A. Any over-excavation carried below the grade ordered, specified, or shown, shall be backfilled to the required grade with the specified material and compaction. The DBF at its own expense shall perform such work.

3.6 EXCAVATION IN LAWN AREAS

- A. Where excavation occurs in lawn areas, the sod shall be carefully removed, kept damp, and stockpiled to preserve it for replacement. Excavated material may be placed on the lawn, provided that a drop cloth or other suitable method is employed to protect the lawn from damage. The lawn shall not remain covered for more than 72 hours. Immediately after completion of backfilling and testing of the pipeline, the

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sod shall be replaced and lightly rolled in a manner so as to restore the lawn as near as possible to its original condition. DBF shall provide new sod if stockpiled sod has not been replaced within 72 hours.

3.7 EXCAVATION IN VICINITY OF TREES

- A. Except where trees are shown to be removed, trees shall be protected from injury during construction operations. No tree roots over 2 inches in diameter shall be cut without express permission of the CITY. Trees shall be supported during excavation by any means previously reviewed and approved by the CITY.

3.8 ROCK EXCAVATION

- A. Rock is defined as follows:
 - 1. Rock shall be classified as material having a blow count in excess of 30 blows per foot from a Standard Penetration Test (ASTM D-1586) and exceeding 1000 psi from an Unconfined Compression Strength Test (ASTM D-2938); and,
 - 2. General Excavation - Any material that cannot be excavated with a single-toothed ripper drawn by a crawler tractor having a minimum draw bar pull rated at not less than 71,000 lbs. (Caterpillar D9N or equivalent), and occupying an original volume of at least 2 cubic yards or more; and,
 - 3. Trench Excavation - Any material that cannot be excavated with a backhoe having a breakout force rated at not less than 44,000 lbs. (Caterpillar 235D or equivalent) and occupying an original volume of at least 2 cubic yards.
- B. Rock excavation shall include removal and disposal of the following: (1) all boulders measuring 1/3 of a cubic yard or more in volume; (2) all rock material in ledges, bedding deposits, and unstratified masses which cannot be removed without systematic drilling and blasting; (3) concrete or masonry structures which have been abandoned; and (4) conglomerate deposits which are so firmly cemented that they possess the characteristics of rock as described in Paragraph 3.09(A).
- C. Said rock excavation shall be performed by the DBF; provided, that should the quantity of rock excavation be affected by any change in the scope of the work, an appropriate adjustment of the contract price will be made under a separate bid item if such bid item has been established; otherwise, payment will be made in accordance with the negotiated price.
- D. Explosives and Blasting: Blasting will not be permitted, except by express permission of the CITY on a case-by-case basis. The use of explosives will be subject to the approval and regulations of all agencies having jurisdiction. If blasting is utilized at the site of the WORK, the DBF shall take all precautions and provide all protective measures necessary to prevent damage to property and structures or injury to person. Prior to blasting, the DBF shall secure all permits required by law for blasting operations and shall provide any additional hazard insurance required by the OWNER. The DBF shall have a fully qualified and experienced blasting construction supervisor in charge of all blasting operations.
- E. The DBF will be held responsible for all and shall make good any damage caused by blasting or resulting from its possession or use of explosives on the WORK.

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- F. All operations involving the handling, storage, and use of explosives shall be conducted in accordance with the requirements of the OSHA Standards for Construction, and in accordance with all local laws and regulations.

3.9 DISPOSAL OF EXCESS EXCAVATED MATERIAL

- A. The DBF shall remove and dispose of all excess excavated material at a site selected by the DBF and reviewed by the CITY.

3.10 DISPOSAL OF UNSUITABLE EXCAVATED MATERIAL

- A. The DBF shall remove and dispose of all unsuitable excavated material. This shall include muck, tree roots, rocks, garbage, debris, or any other material designated as unsuitable by Paragraph 2 of this Section. Disposal shall be at a site selected by the DBF that is designated as an approved disposal site for the unsuitable material.

3.11 BACKFILL – GENERAL

- A. Backfill shall not be dropped directly upon any structure or pipe. Backfill shall not be placed around or upon any structure until the concrete has attained sufficient strength to withstand the loads imposed. Backfill around water retaining structures shall not be placed until the structures have been tested, and the structures shall be full of water while backfill is being placed.
- B. Except for drain rock materials being placed in over-excavated areas or trenches, backfill shall be placed after all water is removed from the excavation.

3.12 PLACING AND SPREADING OF BACKFILL MATERIALS

- A. Backfill materials shall be placed and spread evenly in layers. When compaction is achieved using mechanical equipment the layers shall be evenly spread so that when compacted each layer shall not exceed 6 inches in thickness.
- B. During spreading each layer shall be thoroughly mixed as necessary to promote uniformity of material in each layer. Pipe zone backfill materials shall be manually spread around the pipe so that when compacted the pipe zone backfill will provide uniform bearing and side support.
- C. Where the backfill material moisture content is below the optimum moisture content water shall be added before or during spreading until the proper moisture content is achieved.
- D. Where the backfill material moisture content is too high to permit the specified degree of compaction the material shall be dried until the moisture content is satisfactory.

3.13 COMPACTION – GENERAL

- A. Compact each layer of fill in designated areas with approved equipment to achieve a maximum density at optimum moisture, AASHTO T 180 - latest edition.
 - 1. Building Pads: compaction shall be to 98% of maximum density, unless otherwise shown on the drawings or specifications. Building pads shall be within plus or minus one-tenth (0.1) of a foot of the elevations shown on the plans.
 - 2. Refer to Sections 02513 Asphaltic Concrete Paving - General for compaction

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- requirements in the affected areas.
3. Under landscaped area, compaction shall be to density as specified in Paragraph 3.14.I., unless otherwise shown on the Drawings.
 - B. No backfill shall be placed against any masonry or other exposed building surface until permission has been given by the OWNER's Representative, and in no case until the masonry has been in place seven days.
 - C. Heavy construction equipment will not be permitted within ten (10) feet of any masonry or other exposed building surface.
 - D. Compaction in limited areas shall be obtained by the use of mechanical tampers or approved hand tampers. When hand tampers are used, the materials shall be deposited in layers not more than four inches thick. The hand tampers used shall be suitable for this purpose and shall have a face area of not more than 100 square inches. Special precautions shall be taken to prevent any wedging action against masonry, or other exposed building surfaces/

3.14 COMPACTION OF FILL, BACKFILL, AND EMBANKMENT MATERIALS

- A. Each layer of Types, A, B, C, G, H, I, and K backfill materials as defined herein, where the material is graded such that at least 10 percent passes a No. 4 sieve, shall be mechanically compacted to the specified percentage of maximum density. Equipment that is consistently capable of achieving the required degree of compaction shall be used and each layer shall be compacted over its entire area while the material is at the required moisture content.
- B. Each layer of Type D, E, F, and J backfill materials shall be compacted by means of at least 2 passes from a flat plate vibratory compactor. When such materials are used for pipe zone backfill, vibratory compaction shall be used at the top of the pipe zone or at vertical intervals of 24 inches, whichever is the least distance from the subgrade.
- C. Type L material requires mechanical spreading and placement to fill voids but does not require mechanical compaction or vibration.
- D. Fill on reservoir and structure roofs shall be deposited at least 30 days after the concrete roof slab has been placed. Equipment weighing more than 10,000 pounds when loaded shall not be used on a roof. A roller weighing not more than 8,000 pounds shall be used to compact fill on a roof.
- E. Flooding, ponding, or jetting shall not be used for fill on roofs, backfill around structures, backfill around reservoir walls, for final backfill materials, or aggregate basematerials.
- F. Pipe zone backfill materials that are granular may be compacted by a combination of flooding and vibration using concrete vibrators or by jetting, when acceptable to the CITY.
- G. Pipeline trench zone backfill materials, containing 5 percent or less of material passing a No. 200 sieve, may be compacted using flooding and jetting or vibration if the DBF uses effective procedures that yield the specified compaction test results. Flooding and jetting shall not be done in such a manner that the pipe or nearby utilities are damaged, in areas of poorly draining or expansive soils, or where the use of the procedure is prohibited by any agency having jurisdiction

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over the street or right-of-way. Approved jet pipes or immersible vibrators shall be used so that each backfill layer is saturated and consolidated to its full depth before the next layer is placed. Jet pipes shall be kept at least 6 inches away from the pipe where the backfills being consolidated and 2 feet away from other pipes or utilities.

- H. Equipment weighing more than 10,000 pounds shall not be used closer to walls than a horizontal distance equal to the fill at that time. Hand operated power compaction equipment shall be used where use of heavier equipment is impractical or restricted due to weight limitations.
- I. Compaction Requirements: The following compaction test requirements shall be in accordance with AASHTO T-180. Where agency or utility company requirements govern, the highest compaction standards shall apply.

<u>Location or Use of Fill</u>	<u>Percentage of Maximum Density</u>
Pipe zones backfill portion above bedding for flexible pipe.	98
Pipe zones backfill bedding and over-excavated zones under bedding/pipe for flexible pipe, including trench plugs.	98
Pipe zones backfill portion above bedding for rigid pipe.	98
Pipe zones backfill bedding and over-excavated zones under bedding/pipe for rigid pipe.	98
Final backfills, beneath paved areas or structures.	98
Final backfills, not beneath paved areas or structures.	95
Trench zones backfill, not beneath paved areas or structures, including trench plugs.	95
Embankments.	98
Embankments, beneath paved areas, or Structures.	98
Backfill beneath structures, hydraulic structures.	98
Backfill around Structures	98
Topsoil (Type K material)	80
Aggregate base or subbase (Type G or M material)	80

- J. Trench Backfill Requirements: the pipe has been structurally designed based upon the trench configuration specified herein.
- K. The DBF shall maintain the indicated trench cross section up to a horizontal plane lying 6 inches above the top of the pipe.
- L. If, at any location under said horizontal plane, the DBF slopes the trench walls or exceeds the maximum trench widths indicated in the Contract Documents, the pipe zone backfill shall be "improved" or the pipe class increased as specified

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herein, at no additional cost to the OWNER. "Improved" backfill shall mean sand-cement backfill or other equivalent materials acceptable to the CITY.

- M. If the allowable deflection specified for the pipe is exceeded, the DBF shall expose and reground or replace the pipe, repair all damaged lining and coating, and reinstall the pipe zone material and trench backfill as specified at no additional expense to the OWNER.

3.15 PIPE AND UTILITY TRENCH BACKFILL

- A. Pipe zone Backfill: The pipe zone is defined as that portion of the vertical trench cross- section lying between a plane 6 inches below the bottom surface of the pipe, i.e., the trench subgrade, and a plane at a point 6 inches above the top surface of the pipe. The bedding for flexible pipe is defined as that portion of pipe zone backfill material between the trench subgrade and the bottom of the pipe. The bedding for rigid pipe is defined as that portion of the pipe zone backfill material between the trench subgrade and a level line which varies from the bottom of the pipe to the spring line as shown.
- B. Bedding shall be provided for all sewers, drainage pipelines, and other gravity flow pipelines. Unless otherwise specified or shown, for other pipelines the bedding may be omitted if all the following conditions exist.
 - 1. The pipe bears on firm, undisturbed native soil, which contains only particles that will pass a one-inch sieve.
 - 2. The trench excavation is not through rock or stones.
 - 3. The trench subgrade soils are classified as suitable fill and backfill materials per Paragraph 2.01.
 - 4. The trench subgrade soils have, as a maximum, a moisture content that allows compaction.
- C. Where bedding is required, after compacting the bedding the DBF shall perform a final trim using a stringline for establishing grade, such that each pipe section when first laid will be continually in contact with the bedding along the extreme bottom of the pipe. Excavation for pipe bells and welding shall be made as required.
- D. The pipe zone shall be backfilled with the specified backfill material. The DBF shall exercise care to prevent damage to the pipeline coating, cathodic bonds, or the pipe itself during the installation and backfill operations.
- E. Trench Zone Backfill: After the pipe zone backfill has been placed as specified above, and after all excess water has completely drained from the trench, backfilling of the trench zone may proceed. The trench zone is defined as that portion of the vertical trench cross- section lying between a plane 6 inches above the top surface of the pipe and a plane at a point 18 inches below the finished surface grade, or if the trench is under pavement, 18 inches below the roadway subgrade. If flooding, ponding, or jetting is used the pipe shall be filled with water to prevent flotation.
- F. Final Backfill: Final backfill is all backfill in the trench cross-sectional area within 18 inches of finished grade, or if the trench is under pavement, all backfill within 18 inches of the roadway subgrade.

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EARTHWORK**3.16 EMBANKMENT CONSTRUCTION**

- A. The area where an embankment is to be constructed shall be cleared of all vegetation, roots and foreign material. Following this, the surface shall be moistened, scarified to a depth of 6 inches, and rolled or otherwise mechanically compacted as specified in Paragraph 3.14.I. Embankment fill material shall be placed and spread evenly in horizontal layers. Each layer shall be moistened or aerated, as necessary. Unless otherwise approved by the CITY, each layer shall not exceed 6 inches of compacted thickness. The embankment fill and the scarified layer of underlying ground shall be compacted to 95 percent of maximum density under structures and paved areas, and 90 percent of maximum density elsewhere.
- B. When an embankment fill is to be made and compacted against hillsides or fill slopes steeper than 4:1, the slopes of hillsides or fills shall be horizontally benched to key the embankment fill to the underlying ground. A minimum of 12 inches normal to the slope of the hillside or fill shall be removed and recompacted as the embankment fill is brought up in layers. Material thus cut shall be recompacted along with the new fill material at the DBF's expense. Hillside of fill slopes 4:1 or flatter shall be prepared in accordance with Paragraph A, above.
- C. Where embankment or structure fills are constructed over pipelines, the first 4 feet of fill over the pipe shall be constructed using light placement and compaction equipment that does not damage the pipe. Heavy construction equipment shall maintain a minimum distance from the edge of the trench equal to the depth of the trench until at least 4 feet of fill over the pipe has been completed.

3.17 CORRECTION OF GRADE

- A. Bring to required grade levels areas where settlement, erosion or other grade changes occur.

3.18 MAINTENANCE AND PROTECTION OF WORK

- A. While construction is in progress adequate drainage for the roadbed shall be maintained at all times.
- B. The DBF shall maintain all earthwork construction throughout the life of the contract, unless otherwise provided, and shall take all reasonable precautions to prevent loss of material from the roadway due to the action of wind or water. DBF shall repair at DBF'S expense, except as otherwise provided herein, any slides, washouts, settlement, subsidence, or other mishap which may occur prior to final acceptance of the work.
- C. All channels excavated as a part of the contract work shall be maintained against natural shoaling or other encroachments to the lines, grades, and cross sections shown on the plans, until final acceptance of the project.

3.19 AS-BUILT SURVEY

- A. At the completion of the work and prior to final inspection of the area, the DBF shall provide the CITY with an as-built topographic survey made by a Professional Surveyor and Mapper per Florida Statute 472.001-472.037.

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- B. The surveyor is to certify on the survey whether or not the as-built conditions conform to the elevations shown on the Drawings to within plus or minus two-hundredth (0.02) of a foot.

END OF SECTION 02200

SECTION 02212
MILLING OF EXISTING ASPHALT PAVEMENT

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. All applicable provisions of the Bidding and Contract Requirements, and Division 1- General Requirements shall govern the WORK under this section.

1.2 WORK INCLUDED

- A. Remove existing asphalt concrete pavement by milling to improve the rideability and cross slope of the finished pavement, to lower the finished grade adjacent to existing curb prior to resurfacing, or to completely remove existing pavement.
- B. When milling to improve rideability, the plans will specify an average depth of cut.
- C. DBF to take ownership of milled material.

PART 2 PRODUCT

2.1 EQUIPMENT

- A. Provide a milling machine capable of maintaining a depth of cut and cross slope that will achieve the results specified in the Contract Documents. Use a machine with a minimum overall length (out to out measurement excluding the conveyor) of 18 feet and a minimum cutting width of 6 feet.
- B. Equip the milling machine with a built-in automatic grade control system that can control the transverse slope and the longitudinal profile to produce the specified results.
- C. To start the project, the CITY will approve any commercially manufactured milling machine that meets the above requirements. If it becomes evident after starting milling that the milling machine cannot consistently produce the specified results, the CITY will reject the milling machine for further use.
- D. The DBF may use a smaller milling machine when milling to lower the grade adjacent to existing curb or other areas where it is impractical to use the above described equipment.
- E. Equip the milling machine with means to effectively limit the amount of dust escaping during the removal operation.

PART 3 EXECUTION

3.1 MILLING

- A. Protection: Use all means necessary to protect existing objects and vegetation. In the event of damage, immediately make all repairs, and replacements necessary to the acceptance of the OWNER's Representative at no cost to the OWNER.

3.2 BACKFILL, FILLING, & GRADING

- A. Remove the existing raised reflective pavement markers prior to milling. Include the cost of removing existing pavement markers in the price for milling.
- B. When milling to improve rideability or cross slope, remove the existing pavement to the average depth specified in the plans, in a manner that will restore the pavement surface to a uniform cross-section and longitudinal profile. The CITY may require the use of a stringline to ensure maintaining the proper alignment.
- C. Establish the longitudinal profile of the milled surface in accordance with the milling

SECTION 02212
MILLING OF EXISTING ASPHALT PAVEMENT

plans. Ensure that the final cross slope of the milled surface parallels the surface cross slope shown on the plans or as directed by the CITY. Establish the cross slope of the milled surface by a second sensing device near the outside edge of the cut or by an automatic cross slope control mechanism. The plans may waive the requirement of automatic grade or cross slope controls where the situation warrants such action.

- D. Multiple cuts may be made to achieve the required pavement configuration or depth of cut. Include in the Quality Control Plan a system to control the cross slope of the milling surface with a minimum frequency of one cross slope measurement every 250 feet during milling operations in order to ensure that the slopes are uniform and in compliance with the designed milling slope. When the difference between the measured cross slope and the designed cross slope exceeds $\pm 0.2\%$ for travel lanes (including turn lanes) and $\pm 0.5\%$ for shoulders, make all corrections immediately to bring the cross slope into an acceptable range. The CITY will periodically verify the DBF's measurements at the job site.
- E. The CITY can randomly take ten measurements of the cross slope per day for the first two days of milling operation. If the average cross slope of the ten random measurements per day varies more than the required tolerance (0.2% for travel lanes including turn lanes and 0.5% for shoulders), the milling operation shall be stopped until appropriate corrective actions are made to bring the cross slope into an acceptable range. Approval by the CITY will be required prior to resuming the milling operation.
- F. A recheck of ten random measurements will be made after corrective actions are taken. If the recheck indicates that the cross slope is out of control, the deficient section(s) shall be corrected to bring the cross slope into an acceptable range. During milling operations, the CITY reserves the right to take ten cross slope measurements per day. If the average cross slope of the ten measurements varies more than the permissible tolerance, the milling operation will be stopped until appropriate corrective actions are made to bring the cross slope into an acceptable range and the deficient sections shall be corrected accordingly.
- G. The CITY may waive the corrections specified above if an engineering determination indicates that the deficiencies are sufficiently separated so as not to significantly affect the final cross slope.
- H. For intersections, tapers, crossovers, transitions at the beginning and end of the project and in other similar areas, the cross slope will be adjusted as directed by the CITY to match the actual site conditions.
- I. Operate the milling machine to minimize the amount of dust being emitted. The CITY may require pre-wetting of the pavement.
- J. Provide positive drainage of the milled surface and the adjacent pavement. Perform this operation on the same day as milling. Repave all milled surfaces no later than the day after the surface was milled unless otherwise stated in the plans.
- K. If traffic is to be maintained on the milled surface prior to the placement of the new asphalt concrete, provide suitable transitions between areas of varying thickness to create a smooth longitudinal riding surface. Produce a pattern of striations that will provide an acceptable riding surface.
- L. Prior to opening an area which has been milled to traffic, sweep the pavement with

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MILLING OF EXISTING ASPHALT PAVEMENT

a power broom or other approved equipment to remove, to the greatest extent practicable, fine material which will create dust under traffic. Sweep in a manner that will minimize the potential for creation of a traffic hazard and to minimize air pollution.

- M. Sweep the milled surface with a power broom prior to placing asphalt concrete
- N. In urban and other sensitive areas, use a street sweeper or other equipment capable of removing excess milled materials and controlling dust.
- O. Perform the sweeping operation immediately after the milling operations or as directed by the CITY.

3.3 MILLED SURFACE

- A. Provide a milled surface with a reasonably uniform texture, within 1/4 inch of a true profile grade, and with no deviation in excess of 1/4 inch from a straightedge applied to the pavement perpendicular to the centerline.
- B. Ensure that the variation of the longitudinal joint between multiple cut areas does not exceed 1/4 inch. The CITY may accept areas varying from a true surface in excess of the above stated tolerance without correction if the CITY determines that they were caused by a pre-existing condition which could not have reasonably been corrected by the milling operations.
- C. Correct any unsuitable texture or profile, as determined by the CITY, at no additional expense to the OWNER.
- D. The CITY may require remilling of any area where a surface lamination causes a non- uniform texture to occur.
- E. Refer to Section 02513 for specifications on resurfacing of asphaltic pavement.

END OF SECTION 02212

SECTION 02221
EXCAVATION AND BACKFILLING UTILITIES

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. All applicable provisions of the Bidding and Contract Requirements, and Division 1- General Requirements shall govern the WORK under this section.

1.2 WORK INCLUDED

- A. The work shall consist of furnishing all materials, labor and equipment for excavation, trenching and backfilling for utilities. "Utilities" shall include storm water drains, culverts, water mains, gravity sewers, sewage force mains and appurtenant structures.

1.3 RELATED WORK

- A. 02200 – Earthwork.

PART 2 PRODUCT (NOT APPLICABLE)

PART 3 EXECUTION

3.1 EXCAVATION

- A. General: This work shall consist of the excavation of whatever substances shall be encountered to the depths as shown on the plans. Excavated materials not required for fill or backfill shall be removed from the work site as directed by the CITY and shall be considered to be a part of the bid price of the utility pipe for which excavation and backfill is required.
- B. Excavation for structures and other accessories shall have a minimum clearance of twelve inches and a maximum clearance of twenty-four inches on all sides.
- C. Excavation shall not be carried below the required depths as indicated by the plans. Excess excavation below the required level shall be backfilled at the DBF's expense with sharp sand, gravel or other suitable material thoroughly compacted and approved by the CITY.
- D. Any unstable soil shall be removed and shall be replaced by material acceptable to the CITY. The removal and replacement of such unstable soil shall be considered to be part of the bid price of the pipe for which excavation and backfill is required.
- E. Water shall not be permitted to accumulate in the excavated area. It shall be removed by pumping or other means as approved by the CITY. The removal of water shall be considered to be a part of the bid price of the pipe for which excavation and backfill is required.
- F. Well points, pumps or other approved means shall be used to keep the ground water sufficiently low in the opinion of the CITY to permit the placing of concrete, masonry, or pipe in first class condition, and sufficiently long thereafter to protect the concrete, masonry or joints against washing or damage.
- G. The DBF shall also use such other means as may be necessary to keep the excavation in satisfactory condition for the construction of the work, and the use of well points, or other approved method, will not relieve the DBF of DBF'S responsibility to make structures watertight.

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- H. Banks and trenches shall be vertical unless shown otherwise on plans. The width of the trench shall be no less than 24 inch plus the diameter of the pipe, or as approved by the CITY. Bell holes shall be accurately excavated by hand.
- I. If the bottom of the trench is rock, the excavation shall be carried eight inches below the invert of the pipe and backfilled with thoroughly compacted sharp sand, gravel or other suitable material approved by the CITY.
- J. See Section 02200 Part 3.08 for specifications on Rock Excavation.
- K. Whenever it is necessary, in the interest of safety, to brace or shore the sides of the trench, such bracing or shoring shall be considered to be part of the bid price of the pipe for which excavation and backfill is required.
- L. The DBF shall furnish, put in place, and maintain such sheeting, bracing, as may be required to support the side of the excavation, and to prevent any movement which can in any way damage the work or endanger adjacent structures. If the CITY is of the opinion that supports are insufficient, the CITY may order additional supports. The compliance with such order shall not release the DBF from DBF'S responsibility for the sufficiency of the sheeting. The DBF shall leave all sheeting in place. The CITY may require sheeting to be cut off at any specified elevation, but in no case will any sheeting be left closer than two (2) feet below the natural surface, nor cut off below the elevation of the top of the pipe.

3.2 **BACKFILLING**

- A. After pipes, structures and other appurtenances have been installed, the trench or opening shall be backfilled with material free from large stones or clods of a quality acceptable to the CITY.
- B. Backfill around the pipe and to a point twelve inches above the top of the pipe shall be placed in six-inch layers compacted with 20 pound hand tampers or mechanical tampers suitable for this purpose. Backfilling shall follow lying closely and shall not be more than one hundred (100) feet behind completed lying. Backfill over pipe shall be carefully placed by experienced labor and thoroughly consolidated without shock to the pipe and carried up uniformly on both sides of the pipe. No backfilling with bulldozers will be permitted adjacent to pipeline.
- C. Within roadway rights-of-way, or within areas where pavements are to be constructed over the pipe, the remainder of the trench shall be placed in six-inch layers (compacted thickness) and shall be compacted to that as noted in Section 02200. DBF will be responsible for correcting settlement in all backfilled areas whether under the pavement or otherwise.
- D. In areas where no pavement is to be constructed, the backfill above the twelve-inch line above the pipe shall be compacted to firmness approximately equal to that of the soil adjacent to the pipe trench or to that as noted in Section 02200. Backfill below the 12-inch line shall be compacted in 6-inch layers (compacted thickness) and shall be compacted to 98% of maximum density as determined by AASHTO T-180.

3.3 **EXPLOSIVES**

- A. The use of explosives will not be permitted. See Section 02200 Part 3.08

SECTION 02221
EXCAVATION AND BACKFILLING UTILITIES

Paragraph D through F for further instruction.

END OF SECTION 02221

SECTION 02410
INSTALLATION OF PIPE BY DIRECTIONAL DRILL TECHNIQUE

PART 1 GENERAL**1.1 RELATED DOCUMENTS**

- A. All applicable provisions of the Bidding and Contract Requirements, and Division 1- General Requirements shall govern the WORK under this section.

1.2 WORK INCLUDED

- A. The DBF shall furnish all labor, materials, equipment and incidentals required to install pipe by the technique of inserting the pipe directly into a directional drilled opening; at the locations shown on the Drawings and as specified herein.
- B. All directional drill operations shall be performed in accordance with all requirements of the permitting agency and other agencies having jurisdiction over the work area.

1.3 RELATED WORK

- A. Division 2 as applicable.
- B. Section 02200 – Earthwork.
- C. Section 02221 Excavation and Backfilling for Utilities.
- D. Section 02510 Piping, General.
- E. Section 02641 Valves, General.
- F. Exhibit D Permit Conditions.
- G. Commercial Standards:
 - ASTM F 1962 Maxi-Horizontal Directional Drilling
 - ASTM F 2620 Heat Fusion Joining of Polyethylene Pipe and Fittings

1.4 GENERAL REQUIREMENTS

- A. Directional drilling and pipe installation shall be done only by an experienced, licensed contractor specializing in directional drilling technique and whose key personnel have at least five (5) years of experience in this work. Furthermore, the said contractor shall have had experience in directional drilling under Florida waterways and major roadways.
- B. The DBF shall visit the site and determine the proximity of structures on either side of the crossings. The DBF shall provide the OWNER with a drilling plan outlining procedures to prevent drilling fluid or the drilling process from adversely affecting these structures.
- C. Prior to pre-construction meeting DBF is to submit "Frac-Out Plan" (see Exhibit A) per State Water Quality Standards, pursuant to Rule 62-302, with details of the non-toxic florescent tracking dyes that the DBF will be using with the drilling lubricant as a monitoring method with the bentonite.
- D. Prior to the start of work, the DBF shall engage a Professional Engineer registered in the State of Florida to design a detailed plan of boring and receiving pits, including excavation, together with an outline of the methods to be used and a time schedule for directional drill operations. In addition, DBF shall identify an environmental scientist/biologist with experience in water quality monitoring and habitat protection to be used in the event of a frac-out near protected areas.
- E. Three workdays written notice prior to start of the actual work shall be given to the

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INSTALLATION OF PIPE BY DIRECTIONAL DRILL TECHNIQUE

OWNER.

- F. The DBF shall install, maintain, and leave in place any sheeting, underpinning, cribbing, and other related items (other than that required for the boring and receiving pits) to support any structure or facility affected by the boring operations. The CITY, depending upon existing conditions, may require that additional sheeting for the excavation be left in place.
- G. The DBF shall maintain traffic whenever possible during fusing and installation operations. Fusing and staging areas shall be carefully planned, and locations shall be approved by the CITY.
- H. The DBF shall assume all responsibility for the methods and means of construction, the stability and accuracy of the drilled and reamed hole and constructed pits, and all cost responsible for the safety of the pits and related structures, and personnel engaged in construction throughout the duration of work.
- I. All work under this specification affecting the right-of-way, or municipal facilities shall be carried out to the full satisfaction of the authorized representative. It is the DBF's responsibility to be fully informed of all requirements, and permit conditions as it pertains to the specific project and shall conduct all work accordingly.
- J. All equipment used by the DBF on OWNER's property and rights-of-way may be inspected by the OWNER or the OWNER's Representatives.
- K. The DBF shall be fully responsible for all damages arising from the failure of the DBF or Subcontractors to comply with the regulations and the requirements of these Specifications.
- L. The DBF's methods and schedule shall comply with the overall project requirements. The DBF shall be familiar with the work within the local subsurface conditions. The DBF's selection of inadequate, inappropriate, or inefficient equipment and methods will not be cause for adjustments to the Contract price or Contract time.
- M. The DBF shall be responsible for all clean-up of project site, debris, materials and equipment and shall clear the site of and dispose of them in accordance with Contract Documents.

1.5 **SUBMITTALS**

- A. The DBF shall submit for the OWNER's approval the qualifications of the directional drilling specialty provider indicating compliance with the following minimum experience criteria:
 - 1. Descriptions of successfully completed similar projects using the guided directional drill technique, which shall include a listing of the following information.
 - a. Project name and location
 - b. Year of Project
 - c. Owner/Client
 - d. Client contact information
 - e. Diameter and material of pipe
 - f. Length of direction drilling installation
 - g. Other information relevant to the successful completion of the project

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INSTALLATION OF PIPE BY DIRECTIONAL DRILL TECHNIQUE

2. Documentation of compliance with the following minimum standards:
 - a. The directional drilling specialty provider shall be an experienced, licensed contractor specializing in guided directional drilling and whose key personnel assigned to this work shall have a minimum of five (5) years of related directional drilling experience.
 - b. The directional drilling specialty provider shall have installed utilities under major roadways and waterways via directional drill technique.
- B. Two (2) weeks prior to the start of the directional drilling work, the DBF shall submit the directional drilling work plan for the OWNER's review. The work plan shall include the following information.
 1. A plan showing details of the proposed method of construction, sequence of operations to be performed, number and size of construction crew, hours to be worked, pilot hole drilling procedure, reaming procedure, pullback procedure, method of monitoring the drilling head and method of verifying pipe location for as-built drawings.
 2. A drilling fluid plan which details types of drilling fluids, including the of non-toxic fluorescent tracking dyes, cleaning and recycling equipment, estimated flow rates, and procedures for minimizing drilling fluid escape.
 3. A plan in the event of drilling fluid escape including, but not limited to, stoppage of work, notification of applicable permitting authorities whose right-of-way is impacted by the escape of drilling fluid, procedure to confine drilling fluids/muds, and procedure for repair/plugging of fissures. See Dewatering Permit for requirements that will need to be met, at no additional cost to the OWNER, should fluid escape.
 4. A plan and profile drawing showing the DBF's proposed pilot bore hole routing and location of other underground utilities. The plan drawing shall be at a 1 inch = 20-foot scale and the profile drawing at a 1 inch = 20 foot scale horizontal and 1 inch = 2 foot scale vertical.
 5. A 1 inch = 20-foot scale drawing of the proposed setup of major equipment at the entry point and the proposed layout at the exit point.
- C. The DBF shall furnish shop drawings showing all fabrication and construction details for the directional drilled crossings.
- D. The DBF shall use dataloggers to record and monitor fusing of HDPE pipe. Upon completion of the fusing and prior to pulling the pipe, the DBF must provide the datalogger information to the Engineer for review.
- E. The DBF will be responsible for maintaining drilling logs that provide drill bit locations at least 30 feet along the drill path. In addition, logs will be kept that record the following on an hourly basis throughout each drill pass, back ream pass or pipe installation pass:
 1. Drill fluid pressure
 2. Drilling fluid flow rate
 3. Drill thrust pressure
 4. Drill pullback pressure
 5. Drill head torque
 6. Horizontal distance of drill head from entry point

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- F. Upon completion of the pilot hole phase of the operation, a complete set of as-built records showing the actual horizontal and vertical alignment of the pilot bore at intervals not exceeding 30 feet shall be submitted in duplicate to the CITY along with one electronic AutoCAD as-built drawing file. Contractor shall provide as-builts (mapping) of the installed pipe based on the tracking data generated by the guidance system used during installation. These records shall include copies of the plan drawing at a 1 inch = 20-foot scale, and a profile drawing at a 1 inch = 20 foot scale horizontal and a 1 inch = 2 foot scale vertical, as well as directional survey reports as recorded during the drilling operation.

1.6 SAFETY

- A. The DBF shall, at all times, conform to all applicable State and Federal regulations.
- B. DBF is to adhere to requirements of all permits. See Permit Conditions for permit requirements.
- C. Guided Directional Drilling Equipment machine safety requirements will include a common grounding system to prevent electrical shock in the event of high voltage underground cable strike. The grounding system will connect all pieces of interconnecting machinery: the drill, mud mixing system, drill power unit, drill rod trailer, operator's booth, worker grounding mats and any other interconnected equipment to a common ground. The drill will be equipped with an "electrical strike" audible and visual warning system that will notify the system operators of an electrical strike.
- D. Operators of the drill will wear electrical shock protection equipment and operate from common grounded mats as required.

PART 2 PRODUCT**2.1 MATERIALS**

- A. The carrier pipe shall conform to Section 02610; Piping, General.
- B. Equipment (graders, shovels, etc.) and materials (such as groundsheets, hay bales, booms, and absorbent pads) for cleanup and contingencies shall be provided in sufficient quantities by DBF and maintained at all sites for use in the event of inadvertent leaks, seeps or spills.
- C. Technical criteria for bentonite shall be as given in API Spec. 13A, Specification for Oil Well Drilling Fluids Material for freshwater drilling fluids. Any modification to the basis drilling fluid involving additives must describe the type of material to be used and be included in DBF's drilling plan presented to OWNER. The OWNER retains the right to sample and monitor the waste drilling mud, cuttings and water.

2.2 HDPE PIPELINE IDENTIFICATION

- A. All polyethylene pipe shall be black, and shall contain a continuous colored stripe, 2 inches wide, at three separate locations along the length of the pipe. Stripe color shall be:
 - 1. Potable Water Mains - blue stripe
 - 2. Reclaimed Water Mains - purple stripe
 - 3. Force Mains - green stripe
 - 4. Sanitary Sewer - green stripe

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5. Storm Sewer - no stripes required

PART 3 EXECUTION

3.1 DIRECTIONAL DRILLING OPERATION

- A. The DBF shall provide all material, equipment, and facilities required for directional drilling. Proper alignment and elevation of the opening shall be consistently maintained throughout the directional drilling operation. Entrance and exit angles for the drill are at the DBF's discretion such that the elevation profile maintains adequate ground cover to reasonably precaution against hydraulic fractures with the drilling fluid and maintain the minimum cover shown in the Drawings and specified herein.
- B. DBF shall carefully plan the drill path and ensure all existing utilities are identified. Accuracy of the drill path is a priority. DBF shall only use a wireline locating system or a gyro-based locating system for the tracking, steering and guidance of the directional bore. DBF shall monitor and record the bore location during installation to ensure accuracy of the drill path. The position of the drill string shall be monitored by the DBF and recorded every 30 feet. Information of the bore path may be requested by the OWNER and ENGINEER at any time. The profile and alignment defined on the construction drawings for the bores define the minimum depth and radius of curvature. At no point in the drilled profile shall the radius of curvature of the bore be less than the minimum defined by the pipe manufacturer with a 10% factor of safety. The DBF shall maintain and provide to the OWNER, upon request, the data generated by the downhole survey tools in a form suitable for independent calculation of the pilot hole profile.
- C. Boring pits shall be shored with sheeting, or such other materials as required. Sheeting shall be driven to a sufficient depth below the invert of the carrier pipe to resist any pressure developed by the soil outside the boring pit. Sheeting when used shall terminate not less than 3 feet 6 inches above existing grade.
- D. At the completion of the direction drilling operations, the DBF will be required to remove all sheeting in place. If steel sheeting is used, it may be removed after installation of the carrier pipe in the bore hole, but prior to installation of the joining carrier pipe. However, should damage to the roadway, pipeline or any other adjacent structure occur, the DBF shall leave all remaining sheeting in place and redrive and leave in place any sheeting which is required to stabilize the site and prevent additional damage from occurring. The top of all sheeting left in place shall be cut off 36 inches below finished grade.
- E. Bentonite or other stabilizing gels shall be used to prevent calving of the unsupported bore hole.

3.2 DRILLING FLUIDS AND CUTTINGS

- A. To the extent practical, the DBF shall maintain a closed loop drilling fluid system and utilize drilling tools and procedures which will minimize the discharge of any drilling fluids.
- B. DBF shall have divers present during the drilling operations in order to respond to potential frac-out release.
- C. The Guided Horizontal Direction Drilling operation is to be operated in a manner to

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eliminate the discharge of water, drilling mud and cuttings to the canal or land areas involved during the construction process. The DBF shall provide equipment and procedures to maximize the recirculation or reuse of drilling mud to minimize waste. All excavated pits used in the drilling operation shall be lined by DBF with heavy duty plastic sheeting with sealed joints to prevent the migration of drilling fluids and/or groundwater.

- D. Pits constructed at the entry or exit point area shall be so constructed to completely contain the drill fluid and prevent its escape to the surrounding land or canal.
- E. Waste cuttings and drilling mud shall be processed through a solids control plant comprised as a minimum of stumps, pumps, tanks, distiller/desander, centrifuges, material handlers, and haulers all in a quantity sufficient to perform the cleaning/separating operation without interference with the drilling program. The cuttings and excess drilling fluids shall be dewatered and dried by DBF to the extent necessary for disposal, and disposal in offsite landfills at the DBF's expense. Water from the dewatering process shall be treated by DBF to meet permit requirements and disposed of locally. The cuttings and water for disposal are subject to being sampled and tested. The construction site and adjacent areas will be checked frequently for signs of unplanned leaks or seeps.
- F. All drilling mud shall be removed from the entry and exit area soils such that water will percolate. All disturbed areas shall be restored to original conditions.

3.3 INSTALLING PIPE

- A. The pipe installed within the boring shall be in full conformity with these Specifications and as shown on the Drawings. The pipe shall be installed, as to a reasonable directional drilling ability, to the exact lines grades required after having been satisfactorily approved by the CITY from the directional drillers expected drill path plan and profile sheets provided in Section 1.5.
- B. The type and size of the pilot string cutting head shall be at the DBF's discretion. The type and outside diameter of the drill pipe to be used in the pilot string shall also be at the DBF's discretion.
- C. A minimum depth requirement of 10 feet below the existing crossing bottoms shall be maintained, depths deeper than 10 feet shall be acceptable. Lateral positioning at exit shall be no further than 5 feet left or right of planned centerline, and horizontal positioning shall be no further than 5 feet short or long of proposed exit location. Entry and exit locations, as well as intermediate centerline stationing, shall be staked by the DBF.
- D. Upon approval of the pilot hole location by the CITY, the hole opening or enlarging phase of the installation shall begin. The type of hole opener or back reamer to be utilized in this phase shall be determined by the types of subsurface soil conditions that have been encountered during the pilot hole drilling operation. The reamer type shall be at the DBF's discretion.
- E. The open borehole may be stabilized by means of bentonite drilling slurry being pumped through the inside diameter of the drill pipe and through opening in the reamer. The slurry will also serve as an agent to carry the loose cutting to the surface through the annulus of the borehole. These cuttings and bentonite slurry are to be contained at the exit or entry side of the directional bore in pits or holding

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INSTALLATION OF PIPE BY DIRECTIONAL DRILL TECHNIQUE

tanks. The slurry may be recycled at this time for reuse in the hole opening operation, or it shall be hauled by the DBF to an approved dump site and properly disposed.

- F. Each length of pipe shall be inspected and cleaned as necessary to be free of debris immediately prior to joining.
- G. A complete list of all drilling fluid additives and mixtures to be used in the directional operation will be submitted to the CITY, along with their respective Material Safety Data Sheets. All drilling fluids and loose cuttings shall be contained in pits or holding tanks for recycling or disposal, no fluids shall be allowed to enter any unapproved areas or natural waterways. Upon completion of the directional drill project, drilling fluid shall be disposed of by the DBF at an approved dump site.
- H. A "weak-link or breakaway device shall be used at the leading end of the pipe to protect the pipe from excessive pulling loads. The breakaway strength of this device shall be set at or below the allowable tensile load of the pipe.
- I. High Density Polyethene (HDPE) pipe shall not be placed in direct sunlight immediately prior to installation.
- J. HDPE pipe shall have the beads removed from the interior of the fused joints.
- K. A sufficient length of HDPE pipe shall be pulled past the exit point and left before the entry point to allow for relaxation.
- L. HDPE pipe shall have mechanical joint adapters to connect to the pipe on either side of the directional drills. Mechanical joint adapter used is to match HDPE pipe manufacturer requirements for connection to ductile iron pipe.
- M. HDPE shall have sufficient time for relaxation before connecting to the pipe on either side of the direction drill.

3.4 FUSING OF HDPE PIPE

- A. Standard practice for HDPE fusion shall follow the recommendations from the latest revision of ASTM 2620, ISO 21307 or industry standard international practices.
- B. DBF to handle pipe and fusing operations with care. Fuse joints must be protected from rain, water and dust during fusing operations until the joint has cooled down.
- C. DBF must use data loggers to monitor fusing and provide fusing data results to ENGINEER prior to pulling or installation of the pipe.
- D. Fusing beads must be inspected and shall show a clean fuse and be visually acceptable as required by ASTM 2620.

3.5 EXISTING UTILITIES

- A. The Drawings show existing buried utilities that are believed to be near the directional drill alignment. There is no guarantee that these utilities are located as shown or that other utilities may be present. It is the DBF's responsibility to locate all utilities or other subsurface obstructions that may interfere with the work.
- B. Utility lines and structures indicated on the Drawings which are to remain in service shall be protected by the DBF from any damage as a result of the operations. Where utility lines or structures not shown on the drawings are encountered, the DBF shall report them to the OWNER before proceeding with the Work. The DBF shall bear the cost of repair or replacement of any utility lines or structures which

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are broken or damaged by the DBF's operations.

- C. All utilities in close proximity to the drill pilot bore, back ream or carrier pipe installation must be exposed through a "pot-hole" or other opening, in accordance with state utility locate laws and regulations, to ensure, through visual inspection, that the drill, reamer or pipe has caused no damage to the utility and maintains adequate clearance.

3.6 TESTING

- A. DBF is required to perform a pressure test prior to installation of pipe. A leakage test in accordance with Contract Documents shall also be performed post pulling. All leakage tests shall be completed and approved prior to placing of permanent resurfacing. When leakage exceeds the amount allowed by the Specifications, the DBF, at its expense, shall locate the leaks and make the necessary repairs or replacements in accordance with the Specifications to reduce the leakage to the specified limits. Any individually detectable leaks shall be repaired, regardless of the results of the tests.

- B. Leakage Tests: The leakage testing shall be as follows:

- 1. All PVC and DIP pressure test (force mains and water mains): pressure mains shall be hydrostatically pressure tested for a period of not less than 2 hours at 150 PSI with an allowable leakage not to exceed the formula:

$$L = \frac{SD(P)^{1/2}}{148,000}$$

L = Allowable leakage in gallons per hour

S = Length of pipe in feet

D = Nominal diameter of pipe inches

P = average test pressure during test in pounds per square inch

All testing is to be in accordance with AWWA C605.

- C. HDPE pressure test shall be comprised of two phases as follows:

- 1. Pre-pressure Testing Phase
 - a. Safety precautions shall follow ASTM F2164.
 - b. Fill the test section slowly. Purge all air. Take all appropriate precaution to ensure that no air is trapped in the test section. Use air release valves or corporation stops to allow bleeding of trapped air, prior to beginning the test. Allow the test section and the test liquid to equalize to a common temperature.
- 2. Initial Expansion Phase (4 hours)
 - a. When the test section is completely filled and purged of air, gradually increase pressure in the test section to the required maximum pressure as determined by ENGINEER.
 - b. Add make-up water as necessary to maintain maximum test pressure for a minimum of 4 hours.
 - c. If test pressure cannot be attained, or if it takes an unreasonable long time to reach test pressure, there may be faults such as excessive leakage, entrapped air, or open valves, or the pressurizing equipment

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may be inadequate for the size of the test section. If such faults, exist, discontinue pressurizing, and correct them before continuing.

3. Test Phase (1 hour)
 - a. Reduce the pressure by 10 psi and monitor pressure for 1 hour. Do not increase pressure or add make-up water.
 - b. If no visual leakage is observed and pressure during the test phase remains steady, within +/- 5 psi, for the 1-hour test period, a passing test is indicated.
 - c. If retesting is necessary, depressurize the test section and correct any faults or leaks in the test section. Do not attempt to correct faults or Dix leaks while the test section is under pressure.
 - d. The time required to pressurize, stabilize, hold test pressure, and depressurize should not exceed 8 hours. If re-testing is necessary: the test section should be depressurized for 8 hours prior to retesting.

3.7 COMPLETION OF DIRECTIONAL DRILLING

- A. Completion and successful testing of the approved pipe will entitle the DBF to full payment of the applicable amounts in the Contract.
In the event of failure to install the directional drilled pipelines, the DBF shall retain possession of any DBF-supplied pipe and remove it from the site. The bore holes shall be completely filled with grout to prevent future problems. If the pipe cannot be removed from the bore hole, it shall be cut off five feet below ground and the pipe and annular space shall be grouted.

END OF SECTION 02410

SECTION 02510
CONCRETE SIDEWALK

PART 1 GENERAL**1.1 RELATED DOCUMENTS**

- A. All applicable provisions of the Bidding and Contract Requirements, and Division 1- General Requirements shall govern the WORK under this section.

1.2 WORK INCLUDED

- A. The work specified in this Section consists of the construction of concrete sidewalk in accordance with these Specifications and in conformity with the lines, grades, dimensions and notes shown on the plans.

1.3 RELATED WORK

- A. Section 02200 – Earthwork.
- B. Section 02110 - Clearing.
- C. Section 03010 - Concrete.
- D. Section 03300 - Cast-In-Place Concrete.
- E. Section 03370 - Concrete Curing.

PART 2 PRODUCTS**2.1 CONCRETE**

- A. Concrete shall be Class I Concrete, with a minimum compressive strength of 3,000 psi in accordance with Section 345, Florida Department of Transportation Standard Specifications for Road and Bridge Construction.

2.2 FORMS

- A. Forms for this work shall be made of either wood or metal and shall have a depth equal to the plan dimensions for the depth of concrete being deposited against them. They shall be straight, free from warp or bends, and of sufficient strength when staked, to resist the lateral pressure of the concrete without displacement from lines and grade. Forms shall be cleaned each time they are used and shall be oiled prior to placing the concrete.

2.3 SUBGRADE AND GRADING

- A. Excavation shall be made to the required depth, and the foundation material upon which the sidewalk is to be set shall be compacted to a firm, even surface, true to grade and cross-section, and shall be moist at the time that the concrete is placed. Subgrade shall be compacted to an LBR of 40.

2.4 JOINTS

- A. Contraction joints may be of the open type or may be sawed. Staking a metal bulkhead in place and depositing the concrete on both sides shall form open type contraction joints. After the concrete has set sufficiently to preserve the width and shape of the joint, bulkhead shall be removed. After the sidewalk has been finished over the joint, the slot shall be edged with a tool having a 1/2-inch radius.
- B. If the DBF elects to saw the contraction joints, a slot approximately 1/8-inch-wide

SECTION 02510
CONCRETE SIDEWALK

and not less than 1-1/2 inches deep shall be cut with a concrete saw after the concrete has set, and within the following periods of time:

- C. Contraction joints shall be constructed at not more than 20-foot intervals and shall be in place within 12 hours after finishing.

PART 3 EXECUTION

3.1 PLACING

- A. The concrete shall be placed in the forms to the required depth and shall be vibrated and spaded until mortar entirely covers its surface.

3.2 FINISHING

- A. Screeding: The concrete shall be struck-off by means of a wood screed, used perpendicular to the forms, and floated in order to obtain the required grade and remove surplus water and laitance.
- B. Surface requirements: The concrete shall be given a broom finish. The surface variations shall not be more than 1/4 inch under a ten-foot straightedge, nor more than 1/8 inch on a five-foot transverse section. The exposed edge of the slab shall be carefully finished with an edging tool having a radius of 1-1/2 inch.

3.3 CURING

- A. The concrete shall be continuously cured for a period of at least 72 hours. Curing shall be commenced after finishing has been completed and as soon as the concrete has hardened sufficiently, to permit application of the curing material without marring the surface.
- B. Wet burlap, white-pigmented curing compound, waterproof paper or polyethylene sheets may be used for the curing of grey concrete only.

3.4 COLORED CONCRETE (NOT USED)

- A. Colored – Conditioned Concrete shall be placed, finished, and cured in strict accordance with applicable requirements of this Section and Sections 03010, 03370, and the requirements of the chosen manufacturer.

END OF SECTION 02510

SECTION 02513
ASPHALTIC CONCRETE PAVING - GENERAL

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. All applicable provisions of the Bidding and Contract Requirements, and Division 1- General Requirements shall govern the WORK under this section.

1.2 WORK INCLUDED

- A. This section of the specifications covers the control and general conduct of asphalt paving construction for roads, parking, walks and court areas.
- B. All work within the right-of-way shall be constructed using materials and methods in accordance with the drawings, City of Fort Lauderdale Public Works Standard Details.
- C. Provide all labor, materials, necessary equipment, and services to complete the Asphaltic Concrete Paving work, as indicated on the drawings, as specified herein or both, except as for items specifically indicated as "NIC ITEMS".
- D. Including, but not necessarily limited to the following:
 - 1. Preparation of subgrade.
 - 2. Installation and compaction of base course.
 - 3. Spreading of asphalt surface course.

1.3 RELATED WORK

- A. Section 02200 – Earthwork.

1.4 TRAFFIC CONTROL

- A. The DBF shall provide and maintain access to and from all properties along the line of DBF'S work. The DBF shall also provide temporary bypasses and maintain them in a safe and usable condition whenever the public cannot do detouring of traffic to parallel routes without hardship or excessive increases in travel.

1.5 SPECIAL SUBGRADE CONDITIONS

- A. When special subgrade conditions are encountered for which these "Asphaltic Concrete Paving Specifications" are not applicable, portions of these specifications shall be deleted or revised to provide a properly finished paved surface. A requested revision or deletion of the specifications shall be accompanied with reports and laboratory tests on existing field conditions. Any change from these "Asphaltic Concrete Paving Specifications" shall be approved by the CITY and shall be in effect only for a specified area or paving project.

1.6 QUALITY ASSURANCE

- A. D.O.T. Standard Specifications.
 - 1. Work and materials shall conform to all applicable requirements of Florida Department of Transportation "Standard Specifications for Road and Bridge Construction – Latest Edition" (referred to herein as D.O.T.).
- B. American Society for Testing and Materials.
 - 1. ASTM 3515-80 "Standard Specification for Hot-Mixed, Job Laid, Bituminous Paving mixtures."

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ASPHALTIC CONCRETE PAVING - GENERAL

1.7 SUBMITTALS

- A. Provide copies of materials, notarized certificates of compliance signed by material producer and DBF, certifying that each material item complies with, or exceeds, specified requirements.

1.8 JOB CONDITIONS

- A. Apply prime and tack coats when ambient temperature is above 50 degrees, and when temperature has not been below 35 degrees for 12 hours immediately prior to application. Do not apply when base is wet or contains an excess of moisture.
- B. Construct asphalt concrete surface course only when atmospheric temperature is above 40 degrees, and when base is dry. Base course may be placed when air temperature is above 30 degrees and rising.

1.9 LOCATIONS, LAYOUT AND GRADES

- A. Locate and layout paved areas and right-of-ways with reference to benchmarks, property lines or buildings according to the drawings and as accepted by the CITY.
- B. Determine locations of paved edges and right-of-way line from surveyor's permanent reference monuments and information on the drawings.
- C. Where permanent reference monuments are not available, obtain proper line locations from authorities having jurisdiction.
- D. Establish and maintain required lines and elevations.

PART 2 PRODUCTS**2.1 FILL**

- A. All fill shall be clean rock and sand (maximum rock size = 1 inch).
- B. Fill shall be compacted thoroughly as per Section 02200 - Earthwork.

2.2 LIMEROCK

- A. Limerock shall be obtained from pits for which all overburden has been removed previous to blasting and shall show no tendency to air slake and must undergo the following chemical requirements.

	<u>Percent</u>	
Carbonates of Calcium	Min. 70.0	(Miami Limerock) and Magnesium 95.0 (Ocala Limerock)
Oxides of Iron and Aluminum	Max. 2.0	
Organic Matter	Max. 0.5	

1. Any constituents of other than those listed above shall be silica or inert material.
 2. The material shall be crushed to such size that not less than 97% shall pass a 3-1/2 inch sieve and it shall be graded uniformly down to dust. All fine material shall consist entirely of dust of fracture.
 3. Limerock from on-site may be used if the material meets the requirements of this section of the specifications.
- B. All limerock shall comply with requirements set forth under D.O.T. Section 911.

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ASPHALTIC CONCRETE PAVING - GENERAL

- C. Equipment: The equipment for constructing the rock base shall be in first class working condition and shall include:
 - 1. Three-wheel roller weighing not less than ten tons.
 - 2. Self-propelled blade grader weighing not less than three tons. The wheelbase shall be not less than fifteen feet and blade length not less than ten feet.
 - 3. Scarifiers shall have teeth space not to exceed 4-1/2 inches.
 - a. Provision for furnishing water at the construction site by tank or hose at a rate not less than 50 gallons per minute.

2.3 PRIME COAT

- A. Prime coat shall be Grade RC-70, cut-back asphalt, D.O.T. Section 916-2.
- B. Prime coat shall have full compatibility with surface treatment asphalt.
- C. The bituminous material shall conform to the requirements of the Florida Department of Transportation Standard Specifications for Road and Bridge Construction, Section 300- 2.
- D. The sand for cover shall be clean dry sand.

2.4 TANK COAT

- A. The bituminous material to be used for the tack coat shall conform to the requirements of the Florida Department of Transportation Standard Specifications for Road and Bridge Construction, Section 300-2.

2.5 ASPHALT

- A. The asphaltic concrete surface course shall be in accordance with the City of Fort Lauderdale, Florida Department of Transportation Standard Specifications for Friction Course, Superpave, Type S-1 and Type S-3, Asphaltic Concrete Surface Course.
- B. Pavement within public road right-of-way, which has been disturbed by this construction, shall be replaced with the same type and thickness to match the existing pavement section.
- C. General composition of mixtures:
 - 1. The aggregate in the asphaltic concrete shall be crushed stone and manufactured sand screening of natural sand or combination of both when necessary to meet requirements of composition of mix. All aggregate shall have a Los Angeles abrasion loss of less than 40%.
 - 2. The mineral aggregate shall be so graded, and the prescribed constituents, prepared as hereinafter set out, shall be combined in such proportions as to produce a mixture conforming to the following general composition limits by weight:

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<u>Constituent</u>	<u>Passing Sieve</u>	<u>S-1 Percent by Weight</u>	<u>S-3 Percent by Weight</u>
Coarse Aggregate	3/4" 1/2" 3/8" No.4	100 80-100 75-93 47-75	100 100 88-100 60-90
Total Coarse Aggregate	No.10	31-53	40-70
Fine Aggregate	No.40 No.80	19-35 7-21	20-45 10-30
Filler	No.200	2-6	2-6
<u>Constituent</u>		<u>Percent by Weight</u>	<u>Percent by Weight</u>
Total Fine Aggregate and Filler	No. 10	100	100
Total Mineral Aggregate		100	100
Total Mix		100	100
Asphalt Cement		5-9*	
(Bitumen) Total Mix		100	

*For highly absorptive aggregates the upper limit may be raised.

2.6 SEAL COATING

- A. Homogeneous mixture of emulsified coal tar pitch, asbestos, sand and other inert fillers. It shall be easily remixed if settlement occurs in storage (except in the case of freezing). It shall be capable of application and complete coverage by rubber squeegee, brush, or approved mechanical method, to the surface of bituminous pavements at the spreading rate of point two (.2) to point three (.3) gallons per square yard in two (2) coats.
- B. Approved product: "TARFEX" manufactured by Bitucote Products Co. or approved equal.

PART 3 EXECUTION

3.1 BARRICADES

- A. Provide substantial temporary barricades around all areas of operation and maintain until work under this section is completed and approved.
- B. Install temporary traffic markers, signals, and signs as per the City of Fort Lauderdale requirements for:
 1. Eliminate potentially hazardous conditions.
 2. Maintain adequate traffic patterns free of conflict with work under this Contract.

3.2 PREPARATION OF SUBGRADE

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 ASPHALTIC CONCRETE PAVING - GENERAL

- A. This work consists of bringing the bottom of excavations and top of embankments of the roadway between the outer limits of the shoulders or base course to a surface conforming to the grades, lines, and cross sections shown on the plans. The subgrade shall be of uniform density ready to receive the rock base of the paving course.
- B. All soft and yielding material and other portions of the subgrade which will not compact readily shall be removed and replaced with suitable material and the entire subgrade brought to line and grade to provide a foundation of uniform compaction and supporting power.
- C. Stumps, roots, and other deleterious organic matter encountered in the preparation of the subgrade shall be removed.
- D. Where fills are required on areas covered or partly covered by existing paving, the entire area of such existing paving shall be scarified to a depth of at least six inches, and the scarified material spread evenly over the area to be filled to a width not less than that of the proposed paving.
- E. Material for fills shall consist of sand or other suitable material approved by the CITY free from stumps, roots, brushes, and other deleterious organic matter.
- F. Where fill is more than one foot (1 foot) in depth, the backfill material above the ground water table shall be compacted on one (8 inch) depth lift. Each individual layer of fill under the rock base shall have a density as specified in Section 02200, Paragraph 3.14.I. unless shown otherwise on the plans. Each individual layer of fill under the shoulder area shall have a density as specified in Section 02200, Paragraph 3.14.I., unless shown otherwise on the plans.
- G. The bottom of all excavated areas and the top of all fills where rock base is to be constructed shall be thoroughly compacted by rolling. Water shall be used to insure thorough compaction. The stability of the top 12 inch thickness of the subgrade immediately under the base, for the full base width plus six (6) inches on each side, shall be at least LBR 40 as determined by AASHTO T-180.
- H. Bring subgrade, which has been properly filled and shaped to a firm unyielding surface, by rolling an entire area with an approved vibratory power roller weighing a minimum of 10 tons.
 - 1. Thoroughly compact area inaccessible to the roller with approved hand tamper.
 - 2. Apply water sufficiently to compact the subgrade where the subgrade is of a dry, sandy nature and cannot be rolled.
- I. The subgrade shall be maintained free from ruts, depressions or other irregularities until rock base material is spread.
- J. For all roads and streets other than state highways, the stabilized subgrade shall have a minimum Limerock Bearing Ratio (LBR) of 40, unless otherwise noted on the plans.
- K. Where the bearing value of the existing subgrade is adequate without addition of stabilizing material, the subgrade shall be scarified and disked, harrowed, bladed or tilled for removal of boulders, roots, etc. to assure uniformity and thorough mixing of material to the full width and depth of required stabilization. The compacted subgrade shall conform to the lines, grades and cross-section shown

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on the plans.

- L. Test subgrade for crown and elevation after preparation and immediately before base of paving course is laid.
 - 1. Remove or add material and compact to bring to a correct elevation and uniform bearing if the subgrade is found not to be at the specified elevation at all points.
 - 2. Adjust the MAS rims, catch basin frames and valve boxes where necessary to match proposed finish grade.

3.3 CONSTRUCTION OF BASE COURSE

- A. This work consists of construction of lime rock base course for the asphaltic concrete wearing surface. The base course shall be constructed on the prepared subgrade with eight (8) inch thick limerock bases constructed in two four-inch lifts as shown on the drawings. Twelve (12) inch thick limerock bases shall be constructed in two six-inch lifts. The limerock base shall be a minimum LBR of 100 and shall extend six (6) inches beyond the edge of the asphaltic concrete on each side.
- B. Spreading Rock: The rock shall be transported to the points where it is to be used over rock previously placed, and dumped on the end of the preceding spread. It shall then be spread uniformly with hand tools, or mechanical equipment. In no case shall rock be dumped directly on the subgrade. No hauling shall be done over the subgrade.
- C. Compacting Rock
 - 1. Following spreading, the rock shall be rolled with a three-wheel roller weighing not less than ten tons, water being added as required, until the entire depth of base is compacted into a dense unyielding mass.
 - 2. No greater area of rock base shall be placed during any one day than that which can be rolled and compacted on the same day.
- D. Finishing Base
 - 1. After watering and rolling, the entire surface shall be thoroughly scarified to a depth not less than four inches (4") and shaped to exact crown and cross section, re-watered and again thoroughly rolled. Rolling shall continue until the entire depth of base is bonded and compacted into a dense, unyielding mass, true to grade and cross section.
 - a. Any irregularities, which may develop in the surface during such finishing, shall be corrected by the removal or addition of rock as the case may be.
 - b. If at any time the subgrade material becomes churned up and mixed with the base rock, the DBF shall dig out and remove the mixture, reshape and compact the subgrade and replace the materials removed with clean rock which shall be watered and rolled until satisfactorily compacted.
 - c. Where cracks or checks appear in the base either before or after priming, which in the opinion of the CITY would impair the structural efficiency of the base course, the DBF shall remove such cracks or checks by re-

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scarifying, reshaping, watering, rolling and adding rock where necessary.

- d. During final compacting operations, if grading of any areas is necessary to obtain the true grade and cross section, the compacting operations for such areas shall be completed prior to making the density tests on the finished base.
- E. Inferior Rock: If in the opinion of the CITY at any time during the progress of the work, rock of inferior quality is being delivered to the construction site, a laboratory analysis of the rock shall be made. Should the results of such tests indicate that the rock does not conform to specifications, the DBF shall, at DBF's own expense, remove such inferior material from the area indicated and deliver and spread satisfactory rock on said area.
- F. Testing Surface: The finished surface of the rock base shall be true to the required cross section. Any irregularities in the grade greater than 1/4 inch, as determined by placing a ten-foot straight edge parallel with the centerline, shall be corrected by scarifying to a depth of three inches (3"), removing or adding rock as may be required and again watering, rolling, and compacting the scarified area. In testing the surface for irregularities, the measurements under the straight edge shall not be taken in small holes caused by individual pieces of rock having been pulled out by the road grader.
- G. Thickness Determination: Thickness of the base shall be measured by intervals as required by the CITY. Measurements shall be taken at various points on the cross section. The measurements shall be taken in holes through the base of not less than three inches (3") in diameter. Where the base is more than 1/2 inch less than the required compacted thickness, the DBF shall correct such areas by scarifying and adding rock. The affected areas shall then be watered, rolled and brought to a satisfactory state of completion, and of required thickness and cross section.
- H. Density: An average required density shall be as specified in Section 02200, Paragraph 3.14.I at intervals acceptable to the OWNER. No section of base shall be accepted when more than 10% of tests fall below 98% of maximum density and in no case shall a density of less than 96% of maximum be accepted.
- I. Testing: The DBF shall coordinate with CITY for all testing. All tests shall be made in accordance with AASHTO, T-180 for each class of material in the subgrade and base.
 1. In place density tests in accordance with AASHTO T-147 shall be made in the locations shown on the plans. Two copies of the test reports will be sent directly to the CITY for evaluation.
 2. Any material, which fails to meet these specifications, shall be removed, replaced, and retested, all at the DBF's expense.
 3. Tests shall be taken at least every 1,000 square yards and taken at locations and lifts as directed by the CITY.

3.4 **PRIME COAT FOR BASE COURSE**

- A. Cleaning the prepared base:

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1. Before any bituminous material is applied, all loose material: dust, dirt, caked clay and foreign matter which might prevent proper bond with the existing surface shall be moved to the shoulders, to the full width of the treatment, by means of revolving brooms or approved mechanical sweepers and by mechanical blowers, of approved types, supplemented by hand sweeping. Dust and other loose materials not removed by mechanical means shall be removed with hand brooms. Particular care shall be taken to clean the outer edges of the strip to be treated in order to ensure that the prime coat will adhere. Sweeping and blowing shall be continued until all the loose dust and dirt is removed from the surfaces.
 2. Application of bituminous material shall be made during the same day surface has been swept and as soon as practical thereafter.
- B. Application for prime coat:
1. The bituminous material shall be applied to the clean dry surface of the rock base at such temperature as will insure uniform distribution. The amount applied will be at the rate of approximately 0.10 to 0.20 gallons per square yard of base area. The application shall be made by means of self-propelled pressure distributor operating under a pressure not less than 20 pounds per square inch. Application of bituminous material shall be made on only one-half of the width of base at one time.
 2. The primed base shall then be covered with a uniform layer of clean sand and kept thoroughly and uniformly covered by additional sand or sweeping until it shows no signs of picking up under traffic. For a period of one week after priming, the DBF shall again broom any area where insufficient cover sand or excess of bituminous material causes "bleeding" and, if necessary, spread additional sand on such area.
- C. Prime coat finish: After prime has cured or sat and been sanded, the shoulder shall be shaped to conform to all grade lines and cross sections and the entire area shall be rolled and compacted with a rubber-tired roller or a power roller before asphalt surface is laid on the finished base.

3.5 BITUMINOUS TACK COAT

- A. Before applying any bituminous material, all loose material: dust, dirt and foreign material, which might prevent proper bond with the existing surface, shall be removed for the full width of the application.
- B. Application for tack coat:
1. The surface to receive the tack coat shall be clean and dry. The tack coat shall be clean and dry. The tack coat shall be applied with a pressure distributor except that on small jobs, if approved by the CITY, the application may be made by other approved mechanical methods or by hand methods. The pressure distributor shall operate at a pressure not less than 20 pounds per square inch and at a consistency such that it can be properly pumped and sprayed uniformly over the surface.
 2. The bituminous material shall be applied in a thin uniform layer. The rate of application shall be between 0.02 and 0.10 gallon per square yard. The tack coat shall be applied sufficiently in advance of the laying of the wearing

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surface to permit drying but shall not be applied so far in advance that it might lose adhesiveness as a result of being covered with dust or other foreign material. The tack coat surface shall be kept free from traffic until the wearing surface is laid.

3.6 **ASPHALTIC CONCRETE WEARING SURFACE COURSE**

- A. Cleaning and preparing base:
 - 1. Prior to the laying of the asphaltic concrete, the base of pavement to be covered shall be cleaned of all loose deleterious material by the use of power brooms or blowers. A tack coat shall be applied on all pavements. The tack coat shall not be applied so far in advance of laying operations as to allow shifting and sand or weather conditions to nullify its effectiveness.
 - 2. After the surface has been thoroughly cleaned, all holes shall be filled with asphaltic concrete, if necessary, and thoroughly compacted to conform to the existing surface and to form a smooth surface.
- B. Placing asphaltic concrete: The asphaltic concrete surface course shall be applied after the tack coat after a reasonable permitted time for drying but not to an extent that the tack coat is allowed to lose its adhesiveness.
 - 1. Machine spreading: Upon arrival the mixture shall be dumped into the approved mechanical spreader and immediately spread and struck off to the full width required and to the appropriate loose depth for each successive course that when the work is completed the required weight of the mixture per square yard or the specified thickness will be secured. An excessive amount of mixture shall be carried ahead of the screen at all times. Hand raking shall be done behind the machine as required.
 - 2. Hand spreading: In limited areas, where, on account of irregularities or unavoidable obstacles, the use of mechanical spreading and finishing equipment is impractical, the mixture may be spread by hand, when so authorized by the CITY.
 - 3. The mixture shall be laid only when the surface to be covered is dry and only when weather conditions are suitable.
 - 4. All structures which will be in actual contact with asphaltic mixture, including the face or surface of curbs or gutters and the vertical faces of existing pavements, shall be painted with a uniform coating of asphalt material to provide a closely bonded, watertight joint.
 - 5. Where necessary, due to the traffic requirements, the mixture shall be laid in strips in such manner as to provide for the passage of traffic.
 - 6. Any mixtures caught in transit by a sudden rain may be laid at the DBF's risk. In no case shall the mixture be laid while rain is falling or when there is water on the surface to be covered.
 - 7. The depth of the layer being spread shall be gauged as directed, and where the thickness fails to average the specified thickness, immediate steps shall be taken to correct the depth.
 - 8. Before any rolling is started, the course surface shall be checked, any inequalities adjusted, and all drippings, fat sand accumulations from the

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- screed and fat spots from any source shall be removed and replaced with satisfactory material.
9. Straight-edging and back patching shall be done after initial completion has been obtained and while the material is still hot. Any irregularity greater than 1/4 inch either longitudinally or transversely shall be corrected at this time.
 10. No skin patching shall be done. When a depression is to be corrected while the mixture is hot, the surface shall be well scarified before the addition of fresh mixture. If irregularities occur and are not corrected while the mixture is still hot, the irregularities shall be cut out the full depth of the layer and replaced with fresh mixture.
- C. Compacting mixture: After the spreading, the mixture shall be rolled when it has set sufficiently or come to the proper condition to be rolled, and when the rolling does not cause undue displacement or shoving.
1. The motion of the roller shall at all times be slow enough to avoid displacement and shall at once be corrected by the use of rakes and fresh mixture where required. The rolling shall include all transverse, longitudinal, and diagonal rolling, as may be necessary to obtain the maximum density.
 2. The seal rolling with tandem steel rollers weighing from five to eight tons shall follow as close behind the spreader as is possible without picking up or displacing or blistering the material.
 3. Rolling with the self-propelled pneumatic-tired rollers shall follow as soon as possible and as close behind the seal rolling as the heat of the mixture will permit. The rolling shall be done while pavement temperature is between 175o and 240oF, and to such an extent that the self-propelled traffic roller shall cover every area of the surface with at least ten passes. Final rolling with tandem steel rollers shall be done after the rolling with self-propelled pneumatic tired rollers is completed. This final rolling shall be done before the pavement temperature is lower than 175oF and shall be continued until all roller marks or tire marks are eliminated.
 4. Self-propelled pneumatic rollers shall be used for the rolling of patching and leveling courses. At the option of the DBF, a steel-wheeled roller may be used to supplement the self-propelled pneumatic-tired rollers but not more than one steel-wheeled roller may be used in conjunction with the necessary number of self-propelled pneumatic- tired rollers. After final completion, the finished pavement shall at no point have a density less than 95% of the laboratory compacted density.
 5. Rolling with the self-propelled pneumatic-tired roller shall proceed at a speed from six to twelve miles per hour and the rate of rolling shall not exceed 3,000 square yards per hour per roller. A sufficient number of self-propelled pneumatic-tired rollers shall be used so that the rolling of the surface for the required number of 10 passes within this maximum rolling rate shall not delay any other phase of the placing operation and not result in excessive cooling of the mixture before the rolling is complete. In the event that the rolling is not properly maintained to schedule as outlined above, the laying operation shall be discontinued until the rolling operations are sufficiently caught up.
 6. In all places inaccessible to a roller, such as adjacent to curbs, headers,

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gutters, bridges, MAS, etc., the required compaction shall be secured with tamps. Depressions, which may develop before the completion of the rolling, shall be remedied by loosening the mixture laid and adding new material to bring such depressions to a true surface.

7. Should any depressions remain after final compaction has been obtained, the mixture shall be removed sufficiently, and new material added to form a true and even surface. All high spots, high joints and honeycombs shall be adjusted as directed by the CITY.
 8. The mixture, after compaction, shall be of the thickness shown on the plans. After compactions, at no place on the surface shall an excess of asphalt be shown and any area showing such excess or other defect, shall be cut out and replaced with fresh mixture and immediately compacted to conform with the surrounding area. Any mixture which becomes loose or broken, mixed with dirt in the wearing course shall be removed and replaced with fresh mixture which shall be immediately compacted to conform with surrounding areas.
 9. Gasoline or oil from rollers shall not be allowed to deposit on the pavement and any pavement damaged by such deposits shall be removed and replaced as directed by the CITY.
 10. Any mixture remaining unbonded after rolling shall be removed and replaced.
- D. Protection of pavement: After the completion of the pavement, no vehicular traffic of any kind shall be permitted on the pavement until it has set sufficiently as approved by the CITY.

3.7 **ABUTTING EXISTING PAVING**

- A. Meet elevation of existing paving and structures, facilities and utilities where applicable by sawcutting and removing no less than two (2) feet from abutment. Milling of asphalt for a width of two (2) feet is an alternative if approved by CITY. Do not cover access covers, MAS tops, water meters or other similar devices.

3.8 **PAVEMENT EDGES**

- A. Make edges of paved area conform to details and sections as shown on drawings.

3.9 **SEAL COATING**

- A. Preparation of surface: Pavement to be sealed must be sound and free of loose dust, dirt, stones, or other foreign matter:
1. Repair any breaks or holes.
 2. Scrape off accumulations of oil or fuel drippings and scrub with detergent and water. Remove all traces of detergent.
 3. Soft or damaged spots must be repaired.
 4. Flush entire area with clean water.
 5. Pavement should be damp (no puddles or excess water) when seal coating is applied.
- B. MIXING: Stir seal coating to a uniform consistency, use no solvents for thinning. Dilute seal coating with ten (10) percent to twenty (20) percent clean water, stirring

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to uniform consistency.

C. Application:

1. Seal coat may be applied to dampened surface with a rubber squeegee, soft bristled push broom, or approved mechanized equipment.
2. Seal coating may be poured directly onto pavement in a ribbon or window. Squeegee is placed on pavement at a slight angle to edge line of pavement and pulled in a window along pavement in parallel lines, always working excess material toward bottom edge of squeegee.
3. Seal coating should be applied in two (2) thin coats. After first coat is completely dry to touch, a second coat may be applied at right angles to the first. Rate of application will depend on porosity of surface.
4. Allow to cure for twenty-four (24) hours before opening to traffic.
5. Do not apply seal coating when temperature is below fifty (50) degrees Fahrenheit, or falling, before sealer is dry, or rain appears imminent or forecast.
6. Apply in strict accord with manufacturers published instructions.

3.10 **FIELD QUALITY CONTROL**

- A. Test in place asphalt concrete course for compliance with requirements for thickness and surface smoothness. Repair or remove and replace unacceptable paving as directed by OWNER's Representative.
 1. In-place compacted thickness will not be acceptable if exceeding following allowable variation from required thickness:
 - a. Base Course: Not greater than 1/2 inch of specified thickness.
 - b. Surface Course: Not greater than 1/4 inch of specified thickness.
 2. Test finished surface of each asphalt concrete course for smoothness, using 10-foot straight edge applied parallel with, and at right angles to centerline of paved area. Surfaces will not be acceptable if exceeding the following tolerances for smoothness.
 - a. Base Course Surface: 1/4 inch.
 - b. Wearing Course Surface: 1/8 inch.
- B. Check surface area at intervals as directed by the CITY.
- C. Finish grade shall be within ± 0.01 feet of the grades indicated on the plans or ± 0.05 feet as long as no ponding of water is observed after final paving.

3.11 **CLEAN UP**

- A. Remove all debris and excess material immediately from project site.
- B. Take down all barricades and temporary traffic markers, signals and signs only after all work included in this section is finished and inspected, and only after so directed by the CITY
- C. Leave project area clean, orderly and free of any hazardous conditions.

3.12 **CONSTRUCTION OF SWALES**

- A. This work consists of regrading existing swales and construction of new swales adequate for conveying storm water along the right-of-way to catch basins. The

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swale shall be shaped according to the cross section shown on the plan. In areas adjacent to existing roadways all swales shall be regraded to meet the City of Fort Lauderdale standards, unless otherwise noted.

- B. Requirements: All soft and yielding material and other portions of the swale which will not compact readily shall be removed and replaced with suitable material and the entire swale area brought to the proper grade. Stumps, roots, and other deleterious organic matter encountered during the shaping for the swale shall be removed.
- C. The bottom of all excavated areas and the top of all fills of swale areas shall be thoroughly compacted by rolling. Water shall be used as necessary to insure thorough compaction. The stability of the top 12-inch thickness of swale area shall be at least LBR 40. Sufficient stabilizing material shall be added to swale area soil as required to provide the specified stability.
- D. The DBF shall place sod over existing areas damaged by construction. The sod shall match the existing sod type in the affected areas.

END OF SECTION 02513

SECTION 02601
SUBTERRANEAN STRUCTURES

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. All applicable provisions of the Bidding and Contract Requirements, and Division 1-General Requirements shall govern the WORK under this section.

1.2 WORK INCLUDED

- A. The work covered by this section shall include the furnishing of all labor, equipment, services, materials, products, and tests to perform all operations in connection with the construction of all new structures or modifications or abandonment of existing structures as shown on the plans, defined in these specifications and subject to the terms and conditions of this contract, including, but not limited to, maintenance access structures (MAS), conflict structures, catch basins, and inlets.

1.3 RELATED WORK

- A. Section 02200 – Earthwork
- B. Section 02221 - Excavation and Backfilling for Utilities

1.4 SUBMITTALS

- A. The DBF shall furnish the CITY shop drawings of the precast drainage structures and MAS for approval. Shop drawings should illustrate all dimensions, reinforcements and specifications.

PART 2 PRODUCTS

2.1 MORTAR

- A. Mortar for use in constructing and plastering sewer structures shall conform to ASTM C-270, "Specifications for Mortar for Unit Masonry". A Portland cement-hydrated lime mixture or a masonry cement may be used provided that the same materials are used throughout the project.
- B. Mortar materials shall be proportioned by volume and shall consist of one-part Type II Portland Cement to two parts aggregate (sand). Portland Cement shall conform to ASTM C- 150, "Specifications for Portland Cement". Aggregate shall conform to ASTM C-144, "Specifications for Aggregate for Masonry Units."

2.2 PRECAST CONCRETE MAS

- A. Precast MAS sections shall conform to ASTM C-478, Specifications for Precast Reinforce Concrete MAS Sections as modified thereto. Concrete shall attain a minimum compressive strength of 4,000 pounds per square inch at 28 days. Minimum wall thickness shall be 8 inches.
- B. Unless otherwise specified on the plans, all joints shall be made with neoprene or rubber "O" ring compression joints; mastic joint sealing compound, or approved equal. After assembly, all joints shall be filled with mortar and painted to provide a smooth surface without joint voids.
- C. The base and walls that compose the bottom section of precast MAS shall be of monolithic construction, minimum 8 inches thick, and the edge of the base slab shall project a minimum 4 inches beyond the outside diameter of the wall.

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SUBTERRANEAN STRUCTURES

- D. Holes for piping shall be 6 inches larger than the outside diameter of the respective pipe. After the pipe is set, the void space between the pipe and the hole perimeter shall be completely filled with non-shrinking, quick-setting, waterproof cement mortar and struck smooth.
- E. The minimum height of precast base section shall be 36 inches from the bottom of the base slab; however, no holes for piping shall be cast less than 8 inches from the top of the base section or less than 2 inches from the top of the base slab.
- F. The maintenance access structure walls shall be coated inside and outside with 2 coats of coal tar epoxy. The first coat shall be red and the second coat shall be black. Each coat shall have a thickness of 8 mil for a total thickness of 16 mil outside and 16 mil inside.

2.3 ENDWALLS, CATCH BASINS, INLETS, JUNCTION BOXES AND VALVE VAULTS

- A. Endwalls, valve vaults, catch basins, inlets and junction boxes shall be constructed at the locations shown and to the dimensions indicated on site plans. Unless otherwise specified on the plans, inlets, junction boxes, catch basins, valve vaults and similar structures may be constructed of brick, concrete block, poured concrete or precast concrete. Precast catch basins shall conform to latest Portland Cement Association specifications. Concrete shall have not less than 4,000-pounds per square inch compressive strength at 28 days.
- B. Unless otherwise specified on the plans, all concrete for these structures shall be Class I concrete as specified in the Florida Department of Transportation "Standard Specifications for Road and Bridge Construction", latest revision, Section 345. Mortar for use in constructing and plastering shall be as previously set forth in this section.
- C. Brick shall be solid hard-burned clay conforming to ASTM Serial C-32-73, Grade MA. Concrete brick shall conform to ASTM Serial C-55-75, Grade P-I. Concrete block shall conform to ASTM Serial C-90-78, Grade PI.
- D. All brick or concrete block structures covered in this Section shall be plastered inside and outside with 1/2 inch of cement mortar. Inside surfaces shall be smooth and even.
- E. Base slabs and walls of concrete structures shall be constructed in a continuous pour between expansion joints.
- F. For each grate type inlet, two layers of Mirafi 140 fabric of "Poly Filter X" polypropylene material or approved equal, shall be sandwiched between 2 x 2 x 10/10 welded wire fabric cut to the grate size and attached to the underside of the grate. The sandwiched filter material shall be wired to the cross members of the grate each way on 4-inch centers. After inlet construction and the roadway construction is completed and the project site work (including landscaping) has been established, the filter material and fabric shall be removed with any retained silt or sand.

2.4 CASTINGS (INCLUDING FRAMES, COVERS AND GRATINGS)

- A. Iron castings shall conform to ASTM A-48, "Specifications for Gray Iron Castings", and shall be Class 30. Frames and grates may be Class 20.

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SUBTERRANEAN STRUCTURES

- B. All castings shall be made of clean, even grain, tough grey cast iron. The castings shall be smooth, true to pattern and free from projections, sand holes, warp and other defects. The horizontal surface of the frame cover seats and the under surface of the frame cover seat which rests upon the cover seat shall be machined. After machining, it shall not be possible to rock any cover that has been seated in any position in its associated frame. Machining shall be required only on those frames and covers intended for vehicular traffic.
- C. Bearing surfaces between cast frames, covers and grates shall be machined and fitted together to assure a true and even fit. Within areas of vehicular traffic, the frames, covers and gratings shall be machined-ground so that irregularity of contact will be reduced to a minimum and will be rattle-proof.
- D. All MAS covers shall be provided with concealed pick holes. Manufacturer's name and catalog number shall be cast on all frames, covers, grates, etc. Covers shall be lettered "Storm Sewer" or "Sanitary Sewer" as applicable and shall be plainly visible as shown on the plans. The MAS frames and covers shall be flush with finished grade.
- E. Grates and covers for inlets shall be as shown on the plans, set to the grades indicated and conforming with the requirements of the castings described above. Grates shall be furnished complete with frames specifically constructed to provide full bearing at all points of contact.

PART 3 EXECUTION

3.1 CHANNELS

- A. Channels shall be accurately and smoothly formed in accordance with the plans. Channels shall be constructed of concrete with trowel-finished surfaces. The upper surface of the MAS shall be sloped toward the channels as shown.
- B. Drop pipe at sanitary sewer MAS shall be installed when the difference in elevation between the pipe invert and the invert at the center of the MAS exceeds two feet (2'), or where directed by the CITY. The drop MAS structure shall be built according to the plans and specifications.
- C. After channels are formed and section joints are pointed, the interior of the sanitary sewer MAS shall be painted with two coats of Koppers Bitumastic 300-M (7 mils per coat) or approved equal. The exterior shall be painted in a similar manner, if required by local regulations.
- D. Storm drainage structures are not required to be painted inside or outside. Provide finish and water proofing as specified in 3.02 and 3.03 below.

3.2 BRICKS

- A. All bricks shall be thoroughly wetted before being laid. Brick shall be laid by the above shove joint method so as to bond them thoroughly into the mortar. Headers and stretcher courses shall be so arranged as to bond and mass thoroughly. Joints shall be finished smooth and shall be not less than 1/4 inch or more than 1/2 inch in thickness.

3.3 MANHOLES AND OTHER STRUCTURES

SECTION 02601
SUBTERRANEAN STRUCTURES

- A. All joints shall be finished watertight; all openings for sewers, frames, etc., in precast MAS and catch basins shall be cast at time of manufacture. Spaces around all piping entering or leaving MAS shall be completely filled with Embeco mortar or approved equal.
- B. All MAS shall be set plumb to line and grade and shall rest on a firm carefully graded subgrade which shall provide uniform bearing under base.
- C. Grout for MAS bottoms shall consist of broken block, brick and 2:1 cement mortar.

3.4 CLEANING AND MAINTENANCE

- A. All structures shall be cleaned and maintained in workable condition until accepted by the CITY.

3.5 ABANDONMENT OF EXISTING STRUCTURES IN PLACE

- A. All structures shown on the drawings to be abandoned in place shall be removed to a minimum of 3 feet below existing grade and properly filled with material as in section 02200 paragraph 3.14. Excavation, backfill, and restoration shall be executed in accordance with requirements for removing existing and installing new structures.

END OF SECTION 02601

SECTION 02603
PUMP STATION AND FORCEMAIN

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. All applicable provisions of the Bidding and Contract Requirements, and Division 1- General Requirements shall govern the WORK under this section.

1.2 WORK INCLUDED

- A. The DBF shall install and place in operation submersible sewage pumps and control panel as indicated on the drawings and specified herein. Pump shoes, guide rails (or bars), brackets and all other equipment shall be supplied and installed by the DBF.
- B. To assure unity of responsibility, pumps, motors, driving mechanisms and base plate shall be supplied and coordinated by the pump manufacturer. The DBF shall assume responsibility for the satisfactory installation and operation of the entire pumping system
- C. The work covered by this section consists of furnishing all labor, equipment, services, materials, products, and tests to perform all operations in connection with the construction/installation of forcemain as shown in the design criteria package and defined in the specifications and subject to the terms and conditions of this Contract, including but not limited to the following:
 - 1. Excavation and Backfill
 - 2. Wet Well and Valve Vault
 - 3. Pumps
 - 4. Electrical
 - 5. Force Main (and Tap)
 - 6. Dewatering
- D. Concrete Protective Liner System for Precast Structures
 - 1. Furnish and install all labor, materials, equipment, and incidentals required to supply polypropylene, random copolymer (PP-R) concrete protective liner in the precast wet wells and valve vault as required and as shown on the plans. The liner system shall be AGRU "Sure-Grip" PP-R Concrete Protective Liner or approved equal polypropylene lining.
 - 2. PP-R concrete protective liner shall be designed and installed to protect the precast structure's interior surfaces from chemical attack and microbial corrosion, and to facilitate the prevention of ground water infiltration. A watertight seal between the ring and cover, or access hatch, and the liner, must be incorporated into the design. Additionally, the liner must be sealed at the bottom of the concrete structure's wall with a water stop assembly thermo-welded to the wall liner, or with continuous liner coverage over the top of the base slab. All construction joints must be sealed by extrusion welding the liner seams together to form a continuous and flexible seal between structure sections (Option I), or through the use of a 90-degree liner turnback into the inside horizontal plane of the upper and lower construction joint, and sealed with a butyl, or equal, sealant (Option II). Option II is not recommended for underground structures subjected to high levels of hydraulic backpressure or exposed to a severe corrosive environment.

SECTION 02610
PIPING, GENERAL

1.3 RELATED WORK

- A. Section 02200 – Earthwork
- B. Section 02221 - Excavation and Backfilling for Utilities
- C. Section 02601 – Subterranean Structures
- D. Section 02610 - Piping – General
- E. Section 02641 - Valve – General
- F. Section 02722 - Sanitary Sewerage System
- G. Section 16010 – Basic Electrical Requirements
- H. Section 16015 – Electrical Systems Analyses
- I. Section 16050 – Electrical General Provisions
- J. Section 16110 – Raceways
- K. Section 16120 – Wires and Cables
- L. Section 16405 – Electric Motors
- M. Section 16452 – Grounding
- N. Section 16485 – Variable Frequency Drives
- O. Section 16810 – Control Panels
- P. Section 16950 – Miscellaneous Equipment

1.4 SUBMITTALS

- A. The DBF shall submit to the CITY for preliminary approval of the construction materials selected and shall furnish to the CITY shop drawings for review. Shop drawings shall illustrate all dimensions, reinforcements, joint details, materials, and material specifications.
- B. The DBF 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.
- C. DBF shall submit a complete wiring schematic for the pump station package.
- D. Concrete Protection:
 - 1. The DBF shall submit for review a detailed CAD drawing for each type of structure to be used on the project. These drawings shall detail the precast structure, per the design specified for the project, and shall show the concrete protective liner's placement on the structure's interior wall surfaces, at the construction joints, at pipe and other conduit connections, and at the adjustment area between the precast structure and the ring and cover.
 - 2. The DBF shall provide, upon request, detailed thermo-welding and weld testing procedures, and supply to the CITY, upon request, a copy of the liner manufacturer's certification of training for those personnel performing the welding.

PART 2 PRODUCTS

2.1 WET WELL, VAULT, AND FORCE MAIN

- A. Wet well shall be constructed at the location shown and to the dimensions and depths indicated on the plans. DBF to determine final sizing, depth and capacity of wet well. No additional compensation will be provided for larger wet well or vaults

SECTION 02603
PUMP STATION AND FORCEMAIN

if required.

- B. The wet well shall be precast concrete. The base and three (3) feet of the wall shall be cast monolithically. The remaining wall sections shall be cast with wall sleeves for appurtenances located as shown. The top shall be precast with vent and access hatch required.
- C. Holes for sewer and force main piping shall be 4 inches larger than the outside diameter of the respective pipe. Holes for power cables and control wiring shall be one inch larger than the outside diameter of respective rigid conduit. After pipe is set the void space shall be completely filled with cement mortar and struck smooth. The waterproof hydraulic cement mortar shall be used to provide a leakproof seal around the pipe.
- D. Wetwell Interior shall be coated with one of the following options:
 - 1. 2 coats of 15 MILS (DFT) each, of a Bitumastic coating (30 MILS DFT, Total). Bitumastic Coating shall be Carboline (Koppers) or approved Equal
 - 2. Sprayed with high build, moisture tolerant, chemical resistant epoxy coating designed to be applied on dry or damp concrete surfaces and yielding a hard durable chemical resistant finish to a pH of 1.0. Epoxy Coating shall be BASF Sewer Guard HBS 100, or other approved material on the BCWWS approved materials list.
 - a. Apply material using a 30:0 or 45:1 airless sprayer to a minimum dry thickness of 60 MILS in two (2) 30 MILS coats.
- E. Wetwell and Valve Vault exterior shall be coated with two (2), 10MILS (DFT) each coat of a Bitumastic coating (20 MILS Total DFT). Bitumastic coating shall be Carboline (Koppers) 300M or approved equal.
- F. The valve vault shall be precast. The top shall be the hatch as indicated in the standard details. The walls shall be constructed subsequent to completion of the piping installation.
- G. Valve Vault interior surfaces shall be coated with 100% solids polyamine epoxy specifically designed for wastewater immersion and low permeation to H₂S gas. Material shall be TNEMEC PERMA-GLAZE, Series 435, or approved equal, applied to two (2) coats, 15.0 MILS (DFT) each, (30.0 MILS DFT, Total). Final color is to be beige. Surface preparation, priming and application shall be in accordance with the more stringent of the manufacturer's recommendations or BCWWS specifications.
- H. Ductile iron shall conform to AWWA C 151. Ductile Iron Pipes and Fittings exterior surfaces shall be coated with a 100% polyamine epoxy specifically design for wastewater immersion and low permeation to H₂S gas. Material shall be TNEMEC PERMA-GLAZE, Series 435, or approved equal. It shall be applied in two (2) coats of 20 MILS (DFT) each (40 MILS Total DFT). Valves shall receive only the final 20 MILS (DFT) coat. Final color is to be beige. Surface preparation, priming and application shall be in accordance with the more stringent of the manufacturer's recommendations or BCWWS specifications.
- I. Ductile Iron Pipes and Fittings interior shall be coated with 40 MILS (DFT) of Protecto 401 or approved equal. Surface preparations and application shall be in accordance with the manufacturer's recommendations. Certification of the manufacturer shall be provided.

SECTION 02610
PIPING, GENERAL**2.2 PUMPS**

- A. The pumps shall be submersible type. Operational characteristics shall be as shown on the plans. The pumps shall alternate in service and operate in accordance with the sequence outlined on the plans. Sealed mercury switches shall be used for actuation. Furnish and install three submersibles non-clog wastewater pumps for each lift station.
- B. Each pump shall have a capacity of at least 90 hp and run with a 480 volts configuration. DBF responsible for verifying ultimate pump size and capacity at no additional cost. The power cable shall be sized according to NEC and ICEA standards. An adequate length of multiconductor submersible cable (SUBCAB) will be used to convey pump monitoring device signals between control panel and submersible pumps. The pump shall be supplied with a mating discharge connection and be capable of delivering flow per the operating points defined within the plans. Pump shut off head shall be no less than 52 feet. Each pump shall be fitted with adequate length of lifting chain or stainless-steel cable. The working load of the lifting system shall be 50% greater than the pump unit weigh.
- C. Pump Design
 - 1. The DBF shall design the pump intake in accordance with Hydraulic Institute standard 9.8, Rotodynamic Pumps for Pump Intake Design.
 - a. Operating range shall be 40% to 120% of the flow at the best operating point for each scenario.
 - b. Pumps shall operate within the allowable operating range for all conditions and operate within the preferred operating range for design conditions.
 - c. Single pump operation shall be able to meet minimum flow requirements with no more than 50% turndown on VFDs
 - d. NPSH available shall be a minimum of 1.5 greater than NPSHA required at design points
 - 2. The pump should be no less than 90 hp, using two pumps at the same time to handle the flow that ranges between 555 and 1950 gpm with a pressure value at the connection point that ranges from 15 to 45 psi. Values provided are preliminary. DBF shall verify flows and calculate current and future flows to determine the most efficient pump motor for the project at no additional cost.
 - 3. The pump(s) shall be capable of handling raw, unscreened sewage. The design shall be such that the pump unit will be automatically and firmly connected to the discharge piping when lowered into place on its mating discharge connection, permanently installed in the wet well. The pump shall be easily removable for inspection or service, requiring no bolts, nuts or other fastenings to be disconnected. For this purpose, there shall be no need for personnel to enter the wet well. Each shall be fitted with a stainless-steel chain of adequate strength and length to permit raising and lowering the pump for inspection or removal. The pump, with its appurtenances and cable, shall be capable of continuous submergence underwater without loss of watertight integrity to a depth of 165 feet.

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4. Sealing of the pumping unit to the discharge connection shall be accomplished by a machined metal to metal watertight contact. Sealing of the discharge interface with a diaphragm, O-ring or profile gasket will not be acceptable. The entire weight of the pump/motor unit shall be borne by the pump discharge elbow. No portion of the pump/motor unit shall bear on the sump floor directly or on a sump floor mounted stand. Power and pilot cable supports shall be provided and consist of a wire braid sleeve with attachment loops or tails to connection to the underside of the access frame.

D. Pump Construction

1. All major parts, such as the stator casing, oil casing, and impeller shall be of gray iron. A coating of rubber asphalt paint resistant to sewage shall protect all surfaces coming into contact with sewage. All exposed bolts and nuts shall be of stainless steel.
2. A wear ring system shall be bronze and installed to provide efficient sealing between the volute and impeller. The impeller shall be gray cast iron of non-clogging design, capable of handling solids, fibrous material, heavy sludge, and other matter found in normal sewage applications. The impeller shall be constructed with a long throughlet without acute turns. The impeller shall be dynamically balanced. Static and dynamic balancing operations shall not deform or weaken it. The impeller shall be a slip fit to the shaft and key driven. Non-corroding fasteners shall be used.
3. Each pump shall be provided with a mechanical rotating shaft seal system running in an oil reservoir having separate, constantly hydro-dynamically lubricated lapped seal faces. The (lower) seal unit between the pump and oil chamber shall contain one stationary and one positively driven rotating tungsten-carbide ring. The (upper) seal unit between the oil sump and motor housing shall contain one stationary tungsten-carbide ring and one positively driven rotating tungsten carbide ring. Each interface shall be held in contact by its own spring system supplemented by external liquid pressures. The seals shall require neither maintenance nor adjustment but shall be easily inspected and replaceable. Shaft seals without positively driven rotating members or conventional double mechanical seals with a common single or double spring acting between the upper and lower units, requiring a pressure differential to offset external pressure and effect sealing shall not be considered acceptable nor equal to the dual independent seal system specified. The shaft sealing system shall be capable of operating submerged to depths of, or pressures equivalent to 165 feet. No seal damage shall result from operating the pumping unit out of its liquid environment. The seal system shall not rely upon the pump media for lubrication.
4. A sliding guide bracket shall be an integral part of the pump unit. The volute casing shall have a machined discharge flange to automatically and firmly connect with the cast iron discharge connection, which when bolted to the floor of the sump and discharge line, will receive the pump discharge connecting flange without the need of adjustment, fasteners, clamps or similar devices.

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5. Installation of each pump unit to the discharge connection shall be the result of a simple linear downward motion of the pump unit guide by no less than two 2 inch stainless steel guide bars.
6. No other motion of the pump unit, such as tilting or rotating, shall be required. Sealing of the discharge interface by means of a diaphragm, O-ring or other devices will not be considered acceptable nor equal to a metal-to-metal contact of the pump discharge flange and mating discharge connection specified and required. No portion of the pump unit shall bear directly on the floor of the wet well. There shall be no more than one 90o bend allowed between the volute discharge flange and station piping.
7. The pump motor shall be housed in a water-tight casing and shall have moisture resistant Class F 155o insulation. The motor shall be NEMA Design B and designed for continuous duty.
8. The cable entry water seal design shall be such that precludes specific torque requirements to insure a watertight and submersible seal. Epoxies, silicones or other secondary sealing systems shall not be required or used. The cable entry junction box and motor shall be separated by a stator lead sealing gland or terminal board, which shall isolate the motor interior from foreign materials gaining access through the pump top.
9. Pump motor cable installed shall be suitable for submersible pump applications and this shall be indicated by a code or legend permanently embossed on the cable. Cable sizing shall conform to NEC specifications for pump motors and shall be of adequate size to allow motor voltage conversion without replacing the cable. Motor electrical cables shall be of sufficient length to extend from the motor to the above ground disconnect switch unspliced.
10. All mating surfaces of major parts shall be machined and fitted with nitrile O-rings where watertight sealing is required. Machining and fitting shall be such that sealing is accomplished by automatic compression in 2 planes and O-ring contact made on four surfaces, without the requirement of specific torque limits to affect this. Rectangular cross sectioned gaskets requiring specific torque limits to achieve compression shall not be considered adequate nor equal.
11. Tolerances of all parts shall be such that allows replacement of any part without additional machining required to ensure sealing as described above. No secondary sealing compounds, greases or other devices shall be used.
12. Each unit shall be provided with an adequately designed cooling system. Thermal radiators integral to the stator housing, cast in one unit, are acceptable. Where water jackets alone or in conjunction with radiators are used, separate circulation shall be provided. Cooling media channels and ports shall be non-clogging by virtue of their dimensions. Provision for external cooling and flushing shall be provided.
13. Integral thermal sensors shall not be a requirement on any unit without a water jacket. Thermal sensors shall be used to monitor stator temperatures on any unit with a water jacket. There shall be one for each phase group in the motor. These shall be used in conjunction with and supplemental to external motor over current protection and available at the control panel.

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14. All units of 100 HP or more shall have thermal sensors monitoring bearing temperatures in addition to the motor thermal sensors described above. Bearing thermal monitors shall be independent of the motor sensors and available at the control panel circuitry to effect alarm and/or shut down functions.

E. Pump Test

1. The pump manufacturer shall perform the following inspections and tests on each pump before shipment from factory.
 - a. Impeller, motor rating and electrical connections shall first be checked for compliance to the customer's purchase order.
 - b. A motor and cable insulation test for moisture content or insulation defects.
 - c. Prior to submergence, the pump shall be run dry to establish correct rotation and mechanical integrity.
 - d. The pump shall be run for 30 minutes submerged, a minimum of 6 feet under water.
 - e. After operational test (item d), the insulation test (item b) is to be performed again.
 - f. Test shall consist of checking the unit at its noted speeds for head capacity, efficiency, and brake horsepower at a number of points to properly establish the performance curve.
2. A certified written test report and performance curve stating the foregoing have been done shall be supplied with each pump at the time of shipment.
3. The pump cable end will then be fitted with a shrink fit rubber boot to protect it prior to electrical installation.

F. Pump Warranty

1. The pump manufacturer shall fully warrant the units being supplied to the CITY against defects in workmanship and materials. Full replacement within 5-years (not a prorated warranty) under normal use, operation, and service. The warranty shall be in printed form, include a warranty schedule, and apply to all similar units.

G. Documentation

1. Standard drawings supplied shall include pump outlines, controls, access frames and typical installation guides. Each station shall be supplied with installation and maintenance manuals and pump parts lists for the pumps installed. Electrical control wiring diagrams shall accompany each control.

H. Spare Parts

1. DBF shall furnish one pump complete with parts necessary for its installation. The pump shall be delivered to CITY still in crates.

2.3 ELECTRICAL

- A. All work shall be in conformance with the National Electric Code, National Electrical Manufacturers Association, National Fire Protection Association, Institute of Electrical and Electronics Engineers, American National Standards Institute,

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Occupational Safety & Health Administration, South Florida Building Code, and CITY Standards.

B. Pump Motors:

1. Electrical Service Specifications

- a. Voltage Tolerance: +10%, - 14%
- b. Frequency Tolerance: +5%
- c. Voltage Balance (Phase to Phase): $\pm 1\%$

2. Cable Specifications

- a. All wires and cables shall be of annealed, 98 percent conductivity, soft drawn copper conductors.
- b. All conductors No. 8 AWG and larger shall be stranded.
- c. Type XHHW shall be 600-volt cross-linked polyethylene (XLP) and type THHN/THWN shall be 600 volts as manufactured by the Hi-Tech Company, Rome Cable Corporation, The Okonite Company or approved equal.
- d. Process instrumentation wire shall be 600 volt, PVC or polyethylene insulated, aluminum/polyester tape shielded, polyvinyl chloride jacketed, type "TC" as manufactured by the American Insulated Wire Company, Belden Corporation, "Beldfoil" 9342, or approved equal.

3. Motor Protection

- a. Motor and power line protection for overload and short circuit conditions must conform to N.E.C. standards, ref. NATIONAL ELECTRIC CODE, 1984 edition, Article 430.

4. Thermal Protection

- a. The stator is protected by three thermal switches (one per phase) imbedded in the windings. These switches are wired in series and two leads are brought up to the pump terminal board for connection to the control panel. The switches must be connected so that the pump is turned off if the stator overheats.

C. Control Panel

- 1. The control panel shall be supplied by the DBF completely factory wired with all necessary motor starters, circuit breakers, etc. for complete operation of the pumps. It shall be of the safety type and components shall bear the label of approval of Underwriters Labs; as well as meeting all applicable requirement of NEMA. The top of the cabinet shall be mounted 6'-0" above the floor, properly aligned and adequately supported independently of the connecting raceways. Each device in the control circuit shall be mounted on a frame with plastic cover mounted on the inside of the door.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Installation shall be in strict accordance with the manufacturer's instructions and recommendations in the locations shown on the drawings. Installation shall include furnishing the required oil and grease for initial operation. The grades of oil and grease shall be in accordance with the manufacturer's recommendations.

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- B. Pipe handling. All loading or unloading of pipe, fittings, valves, and accessories shall be done in such a manner so as to avoid damage. The pipe shall not be skidded or rolled against pipe already unloaded.
- C. Force mains shall be constructed of ductile iron pipe or PVC plastic pipe as specified on the Plans. Fittings 4 inches and over shall be properly anchored and braced with restrained joints conforming to the details shown in the plans.
- D. The interior of all pipes, fittings and other appurtenances shall be kept free of dirt and foreign matter at all times. Pipe shall be flushed clean before valves and other appurtenances are installed.
- E. Pipe laying. All pipes shall be laid to line and grade with valves stems plumb. All pipes shall have a minimum cover of 30 inches for DIP pipe and 36 inches for HDPE and PVC pipe.
- F. All fittings, encasement and appurtenances shall be incidental to the cost of furnishing and installing the force mains.
- G. Concrete Protective Liner
 - 1. The installation of the protective liner into precast wet wells and maintenance access structures shall be accomplished only by a precast concrete manufacturer certified by the liner manufacture, with a minimum of five years of manufacturing experience, and a minimum of five years of experience in the installation of corrosion resistant thermo-plastic sheet liners in concrete structures. Upon request, the liner installer shall provide written certification that the installation is in accordance with the liner manufacturer's installation specifications. Part 2, Paragraph 2.01 of this Section includes further information as it pertains to the lining of the wetwell.
 - 2. Placement of the liner on forms shall conform to the liner manufacturer's written instructions. Only thermo-plastic extrusion welders certified by the liner manufacturer shall perform all shop and field welding. All field thermo-welding shall additionally be performed only by confined space trained, and certified, personnel. A copy of the thermo-welder's certifications shall accompany the submittal.

3.2 **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 primed, with primer compatible with the field painting.
- C. All nameplates shall be properly protected during painting.
- D. Gears, bearing surfaces and other similar surfaces, which are 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 CITY up to the time of the final acceptance test.

3.3 **FIELD PAINTING**

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- A. The primer and paint used in the field shall be products of the same manufacturer as the shop paint to assure compatibility.

3.4 INSPECTION AND TESTING

- A. The CITY shall have the right to inspect, test or witness tests of all materials or equipment to be furnished under these Specifications, prior to the shipment from the point of manufacture.
- B. The CITY shall be notified in writing prior to initial shipment, in ample time so that the CITY can make arrangements for inspection.
- C. The CITY or CITY'S representative shall be furnished all facilities, including labor, and shall be allowed proper time for inspection and testing of material and equipment.
- D. Materials and equipment shall be tested or inspected as required by the CITY, and the cost of such work shall be included in the cost of the equipment. The DBF shall anticipate that delays may be caused because of the necessity of inspection, testing, and accepting materials and equipment before their use is approved.
- E. The services of a factory representative shall be furnished for one (1) day and shall have complete knowledge of proper operation and maintenance to inspect the final installation and supervise a test run of the equipment.
- F. Field tests shall not be conducted until such time that the entire installation is complete and ready for testing.

3.5 PUMP TESTING

- A. After all pumps have been completely installed, and working under the direction of the manufacturer, conduct in the presence of the CITY such tests that are necessary to indicate that pump efficiency and discharge conform to the Specifications. Field tests shall include all power, water or wastewater, labor, equipment, and incidentals required to complete the field tests.
- B. 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.

3.6 MOTOR TESTING

- A. The DBF shall check all motors for correct lubrication in accordance with manufacturer's instructions. The DBF shall check direction of rotation of all motors and reverse connections, if necessary.

3.7 ELECTRICAL

- A. All electrical wiring shall comply with the latest edition of the minimum requirements of the Florida Building Code, National Electric Code, and Underwriters Laboratories. Electrical wiring will also need to meet the requirements listed in Division 16 of the specifications and the drawings.

END OF SECTION 02603

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PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. All applicable provisions of the Bidding and Contract Requirements, and Division 1- General Requirements shall govern the WORK under this section.

1.2 WORK INCLUDED

- A. The DBF shall furnish and install all piping systems shown and specified, in accordance with the requirements of the Contract Documents. Each system shall be complete with all necessary fittings, hangers, supports, anchors, expansion joints, flexible connectors, valves, accessories, heat tracing, insulation, lining and coating, testing, disinfection, excavation, backfill and encasement, to provide a functional installation.
- B. The piping shown is intended to define the general layout, configuration, routing, method of support, pipe size, and pipe type. The mechanical drawings are not pipe construction or fabrication drawings. It is the DBF's responsibility to develop the details necessary to construct all mechanical piping systems, to accommodate the specific equipment provided, and to provide and install all spools, spacers, adapters, connectors, etc., for a complete and functional system.

1.3 RELATED WORK

- A. Division 2 as applicable.
- B. Section 02200 - Earthwork.
- C. Section 02221 - Excavation and Backfilling Utilities
- D. Section 02641 – Valves, General

1.4 REFERENCE STANDARDS

- A. Codes: All codes, as referenced herein are specified in Section 01090, "Reference Standards".
- B. Commercial Standards:

ANSI/ASME B1.20.1	Pipe Threads, General Purpose (inch).
ANSI B16.5	Pipe Flanges and Flanged Fittings, Steel Nickel Alloy and other Special Alloys.
ANSI/AWWA	C100 Ductile Iron Pipe
ANSI/AWWA	C900 Plastic Pipe
ANSI/AWWA	C207 Steel Pipe Flanges for Water Works Service, Sizes 4 inch through 144 inch.
ANSI/AWWA	C606 Grooved and Shouldered Joints.
ANSI/AWS D1.1	Structural Welding Code.
ASTM A 307	Specification for Carbon Steel Bolts and Studs, 6,000 psi Tensile.
ASTM A 325	Specification for High-Strength Bolts for Structural Steel Joints.
ASTM D 792	Test Methods for Specific Gravity and Density of Plastics by Displacement.

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ASTM D 2000

Classification System for Rubber Products in Automotive Applications.

1.5 SUBMITTALS

- A. The DBF shall submit complete shop drawings and certificates, test reports, affidavits of compliance, of all piping systems, in accordance with the requirements in Section 01340, "Shop Drawings, Product Data and Samples", and as specified in the individual sections. The shop drawings shall include all necessary dimensions and details on pipe joints, fittings, fitting specials, valves, appurtenances, design calculations, and material lists. The submittals shall include detailed layout, spool, or fabrication drawings which show all pipe spools, spacers, adapters, connectors, fittings, and pipe supports necessary to accommodate the equipment and valves provided in a complete and functional system.
- B. All expenses incurred in making samples for certification of tests shall be borne by the DBF.
- C. The DBF shall submit as part of the shop drawings a certification from the pipe fabricator stating that all pipes that are fabricated are subject to a recognized Quality Control Program. An outline of the program shall be submitted to the CITY for review prior to the fabrication of any pipe.

1.6 QUALITY ASSURANCE

- A. Inspection: All pipes shall be subject to inspection at the place of manufacture. During the manufacture of the pipe, the CITY shall be given access to all areas where manufacturing is in progress and shall be permitted to make all inspections necessary to confirm compliance with the Specifications.
- B. Tests: Except where otherwise specified, all materials used in the manufacture of the pipe shall be tested in accordance with the applicable Specifications and Standards.

1.7 MANUFACTURER'S SERVICE REPRESENTATIVE

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

1.8 MATERIAL DELIVERY, STORAGE, AND HANDLING

- A. All piping materials, fittings, valves, and accessories shall be delivered in a clean and undamaged condition and stored off the ground, to provide protection against oxidation caused by ground contact. All defective or damaged materials shall be replaced with new materials.

1.9 CLEANUP

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

SECTION 02610
PIPING, GENERAL**PART 2 PRODUCTS****2.1 GENERAL**

- A. All pipes, fittings, and appurtenances shall be furnished in accordance with the requirements of the applicable Sections of Division 2 and as specified herein.
- B. Lining: All requirements pertaining to thickness, application, and curing of pipe lining, are in accordance with the requirements of the applicable Sections of Division 2, unless otherwise specified.
- C. Coating: All requirements pertaining to thickness, application, and curing of pipe coating, are in accordance with the requirements of the applicable Sections of Division 2, unless otherwise specified. Pipes above ground or in structures shall be field-painted as directed by the CITY.
- D. Grooved Piping Systems: Piping systems with grooved joints and fittings may be provided in lieu of screwed, flanged, welded, or mechanical joint systems for ductile iron yard piping. (All piping above and below ground within the property limits of treatment plants, pump stations, and similar installations). All grooved couplings on buried piping must be bonded. To assure uniform and compatible piping components, all grooved fittings, couplings, and valves shall be from the same manufacturer. The DBF shall make the coupling manufacturer responsible for the selection of the correct style of coupling and gasket for each individual location.

2.2 PIPE FLANGES

- A. Flanges: Where the design pressure is 150 psi or less, flanges shall conform to either ANSI/AWWA C207 Class D or ANSI B16.5 150-lb class. Where the design pressure is greater than 150 psi, up to a maximum of 275 psi, flanges shall conform to ANSI/AWWA C207 Class E, Class F, or ANSI B16.5 150-lb class. However, AWWA flanges shall not be exposed to test pressure greater than 125 percent of rated capacity. For higher test pressures, the next higher rated AWWA flange or an ANSI-rated flange shall be selected. Where the design pressure is greater than 275 psi up to a maximum of 700 psi, flanges shall conform to ANSI B16.5 300-lb class. Flanges shall have flat faces and shall be attached with boltholes straddling the vertical axis of the pipe unless otherwise shown. Attachment of the flanges to the pipe shall conform to the applicable requirements of ANSI/AWWA C207. Flanges for miscellaneous small pipes shall be in accordance with the standards specified for these pipes.
- B. Blind Flanges: Blind flanges shall be in accordance with ANSI/AWWA C207, or with the standards for miscellaneous small pipes. All blind flanges for pipe sizes 12 inches and over shall be provided with lifting eyes in form of welded or screwed eyebolts.
- C. Flange Coating: All machined faces of metal blind flanges and pipe flanges shall be coated with a temporary rust-inhibitive coating to protect the metal until the installation is completed.
- D. Flange Bolts: All bolts and nuts shall conform to pipe manufacturers recommendations. Studs and bolts shall extend through the nuts a minimum of 1/4-inch. All-thread studs shall be used on all valve flange connections, where space restrictions preclude the use of regular bolts.
- E. Insulating Flanges: Insulated flanges shall have boltholes 1/4-inch diameter

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greater than the bolt diameter.

- F. Insulating Flange Sets: Insulating flange sets shall be provided where shown. Each insulating flange set shall consist of an insulating gasket, insulating sleeves and washers and a steel washer. Insulating sleeves and washers shall be one piece when flange bolt diameter is 1-1/2-inch or smaller and shall be made of acetal resin. For bolt diameters larger than 1-1/2-inch, insulating sleeves and washers shall be 2-piece and shall be made of polyethylene or phenolic. Steel washers shall be in accordance with ASTM A 325. Insulating gaskets shall be full-face.
- G. Insulating Flange Manufacturers, or approved equal:
 - 1. JM Red Devil, Type E;
 - 2. Maloney Pipeline Products Co., Houston;
 - 3. PSI Products, Inc., Burbank, California.
- H. Flange Gaskets: Gaskets for flanged joints shall be full-faced, 1/16-inch thick compressed sheets of aramid fiber base, with nitrile binder and non-stick coating, suitable for temperatures to 700 degrees F, a pH of one to eleven, and pressures to 1000 psi. Blind flanges shall have gaskets covering the entire inside face of the blind flange and shall be cemented to the blind flange. Ring gaskets shall not be permitted.
- I. Flange Gasket Manufacturers, or approved equal:
 - 1. John Crane, style 2160;
 - 2. Garlock, style 3000.

2.3 THREADED INSULATING CONNECTIONS

- A. General: Threaded insulating bushings, unions, or couplings, as appropriate, shall be used for joining threaded pipes of dissimilar metals and for piping systems where corrosion control and cathodic protection are involved.
- B. Materials: Threaded insulating connections shall be of nylon, Teflon, polycarbonate, polyethylene, or other non-conductive materials, and shall have ratings and properties to suit the service and loading conditions.

2.4 MECHANICAL-TYPE COUPLINGS (GROOVED OR BANDED PIPE)

- A. General: Cast mechanical-type couplings shall be provided where shown. The couplings shall conform to the requirements of ANSI/AWWA C606. All gaskets for mechanical-type couplings shall be compatible with the piping service and fluid utilized, in accordance with the coupling manufacturer's recommendations. The wall thickness of all grooved piping shall conform with the coupling manufacturer's recommendations to suit the highest expected pressure. To avoid stress on equipment, all equipment connections shall have rigid-grooved couplings, or harness sets in sizes where rigid couplings are not available, unless thrust restraint is provided by other means. The DBF shall have the coupling Manufacturer's service representative verify the correct choice and application of all couplings and gaskets, and the quality of work, to assure a correct installation.
- B. Couplings for Steel Pipe, Manufacturers, or approved equal:
 - 1. Gustin-Bacon (banded or grooved);
 - 2. Victaulic Style 41 or 44 (banded, flexible);
 - 3. Victaulic Style 77 or 07 (grooved).

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- C. Ductile Iron Pipe Couplings, Manufacturers, or approved equal:
1. EBAA Iron
 2. Romac.
 3. Sigma

Note: Ductile iron pipe couplings shall be furnished with flush seal gaskets.

2.5 SLEEVE-TYPE COUPLINGS

- A. Construction: Sleeve-type couplings shall be provided where shown, in accordance with ANSI/AWWA C219 unless otherwise specified, and shall be of steel with steel bolts, without pipe stop, and shall be of sizes to fit the pipe and fittings shown. The middle ring shall be not less than 1/4-inch in thickness and shall be either 5 or 7 inches long for sizes up to and including 30 inches and 10 inches long for sizes greater than 30 inches, for standard steel couplings, and 16 inches long for long-sleeve couplings. The followers shall be single-piece contoured mill section welded and cold expanded as required for the middle rings. They shall be of sufficient strength to accommodate the number of bolts necessary to obtain adequate gasket pressures without excessive rolling. The shape of the follower shall be of such design as to provide positive confinement of the gasket. Buried sleeve-type couplings shall be epoxy-coated at the factory as specified.
- B. Pipe Preparation: The ends of the pipe, where specified or shown, shall be prepared for flexible steel couplings. Plain ends for use with couplings shall be smooth and round for a distance of 12 inches from the ends of the pipe, with outside diameter not more than 1/64-inch smaller than the nominal outside diameter of the pipe. The middle ring shall be tested by cold-expanding a minimum of one percent beyond the yield point, to proof-test the weld to the strength of the parent metal. The weld of the middle ring shall be subjected to air test for porosity.
- C. Gaskets: Gaskets for sleeve-type couplings shall be rubber-compound material that will not deteriorate from age or exposure to air under normal storage or use conditions. Gaskets for wastewater and sewerage applications shall be Buna "N," grade 60, or equivalent suitable elastomer. The rubber in the gasket shall meet the following specifications:
1. Color - Jet Black
 2. Surface - Non-blooming
 3. Durometer Hardness - 74 ± 5
 4. Tensile Strength - 1000 psi Minimum
 5. Elongation - 175 percent Minimum
- D. The gaskets shall be immune to attack by impurities normally found in water or wastewater. All gaskets shall meet the requirements of ASTM D 2000, AA709Z, meeting Suffix B13 Grade 3, except as noted above. All gaskets shall be compatible with the piping service and fluid utilized.
- E. Insulating Couplings: Where insulating couplings are required, both ends of the coupling shall have a wedge-shaped gasket which assembles over a rubber sleeve of an insulating compound in order to obtain insulation of all coupling metal parts from the pipe.
- F. Restrained Joints: All sleeve-type couplings on pressure lines shall be harnessed

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unless thrust restraint is provided by other means. Harnesses shall be in accordance with the requirements of the appropriate reference standard, or as shown.

- G. Manufacturers or Equal:
 - 1. JCM Industries
 - 2. Hymax
 - 3. Smith-Blait

2.6 FLEXIBLE CONNECTORS

- A. Flexible connectors shall be installed in all piping connections to engines, blowers, compressors, and other vibrating equipment, and where shown. Flexible connectors for service temperatures up to 180 degrees F shall be flanged, reinforced Neoprene or Butyl spools, rated for a working pressure of 40 to 150 psi, or reinforced, flanged duck and rubber, as best suited for the application. Flexible connectors for service temperatures above 180 degrees F shall be flanged braided stainless-steel spools with inner, annular, corrugated stainless steel hose, rated for minimum 150 psi working pressure, unless otherwise shown. The connectors shall be 9 inches long, face-to-face flanges, unless otherwise shown. The manufacturer shall approve the final material selection. The DBF shall submit manufacturer's shop drawings and calculations.

2.7 EXPANSION JOINTS

- A. All piping subject to expansion and contraction shall be provided with sufficient means to compensate for such movement, without exertion of undue forces to equipment or structures. This may be accomplished with expansion loops, bellow-type expansion joints, or sliding-type expansion joints. Expansion joints shall be of stainless steel, monel, rubber, or other materials, best suited for each individual service. The DBF shall submit detailed calculations and manufacturer's shop drawings, guaranteeing satisfactory performance of all proposed expansion joints, piping layouts showing all anchors and guides, and information on materials, temperature and pressure ratings.

2.8 PIPE THREADS

- A. All pipe threads shall be in accordance with ANSI/ASME B1.20.

PART 3 EXECUTION

3.1 GENERAL

- A. All pipes, fittings, and appurtenances shall be installed in accordance with the requirements of the applicable Section of Divisions 2. The lining manufacturer shall take full responsibility for the complete, final product and its application. All pipe ends and joints at screwed flanges shall be epoxy-coated, to assure continuous protection.
- B. Where core drilling is required for pipes passing through existing concrete, core drilling locations shall be determined by radiograph of concrete construction to avoid damage to embedded raceways and rebars.
- C. All exposed piping shall be painted. All piping to be painted shall be color coded in

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accordance with OWNER's standard color code. Color samples shall be submitted to CITY for final color selection.

END OF SECTION 02610

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PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Provide all labor, materials, necessary equipment and services to complete the water distribution and wastewater transmission system work, as indicated on the drawings, as specified herein or both, except as for items specifically indicated as "NIC ITEMS".

1.2 WORK INCLUDED

- A. The DBF shall provide all tools, supplies, materials, equipment, and labor necessary for furnishing, epoxy coating, installing, adjusting, and testing of all valves and appurtenant work, complete and operable, in accordance with the requirements of the Contract Documents. Where buried valves are shown, the DBF shall furnish and install valve boxes to grade, with covers, extensions, and position indicators.
- B. The provisions of this Section shall apply to all valves and valve operators specified in the various Sections and Division 2 of these Specifications except where otherwise specified in the Contract Documents. Valves and operators in particular locations may require a combination of units, sensors, limit switches, and controls specified in other Sections of these Specifications.

1.3 RELATED WORK

- A. Section 02221 - Excavation and Backfilling for Utilities
- B. Section 02610 - Piping, General

1.4 REFERENCE STANDARDS

- A. Codes: All codes, as referenced herein, are specified in Section 01090, "Reference Standards".
- B. Commercial Standards:

ANSI B16.1	Cast Iron Pipe Flanges and Flanged Fittings, Class 25, 125, 250, and 800.
ANSI B16.5	Pipe Flanges and Flanged Fittings, Steel Nickel Alloy and Other Special Alloys.
ANSI/ASME B31.1	Power Piping.
ASTM A 36	Specification for Structural Steel.
ASTM A 48	Specification for Gray Iron Castings.
ASTM A 126	Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings.
ASTM A 536	Specification for Ductile Iron Castings.
ASTM B 61	Specification for Steam or Valve Bronze Castings.
ASTM B 62	Specification for Composition Bronze or Ounce Metal Castings.
ASTM B 148	Specification for Aluminum-Bronze Castings.
ASTM B 584	Specification for Copper Alloy Sand Castings for General Applications.
ANSI/AWWA C500	Gate Valves for Water and Sewerage Systems.
ANSI/AWWA C502	Dry-Barrel Fire Hydrants.

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ANSI/AWWA C503	Wet-Barrel Fire Hydrants.
ANSI/AWWA C504	Rubber-Seated Butterfly Valves.
ANSI/AWWA C507	Ball Valves 6 Inches Through 48 Inches.
ANSI/AWWA C508	Swing-Check Valves for Waterwork Service, 2 Inches Through 24 Inches NPS.
ANSI/AWWA C509	Resilient-Seated Gate Valves for Water and Sewage Systems.
ANSI/AWWA C511	Reduced-Pressure Principle Backflow-Prevention Assembly.
ANSI/AWWA C550	Protective Interior Coatings for Valves and Hydrants.
SSPC-SP-2	Hand Tool Cleaning.
SSPC-SP-5	White Metal Blast Cleaning.

1.5 SUBMITTALS

- A. Shop Drawings: Shop drawings of all valves and operators including associated wiring diagrams and electrical data, shall be furnished as specified in Section 01340, "Shop Drawings, Product Data and Samples".
- B. Valve Labeling: The DBF shall submit a schedule of valves to be labeled indicating in each case the valve location and the proposed wording for the label.

1.6 QUALITY ASSURANCE

- A. Valve Testing: Unless otherwise specified, each valve body shall be tested under a test pressure equal to twice its design water-working pressure.
- B. Bronze Parts: Unless otherwise specified, all interior bronze parts of valves shall conform to the requirements of ASTM B 62, or where not subject to dezincification, to ASTM B 584.
- C. Certification: Prior to shipment, the DBF shall submit for all valves over 12 inches in size, certified, notarized copies of the hydrostatic factory tests, showing compliance with the applicable standards of AWWA, ANSI, ASTM, etc.

PART 2 PRODUCTS

2.1 VALVES, GENERAL

- A. General: The DBF shall furnish all valves, gates, valve-operating units, stem extensions, and other accessories as shown or specified. All valves and gates shall be new and of current manufacture. All shut-off valves, 6-inch and larger, shall have operators with position indicators. Where buried, these valves shall be provided with valve boxes and covers containing position indicators, and valve extensions. Shut-off valves mounted higher than 5 feet-6 inches above working level shall be provided with chain operators.
- B. Valve Flanges: The flanges of valves shall be in accordance with Section 02610, "Piping, General".
- C. Gate Valve Stems: Where subject to dezincification, gate valve stems shall be of bronze conforming to ASTM B 62, containing not more than 5 percent of zinc nor more than 2 percent aluminum. Gate valve stems shall have a minimum tensile strength of 60,000 psi, a minimum yield strength of 40,000 psi, and an elongation

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- of at least 10 percent in 2 inches, as determined by a test coupon poured from the same ladle from which the valve stems to be furnished are poured. Where dezincification is not a problem, bronze conforming to ASTM B 584 may be used.
- D. Protective Coating: Except where otherwise specified, ferrous surfaces, exclusive of stainless steel surfaces, in the water passages of all valves 4-inch and larger, as well as the exterior surfaces of all submerged valves, shall be coated with 2 part thermal setting epoxy coatings. Flange faces of valves shall not be epoxy coated. The valve manufacturer shall certify in writing that such coating has been applied and tested in the manufacturing plant prior to shipment, in accordance with these Specifications.
 - E. Valve Operators: Where shown, certain valves and gates shall be furnished with electric operators, provided by the valve or gate manufacturer. The same manufacturer shall furnish all operators of a given type. Where different manufacturers supply these operators, the DBF shall coordinate their selection to provide uniformity of each type of electric operator. All valve operators, regardless of type, shall be installed, adjusted, and tested by the valve manufacturer at the manufacturing plant.
 - F. Valve Labeling: Except when such requirement is waived by the ENGINEER in writing, a label shall be provided on all shut-off valves exclusive of hose bibbs and chlorine cylinder valves. The label shall be of 1/16-inch plastic or stainless steel, minimum 2 inches by 4 inches in size, and shall be permanently attached to the valve or on the wall adjacent to the valve as directed by the ENGINEER. Valve labels shall be photographed and marked on the As-Built Drawings. Valves are also required to have an Identification Marker in accordance with the Contract Documents.
 - G. Nuts and Bolts: All nuts and bolts on valve flanges and supports shall be in accordance with manufacturers recommendations. Where submerged or buried, all nuts and bolts on valve flanges and valve bodies shall be stainless steel.

2.2 **GATE VALVES**

- A. All buried gate valves shall be of the inside screw, non-rising stem type. Valves shall be capable of being repacked under line pressure. Valves 14-inch and larger installed on vertical pipes with their stems horizontal shall be fitted with bronze slides, tracks, rollers, and scrapers to assist the travel of the gate assembly. Quick opening valves shall have quick opening levers and cams in lieu of handwheel operators.
- B. Knife Gate Valves.
 - 1. Knife gate valves shall be provided with raised face and resilient seats for positive seating. Wetted parts shall be constructed of Type 316 stainless steel. Gates shall be finish-ground on both sides to prevent packing or seat damage. Valves 2 to 4 inches in size shall be furnished with cast stainless steel bodies; valves 6 to 24 inches in size shall be furnished with cast semi-steel bodies with stainless steel linings. Valve ends shall be of the flanged or wafer design, as shown. Gate guides and jams shall be steel. Actuator shall be handwheel. Port design shall be full-round.
 - 2. Manufacturers or approved equal:
 - a. Red Valve Company Inc.;

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- b. DeZurik Corporation
 - c. Fabri-Valves;
 - d. Rovang, Inc.
- C. Resilient-Seated Gate Valves
 - 3. Resilient-seated gate valves conforming to ANSI/AWWA C509 shall be provided. Resilient-seated gate valves shall have cast iron bodies with flanged, bell, or mechanical joint ends, rubber-coated cast iron disc, flanged bonnet, bronze stem, O-ring seals, and operators with handwheel or square nut, unless otherwise shown. Rubber and rubber composition materials (EPDM) shall be suitable for use in water chlorine or chloramines and in sanitary sewage.
 - 4. Manufacturers or approved equal:
 - a. Clow Valve Co.;
 - b. Kennedy Valve;
 - c. Mueller Company;
 - d. M&H Valve

2.3 **ECCENTRIC PLUG VALVES**

- A. Equipment Requirements: Plug valves shall be of the non-lubricated, eccentric type with resilient faced plugs, port areas shall be 100% of full pipe area regardless of the size. The body shall be of semi-steel (ASTM A-126 C1.B) and shall have bolted bonnet, which gives access to the intervals of the valve. Seats shall be welded overlay of high nickel content, or a stainless-steel plate locked in the body cavity. If a plate is used, it shall be replaceable through the bonnet access. Bearings shall be permanently lubricated of stainless steel, bronze or teflon lined, fiberglass backed duralon. Bearing areas shall be isolated from the flow with grit seals. Valves shall have packing bonnets where the shaft protrudes from the grit seals. Valves shall have packing bonnets where the shaft protruded from the valve and the packing shall be self-adjusting chevron type, which can be replaced without removing the bonnet. All nuts, bolts, springs and washers shall be stainless steel.
- B. Valves shall be designed for a working pressure of 150 PSI. The valve and actuator shall be capable of satisfactory operation in either direction of flow against pressure drops up to and including 100 PSI (for plug valves over 12 inches in diameter). Valves shall be bubble tight in both directions at 100-psi differential.
- C. Plug valves over 12 inches in diameter shall have worm gear operators. The operating mechanism shall be for buried service with a 2-inch square-operating nut.
- D. Plug valves are to be installed with the sear pointed towards the upstream flow, when specified.
- E. Manufacturers or approved equal:
 - 1. Val-Matic.
 - 2. DeZurik Corporation.
 - 3. Clow Valve Co.
 - 4. American

2.4 **BALL VALVES (4-INCH AND SMALLER)**

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- A. General Requirements: Unless otherwise specified or shown, general purpose ball valves in sizes up to 4-inch shall have manual operators with lever or handwheel. Ferrous surface of 4-inch valves, which will be in contact with water, shall be epoxy-coated. All ball valves shall be of best commercial quality, heavy-duty construction.
- B. Body: All ball valves up to 1-1/2 inch (incl.) in size shall have bronze or forged brass 2- or 3-piece bodies with screwed ends for a pressure rating of not less than 300 psi WOG (water-oil-gas). Valves 2-inch to 4-inch in size shall have bronze forged brass or steel 2- or 3-piece bodies with flanged ends for a pressure rating of 125 psi or 150 psi.
- C. Balls: The balls shall be solid brass or chrome plated bronze, or stainless steel, with large or full openings.
- D. Stems: The valves seats shall be of Polytetrafluoroethylene (PTFE) or Buna N, for bi-directional service and easy replacement.
- E. Manufacturers or approved equal:
 - 1. Jamesbury Corporation;
 - 2. Jenkins Bros.;
 - 3. Lunkenheimer Flow Control;
 - 4. Wm. Powell Company;
 - 5. Worcester Controls;
 - 6. Valve Primer Corporation.

2.5 SWING CHECK VALVES (3-INCH AND LARGER)

- A. General: Swing check valves for water, sewage, sludge, and general service shall be of the outside lever and spring or weight type, in accordance with ANSI/AWWA C 508 - Swing-Check Valves for Waterworks Service, 2-inch through 24-inch NPS, unless otherwise indicated, with full-opening passages, designed for a water-working pressure of 150 psi. They shall have a flanged cover piece to provide access to the disc.
- B. Body: The valve body and cover shall be of cast iron conforming to ASTM A 126, with flanged ends conforming to ANSI B 16.1, or mechanical joint ends, as shown.
- C. Disc: The valve disc shall be of cast iron, ductile iron, or bronze conforming to ASTM B 62.
- D. Seat and Rings: The valve seat and rings shall be of bronze conforming to ASTM B 62 or B 148, or of Buna-N.
- E. Hinge Pin: The hinge pin shall be of bronze or stainless steel.
- F. Manufacturers or approved equal:
 - 1. American
 - 2. Clow

2.6 AIR-VACUUM AND AIR-RELEASE VALVES

- A. Air and Vacuum Valves: Air and vacuum valves shall be capable of venting large quantities of air while pipelines are being filled and allowing air to re-enter while pipelines are being drained. They shall be of the size shown, with flanged or screwed ends to match piping. Bodies shall be of high-strength cast iron. The float, seat, and all moving parts shall be constructed of Type 316 stainless steel.

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Seat washers and gaskets shall be of a material insuring water tightness with a minimum of maintenance. Valves shall be designed for minimum 150-psi water-working pressure, unless otherwise shown.

- B. Air-Release Valves: Air-release valves shall vent accumulating air while system is in service and under pressure and be of the size shown and shall meet the same general requirements as specified for air and vacuum valves except that the vacuum feature will not be required. They shall be designed for a minimum water-working pressure of 150 psi, unless otherwise shown.
- C. Combination Air Valves: Combination air valves shall combine the characteristics of air and vacuum valves and air release valves by exhausting accumulated air in systems under pressure and releasing or re-admitting large quantities of air while a system is being filled or drained, respectively. They shall have the same general requirements as specified for air and vacuum valves.
- D. Manufacturers or approved equal:
 - 1. ARI

2.7 CORPORATION STOPS (Ball Valve Type)

- A. Unless otherwise shown, corporation stops shall be made of brass alloy for key operation, with screwed ends with corporation thread or iron pipe thread, as required. AWWA taper thread for inlet thread and compression type fittings for outlet.
- B. Manufacturer or approved equal:
 - 1. Ford Meter Box Company;
 - 2. Cambridge Brass;
 - 3. Mueller Company.
- C. Electric Motor Operators
 - 1. All motorized valves shall be furnished by the DBF through the valve manufacturers as a complete package. Motor driven valve operators shall be furnished and installed in accordance with the applicable requirements shown on the process and instrumentation diagrams and electrical elementary diagrams. Operators shall comply with AWWA requirements for electrical operators.
 - 2. Electric operators including the motor, all required gearing, integral continuous duty rated reversing starter, AC line surge suppressors, controls and switches shall be as manufactured by Rotork, Limitorque, EIM; or approved equal.
 - 3. The motorized operators for modulating service shall be furnished with an integral position indicator/transmitter/controller. The above unit shall be internally powered, factory calibrated and furnished with adjustable zero, span, gain and deadband controls.
 - 4. The position indicator/transmitter shall provide a linear, isolated, 4-20 mA, 24 VDC output to remote instrumentation and controls proportional to 0-100 percent travel span. An external DC power source shall not be required.
 - 5. The position controller shall accept a linear 4-20 mA, 24 VDC input signal proportional to 0-100 percent travel span and shall generate appropriate outputs to the reversing starter to open/close the valve until the desired

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- portion has been reached as determined by the position feedback signal to the position controller. Input signal isolation shall be provided.
6. The controller shall be furnished with circuitry to "lock in the last position" upon loss of control signal. DBF shall be responsible for proper transmitter/controller calibration in accordance with the manufacturer's recommendations.
 7. Operator capacity shall be adequate to continuously operate the valve under all operating conditions. Unless otherwise indicated, or specified, motor operators shall be furnished complete with motors, limit switch operating mechanisms, travel limit switches, torque switches, transmitters, controllers, starters, lightening and surge suppression, terminal blocks, gear reducers, handwheel, gearing, necessary components, and incidental accessories as follows:
 - a. All phases of the power supply shall be monitored. The DBF shall de-energize the motor upon detection of single phasing.
 - Logic circuits shall be protected against spurious voltage spikes, using opto-isolators in circuits connected to any remote input or output signals.
 8. Enclosure: The starter for 240 volt single phase motor operators and all local devices shall be mounted on a common NEMA 4 and PVC coated cast aluminum enclosure. The enclosure shall be permanently affixed to the valve operator housing.
 9. Valve Stops: Valve stops for the operators shall be positive in action. Closing shall be complete, and opening full. Stops shall be field adjustable to the required settings. The torque switches shall prevent any excessive mechanical stress or electrical overloading any direction of travel.
 10. Limit switches and gearing shall be an integral part of the motorized valve operator. The limit switch gearing shall be of the intermittent type, totally enclosed in its own gear case, grease lubricated to prevent direct and foreign matter from entering the gear train and shall be made of bronze or stainless steel. Limit switches shall be of the adjustable type capable of being adjusted to trip at any point between the normal position (full open, or full closed) and 75 percent of the travel to the opposite position.
 11. Local (Motor) Devices: Local devices shall include, but not be limited to the following:
 - a. Torque Switches: Torque switches, responsive to high torque encountered in either direction of travel. A torque switch, which has tripped due to mechanical load, shall not reset when the operator motor has come to a halt.
 - Limit Switches: Travel limit switches, for opening and closing direction of travel. Contract operations shall be as indicated on the Drawings. If not shown on the Drawings, the operator shall be furnished with a minimum of two DPDT switches. All switches shall be furnished with 5-ampere contacts. Switches shall be connected such that when the valve is fully open, or fully closed, the "open" or "close" light shall be illuminated. All limit switch contacts shall be wired out to a terminal strip so that the electrician in the field does not have to connect to the

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switches.

- Local/remote selector switch with phase motor relay and auxiliary to provide dry contacts for collective indication of placement in the "remote" operating mode, the unit is powered, and that all safety/overload interlocks are satisfied to provide the above signal. For further requirements refer to electrical elementary control schematic.
 - Open/close push-button for local manual operation (modulating service).
 - Position indicator calibrated to 0-100 percent travel span.
 - Terminals for remote indication of full open, full closed and overload (torque).
12. Operating Unit Gearing: The actuator shall be double reaction unit with the capability of quickly changing the output speed with a gear change. The power gearing shall consist of generated spur or helical gears of heat-treated steel, and worm gearing where required by the type of operator. Quarter turn or traveling unit operators do not specifically require worm gearing. The worm shall be of hardened alloy steel and the worm gear shall be of alloy bronze. All power gearing shall be grease-lubricated. Ball or roller bearings shall be used throughout for all motor operators. A mechanical dial position indicator to display valve position in percent of valve opening shall be provided. The gearing shall comply with AWWA requirements.
 13. Stem Nuts: The actuator for other than quarter turn valves shall have a stem nut of high tensile bronze or other material compatible with the valve stem and suited to the application. The nut arrangement, where possible, shall be of the two-piece type to simplify field replacement. The stem nut for rising stem valves must be capable of being removed from the top of the actuator without removing the actuator from the valve, disconnecting the electrical wiring, or disassembling any of the gearing within the actuator.
 14. Manual Operation: A handwheel shall be provided for manual operation. The handwheel shall not relocate during hand operation nor shall a fused motor prevent manual operation.
 15. When in manual operating position, the volt motor driven unit will remain in this position until motor is energized at which time the valve operator will automatically return to electric operation and shall remain in motor position until handwheel operation is desired. This movement from motor operation to handwheel operation shall be accomplished by a positive declutching knob or lever, which will disengage the motor and motor gearing mechanically not electrically. Hand operation must be reasonably fast and require no more than 100 lbs. of rim effort at the maximum required torque. It shall not be possible for the unit to be simultaneously in manual and motor operation.
 16. 240 Volt Single Phase Motors: All motors on valves shall be designed for 240 volts 1-phase 60 Hz power. The motor shall be specifically designed for valve actuator service and shall be of high torque, squirrel cage reversible, totally enclosed, non-ventilated construction, with motor leads brought into the limit switch compartment without having external piping or conduit box. Motor insulation shall be NEMA Class B with maximum continuous temperature rating of 120° C (rise + ambient). Motors shall be sized to have

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- a rated running time at the rated running torque of 15 minutes without exceeding the temperature rating of the insulation system. Running load torque shall be not more than 20 percent of the rated seating/unseating torque.
17. Speed-torque curves for the motors and torque calculations for seating, unseating, and running conditions shall be submitted. The maximum valve torque (seating/unseating) shall be less than 50 percent of stall torque or starting torque potential of the motor whichever is greater.
 18. Operator Type:
 - Type A: Remote set point using a 4-20 mA analog signal
 - a. Local Operation
 - (1) LOCAL/REMOTE selector
 - (2) OPEN/CLOSE push buttons
 - (3) Position set-point potentiometer/indicator
 - (4) LOCAL accepts local position set point
 - (5) OPEN/CLOSE indication
 - (6) Fault (torque) indication
 - b. Remote operation
 - (1) REMOTE - accept a remote 4-20 mA position set-point
 - (2) Position transmitter 4-20mA signal to RTU
 - (3) Available Ready of Auto to RTU
 - (4) Fault torque status to RTU
 19. Valve Closure Time: Valve closure time shall be 1 minute.
 20. Spare Parts:
 - a. DBF shall furnish loose, one unit valve operator, complete with all the devices specified herein and with all the features and characteristics similar to the equipment supplied in this Contract. The spare operator shall be delivered to the OWNER still in crates.

2.8 **BUTTERFLY VALVES**

- A. General: Butterfly valves used for 12 inch diameter and larger ONLY. All valves shall meet or exceed ANSI/NSF 61, latest revision. All valves shall meet or exceed AWWA C-504, Class 150B, latest revision. Valves shall open left, or counterclockwise. Buried service valves shall have a 2-inch operating nut.
 1. Body: Body and disc material shall be cast or ductile iron meeting or exceeding ASTM A126 (latest revision) or A536, latest revision. Seat and all rubber material shall be chloramine resistant.
 2. Shaft: Shaft, nuts, screws, and hardware material shall be stainless steel (Type 304 minimum). Valve disc shall be rigidly attached to the shaft to eliminate any relative motion. Shaft shall be offset from the disc and body seats so that they do not intersect. Shafts of 3-inch diameter and smaller shall be one piece through the valve with factory set thruster(s) to center the disc in the seat. Shafts larger than 3 inches diameter shall be stub-shafts rigidly keyed to the disc. Stub-shafts shall be provided with an adjustable thruster(s) to move the disc and shaft assembly positively in either direction to center the disc in the seat

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3. Coating: Except where otherwise specified, interior and exterior ferrous surfaces, exclusive of stainless-steel surfaces, in all valves shall be coated with two-part thermosetting epoxy coating or fusion bonded epoxy coating. Flange faces of valves shall not be epoxy coated. The epoxy shall be suitable for use in potable water, reclaimed water, and wastewater.
4. Manufacturers or approved equal:
 - a. Mueller
 - Val-Matic
 - Pratt
 - Clow

PART 3 EXECUTION

3.1 VALVE INSTALLATION

- A. General: All valves, gates, operating units, stem extensions, valve boxes, and accessories shall be installed in accordance with the manufacturer's written instructions and as shown and specified. All gates shall be adequately braced to prevent warpage and bending under the intended use. Valves shall be firmly supported to avoid undue stresses on the pipe.
- B. Access: All valves shall be installed to provide easy access for operation, removal, and maintenance and to avoid conflicts between valve operators and structural members or handrails.
- C. Valve Accessories: Where combinations of valves, sensors, switches, and controls are specified, it shall be the responsibility of the DBF to properly assemble and install these various items so that all systems are compatible and operating properly. The relationship between interrelated items shall be clearly noted on shop drawing submittals.
- D. Butterfly Valves: All exposed butterfly valves shall be installed with a means of removing the complete valve assembly without dismantling the valve or operator.

END OF SECTION 02641

SECTION 02722
SANITARY SEWERADE SYSTEM

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. All applicable provisions of the Bidding and Contract Requirements, and Division 1 (General Requirements) shall govern the WORK under this section.

1.2 WORK INCLUDED

- A. The work under this Section shall consist of furnishing and installing sewer pipes and service connections and/or abandonment of pipelines in place as indicated on the plans and in accordance with these Specifications.

1.3 RELATED WORK

- A. Section 02221 - Excavation and Backfilling for Utilities
- B. Section 02601 - Subterranean Structures
- C. Section 02610 - Piping – General
- D. Section 02641 - Valves – General

PART 2 PRODUCTS

2.1 PIPE

- A. PVC plastic pipe and fittings for gravity sanitary sewers shall be un-plasticized, PVC Plastic Gravity Sewer Pipe conforming to ASTM D 3034 with SDR 26 (minimum pipe stiffness of 115 lbs/in/in) and integral wall bell and spigot joints for conveyance of domestic sewage that shall meet or exceed the requirements of ASTM D3212, latest revision. Sewer pipe, including laterals and fittings shall be of the same material composed of PVC plastic having a cell classification of 12454B or 12454C as defined in ASTM D 1784. Gaskets shall meet the requirements of ASTM F477, latest revision. No solvent welded pipe will be permitted.
 - 1. In addition to the above requirements, pipe shall also conform to the following tests:
 - a. Drop Impact Test in accordance with ASTM D 2444.
 - b. Pipe Stiffness Test in accordance with ASTM D2412.
 - c. Acetone Immersion Test in accordance with ASTM D 2152.
- B. PVC plastic gravity sewer pipe shall be as manufactured by JM Eagle or approved equal. Prior to delivery of PVC plastic pipe to the jobsite, DBF shall furnish the ENGINEER complete data from the manufacturer of the type of PVC pipe and fittings DBF proposes to install.
- C. C900 plastic gravity sewer pipe (or SDR 18) shall conform to ANSI/AWWA standard for pipes 4 inch through 12 inch made from class 12454-A or class 12454-B material. C-900 or C-905 plastic gravity sewer pipe will be required to be installed where the depth of installation is 12 foot or deeper. C-900 or C-905 plastic gravity sewer pipe (SDR 18) shall conform to ANSI/AWWA for pipe 14 inch through 48 inch made from class 12454-B material.
- D. Ductile iron pipe shall be epoxy lined and conform to ANSI/AWWA standard C151/A21.51 and C150/A21.50.
- E. DIP pipe shall conform with pressure class 350 for 4 inch through 24 inch.

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SANITARY SEWERAGE SYSTEM

2.2 SUBMITTALS

- A. Shop Drawings: Shop drawings of all sanitary sewerage system products and materials shall be furnished as specified in Section 01340, "Shop Drawings, Product Data and Samples"

2.3 FORCE MAIN

- A. Pipe Material
 - 1. Force main shall be Protecto 401 (or approved equal) epoxy lined ductile iron pipe as specified on the plans. All pipes material shall be in accordance with material specified in Section 02610 "Piping General".

PART 3 EXECUTION

3.1 GRAVITY SEWER INSTALLATION

- A. All sewer pipes shall be true to line and grade with bells up grade. The sections of the pipe shall be so laid and fitted together that when complete, the sewer shall have a smooth and uniform invert. The pipe shall be maintained clean. All pipe shall be free from defects. Trenches shall be kept dry while the pipe is being laid.
- B. Bedding of the pipe shall consist of well graded ASTM C33 #67 rock or better, requiring the bottom of the trench to be shaped to fit the bottom of the pipe for distance equal to one-half of the outside diameter of the pipe. Bell holes shall be deep enough to ensure proper bearing of the pipe barrel on the bedding.
- C. All joints shall be carefully fitted so as to ensure a tight waterproof joint. Joints shall not be covered until approved by the CITY. The exposed end of all pipes shall be protected so as to prevent dirt or other debris from entering the pipe. Pipes shall be thoroughly flushed at the completion of the work.
- D. SDR 26 shall be per ASTM D2321 with Class I embedment material.
- E. A minimum cover of thirty (30) inches is required for DIP and thirty-six (36) inches for PVC pipe unless otherwise shown on the plan and approved by the CITY.

3.2 SERVICE LATERAL CONNECTIONS

- A. All connections, which are for future use, shall be properly capped. No pipe shall be cut for connections unless approved by the CITY. Wyes for service connections shall be installed as shown on the plans. The upper end of service connections shall be laid at a depth not less than 36 inches nor more than 48 inches below finish grade elevation, unless specifically noted otherwise on plans. All private property connections shall have a minimum slope of 1%. Additional cleanouts are required on all lateral connections over 75 feet in length. DBF is to take all necessary measures to ensure that all private property connections to existing main are switched over the new sanitary sewer facilities prior to abandonment of existing main.

3.3 ABANDONMENT OF PIPELINE IN PLACE

- A. All sanitary sewer gravity or force mains shown on the drawings to be abandoned in place shall be properly cut and plugged after new mains or services are installed

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SANITARY SEWERADE SYSTEM

and service is properly restored to the homeowner. The pipeline shall be filled with concrete one foot from end of pipe as specified in Division 3 - Concrete, and Section 03010. Excavation, backfill, and restoration shall be executed in accordance with requirements for removing existing and installing new pipelines.

3.4 **TESTS**

- A. After the joints have been inspected and approved, backfilling may be done until backfilled to one foot over the pipes. Backfilling shall be in accordance with Section 02221 of these Specifications.
- B. After backfilling gravity sewers to the pavement rock base, the ENGINEER will "lamp" the lines between MAS. If this alignment is true and no pipes are broken or misaligned, the backfilling shall be completed. After the Engineer has determined that the pipe has been properly backfilled and sufficient time has passed to allow any settlement but not more than 30 days after backfill, a deflection test is to be performed on all sections of gravity pipeline between MAS. Refer to SECTION 02723 for details on sanitary sewer pipe video requirements.
- C. Tests for water tightness of gravity sewers shall be made by the DBF in the presence of the ENGINEER. The sewer and connections shall not leak under the normal exterior ground water pressure at a rate in excess of 100 gallons per inch of diameter per mile per 24 hours for any section of line up to 15 inches in diameter. Special consideration shall be given to leakage allowance for sizes larger than 15 inches in diameter. Exfiltration from individual MAS shall not exceed 4 gallons in 24 hours. A maximum run of 3 MAS may be used per test.
- D. Where the crown of the pipe is below the natural ground water table at the time and place of testing, the pipe shall be tested for infiltration. Suitable watertight plugs shall be installed and sections of pipe to be tested shall be pumped dry before start of the test. Where the crown of the pipe is above the natural water table, the pipe shall be tested for exfiltration by installing necessary plugs and filling pipes and MAS with water and maintaining a static head of water of two feet above the crown of the pipe during the test. Exfiltration tests shall be conducted on gravity lines, building and house lateral lines, unless waived by the ENGINEER. With sanitary sewers, the water level or internal pressure to be used for exfiltration tests shall be determined by the ENGINEER.
- E. All visible leaks, regardless of results of infiltration tests, shall be repaired. All repairs shown necessary by the tests are to be made, broken or cracked pipe replaced, all deposits removed, the sewer left true to line and grade and entirely clean, free from lumps of cement, protruding gaskets, bulkheads, etc., and ready for use before final acceptance is made.
- F. Repair of any defects found in the system are to be completed at the expense of the DBF.
- G. On sanitary sewers, final infiltration and exfiltration tests shall be made by the DBF at their expense after all limerock base installations are completed and the sewers are cleaned and ready for use.
- H. The ENGINEER shall maintain a record showing date and time of inspection, calculation of allowable exfiltration or infiltration and amount of measured

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exfiltration or infiltration.

- I. DBF will provide video of the sanitary sewer pipe installed. Video review of gravity sanitary sewer pipe will be performed by the ENGINEER and reviewed for compliance with the CITY Sewer Standard Details. First lift of rock must be installed before the gravity sewer pipe is videoed and available for review and approval by the ENGINEER.

3.5 WARRANTY

- A. Repair and replacement. Any repairs or replacement necessitated by mechanical failure due to faulty materials, improper installation or poor quality of work shall be completed within five (5) days after notification by the ENGINEER. At the expiration of this time, the OWNER shall be entitled to have work done by others at the expense of the DBF. Such repair work done by others shall not void the warranty nor the responsibility of the DBF for the balance of the installation by the DBF.

END OF SECTION 02722

SECTION 02722
SANITARY SEWERADE SYSTEM

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. All applicable provisions of the Bidding and Contract Requirements, and Division 1- General Requirements shall govern the WORK under this section.

1.2 WORK INCLUDED

- A. The work included in this section consists of furnishing all labor, supplies equipment and materials necessary to complete the installation of all landscaping as shown on the Plans as base bid including the installation of sod and seeding as shown, as well as all other related responsibilities as described in these Specifications and accompanying plans.
- B. Installation: All plant materials included shall be of the specific size and quality indicated on the plans and in these specifications and shall be installed in strict accordance with sound nursery practices and shall include maintenance and watering for all work outlined on the plans and specifications until final acceptance.
- C. Quantities and Locations: The CITY reserves the right to adjust the number and locations of the designated types and species to be used at any of the locations shown in order to provide for any modifications which might become necessary.

1.3 RELATED WORK

- A. Section 02910 – Sodding

1.4 QUALITY ASSURANCE

- A. Responsibility for Assuring Quality Work: The DBF'S Superintendent shall be well versed in Florida plant material, planting operations, blueprint reading, and coordination with other performing contracts or services in the job area.
- B. All employees shall be competent and highly skilled in their particular job in order to properly perform the work assigned to them. The DBF shall be responsible for maintaining the quality of the material on the job throughout the duration of the CONTRACT.
- C. Correct Grade of Plants: In the event that it becomes apparent that any nursery supplying plants for this work has knowingly and consistently represented the grade of plants as being higher than their actual grades as determined under these provisions, all plants already delivered from such sources shall be removed from the job at the DBF'S expense, and no further plants will be accepted from such nursery until written evidence is submitted and confirmed that all material for delivery has been inspected and approved by inspectors of the State Plant Board as being of the grade as represented.
- D. Authority for Nomenclature, Species, Etc.: All plant material shall conform to the names given in Hortus Third, 1976 edition. Names of varieties not included therein conform generally with names accepted in the nursery trade.
- E. Grade Standards: All plant materials shall be nursery grown except where specified as collected material, and shall comply with all required inspections, grading standards and plant regulations as set forth by the Florida Department of Agriculture's "Grades and Standards for Nursery Plants" revised 1973, or with any

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superseding specifications that may be called for on the Plans or in the Specifications. ALL PLANTS NOT LISTED IN THE GRADES AND STANDARDS FOR NURSERY PLANTS, shall conform to a Florida No. 1 as to: (1) Health and Vitality, (2) Condition of Foliage, (3) Root System, (4) Freedom from Pest or Mechanical Damage, (5) Heavily Branched and Densely Foliated according to the accepted normal shape of the species, or sport, (6) Form and branching habit.

- F. Balled and Burlapped (B&B) and Wire Balled and Burlapped (WB&B) Plants: These plants shall be properly protected until they are planted. The plant shall be handled only by the earth ball and not be the plant itself.
- G. Any (B&B) or (WB&B) plant which shows evidence of having handled by a method other than the method outlined above and resulting in a cracked or broken ball or of the roots being loosened within the ball shall be rejected.
- H. For plants grown in soil of loose texture, which does not readily adhere to the root system, (especially in the case of large plant material), WB&B plants may be specified. For WB&B plants, before plant is removed from the hole, sound hog wire shall be placed around the burlapped ball and looped and tensioned until the burlapped ball is substantially packaged by the tightened wire netting, such as to prevent disturbing of the loose soil around the roots during handling. Any wire, synthetic material or chemically treated material will be removed from the rootball at planting time, all ties shall be removed from the rootball and around the trunk at planting.
- I. Container Grown Plants (CG): Any Container Grown (CG) plants, which have become "pot bound" or for which the top system is out of proportion (larger) to the size of the container, will not be acceptable.
- J. With metal containers, unless the root-ball system slips easily and unbroken from the can, a nursery can-cutter shall be used to slit the can in such a way that the can may be opened fully.
- K. CG plants shall not be removed from the can until immediately before planting, and with all due care to prevent damage to the root system.
- L. Submit to the CITY the names and locations of nurseries proposed as sources of acceptable plant material. The CITY reserves the right to visit the nursery to inspect and/or select the specified material.
- M. The CITY will be included in the hand selecting of all Live Oaks for the project.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Inspection and Transporting: Movement of nursery stock shall comply with all Federal, State, and local laws and regulations. Therefore, required inspection certificates shall accompany each shipment, and shall be filed with the CITY.
- B. Wrap root balls with burlap. Wire wraps burlap if root ball is not sufficiently compacted. Palms will not require burlap wrapping if the following requirements are met:
 - 1. Dug from marl or heavy soil that adheres to roots and retains shape without shattering.
 - 2. Moistened material used to cover ball and roots not exposed to wind and sun.
 - 3. Transport material on vehicles large enough to allow plants not to be crowded. Plants shall be covered to prevent wind damage during transit and

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shall be kept moist, fresh and protected at all times. Such protection shall encompass the entire period, which the plants are in transit, being handled, or are in temporary storage.

- C. All plant material shall not remain on the work site longer than two (2) days prior to being installed.

1.6 SUBSTITUTIONS

- A. Substitutions of plant types or change in the size of plant material will only be permitted upon submission of documented proof that the particular plant type and size specified is not obtainable.
- B. Where B&B or WB&B plants are specified, CG plants of the same species, etc., will not be accepted. Where a B&B or WB&B is not specified on a particular plant material, B&B, WB&B or CG plants may be used provided they meet all specifications.

1.7 GUARANTEE

- A. All plant material shall be guaranteed for a minimum of one (1) calendar year from the time of final acceptance.

1.8 REPLACEMENT

- A. The guaranteeing of plant material shall be construed to mean the complete and immediate replacement of plant material if it is:
 - 1. Not in a healthy growing condition.
 - 2. There is a question to its survival ability at the end of the guarantee period.
 - 3. It is dead.

1.9 SIZE, QUALITY AND GRADE OF REPLACEMENT

- A. Replacement plant material shall be of the same species, quality and grade as that of the plant to be replaced. The size of the replacement shall not necessarily be the same size as the original specified plant at its initial planting but shall closely match specimens of the same species. Replacements shall be guaranteed for a period equal to the originally specified guarantee. This guarantee period shall begin at time of plant replacement.

1.10 GUARANTEE NULL AND VOID

- A. The guarantee shall be null and void for plant material which is damaged or dies as a result of "Act of God" limited to hail, freeze, lightening, winds which exceed hurricane force, and lethal yellowing, providing the plant was in a healthy growing condition prior to these "Acts of God".

PART 2 MATERIALS

2.1 PLANT MATERIAL

- A. Florida No. 1: Except where another grade is specifically called for in the Plans, all plant material shall be no less than Florida No. 1 at the time of final inspection immediately prior to the acceptance by the OWNER.

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- B. Habit of Growth: All plant material shall have a habit of growth that is normal for that species and shall be sound, healthy, vigorous and free from insects, plant diseases, injuries, and dead limbs.
- C. Branching, Leafing, Measurements and Ball Sizes:
 - 1. Trees and Shrubs: Requirements for the measurement, branching character, ball diameter, depth and other standards shall follow the Code of Standards recommended by the American Association of Nursery Stock, Bulletin Z-60.1-1973 and as revised.
 - 2. Palms: Requirements for the measurement of clear trunk, clear wood and graywood ball diameter and depth shall comply with requirements as set forth by the Florida department of Agriculture's "Grades and Standards for Nursery Plants, Part II for Palms and Trees".
- D. Die-Back and Leaf-Drop: Plant material showing signs of die-back or leaf-drop will not be accepted and must be removed from the job immediately if so directed by the CITY. Therefore, any plant material with tendencies toward leaf-drop or dieback must be root pruned early enough to provide a sound network of hair roots prior to relocation to the job site.
- E. Mechanical Destruction of Foliage: Mechanical destruction of foliage resulting from root pruning shall not effect more than 10% of the total foliage prior to planting on the job site. Loss of foliage caused by seasonal change will be accepted.
- F. Spanish Moss: If Spanish Moss (*Tillandsia usneoides*) exists on plant material, it shall be completely removed prior to planting on the job site.
- G. Palms: Before transporting, see Delivery, Storage and Handling; for requirements related to wrapping of root balls.
 - 1. Remove a minimum of fronds from the crown of the palms to facilitate transporting and handling.
 - 2. Palms with burn marks, nail holes, and frond boots on trunk shall not be accepted.
 - 3. Using untreated burlap strip or untreated cotton twine, tie Sabal Palmetto buds and leave in place until Palmetto is established. Tying shall be as set forth in Florida Department of Agriculture's "Grades and Standards for Nursery Plants". Tying of other palms shall be at the option of the DBF.
 - 4. To reduce head volume, Palm fronds may be taper trimmed by not more than one- third (1/3).
 - 5. Palm trees showing cable or chain marks and equipment scars shall be rejected.
- H. Chlorosis: The allowable level of Chlorosis in foliage shall be as set forth in the Florida Department of Agriculture's "Grades and Standards for Nursery Plants".

2.2 **PLANTING SOILS**

- A. General Type: All plant material with the exception of Sabal Palmetto shall be planted with planting soil mixed with 50% original soil, if the soil is of good quality, as determined by the CITY. The planting soils shall be sandy loam (50% sand, and 50% muck) typical of the locality. The soil must be taken from ground that has never been stripped, with a slight acid reaction (5.5 to 6.5 pH) and without an

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excess of calcium or carbonate. Soil shall be delivered in a loose friable condition.

- B. Special Type: Planting soil for palms shall be a good grade of salt free sand, which is free of all weeds.

2.3 WATER

- A. Water shall be potable, from municipal water supplies or other sources, which are approved by a public health department.

2.4 MULCH

- A. Mulch shall be Eucalyptus mulch or other approved non-native tree bark mulch. It must be uniformly shredded and be free from pieces of bark larger than 1 inch, foreign matter, weed seeds and any other organic or inorganic material. Submit sample for approval. DBF shall apply one application at initial installation and a second application prior to final acceptance.

2.5 FERTILIZER

- A. New Plant Material: Trees, palms and shrubs, fertilize with Agriform planting tablets, 20- 20-5 formula, 21 gram or approved equal.
- B. New Ground Covers: Fertilize with an approved fertilizer of fifty percent (50%) or greater organic 6-6-6 or 8-8-8 with minor elements including, but not limited to, iron zinc and manganese.
- C. Composition of Quality: All fertilizer shall be uniform in composition and dry. Granular fertilizer shall be free flowing and delivered in manufacturers standard container with name of material, weight and guaranteed analysis printed on container. Tabletized fertilizer shall be delivered in unopened containers or boxes. All bags, containers or boxes shall be fully labeled with the manufacturer's analysis. Submit labels to CITY for approval prior to placement of fertilizer.
- D. All shall comply with the State of Florida fertilizer laws.

2.6 PRUNING PAINT

- A. Pruning paint shall be commercial tree paint, which is waterproof, antiseptic, adhesive, elastic and free of kerosene, water, cresol, and any other substances harmful to plant material.

2.7 VEGETATIVE ROOT INHIBITOR

- A. A vegetative root inhibitor shall consist of a polypropylene fabric with root control time- release modules of Trifluralin with an effective life of 100 years or approved equal
- B. Vegetative root inhibitor shall be Bio-Barrier as manufactured by Reemay, Inc. or approved equal.

PART 3 EXECUTION

3.1 INSPECTION

- A. Utilities: The location and existence of utilities (overhead and underground) shall be thoroughly investigated and verified by the DBF before the work begins in the

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area of said utilities. The DBF shall exercise care in digging and work so as not to damage existing utilities in said areas, such as underground pipes, cables, wires, etc. Should such overhead or underground obstructions be encountered which interfere with planting, the CITY shall be consulted immediately in order for a decision to be made on the relocations of plant material to clear such obstruction. The DBF shall be responsible for the immediate repair of any damage to utilities caused by DBF's work.

3.2 **PREPARATION**

- A. Staking Plant Locations: Plant locations must be staked or marked prior to plant hole excavation or placing on deck, by scaling the plants from existing features found on-site and shown on the plans or by given dimensions if shown.
- B. Spacing of Shrubs: Shrub beds located next to another bed, walkway, structure, etc., shall have the plants along the perimeter spaced so that the plants can mature properly without growing into the other bed, walkway, structure, etc.
- C. Excavation of Plant Holes: Excavation of plant holes shall be roughly cylindrical in shape with the sides approximately vertical. The CITY reserves the right to adjust the size and shape of the plant hole and the location of the plant in the hole to compensate for unanticipated structures or unanticipated factors. All plant holes shall be sufficiently deep to allow the rootball to set on existing soil and have root collar at grade level. Plants shall be centered in the holes with the tree trunk locations scaled from existing permanent structures as shown on the drawings. Plants shall be set straight or plumb in locations.

All plant holes to accommodate plants with ball sizes less than 24 inches in diameter shall be at least 18 inch greater than the diameter of the ball. All plants holes to accommodate plants with ball sizes two feet (2') and larger in diameter shall be at least twice the diameter of the ball. The excavated material from the plant holes may not be used to back-fill around the plant material. Such material shall be disposed of either on the project site or off the site as directed by the CITY. Plant holes for shrub material planted in mass shall meet all requirements listed above for plant holes. However, they shall not be individual holes but one continuous hole or excavation. Plant holes for hedge material shall also meet all requirements listed above for plant holes, however, a continuous trench shall be used in lieu of individual holes.

3.3 **INSTALLATION**

- A. Setting of Plants:
 - 1. When lowered into the hole the plant shall rest on the prepared hole bottom such that the roots after settlement are level, or slightly above the level of its previous growth condition and the final level of the ground around the plant shall conform to the surrounding grade. The plants shall be set straight or plumb or normal to the relationship of their growth prior to transplanting. The CITY reserves the right to realign any plant material after it has been set.
 - 2. Palms of the Sabal species may be set deeper than the depth of their original growth condition in order to lessen the necessity for support or bracing. For such deeper planting however, it will be required that the underlying soil be

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friable and that the clear trunk requirements set forth in the plant list be maintained from the finished grade and NOT from the previous grade of the palm trees before it was transplanted.

3. Plant material of the shrub category and smaller must be handled by the ball only. Plant material too large for hand handling, if moved by winch or crane, must be thoroughly protected from chain, rope or cable marks, girdling, bark slippage, limb breakage and any other damage that might occur by improper handling or negligence.
 4. All palm trees handled by the trunks must be wrapped with burlap and wood battens, held in place by banding strips as called for in the details.
- B. Backfilling:
1. Use planting soils approved by the City. Backfill to the bottom two thirds of the planting hole and firmly tamp and settle by watering as backfilling progresses. After having tamped and settled the bottom two thirds (2/3) of the hole, thoroughly puddle with water and fill remaining one third (1/3) of the hole with planting soil, tamping and watering to eliminate air pockets.
- C. Application of Fertilizer:
1. Fertilize New Planting (Trees, Palms and Shrubs) as follows:
 - a. Specified Container Size Application

Rate 1 gallon container	1 tablet
3 gallon container	2 tablets
5 gallon container	3 tablets
7 gallon container	5 tablets
 - b. Large tubs or boxes and B&B material shall receive one (1) tablet for each one- half (1/2) inch of trunk diameter (measured three (3) feet from ground). For large shrubs, one (1) tablet for each one (1) foot of height or spread.
- D. Mulch: Within 24 hours after planting, planting areas must be mulched as called for in these specifications. The mulch shall be uniformly applied to a depth of two (2) inches over all shrub, tree and groundcover areas and any areas indicated on the plans.
- E. Staking and Guying shall be installed within 24 hours; in accordance with details.
- F. Initial Watering: Initially, water the plant material to develop uniform coverage and deep- water penetration of at least six inches (6"). Avoid erosion, puddling, and washing soil away from plant roots.
- G. Hand Watering: Provide hand watering of plant material as necessary subject to weather conditions, to maintain healthy growing conditions until final acceptance. This shall be in addition to water received from irrigation system, if any.
- H. Pruning
1. The amount of general pruning shall be limited to the minimum necessary to remove dead or injured twigs and branches and to compensate for the loss of roots as a result of transplanting operations. Pruning shall be done in such a manner as not to change the natural habit of shape of a plant, and in accordance with National Arborist Association standards for pruning.
 2. All broken or damaged roots shall be cut off smoothly. The tops of all trees

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shall be pruned in a manner complying with standard horticultural practices. All cut surfaces of one-half inch (1/2") or more in diameter above ground level shall be treated with approved commercial tree paint.

- I. Weeding: In the event that weeds or undesirable vegetation becomes prevalent to such an extent that they threaten plant material, they shall be removed as directed by the CITY. If necessary, the plant material and/or planting soil shall be replaced as needed to eliminate the weeds at the expense of the DBF.

3.4 CLEANING AND PROTECTION

- A. Disposal of Trash: All debris and other objectionable material created through planting operations and landscape construction shall be removed completely on a daily basis from the job or as directed by the CITY. Excess soil shall be disposed of as directed by the CITY.
- B. Responsibility for Protection and Restoration of Property: The DBF shall be responsible for all damage to property whether it is accidental or necessary for the completion of the contract.
- C. Protection Against Mechanical Damage: The DBF's responsibility for protection against mechanical damage shall include providing protection from vehicles and providing warning signs and barricades as might be necessary and DBF shall repair, restore and replace any planting areas which become damaged as a result of any negligence of the DBF or DBF's employees in complying with these requirements. Coordination shall be with the OWNER.
- D. Responsibility Prior to Final Acceptance:
 1. Maintenance shall begin immediately after each plant is planted and continue until final acceptance.
 2. Plants shall be watered by hose, soaking thoroughly each day for the first two weeks (14 calendar days) and every other day for the following two week period. Soaking then shall continue on a twice weekly basis for another period of three (3) weeks for material over five feet (5') height, amounting to a total of 28 days after installation of planting under five feet (5') and a total of 45 days for plants over five feet (5'). All watering is required without regard to an irrigation system.
 3. Plant maintenance shall include watering, pruning, weeding, cultivating, mulching, tightening and repairing of guys, stakes, braces, etc., replacement of sick or dead plants, resetting plants to proper grades or upright position and maintenance of the watering saucer, and all other care needed for proper growth of the plants. Plant material rejected during the course of the construction shall be removed within five (5) working days and replaced before the inspection for completion will be scheduled.
 4. During the maintenance period and up to the issuance of Certificate of Final Acceptance, the DBF shall do all seasonal spraying and/or dusting of all planting. The materials and methods shall be in accordance with the highest standard nursery practices and as recommended by the CITY prior to implementation.
 5. Planting areas and plants shall be protected against trespassing and

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damage. If any plants become damaged or injured they shall be treated or replaced, as directed and in compliance with this specification. No work shall be done within or over planting areas or adjacent to plants without proper safeguards and protection.

END OF SECTION 02900

SECTION 03010
CONCRETE**PART 1 GENERAL****1.2 RELATED DOCUMENTS**

- A. All applicable provisions of the Bidding and Contract Requirements, and Division 1- General Requirements shall govern the WORK under this section.

1.2 WORK INCLUDED

- A. Provide all labor, materials, necessary equipment and services to complete the concrete work, as indicated on the drawings, as specified herein or both, except as for items specifically indicated as "NIC ITEMS".
- B. Including but not necessarily limited to the following:
 - 1. Form work, shoring, bracing and anchorage.
 - 2. Concrete reinforcement and accessories.
 - 3. Cast-in-place concrete.
 - 4. Plugging abandoned pipelines and/or structures in place.

1.2 RELATED WORK

- A. Section 02510 - Concrete sidewalk
- B. Section 02513 - Asphaltic Concrete Paving – General
- C. Section 03300 - Cast-in-Place Concrete.
- D. All applicable sections of Division 1, 2, 3 and 4.

1.2 QUALITY ASSURANCE

- A. All work shall be in accordance with ACI 301, latest edition, a copy of which shall be maintained on site.
- B. Requirements of Regulatory Agencies: perform work in accordance with local building and other applicable codes.
- C. Installation: Performed only by skilled laborers with satisfactory record of performance on completed projects of comparable size and quality
- D. Inspection and Testing
 - 1. Test Cylinders - As per ASTM C-39.
 - a. Minimum of three (3) concrete test cylinder shall be taken for every 75 or less cubic yards of concrete placed each day.
 - b. Minimum of one (1) slump test shall be taken during any cold weather concreting, and be cured on job site under same conditions as the concrete it represents.
 - 2. Slump Test - As per ASTM C-143.
 - a. Minimum of one (1) slump test shall be taken for each set of test cylinders taken.

1.2 SUBMITTALS

- A. Test Reports: Reports of concrete compression, yield, air content and slump tests.
- B. Certificates:
 - 1. Manufacturer's certification that materials meet specification requirements.
 - 2. Material content per cubic yards of each class of concrete furnished.
 - a. Dry weights of cement.

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- b. Saturated surface-dried weights of fine and coarse aggregate.
 - c. Quantities, type and name of all mixtures.
 - d. Weight of water.
- 3. Ready-mix delivery tickets as per ASTM C-94.
- C. Shop Drawings:
 - 1. Show sizes and dimensions for fabrication and placing of reinforcing steel and bar supports.
 - 2. Indicate reinforcement sizes, spaces, locations and quantities or reinforcing steel, and wire fabric, bending and cutting schedules, splicing and supporting and spacing devices.
 - 3. Indicate formwork dimensioning, materials, arrangement of joints and ties.
 - 4. Shop drawings shall be prepared under seal of a Professional Structural Engineer, registered in the State of Florida.

1.2 DELIVERY, STORAGE AND HANDLING

- A. Deliver reinforcement to project site in bundles marked with metal tags indicating bar size and length.
- B. Handle and store materials to prevent contamination.

1.2 JOB CONDITIONS

- A. Allowable concrete temperatures:
 - 1. Hot weather: Maximum 90 degrees F as per ASTM C-94.
- B. Do not place concrete during rain, unless protection is provided.

PART 2 PRODUCTS

2.1 FORM MATERIALS

- A. Materials shall conform to ACI 301, latest edition
- B. Plywood forms: Douglas Fir Species, solid one side, form grade, sound undamaged sheets.
- C. Lumber: Southern Pine Species, No. 2 Grade, with grade stamp clearly visible.
- D. Form Ties: Removable, snap-off metal, of fixed and adjustable length, cone ends.
- E. Tubular Column Type: Round, spirally wound laminated fiber material, clearly visible.

2.2 REINFORCING STEEL

- A. Reinforcing steel shall conform to ASTM A615, 60 ksi yield grade billet steel reformed bars; uncoated finish.
- B. Welded steel wire fabric shall confirm to ANSI/ASTM A185, plain type; coiled rolls, uncoated finish.

2.3 CONCRETE MATERIALS

- A. Cement: shall conform to ASTM C150, normal Type II Portland, gray color.
- B. Fine and coarse aggregate shall conform to ASTM C33.
- C. Water: clean and not detrimental to concrete.

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CONCRETE**2.4 ADMIXTURES**

- A. Air Entraining: ASTM C-260
- B. Chemical: Type (as required) ASTM C-494.
- C. Fly Ash and Pozzolans: ASTM C-618
- D. Color - Conditioned Concrete: ASTM C-494 and ASTM C-979

2.5 ACCESSORIES

- A. Non-shrink grout: pre-mixed compound with non-metallic aggregate, cement, water reducing and plasticizing agents; capable of minimum compressive strength of 3500psi.
- B. Construction joints: locate and install construction joints, which are not shown on drawings, so as not to impair strength and appearance of the structure, as acceptable to the CITY. Place construction joints perpendicular to the main reinforcement, continue reinforcement across construction joints.
- C. Expansion joints: shall be a minimum of 3/4-inch thick asphalt impregnated fiberboard as per ASTM D-1751.
- D. Form release agent shall be a colorless material, which will not stain concrete, absorb moisture or impair natural bonding or color characteristics of coating intended for use on concrete.
- E. Water shall be clear and potable.

2.6 CURING MATERIALS

- A. Water shall be clean and potable.
- B. Absorptive mat shall be burlap fabric of 9 oz./sq. yd. clean, roll goods complying with AASHTO M182, Class 3.
- C. Membrane curing compound shall conform to ASTM C309.
- D. Clear Sealer: "Clear Bond" as manufactured by Guardian Chemical Co., Dayton Day- Chem Cure-W (J-9-A) or approved equal.
- E. Color curing compound shall be liquid membrane-forming conforming to ASTM C 309 two- component Lithochrome Colorwax by L.M. Scofield Company, or approved equal, color to match admixture for color-conditioned concrete.

2.7 CONCRETE MIX

- A. Mix concrete in accordance with ASTM C94.
- B. Concrete:
 - 1. Compressive strength (28 days): 3000 psi.
 - 2. Slump: 4(±) 1 inch.
- C. Concrete / Flowable fill for grouting and plugging:
 - 1. Compressive strength (28 days) 2000 psi.
 - 2. Slump: as required to grout and plug.

PART 3 EXECUTION**3.1 FORMWORK ERECTION**

- A. Verify lines, levels, and measurement before proceeding with formwork.
- B. Hand trimmed sides and bottom of earth forms; remove loose dirt.

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CONCRETE

- C. Align form joints.
- D. Do not apply form release agent where concrete surfaces receive special finishes or applied coatings, which may be affected by agent.
- E. Coordinate work of other sections in forming and setting openings, slots, recesses, chases, sleeves, bolts, anchors and other inserts.

3.2 REINFORCING

- A. Place, support and secure reinforcement against displacement.

3.3 PLACING CONCRETE

- A. Color Conditioned concrete, when batching, shall not be less than one-third of the capacity of the mixing drum (a minimum of four yards for a ten-yard mixer) and will be in full cubic yard increments.
- B. Notify CITY minimum 24-hours prior to commencement of concreting operations.
- C. Scratch, float, trowel, broom or belt finish surfaces, as scheduled or indicated on the Drawings.
- D. Place 2000 psi concrete for pugging and grouting pipelines and structures in-place as required after proper connection to new service and function of system is completes.

3.4 TOLERANCES

- A. Provide Class B tolerance to floor slabs according to ACI 301. Pitch to drains 1/4 inch per foot.

3.5 FINISHES FOR EXPOSED SURFACES

- A. Provide exposed surfaces with finishes as called for on the Drawings.

3.6 CONCRETE CURING

- A. Curing for standard grey work after finishing, cure concrete by keeping moist for one (1) week after placement. Floors and vertical surfaces may be sprayed with an approved curing compound to retard evaporation of water, if spraying is not objectionable because of future finishing requirements. Begin curing operations as soon as concrete has attained its initial set. Keep exposed concrete surface moist for at least one (1) week.
- B. Apply a liquid membrane-forming compound, conforming with ASTM C 309, color to match that of the color condition concrete. Apply on flat work immediately after the finishing operation pursuant to the manufacturer's recommendations.

END OF SECTION 03010

SECTION 03100
CONCRETE FRAMEWORK

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. All applicable provisions of the Bidding and Contract Requirements, and Division 1- General Requirements shall govern the WORK under this section.

1.2 WORK INCLUDED

- A. Formwork for Cast-In-Place Concrete, with shoring, bracing, and anchorage.
- B. Openings for other affected work.
- C. Form accessories.
- D. Stripping forms.

1.3 RELATED WORK

- A. Section 03010 - Concrete.
- B. Section 03300 - Cast-In-Place Concrete.

1.4 SYSTEM DESCRIPTION

- A. Design, engineer and construct formwork, shoring and bracing to meet design code requirements, so that resultant concrete conforms to required shapes, lines, and dimensions.

1.5 QUALITY ASSURANCE

- A. Construct and erect concrete formwork in accordance with ACI 301 and 347.

1.6 SUBMITTALS

- A. Indicate pertinent dimensions, materials, and arrangement of joints and ties.
- B. Prepare shop drawings under seal of Professional Structural Engineer registered in the State of Florida.
- C. Manufacturers certification that materials meet specification requirements.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store and handle materials in accordance with manufacturers recommendations.
- B. Deliver form materials in manufacturer's packaging with installation instructions.
- C. Store off ground in ventilated and protected area to prevent deterioration from moisture or damage.
- D. Remove packaging from void forms.

PART 2 PRODUCTS

2.1 FORM MATERIALS

- A. Plywood: Douglas Fir Species; medium density overlaid one side grade; sound, undamaged sheets with straight edges.
- B. Lumber: Southern Pine Species; No. 2 grade; with grade stamp clearly visible.
- C. Tubular Column: Round, of spirally wound laminated fiber type; surface treated with release agent; of size required.

SECTION 03100
CONCRETE FRAMEWORK

2.2 FORMWORK ACCESSORIES

- A. Form Ties: Snap-off metal of adjustable length; cone type; 1 1/2 inch break back dimension; free of defects that will leave holes no larger than 1-1/4 inches diameter in concrete surface.
- B. Form Release Agent: Colorless material which will not stain concrete, absorb moisture, or impair natural bonding in color characteristics of coating intended for use on concrete.
- C. Fillets for Chamfered Corners: Wood strips or rigid PVC plastic in maximum possible lengths.
- D. Nails, Spikes, Lag Bolts, Through Bolts, Anchorages: Sized as required; or strength and character to maintain formwork in place while placing concrete.

PART 3 EXECUTION

3.1 INSPECTION

- A. Verify lines, levels, and measurements before proceeding with formwork.

3.2 PREPARATION

- A. Hand-trim sides and bottoms of earth forms; remove loose dirt prior to placing concrete.
- B. Minimize form joints. Symmetrically align joints and make weathertight to prevent leakage of mortar.
- C. Arrange and assemble formwork to permit dismantling, stripping, so that concrete is not damaged during its removal.
- D. Arrange forms to allow stripping without removal of principal shores, where required to remain in place.

3.3 ERECTION

- A. Provide bracing to ensure stability of formwork. Strengthen formwork liable to be overstressed by construction loads.
- B. Camber slabs and beams to achieve ACI 301 tolerances.
- C. Provide temporary ports in formwork to facilitate cleaning and inspection. Locate openings at bottom of forms to allow flushing water to drain. Close ports with tight fitting panels, flush with inside face of forms, neatly lifted so that joints will be apparent in exposed concrete surfaces.
- D. Provide expansion strips on external corners of beams and columns, where exposed.
- E. Install void forms. Protect from moisture before concrete placement. Protect from crushing during concrete placement.
- F. Construct formwork to maintain tolerances in accordance with ACI 301.

3.4 APPLICATION OF FORM RELEASE AGENT

- A. Apply form release agent on formwork in accordance with manufacturer's instructions. Apply prior to placing reinforcing steel, anchoring devices, and embedded items.
- B. Do not apply form release agent where concrete surfaces are scheduled to receive

SECTION 03100
CONCRETE FRAMEWORK

special finishes or applied coverings, which may be affected by agent. Soak contact surfaces of untreated forms with clean water. Keep surfaces wet prior to placing concrete.

3.5 INSERTS, EMBEDDED PARTS, AND OPENINGS

- A. Provide formed openings where required for work embedded in or passing through concrete.
- B. Coordinate work of other sections in forming and setting openings, slots, recesses, chases, sleeves, bolts, anchors, and other inserts.
- C. Install accessories in accordance with manufacturer's instructions, level and plumb. Ensure items are not disturbed during concrete placement.

3.6 FORM REMOVAL

- A. Notify CITY prior to removing formwork.
- B. Do not remove forms and shoring until concrete has sufficient strength to support its own weight, and construction and design loads which may be imposed upon it. Remove load- supporting forms when concrete has attained 75 percent of required 28-day compressive strength, provided construction is reshored.
- C. Formwork not supporting weight of concrete, such as sides of beams, walls, columns, and similar parts of the work, may be removed after cumulatively curing at not less than 50 degrees F for 24-hours after placing concrete, provided concrete is sufficiently hard to not be damaged by form removal operations, and provided curing and protection operations are maintained.
- D. Formwork supporting weight of concrete, such as beam soffits, joints, slabs and other structural elements, may not be removed in less than 14 days and until concrete has attained design minimum compressive strength at 28-days. Determine potential compressive strength of in place concrete by testing field-cured specimens representative of concrete location of members.
- E. Reshore structural members due to design requirements or construction conditions to permit successive construction.
- F. Remove formwork progressively so no unbalanced loads are imposed on structure.
- G. Do not damage concrete surfaces during form removal.
- H. Store reusable forms for exposed architectural concrete to prevent damage to contact surfaces.
- I. Remove formwork in same sequence as concrete placement to achieve similar concrete surface coloration.

3.7 CLEANING

- A. Clean forms to remove foreign matter as erection proceeds.
- B. Ensure that water and debris drain to exterior through clean-out ports.

END OF SECTION 03100

SECTION 03300
CAST-IN-PLACE CONCRETE

PART 1 GENERAL**1.1 RELATED DOCUMENTS**

- A. All applicable provisions of the Bidding and Contract Requirements, and Division 1- General Requirements shall govern the WORK under this section.

1.2 WORK INCLUDED

- A. Provide all labor, materials, necessary equipment and services to complete the Cast-In- Place Concrete Work, as indicated on the drawings, as specified herein or both except as for items specifically indicated as "NIC ITEMS".
- B. Including but not necessarily limited to the following:
 - 1. Cast-In-Place concrete walls, footings, foundation walls, paving, walks, slabs, formwork, reinforcing and all other components as indicated on the Drawings.

1.3 RELATED WORK

- A. Section 03010 - Concrete.
- B. Section 03100 - Concrete Form work.
- C. Section 03370 - Concrete Curing.
- D. Section 02510 - Concrete Sidewalk

1.4 QUALITY ASSURANCE

- A. Applicator Qualifications: Minimum of five years' experience on 5 comparable concrete projects.
- B. Requirements of Regulatory Agencies: Perform work in accordance with local building codes.
- C. Allowable Tolerances: Flat work true to plane 1/8 inch in 10 feet.
- D. Slump tests as per ASTM C-143, and test cylinders as per ASTM C-39.

1.5 TESTS

- A. Submit proposed mix design of each class of concrete to appointed firm for review prior to commencement of work.
- B. Testing firm will take cylinders and perform slump and air entrainment tests in accordance with ACI 301
- C. Tests of cement and aggregates will be performed to ensure conformance with requirements stated herein.
- D. Three (3) concrete test cylinders will be taken for every 75 cubic yards. or less of each class of concrete placed each day.
- E. One (1) slump test will be taken for each set of test cylinders taken.
- F. All testings shall be at the expense of the DBF.

1.6 SUBMITTALS

- A. Provide product data for specified products.
- B. Test Reports: Reports of concrete compression, yield, air content, and slump tests.
- C. Certificates:
 - 1. Manufacturer's certification that materials meet specification requirements.

SECTION 03300
CAST-IN-PLACE CONCRETE

2. Material content per cubic yard of each class of concrete furnished.
 - a. Dry weights of cement.
 - b. Saturated surface-dried weights of fine and coarse aggregate.
 - c. Quantities, type and name of admixtures.
 - d. Weight of water.
3. Ready-mix delivery tickets, ASTM C-94.
- D. Shop Drawings:
 1. Show sizes and dimensions for fabrication and placing of reinforcing steel and bar supports.
 2. Indicate bar schedules, stirrup spacing, and diagrams of bend bars.
 3. Detail items of form systems affecting appearance of architectural concrete surfaces such as joints, tie holes, liners, patterns and textures. Show items in relation to entire form system.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Deliver reinforcement to project site in bundles marked with metal tags indicating bar size and length.
- B. Handle and store materials to prevent contamination.

1.8 ENVIRONMENTAL REQUIREMENTS

- A. Allowable concrete temperatures:
 1. - Hot Weather: Maximum 90° F as per ASTM C-94.
- B. Do not place concrete during rain, unless protection is provided.

PART 2 PRODUCTS

2.1 MATERIALS & MANUFACTURERS

- A. Concrete Ready-Mix concrete ASTM C-94.
 - a. Cement:
 - ASTM C 150, Type II
 - b. Admixtures:
 - Air entraining: ASTM C-260
 - Chemical: Type (as required) ASTM C-494.
 - Fly ash and pozzolans: ASTM C-618
 - Vapor Barrier: 6-mil thick film of type recommended for below grade application.
 - c. Coarse aggregate: Not less than 50% clean, hard, crushed stone conforming to requirements of Table 2, size number 467 ASTM C-33.
 - d. Slump 4 inch maximum; plus tolerance 0, minus tolerance 1 inch.
 - e. Air content: 5% + 1%.
 - f. Mix proportioning:
 - In accordance with ASTM C-94.
 - 28 day compressive strength of moist cured laboratory samples 3,000 PSI.

SECTION 03300
CAST-IN-PLACE CONCRETE

- Use set retarding admixtures during hot weather only when approved by CITY.
- Minimum cement contents 5 sacks/cubic yards.
- Add air-entraining agent to concrete work exposed to exterior.
 - g Curing Material: Liquid membrane, ASTM C-309, Type 1.
 - h Mixes:
 - ASTM C-94.
 - Mix concrete only in quantities for immediate use.
 - Do not retemper or use set concrete.
- B. Bars.
 - 1. Deformed billet steel: ASTM A 615, Grade 60.
- C. Wire Fabric:
 - 1. Welded Wire Fabric Steel: ASTM A 185
- D. Tie Wire: FS QQ-W-461-G, annealed steel, black 16 ga. minimum.
- E. Bar supports: Conform to "Bar Support Specification," CRSI Manual of Standard Practice.
- F. Forms:
 - 1. Conform with ACI 347, Chapter 3, Material and Form Work.
- G. Lumber:
 - 1. Softwood framing lumber: Kiln dried, PS-20.
 - 2. Boards less than 1 1/2 inch thick and 2 inch wide, used for basic forms and form liners: Kiln dried.
 - 3. Grade marked by grading rules agency approved by American Lumber Standards Committee.
 - 4. Light framing or studs for board or plywood forms, 2 inch to 4 inch width and thickness Construction Standard grade.
 - 5. Boards for basic forms Construction Standard grade.
 - 6. Board surface: Smooth.
- H. Plywood:
 - 1. Exterior type softwood plywood, PS 1-66.
 - 2. Each panel stamped or branded indicating veneer grades, species, type and identification.
 - 3. Wood faced plywood for architectural concrete surfaces.
 - 4. Panel veneer grades: B - C.
 - 5. Mill-oiled sides and mill-sealed edges of panels.
- I. Ties:
 - 1. Materials: Stainless Steel.
 - 2. Type: Snap Ties.
 - 3. Depth of breakback: 1 inch.
 - 4. Maximum diameter 1/4 inch.
- J. Form coatings:
 - 1. Non-staining type.
 - 2. Agent: Pine oil derivative.
- K. Water: Clean and potable.

PART 3 EXECUTION

SECTION 03300
CAST-IN-PLACE CONCRETE

2.2 FORMWORK

- A. Conform to ACI 347, Chapter 2, Construction; and Article 4.2, architectural Concrete.
- B. Framing, Bracing and Plywood Form Liners: APA Form V 345-72.
- C. Provide temporary openings in framework for concrete placement.
- D. Fill voids of plywood joints with sealant and tool smooth.
- E. DBF is responsible for the design, construction, removal and complete safety of formwork and shoring.
- F. Form construction shall be provided to shape, lines dimensions of members shown; substantial, tight enough to prevent leakage, and properly braced or tied to maintain position and size, form sides and bottoms of members unless specifically excepted.

2.3 REINFORCING

- A. Fabrication shall be provided to latest ACI Manual of Practice ACI-315.
- B. Reinforcing free from excessive rust, scale or coating reducing bond. Bars bent cold in fabrication plant. Chairs, support bars, and other accessories furnished to carry and provide coverage as required by ACI Manual.
- C. Unless otherwise indicated the minimum coverage is 3-inch for footings (slabs to have 3/4 inch minimum). Call any "crowding" of reinforcement to CITY's attention during placing.
- D. Splices shall be Mesh 6-inch lap, bars 30 X diameter minimum.
- E. Conduit or pipes embedded in concrete must have specific approval and be located to avoid cracking or reduction in strength. Provide extra strong pipe sleeves where pipes are allowed to pierce concrete beams or walls.
- F. Placement:
 - a Bar supports: CRSI 65.
 - b Reinforcing bars: CRSI 63.
- G. Steel Adjustment:
 - a Move within allowable tolerances to avoid interference with other reinforcing steel, conduits, expansion joints, or embedded items.
 - b Do not move bars beyond allowable tolerances without concurrence of CITY.
 - c Do not heat, bend, or cut bars without concurrence of CITY.
- H. Splices:
 - a Lap splices: Tie securely with wire to prevent displacement of splices during placement of concrete.
 - b Splice devices: Install in accordance with manufacturer's written instructions.
 - c Welding: Perform in accordance with AWS Standards.
 - d Do not splice bars except at locations shown on drawings without concurrence of CITY.
- I. Wire Fabric:
 - a Install in longest practicable length.
 - b Lap adjoining pieces one full mesh minimum, and lay splices with 16-gauge wire.

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- c Offset end laps in adjacent widths to prevent continuous laps.
- J. Cleaning: Remove dirt, grease, oil, loose mill scale, excessive rust, and foreign matter that will reduce bond with concrete.
- K. Protection During Concreting: Keep reinforcing steel in proper position during concrete placement.

2.4 JOINTS

- A. Construction pours shall be continuous pours except where joints are indicated. No additional joints except by special acceptance in writing by the CITY. Allow no construction or interrupted pour joints in any exposed surface, unless treated as part of design.
 - a Where indicated and as detailed, provide saw cut type construction joints of sizes as called for on the drawings.
- B. Expansion joints shall be constructed as shown on drawings.
 - a Expansion material shall be ½ inch continuous full depth strips set ½ inch below finish surface with ½ inch x ½ inch joint sealant filler above.

2.5 BUILT-IN ANCHORING DEVICES, FIXTURES, PIPE SLEEVES AND OTHER INSERTS

- A. Build-in and coordinate as required and called for on the drawings all items to be constructed into concrete such as anchoring devices, fixtures, piping, sleeves and other inserts and items as required for a complete installation.

2.6 INSPECTION

- A. Assure that excavation and formwork are completed, with smooth rubbed finish, and that excess water is removed.
- B. Check that reinforcement is secured in place.
- C. Verify that expansion joint material, anchors, and other embedded items are secured in position.
- D. Verify anchors, seats, plates, reinforcement, and other items to be cast into concrete are accurately placed, held securely, and will not cause hardship in placing concrete.

2.7 CONCRETE QUALITY

- A. Design of mix shall be a laboratory designed mix to satisfy the following requirements and shall be approved by the CITY.
 - a Ready mixed concrete as per ASTM C-94 with 28 day strength 3,000 PSI minimum, for all standard grey concrete work.
 - b Proportion the concrete to work readily into forms and around reinforcement, without excessive manipulation, segregation or water gain. Approved additives may be used to achieve the above results.
 - c Slump shall be maximum 3 inch for footings, and for all other concrete shall be 3 inch to 5 inch.
- d Submit for approval representative test results by independent laboratory to

SECTION 03300
CAST-IN-PLACE CONCRETE

substantiate proposed mix design.

2.8 PREPARATION FOR POURS

- A. Notify the OWNER's Representative, CITY and other inspectors at least 36 hours prior to inspection.
- B. Equipment forms, and reinforcing shall be clean and wet down, reinforcing firmly secured in place, runways set up and not resting on or displaying reinforcing.
- C. Prepare previously placed concrete by cleaning with steel brush and applying bonding agent. Apply bonding agent in accordance with manufacturer's instruction.
- D. At locations where new concrete is dowelled to existing work, drill holes in existing concrete, insert steel dowels, and pack solid with non-shrink grout.

2.9 PLACING

- A. Mixing and conveying shall be as per ASTM C-94 and as follows:
 - a Maximum elapsed time from addition of water to placing in forms -60 minutes, (total mixing time).
 - b Concrete handled and placed by methods, which keep concrete plastic, prevent separation of materials, and do not displace reinforcement.
- B. Deposit as close as possible to final position to avoid segregation of materials. Restrict drop to 3 foot maximum (less for exposed concrete), using tremie if necessary.
 - a Compact by mechanical vibration to thoroughly work around reinforcing and eliminate honeycomb.
- C. Place concrete in accordance with ACI 301.
- D. Hot Weather Placement: ACI 301.
- E. Cold Weather Placement: ACI 301.
- F. Ensure reinforcement, inserts, embedded parts and formed joints are not disturbed during concrete placement.
- G. Maintain concrete cover around reinforcing as follows:

Item	Coverage
Beams	1 1/2 inch
Supported Slabs	3/4 inch
Column Ties	1 1/2 inch
Walls (exposed to weather or backfill)	2 inch
Footings and Concrete Formed Against Earth	3 inch
Slabs on Fill	2 inch

- H. Place concrete continuously between predetermined construction and control joints. Do not break or interrupt successive pours such that cold joints occur.
- I. Saw cut control joints at an optimum time after finishing. Use 3/16 inch thick blade, cutting 1/3 depth of slab thickness.
- J. Separate exterior slabs on fill from vertical surfaces with joint filler. Extend joint filler from bottom of slab to within 1/2 inch of finished slab surface.
- K. Excessive honeycomb or embedded debris in concrete is not acceptable. Notify CITY upon discovery.

SECTION 03300
CAST-IN-PLACE CONCRETE

2.10 CONCRETE CURING

- A. Curing for standard grey work after finishing, cure concrete by keeping moist for one (1) week after placement. Floors and vertical surfaces may be sprayed with an approved curing compound to retard evaporation of water, if spraying is not objectionable because of future finishing requirements. Begin curing operations as soon as concrete has attained its initial set. Keep exposed concrete surface moist for at least one (1) week.
- B. Apply a liquid membrane-forming compound, conforming to ASTM C 309, color to match that of the color condition concrete. Apply on flat work immediately after the finishing operation pursuant to the manufacturer's recommendations.

2.11 CONCRETE FINISHING

- A. Unexposed concrete work shall be patched and repaired immediately after removal of forms.
 - a Cut off metal ties a minimum of 1 inch back from surface of concrete.
 - b Moderate honeycomb cut out and prepared for patching. Severe honeycomb with exposed steel reinforcing is to be removed or "united" at the discretion of the CITY.
 - c Wet areas for patching and pack carefully with rich mortar rubbed to match surface.
- B. Provide concrete surfaces to be left exposed, walls, columns, beams, with smooth rubbed finish.
- C. Provide Class B tolerances to floor slabs and toppings according to ACI301.
- D. Pitch to drains 1/4 inch per foot.
- E. Exposed concrete work shall be patched and repaired as accepted by CITY after consultation. Patching and rubbing will be kept to a minimum if possible, but when necessary will be done with great care to obtain maximum degree of matching in color and texture to adjacent finished concrete surfaces
- F. Monolithic finish using care to obtain a level surface; floors out of level or with variation greater than 1/8 inch in 10 feet shall be corrected.
- G. All finishes shall be as called for on the drawings.

2.12 SEPARATE FLOOR TOPPINGS

- A. Prior to placing, roughen concrete base course and remove foreign materials. Broom and vacuum clean.
- B. Place dividers, edge strips, reinforcing and other items to be cast in.
- C. Apply bonding agent on base course in accordance with manufacturer's instructions. Apply sand and cement slurry coat on base course immediately prior to placing toppings.
- D. Place concrete floor toppings to required lines and levels.

2.13 PATCHING

- A. Notify CITY immediately upon removal of forms.
- B. Patch imperfections.

SECTION 03300
CAST-IN-PLACE CONCRETE

2.14 DEFECTIVE CONCRETE

- A. Modify or replace concrete not conforming to required levels and lines, details, and elevations.
- B. Repair or replace concrete not properly placed or of the specified type.

2.15 FIELD QUALITY CONCRETE

- A. Maintain records of placed concrete items. Record date, location of pour, quantity, air temperature, and test samples taken.

2.16 PROTECTION

- A. 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.
- C. During curing period, protect concrete from damaging mechanical disturbances, water flow, loading, shocking, and vibration.

2.17 APPLICATION OF BOND COAT FOR CONCRETE LEVELING COAT FOR PAVERS AND TEXTURED SURFACES

- A. Provide installation as per manufacturer's standard printed specifications, instructions and recommendations.

END OF SECTION 03300

SECTION 03300
CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. All applicable provisions of the Bidding and Contract Requirements, and Division 1- General Requirements shall govern the WORK under this section.

1.2 WORK INCLUDED

- A. Maintenance of conditions for proper concrete curing.

1.3 RELATED WORK

- A. Section 03010 - Concrete.
- B. Section 03300 – Cast-in-Place Concrete
- C. Section 02510 - Concrete Sidewalk

1.4 QUALITY ASSURANCE

- A. Conform to requirements of ACI 301.

1.5 REFERENCES

- A. ACI 301 - Specifications for Structural Concrete for Buildings.
- B. ASTM C309 - Liquid Membrane-Forming Compounds for Curing Concrete.

1.6 SUBMITTALS

- A. Provide product data for specified products.

1.7 ENVIRONMENTAL REQUIREMENTS

- A. Maintain ambient temperature at 70 degrees F for three (3) days.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Water: Clean and not detrimental to concrete.
- B. Absorptive Mat: Burlap fabric of 9 ounce per square yard. Clean, roll goods.
- C. Curing Compound: As per ASTM C309.

PART 3 EXECUTION

3.1 INSPECTION

- A. Verify concrete surfaces are ready for curing.

3.2 CURING COMPOUND

- A. Apply curing compound in two (2) coats with second coat at right angles to first.
- B. Apply in accordance with manufacturer's instructions.

3.3 SPRAYING

- A. Spray water over slab areas; maintain wet for three (3) days.

3.4 ABSORPTIVE MAT

- A. Saturate burlap side of burlap fabric mat. Place over slab areas, burlap side down;

SECTION 03370
CONCRETE CURING

lap edges and ends 12 inches. Maintain in place for seven (7) days.

3.5 CONCRETE CURING

- A. Curing for standard grey work after finishing, cure concrete by keeping moist for one (1) week after placement. Floors and vertical surfaces may be sprayed with an approved curing compound to retard evaporation of water, if spraying is not objectionable because of future finishing requirements. Begin curing operations as soon as concrete has attained its initial set. Keep exposed concrete surface moist for at least one (1) week.
- B. Apply a liquid membrane-forming compound, conforming to ASTM C 309, color to match that of the color condition concrete. Apply on flat work immediately after the finishing operation pursuant to the manufacturer's recommendations.
- C. Cure concrete as scheduled or indicated.
- D. Remove absorptive mat after curing.

END OF SECTION 03370

SECTION 03300
CAST-IN-PLACE CONCRETE**PART 1 GENERAL****1.1 RELATED SECTIONS**

- A. Requirements specified within this section apply to all sections in Division 16, ELECTRICAL. Work specified herein shall be performed as if specified in the individual sections.

1.2 DESIGN REQUIREMENTS

- A. All electronic boards as part of electrical equipment shall meet the atmospheric conditions of the space the equipment is installed in. All electronic boards which are not installed in a conditioned environment shall be fungus-resistant.
- B. All electrical equipment shall be rated for the conditions the equipment is installed in.

1.3 STANDARDS, CODES, PERMITS, AND REGULATIONS

- A. Perform all work; furnish and install all materials and equipment in full accordance with the latest applicable rules, regulations, requirements, and specifications of the following:
 - a. Local Laws and Ordinances.
 - b. State and Federal Laws.
 - c. National Electrical Code (NEC).
 - d. State Fire Marshal.
 - e. Underwriters' Laboratories (UL).
 - f. National Electrical Safety Code (NESC).
 - g. American National Standards Institute (ANSI).
 - h. National Electrical Manufacturer's Association (NEMA).
 - i. National Electrical Contractor's Association (NECA) Standard of Installation.
 - j. Institute of Electrical and Electronics Engineers (IEEE).
 - k. Insulated Cable Engineers Association (ICEA).
 - l. Occupational Safety and Health Act (OSHA).
 - m. National Electrical Testing Association (NETA).
 - n. American Society for Testing and Materials (ASTM).
 - o. Florida Building Code, including Local County amendments.
- B. Conflicts, if any, which may exist between the above items, will be resolved at the discretion of the ENGINEER.
- C. Wherever the requirements of the Specifications or Drawings exceed those of the above items, the requirements of the Specifications or Drawings govern. Code compliance is mandatory. Construe nothing in the Contract Documents as permitting work not in compliance with these codes.
- D. Obtain all permits and pay all fees required by any governmental agency having jurisdiction over the work. Arrange all inspections required by these agencies. On completion of the work, furnish satisfactory evidence to the ENGINEER that the work is acceptable to the regulatory authorities having jurisdiction.

1.4 ELECTRICAL COORDINATION

- A. Work Provided Under this Contract:
 - a. Provide and install complete electrical power system shown on drawings and as per specifications for lift station A-06, located on the corner of Ashbury

SECTION 16010
BASIC ELECTRICAL REQUIREMENTS

Road and Edgewater Drive. Coordinate with local utility company (FPL – phone number is listed on electrical drawing E-01) for installation of new service to each lift station complete in place. Coordinate with other disciplines for demolition of the existing lift station A-06.

- b. Provide and install all electrical equipment indicated on the drawings and as described in the specifications including new utility meter, main/MTS, lift station control panel, control transformers, SPD (Surge Protection Device), etc. complete in place.
 - c. Provide and install all new underground conduit and wiring indicated on the drawings complete in place.
 - d. Provide and install new grounding system complete in place.
 - e. Provide and install all electrical required to support instrumentation and control system as shown on the drawings complete in place.
 - f. Provide all miscellaneous electrical including switches, terminations, fittings, wiring, conduit, junction box, terminal junction box, etc., not specified but obviously necessary for a complete working system in place.
 - g. Provide an Electrical Systems Analysis and Arc Flash Study per Specification 16015.
- B. Temporary Power:
- a. Provide temporary power for all office trailers and for all construction areas. Coordinate with local power and telephone utility for temporary construction power and telephone service during construction.

1.5 **SUBMITTALS**

- A. The following information shall be provided for all electrical equipment:
 - a. A copy of each specification section, with addendum updates included, and all referenced and applicable sections, with addendum updates included, with each paragraph check-marked to indicate specification compliance or marked to indicate requested deviations from specification requirements. Check-marks (✓) shall denote full compliance with a paragraph as a whole. If deviations from the specifications are indicated, and therefore requested by the DBF, each deviation shall be underlined and denoted by a number in the margin to the right of the identified paragraph. The remaining portions of the paragraph not underlined shall signify compliance on the part of the DBF with the specifications. The submittal shall be accompanied by a detailed, written justification for each deviation.
 - b. Electrical equipment submittals shall be made by specification section. Submit one package per specification section and do not group multiple specification sections under one submittal package.
 - c. Provide complete conduit and equipment layouts: a scaled plan layout of the electrical room(s) showing spatial relationships of all equipment as well as the overall size of the room. Minimum scale shall be 1/4"=1'-0".
 - d. Provide a conduit plan for major power, instrumentation and control conduits, both interior and exterior, showing routing, size and stub up locations for buried or in slab conduits.
- B. As part of the electrical submittal, the DBF shall provide a minimum of 1/4"=1'-0" scaled layout of the electrical equipment in the electrical room or major electrical equipment in a mechanical room showing sizes of all equipment and their spatial relationship. Non-electrical equipment shall be approved before finalizing the electrical layout in mechanical rooms.

SECTION 03300
CAST-IN-PLACE CONCRETE**1.6 ENVIRONMENTAL CONDITIONS**

- A. All chemical rooms and areas shall be designated as corrosive.
- B. All indoor chemical and process equipment areas shall be considered wet locations.
- C. Electrical equipment in rooms designated as Classified by NFPA 70 (national electrical code) as Division 1 or Division 2 shall meet all requirements set forth for that classification as described in NEC article 500.

1.7 INSPECTION OF THE SITE AND EXISTING CONDITIONS

- A. The Electrical Drawings were developed from past record drawings and information supplied by the OWNER. Verify all scaled dimensions prior to submitting bids.
- B. Before submitting a bid, visit the site and determine conditions at the site and at all existing structures in order to become familiar with all existing conditions and electrical system which will, in any way or manner, affect the work required under this Contract. No subsequent increase in Contract cost will be allowed for additional work required because of the DBF's failure to fulfill this requirement.
- C. Carry out any work involving the shutdown of the existing services to any piece of equipment now functioning in existing areas at such time as to provide the least amount of inconvenience to the OWNER. Do such work when directed by the ENGINEER.
- D. After award of Contract, locate all existing underground utilities at each area of construction activity. Protect all existing underground utilities during construction. Pay for all required repairs without increase in Contract cost, should damage to underground utilities occur during construction.

1.8 RESPONSIBILITY

- A. The DBF shall be responsible for:
 - a. Complete systems in accordance with the intent of these Contract Documents.
 - b. Coordinating the details of facility equipment and construction for all Specification Divisions which affect the work covered under Division 16, ELECTRICAL.
 - c. Furnishing and installing all incidental items not actually shown or specified, but which are required by good practice to provide complete functional systems.

1.9 INTENT OF DRAWINGS

- A. Electrical plan Drawings show only general location of equipment, devices, and raceway, unless specifically dimensioned. The DBF shall be responsible for the proper routing of raceway, subject to the approval of the ENGINEER.
- B. Electrical equipment sizes and characteristics have been based on Square D and Eaton.
- C. If the DBF chooses to and is allowed to substitute, the DBF shall be responsible for fitting all the equipment in the available space as shown on the Drawings or re-designing the space, at no additional cost to the OWNER, and shall reimburse the ENGINEER for time and materials spent in reviewing revised design.

SECTION 16010
BASIC ELECTRICAL REQUIREMENTS

PART 2 PRODUCTS**2.1 GENERAL**

- A. Provide materials and equipment listed by UL wherever standards have been established by that agency. If a UL listing is not available, equipment shall have a label and listing from a nationally recognized testing laboratory (NRTL) acceptable to the authority having jurisdiction (AHJ) over the project location.
- B. Equipment Finish:
 - a. Provide manufacturers' standard finish and color, except where specific color is indicated.
 - b. If manufacturer has no standard color, provide equipment with ANSI No. 61, light gray color.

PART 3 EXECUTION**3.1 GENERAL**

- A. Electrical Drawings show general locations of equipment, devices, and raceway, unless specifically dimensioned.
- B. Install work in accordance with NECA Standard of Installation, unless otherwise specified.

3.2 LOAD BALANCE

- A. Drawings and Specifications indicate circuiting to electrical loads and distribution equipment.
- B. Balance electrical load between phases as nearly as possible on switchboards, panel boards, motor control centers, and other equipment where balancing is required.
- C. When loads must be reconnected to different circuits to balance phase loads, maintain accurate record of changes made, and provide circuit directory that lists final circuit arrangement.

3.3 CHECKOUT AND STARTUP

- A. Voltage Field Test:
 - a. Check voltage at point of termination of power company supply system to project when installation is essentially complete and is in operation.
 - b. Check voltage amplitude and balance between phases for loaded and unloaded conditions.
 - c. Record supply voltage (all three phases simultaneously on the same graph) for 24 hours during normal working day.
 - 1) Submit Voltage Field Test Report within 5 days of test.
 - d. Unbalance Corrections: Make written request to power company to correct condition if balance (as defined by NEMA) exceeds 1 percent, or if voltage varies throughout the day and from loaded to unloaded condition more than plus or minus 4 percent of nominal.
 - 1) Obtain a written certification from a responsible power company official that the voltage variations and unbalance are within their normal standards if corrections are not made.
- B. Equipment Line Current Tests:

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- a. Check line current in each phase for each piece of equipment.
- b. Make line current check after power company has made final adjustments to supply voltage magnitude or balance.
- c. If any phase current for any piece of equipment is above rated nameplate current, prepare Equipment Line Phase Current Report that identifies cause of problem and corrective action taken.
- C. Startup:
 - a. Demonstrate satisfactory operation of all 240-volt electrical equipment. Participate with other trades in all startup activities.
 - b. Assist the I&C Contractor in verifying signal integrity of all control and instrumentation signals.
- D. Conflicts, if any that may exist between the above items will be resolved at the discretion of the ENGINEER.
- E. Wherever the requirements of the Specifications or Drawings exceed those of the above items, the requirements of the Specifications or Drawings govern. Code compliance is mandatory. Construe nothing in the Contract Documents as permitting work not in compliance with these codes.
- F. Obtain all permits and pay all fees required by any governmental agency having jurisdiction over the work. Arrange all inspections required by these agencies. On completion of the work, furnish satisfactory evidence to the ENGINEER that the work is acceptable to the regulatory authorities having jurisdiction.

END OF SECTION 16010

SECTION 16015
ELECTRICAL SYSTEM ANALYSES

PART 1 GENERAL**1.1 REFERENCES**

- A. The following is a list of standards that may be referenced in this Section
 - a. Institute of Electrical and Electronics Engineers, Inc. (IEEE):
 - IEEE 242: Recommended Practice for Protection and Coordination of Industrial and Commercial Power Systems.
 - IEEE 399: Recommended Practice for Industrial and Commercial Power System Analysis.
 - IEEE 1584-2002: Guide for Performing Arc Flash Hazard Calculations.
 - b. American National Standards Institute (ANSI): C57.12.00, Standard General Requirements for Liquid-immersed Distribution, Power, and Regulating Transformers.
 - c. National Fire Protection Association:
 - a. NFPA 70E: National Electrical Safety Code Chapter 1.
 - b. NFPA 70: National Electrical Code.
 - d. Occupational Safety & Health Administration (OSHA):
 - a. 29-CFR, Part 1910, sub part S.

1.2 SCOPE OF WORK

- A. The requirements of this specification shall apply to the electrical distribution system and all external control panels, disconnect switches, etc. The end result shall be a fully protected and properly coordinated system with proper labels provided and installed for short-circuit values, and arc flash safety and personal protective equipment recommendations.

1.3 SUBMITTALS

- A. Shop Drawings: Provide five copies of study in hard cover, three-ring binders, to include:
 - 1. Short circuit study and labels.
 - 2. Protective Device Coordination Study shall include all equipment protective devices. Submit within 30 days after approval of the short circuit study.
 - 3. Arc Flash Analysis/Assessment and labels.

1.4 QUALITY ASSURANCE

- A. Short circuit, protective device coordination, and arc flash studies shall be prepared by the manufacturer of the existing electrical power distribution equipment, or a professional electrical engineer registered in the State of Florida, in accordance with IEEE 242 and IEEE 399.

1.5 SEQUENCING AND SCHEDULING

- A. An initial, complete short circuit and protective device coordination study and arc flash study must be submitted with 90 days after notice to proceed.
- B. The short circuit, protective device coordination and arc flash studies shall be updated prior to Project Substantial Completion. Utilize characteristics of as-installed equipment actual wire run lengths and materials.

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CAST-IN-PLACE CONCRETE**1.6 GENERAL**

- A. Equipment and component titles used in the studies shall be identical to the equipment and component titles shown on the Drawings.
- B. Perform studies using digital computer with a software package such as SKM Power*Tools for Windows™ DAPPER™, CAPTOR™ and ARC FLASH™, ETAP, or approved equal.
- C. Perform complete fault calculations for all busses on utility and generator power sources. Perform load flow and voltage drop studies for major feeders and loads with long feeder runs. Analysis shall include expected fault currents at industrial control panels manufactured in accordance with UL 508A and NEC article 409.
- D. Fault source combinations shall include large motors, large transformers, utility and generator.
- E. Utilize proposed and existing load data for the study obtained from Contract Documents and field survey. Coordinate with local power utility for available fault currents from utility services.
- F. Existing Equipment:
 - 6. Include fault contribution of existing motors, services, generators and equipment, as appropriate, in the study.
 - 7. Obtain required existing equipment data from the field and FPI.
- G. Provide a comprehensive report document containing the short circuit, device coordination and arc flash studies. As a minimum the report structure shall contain the following:
 - 1. Executive Summary.
 - 2. Methodology.
 - 3. One Line Diagram(s).
 - 4. Short Circuit Analysis.
 - 5. Short Circuit Analysis Results/Conclusions/Recommendations.
 - 6. Device Coordination Analysis.
 - 7. Recommended protective devices settings.
 - 8. Arc Flash Analysis.
 - 9. Arc Flash PPE recommendations.

1.7 SHORT CIRCUIT STUDY

- A. General
 - 1. Use cable impedances based on copper conductors.
 - 2. Use bus impedances based on copper bus bars.
 - 3. Use cable and bus resistances calculated at 25 degrees C.
 - 4. Use 600-volt cable reactance based on use of typical data of conductors to be used in this project.
 - 5. Use transformer impedances 92.5 percent of "nominal" impedance based on tolerances specified in ANSI C57.12.00.
- B. Provide
 - 1. Calculation methods and assumptions.
 - 2. Selected base per unit quantities.
 - 3. One-line diagrams annotated with results of short circuit analysis.
 - a. Three phase, line-to-line and single line to ground faults

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ELECTRICAL SYSTEM ANALYSES

- b. Equipment Short Circuit Rating
- 4. Source impedance data, including electric utility system and motor fault contribution characteristics.
- 5. Short circuit report, demand load report, load flow report and input data reports.
- 6. Results, conclusions, and recommendations.
- C. Calculate short circuit interrupting and momentary (when applicable) duties for an assumed symmetrical three-phase bolted fault, bolted line-to-ground fault, and bolted line-to-line fault at each:
 - 1. Calculation methods and assumptions.
 - 2. Main breaker.
 - 3. Low voltage switchboard and/or distribution panelboard.
 - 4. Motor control centers, Motor starters, and VFD's.
 - 5. Standby generator.
 - 6. Automatic Transfer Switch.
 - 7. All branch circuit panelboards.
 - 8. Industrial control panels manufactured in accordance with UL 508A and NEC article 409.
 - 9. Disconnect switches and other significant locations throughout the system.
 - 10. Future load contributions as shown on one-line diagram.
- D. Verify:
 - 1. All equipment, main breaker, ATS, and protective devices are applied within their ratings.
 - 2. Adequacy of switchgear, switchboard, panelboards, and motor control centers bus bars to withstand short circuit stresses.
 - 3. Adequacy of transformer windings to withstand short circuit stresses.
 - 4. Cable and busway sizes for ability to withstand short circuit heating, besides normal load currents.

1.8 PROTECTIVE DEVICE COORDINATION STUDY

- A. Proposed protective device coordination time-current curves for distribution system, graphically displayed on conventional log-log curve sheets. Time Current Curve plots from the software program are acceptable.
- B. Each curve sheet to have title and one-line diagram that applies to specific portion of system associated with time-current curves on that sheet.
- C. Terminate device characteristic curves at a point reflecting maximum symmetrical or asymmetrical fault current to which device is exposed.
- D. Identify device associated with each curve by manufacturer type, function, and, if applicable, tap, time delay, and instantaneous settings recommended.
- E. Perform device coordination on time-current curves for low voltage distribution system(s).
- F. Provide Individual protective device time-current characteristics on log-log paper or software generated graphs.
- G. Plot Characteristics on Curve Sheets:
 - 1. Electric utility's relays (if applicable).
 - 2. Electric utility's fuses including manufacturer's minimum melt, total clearing,

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- tolerance, and damage bands (if applicable).
- 3. Medium voltage equipment relays (if applicable).
- 4. Medium and low voltage fuses including manufacturer's minimum melt, total clearing, tolerance, and damage bands.
- 5. Low voltage equipment circuit breaker trip devices, including manufacturer's tolerance bands.
- 6. Pertinent transformer full-load currents at 100 and 600 percent.
- 7. Transformer magnetizing inrush currents.
- 8. Transformer damage curves.
- 9. ANSI transformer fault withstand parameters.
- 10. Significant symmetrical and asymmetrical fault currents.
- 11. Ground fault protective device settings.
- 12. Cable damage curves.
- 13. Circuit breaker panelboard main breakers, where appropriate.
- 14. Motor circuit protectors for major motors

1.9 ARC FLASH ANALYSIS

- A. Perform incident energy calculations in accordance with IEEE 1584-2002 Guide for Performing Arc Flash Hazard Calculations for all equipment analyzed in the short circuit study. Tabular results and recommended labels from the software program are acceptable.
- B. Furnish recommendations for Personal Protective Equipment, in accordance with OSHA standards, and proper labels to be located on the electrical equipment in accordance with NEC Article 110.16.
- C. Use data from short circuit and device coordination study.
- D. Use manufacturer data for: enclosure type; gap between exposed conductors or busway; grounding type; number of phases and connection; and working distance.

1.10 TABULATIONS

- A. General Data:
 - 1. Short circuit reactances of rotating machines.
 - 2. Cable and conduit material data.
 - 3. Bus data.
 - 4. Transformer data.
 - 5. Circuit resistance and reactance values.
- B. Short Circuit Data
 - 1. Fault impedances.
 - 2. X to R ratios.
 - 3. Asymmetry factors.
 - 4. Motor contributions.
 - 5. Short circuit kVA.
 - 6. Symmetrical and asymmetrical fault currents.
- C. Recommended Protective Device Settings:
 - 1. Relays:
 - a. Relay name.
 - Device number.

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- Description.
 - TCC catalog number.
 - Short circuit ratings.
 - Current tap.
 - Time dial (as applicable).
 - Instantaneous pickup (as applicable).
 - Ground fault settings (as applicable).
2. Circuit Breakers:
- a. Breaker name.
 - Breaker Description.
 - Model number.
 - TCC catalog number.
 - Short circuit rating.
 - Frame/Sensor rating.
3. Motor Circuit Protectors (MCP):
- a. MCP name.
 - MCP Description.
 - Model number.
 - TCC catalog number.
 - Short circuit rating.
 - Frame/Sensor rating.
 - Instantaneous settings.
4. Fuses:
- a. Fuse name.
 - Fuse Description.
 - Model number.
 - TCC catalog number.
 - Short circuit rating.
 - Fuse rating.

1.11 STUDY ANALYSES

- B. Written Summary:
- 1. Scope of studies performed.
 - a Explanation of bus and branch numbering system.
 - b Selected equipment deficiencies.
 - c Results of short circuit and coordination studies.
 - d Comments or suggestions.
- C. Suggest changes and additions to equipment rating and/or characteristics.
- D. Notify Engineer in writing of existing circuit protective devices improperly rated for new fault conditions.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 GENERAL

- A. Adjust relay and protective device settings according to values established by the coordination study.

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- B. Make other minor modifications to equipment as required to accomplish conformance with the short circuit and protective device coordination studies.
- C. Provide and install short-circuit and arc flash labels on all electrical panels, enclosed circuit breakers, motor starters, VFD's, and disconnect switches in accordance with NFPA 70-2014 and NFPA 70E-2015.
- D. Notify Engineer in writing of any required major equipment modifications.

END OF SECTION 16015

SECTION 16050
ELECTRICAL GENERAL PROVISIONS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. The Drawings and general provisions of the Contract, including General and Supplementary Conditions, apply to this Division.

1.2 SCOPE OF WORK

- A. Furnish all labor, materials, equipment and incidentals required for a complete electrical system as hereinafter specified and shown on the Drawings. Electrical work to be performed under this Contract includes, but is not limited to, the following:
 - 1. Provide and install all equipment, conduit, and wiring for the electrical work indicated on the civil site plans and the electrical drawings in accordance with Division 16 of the specifications.
- B. The work, apparatus and materials which shall be furnished under these Specifications and accompanying Drawings shall include all items listed hereinafter and/or shown on the Drawings. Certain equipment will be furnished as specified in other Sections of these Specifications which will require wiring thereto and/or complete installation as indicated. All materials necessary for the complete installation shall be furnished and installed by the DBF to provide complete power, communication systems, instrumentation, wiring and control systems as indicated on the Drawings and /or as specified herein.
- C. The work shall include complete testing of all equipment and wiring at the completion of the work and making any minor connection changes or adjustments necessary for the proper functioning of the system and equipment. All workmanship shall be of the highest quality; sub-standard work will be rejected.

1.3 GENERAL INFORMATION

- A. Each bidder or his authorized representatives shall, before preparing his proposal, visit all areas of the sites in which work under this Section is to be performed and carefully inspect the existing conditions. The submission of the proposal by the bidder shall be considered evidence that he or his representative has visited the sites and noted the locations and conditions under which the work will be performed and that he takes full responsibility for a complete knowledge of all factors governing his work.
- B. It is the intent of these Specifications that the electrical system shall be suitable in every way for the service required. All material and all work which may be reasonably implied as being incidental to the work of this Section shall be furnished at no extra cost.

1.4 CODES, INSPECTIONS AND FEES

- A. All material and installation shall be in accordance with the latest edition of the National Electrical Code and all applicable national, local and state codes.
- B. All equipment and material shall be U.L. listed.
- C. Pay all fees required for permits and inspections.

1.5 UTILITY COORDINATION

- A. The DBF shall coordinate with local representatives of the power utility to ensure

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the proper installation of these utilities at the project sites. Utility installation(s) shall be in accordance with the requirements of the Contract Documents and meet all requirements of the respective utility

1.6 TEMPORARY ELECTRICAL FACILITIES

- A. The DBF shall furnish, install, and maintain all materials and equipment required to provide temporary light and power to perform the work of all trades during construction until work is completed. Adequate lighting and receptacle outlets for operation of hand tools shall be provided throughout the project, including trailers, field offices, etc. and shall be extended as construction progresses.
- B. All reasonable safety requirements shall be observed to protect workers and the public from shock and fire hazards.
 - 1. Ground fault circuit interrupters shall be employed in accordance with codes.
 - a. Ground wires are required in all circuits. Ground poles are required on all outlets. All metallic cases shall be grounded.
 - b. Raintight cabinets shall be used for all equipment in wet locations.

1.7 INTERPRETATION OF DRAWINGS

- A. The Drawings are not intended to show exact locations of conduit runs.
- B. Unless otherwise approved by the Engineer conduit shown exposed shall be installed exposed; conduit shown concealed shall be installed concealed.
- C. Where circuits are shown as "home-runs" all necessary fittings and boxes shall be provided for a complete raceway installation.
- D. All wire, conduit, circuit breaker, and motor starter sizes shown on the drawings are indicative of the sizes required based upon the equipment shown. These may vary depending upon the actual equipment furnished. The DBF shall make adjustments as required to meet the installation requirements of equipment.
- E. The locations of equipment and devices shown on the Drawings are approximate only. Exact locations shall be as approved by the Engineer during construction. Obtain in the field all information relevant to the placing of electrical work and in case of any interference with other work, proceed as directed by the Engineer and furnish all labor and materials necessary to complete the work in an approved manner.
- F. Circuit layouts shown are not intended to show the number of fittings, or other installation details. Furnish all labor and materials necessary to install and place in satisfactory operation all power, lighting, and other electrical systems shown. Additional circuits shall be installed whenever needed to conform to the specific requirements of the equipment.
- G. All connections to equipment shall be made as shown, specified, and directed and in accordance with the approved shop drawings.
- H. All cutting and patching necessary throughout the existing site shall be done in a thoroughly workmanlike manner.

1.8 COMPONENT INTERCONNECTIONS

- A. Component equipment furnished under this Specification will not be furnished as integrated systems.

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- B. Analyze all systems components and their shop drawings; identify all terminals and prepare drawings or wiring tables necessary for component interconnection

1.9 MATERIALS

- A. The materials used in all systems shall be new, unused, of the manufacturer's latest design, and as hereinafter specified. All materials where not specified shall be of the very best of their respective kinds. Samples of materials or Manufacturer's Specifications shall be submitted for approval as required by the Engineer.
- B. Materials and equipment used shall be Underwriters Laboratories, Inc. listed.
- C. Electrical equipment shall at all times during construction be adequately protected against mechanical injury or damage by water. Electrical equipment shall not be stored out-of-doors. Electrical equipment shall be stored in dry permanent shelters. If any apparatus has been damaged, such damage shall be repaired by the DBF at his own cost and expense. If any apparatus has been subject to possible injury by water, it shall be thoroughly dried-out and put through such special tests as directed by the Engineer, at the cost and expense of the DBF, or shall be replaced by the DBF at his own expense.
- D. All electrical panels, enclosures, raceways, conduits, wireways, boxes, cabinets, etc., shall be fabricated of metal, Non-metallic substitutes are not acceptable. This does not apply to buried work.

1.10 SHOP DRAWINGS

- A. Shop drawings shall be submitted for approval of all materials, equipment, apparatus, and other items as required by the Engineer.
- B. Shop drawings shall be submitted for all equipment supplied under Division 16 of the specifications.
- C. Prior to submittal by the DBF, all shop drawings shall be checked for conformance with the Contract requirements. Shop drawings shall bear the date checked checker's name and indication of approval. Provide an itemized list noting all discrepancies with the Specifications and Drawings. Shop drawings not so checked and noted shall be returned.
- D. The Engineer's check shall be only for conformance with the design concept of the project and compliance with the Specifications and Drawings.
- E. No material shall be ordered, or shop work started until the Engineer's approval of shop drawings has been given.

1.11 WARRANTY

- A. All equipment furnished and installed, and all work performed under Division 16 shall be guaranteed by the DBF against defects of workmanship, materials, and proper installation for a minimum period of one (1) year from date of acceptance. This time shall be increased to the periods stated within individual specification sections as required.

1.12 RECORD DRAWINGS

As the work progresses, legibly record all field changes on a set of project Contract Drawings. When the project is complete, furnish a complete set of "as-built"

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drawings for the Project Record Documents.

1.13 TESTS

- A. Test all systems in the presence of the Engineer and repair or replace all defective work. Make all necessary adjustments to the systems and instruct the Owner's personnel in the proper operation of the systems.

END OF SECTION 16050

**SECTION 16110
RACEWAYS****PART 1 GENERAL****1.1 SCOPE OF WORK**

- B. Furnish and install complete raceway systems as shown on the Drawings and as specified herein.

1.2 APPLICATIONS

- A. Schedule 40 PVC conduit shall be used underground, unless otherwise noted. Transitions to exposed, outdoor locations shall be made using rigid aluminum conduit starting with the last 90 degree elbow.
- B. Rigid aluminum conduit shall be used in exposed, outdoor locations except where specified otherwise.
- C. PVC coated RGS conduit shall be used as raceways for shielded wiring.
- D. All conduit of a given type shall be the product of one manufacturer.

PART 2 PRODUCTS**2.1 RIGID CONDUIT**

- A. PVC conduit shall be rigid polyvinyl chloride type as manufactured by Carlon, an Indian Head Company, Phillips Petroleum Company, Triangle Pipe and Tube Company, Inc., or approved equal.
- B. PVC coated rigid steel conduit shall be hot-dipped galvanized inside and out including threads. The PVC coating shall be UL listed for corrosion protection and be at least 40 mil thick. A 2 mil green urethane interior coating shall be provided. PVC coated rigid steel conduit shall be as manufactured by the Perma-Cote Company, Gilmer, Texas, or approved equal.
- C. Rigid Aluminum Conduit:
 - 1. Meet requirements of ANSI C80.5 and UL 6.
 - 2. Material: Type 6063, copper-free aluminum alloy.

2.2 BOXES AND FITTINGS

- A. Terminal boxes, junction boxes, pull boxes, etc., shall be schedule 80 PVC unless otherwise shown on the Drawings. Covers shall be gasketed and fastened with stainless steel screws. Boxes shall be as manufactured by Hoffman Engineering Company or approved equal.
- B. Conduit hubs shall be as manufactured by Meyers Electric Products, Inc., Racor Division, Appleton Electric Company, or approved equal.

PART 3 EXECUTION**3.1 INSTALLATION**

- A. No conduit smaller than 3/4 inch electrical trade size shall be used, nor shall any have more than four (4) 90 degree bends in any one run. Pull boxes shall be provided as required or directed.
- B. An equipment grounding conductor sized per article 250-95 of the N.E.C. shall be installed in every raceway whether or not shown on the Drawings.
- C. All underground conduit shall be buried at least 24 inches below grade.
- D. A three (3) inch wide warning tape, red with black stenciled letters "CAUTION - CAUTION - CAUTION ELECTRICAL LINE BURIED BELOW" shall be installed at

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least 12 inches above, and along the entire length of all underground conduit.

- E. No wire shall be pulled until the conduit system is complete in all details.
- F. The ends of all conduits shall be tightly plugged to exclude dust and moisture while under construction.
- G. Conduit supports shall be spaced at intervals of eight (8) feet or less, as required to obtain rigid construction.
- H. Single conduits shall be supported by means of one-hole pipe clamps in combination with one-screw back plates, to raise conduits from the surface.
- I. All conduits on exposed work shall be run at right angles to and parallel with the surrounding wall or slab. No diagonal runs will be allowed. Bends in parallel conduit runs shall be concentric. All conduits shall be run perfectly straight and true.
- J. All earth, sod, etc., moved during the installation of underground conduit shall be replaced by the DBF to its original state.
- K. Conduits terminating in gasketed enclosures shall be terminated with conduit hubs.
- L. The ends of all conduits terminating in panels and cabinets shall be filled with silicone gel. Filling shall be done after the cable has been pulled in order to prevent moisture in the terminating enclosure.

END OF SECTION 16110

SECTION 16120
WIRES AND CABLES

PART 1 GENERAL**1.1 SCOPE OF WORK**

- A. Furnish, install and test all wire, cable, and appurtenances as shown on the Drawings and as hereinafter specified

1.2 APPLICATIONS

- A. Wire for all low voltage power and motor circuits shall be type XHHW, stranded.
- B. Single conductor wire for control, indication and metering shall be type THHN/THWN No. 14 AWG, stranded.
- C. Wire for process instrumentation shall be shielded pairs No. 16 AWG, stranded with individual drain wires.

1.3 SUBMITTALS

- A. Samples of proposed wire and cable shall be submitted for approval. Each sample shall have the size, type of insulation and voltage stencilled on the jacket.
- B. Approved samples will be sent to the project location for comparison by the Resident Engineer with the wire actually installed.
- C. Installed, unapproved wire shall be removed and replaced at no additional cost to the Owner.

PART 2 PRODUCTS**2.1 MATERIALS**

- A. All wires and cables shall be of annealed, 98 percent conductivity, soft drawn copper conductors.
- B. All conductors No. 8 AWG and larger shall be stranded.
- C. Type XHHW shall be 600 volt cross-linked polyethylene (XLP) and type THHN/THWN shall be 600 volt as manufactured by the Hi-Tech Company, Rome Cable Corporation, The Okonite Company or approved equal.
- D. Process instrumentation wire shall be 600 volt, PVC or polyethylene insulated, aluminum/polyester tape shielded, polyvinyl chloride jacketed, type "TC" as manufactured by the American Insulated Wire Company, Belden Corporation, "Beldfoil" 9342, or approved equal.

PART 3 EXECUTION**3.1 INSTALLATION**

- A. All conductors shall be carefully handled to avoid kinks or damage to insulation.
- B. Lubrications shall be used to facilitate wire pulling. Lubricants shall be U.L. listed for use with the insulation specified.
- C. Shielded instrumentation wire shall be installed from terminal to terminal with no splicing at any intermediate point.
- D. Instrumentation cables shall be separated from power and control cables in pullboxes.
- E. Shielding on instrumentation wire shall be grounded at the transmitter end only, or as directed by the supplier of the instrumentation equipment.
Wire and cable connections to terminals, splices, and taps shall be made with compression connectors. Connections of insulated conductors shall be insulated and covered. All connections shall be made using materials and installation

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methods in accordance with instructions and recommendations of the manufacturer of the particular item of wire and cable. The conductivity of all completed connections shall be not less than that of the uncut conductor. The insulation resistance of all completed connections of insulated conductors shall be not less than that of the uncut conductor.

- F. All wire and cable shall be continuous and without splices between points of connection to equipment terminals, except a splice will be permitted by the Engineer if the length required between the points of connection exceeds the greatest standard shipping length available from the manufacturer specified or approved by the Engineer as the manufacturer of the particular item of wire and cable.
- G. Steel fish tapes and/or steel pulling cables shall not be used in PVC conduit runs.

3.2 TESTS

- A. All 600 volt wire insulation shall be tested with a megohm meter after installation. Tests shall be made at not less than 1,000 VDC

END OF SECTION 16120

SECTION 16405
ELECTRIC MOTORS

PART 1 GENERAL

1.1 RELATED SECTIONS

- A. A. This section applies only when referenced by a motor-driven equipment specification. Application, horsepower, enclosure type, mounting, shaft type, synchronous speed, and any deviations from this section will be listed in the equipment specification. Where such deviations occur, they shall take precedence over this section.

1.2 REFERENCES

- A. The following is a list of standards which may be referenced in this section:
 - a. Anti-Friction Bearing Manufacturers' Association (AFBMA):
 - 1) 9, Load Ratings and Fatigue Life for Ball Bearings.
 - 2) 11, Load Rating and Fatigue Life for Roller Bearings.
 - b. American National Standards Institute (ANSI): C50.41, Polyphase Induction Motors for Power Generating Stations.
 - c. Institute of Electrical and Electronics Engineers, Inc. (IEEE):
 - 1) 85, Test Procedure for Airborne Sound Measurements on Rotating Machines.
 - 2) 112, Standard Test Procedures for Polyphase Induction Motors and Generators.
 - 3) 114, Standard Test Procedures for Single-Phase Induction Motors.
 - 4) 620, Guide for Construction and Interpretation of Thermal Limit Curves for Squirrel-Cage Motors Over 500 Horsepower.
 - 5) 841, Recommended Practice for Chemical Industry Severe-Duty Squirrel-Cage Induction Motors, 600V and Below.
 - d. National Electrical Manufacturers Association (NEMA):
 - 1) MG 1, Motors and Generators.
 - 2) MG 13, Frame Assignments for Alternating Current Integral Horsepower Induction Motors.
 - 3) 250, Enclosures for Electrical Equipment (1,000 Volts Maximum).
 - e. National Fire Protection Association (NFPA): 70, National Electrical Code. (NEC)
 - f. Underwriters Laboratories (UL):
 - 1) 547, Thermal Protectors for Electric Motors.
 - 2) 674, Electric Motors and Generators Used in Hazardous (Classified) Locations.

1.3 DEFINITIONS

- A. CISD-TEFC: Chemical industry, severe-duty enclosure.
- B. DIP: Dust-ignition-proof enclosure.
- C. EXP: Explosion-proof enclosure.
- D. ODP: Open drip-proof enclosure.
- E. TEFC: Totally enclosed, fan cooled enclosure.
- F. TENV: Totally enclosed, nonventilated enclosure.
- G. WPI: Open weather protected enclosure, Type I.
- H. WPII: Open weather protected enclosure, Type II.
- I. Motor Nameplate Horsepower: That rating after any derating required to allow for extra heating caused by the harmonic content in the voltage applied to the motor by its controller.

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1.4 SUBMITTALS

- A. Shop Drawings:
 - a. Descriptive information.
 - b. Nameplate data in accordance with NEMA MG 1.
 - c. Additional Rating Information:
 - 1) Service factor.
 - 2) Locked rotor current.
 - 3) No load current.
 - 4) Safe stall time for motors 200 horsepower and larger.
 - 5) Multispeed load classification (e.g., variable torque).
 - 6) Adjustable frequency drive motor load classification (e.g., variable torque) and minimum allowable motor speed for that load classification.
 - d. Enclosure type and mounting (e.g. horizontal, vertical).
 - e. Dimensions and total weight.
 - f. Conduit box dimensions and usable volume as defined in NEMA MG 1 and NFPA 70.
 - g. Bearing type.
 - h. Bearing lubrication.
 - i. Bearing life.
 - j. Space heater voltage and watts.
 - k. Description and rating of motor thermal protection.
 - l. Motor sound power level in accordance with NEMA MG 1.
 - m. Maximum brake horsepower required by the equipment driven by the motor.
 - n. Description and rating of submersible motor moisture sensing system.
- B. Quality Control Submittals:
 - a. Factory test reports, certified.
 - b. Manufacturer's Certificate of Proper Installation, 100 horsepower and larger.
 - c. Operation and Maintenance Manual.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. General Electric.
- B. Reliance.
- C. MagneTek.
- D. Siemens.
- E. Baldor.
- F. U.S. Motors.
- G. Westinghouse.
- H. Toshiba.

2.2 GENERAL

- A. For multiple units of the same type of equipment, furnish identical motors and accessories of a single manufacturer.
- B. In order to obtain single source responsibility, utilize a single supplier to provide a drive motor, its driven equipment, and specified motor accessories.
- C. Meet requirements of NEMA MG 1.
- D. Frame assignments in accordance with NEMA MG 13.

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- E. Provide motors for hazardous (classified) locations that conform to UL 674 and have an applied UL listing mark.
- F. Motors shall be specifically designed for the use and conditions intended, with a NEMA design letter classification to fit the application.
- G. Lifting lugs on all motors weighing 100 pounds or more.
- H. Operating Conditions:
 - a. Maximum ambient temperature not greater than 50 degrees C.
 - b. Motors shall be suitable for operating conditions without any reduction being required in the nameplate rated horsepower or exceeding the rated temperature rise.
 - c. Overspeed in either direction in accordance with NEMA MG 1.

2.3 HORSEPOWER RATING

- A. As designated in motor-driven equipment specifications.
- B. Constant Speed Applications: Brake horsepower of the driven equipment at any head capacity point on the pump curve not to exceed motor nameplate horsepower rating, excluding any service factor.
- C. Adjustable Frequency, Adjustable Speed Applications: Driven equipment brake horsepower at any head capacity point on the pump curve not to exceed motor nameplate horsepower rating, excluding any service factor.

2.4 SERVICE FACTOR

- A. 1.15 minimum at rated ambient temperature, unless otherwise indicated.

2.5 VOLTAGE AND FREQUENCY RATING

- A. System Frequency: 60-Hz.
- B. Voltage Rating: Unless otherwise indicated in motor-driven equipment specifications:

Size	Voltage	Phases
1/2 hp and smaller	115	1
3/4 hp through 400 hp	460	3
450 hp and larger	4,000	3

- C. Suitable for full voltage starting.
- D. One hundred horsepower and larger also suitable for reduced voltage starting with 65 or 80 percent voltage tap settings on reduced inrush motor starters.
- E. Suitable for accelerating the connected load with supply voltage at motor starter supply terminals dipping to 90 percent of motor rated voltage.

2.6 EFFICIENCY AND POWER FACTOR

- A. For all motors except single-phase, under 1 horsepower, multispeed, short time rated and submersible motors, or motors driving gates, valves, elevators, cranes, trolleys, and hoists:
 - a. Efficiency:
 - 1) Tested in accordance with NEMA MG 1, paragraph 12.54.1.
 - 2) Guaranteed minimum at full load in accordance with Table 1 or as indicated in motor-driven equipment specifications.

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- b. Power Factor: Guaranteed minimum at full load in accordance with Table 1 or as indicated in motor-driven equipment specifications.

2.7 LOCKED ROTOR RATINGS

- A. Locked rotor kVA Code F or lower if motor horsepower not covered by NEMA MG 1 tables.
- B. Safe stall time 15 seconds or greater.

2.8 INSULATION SYSTEMS

- A. Single-Phase, Fractional Horsepower Motors: Manufacturer's standard winding insulation system.
- B. Motors rated over 600 Volts: Sealed windings in accordance with NEMA MG 1.
- C. Three-Phase and Integral Horsepower Motors, Unless Otherwise Indicated in Motor-Driven Equipment Specifications: Class F with Class B rise at nameplate horsepower and designated operating conditions, except EXP and DIP motors which must be Class B with Class B rise.

2.9 ENCLOSURES

- A. All enclosures to conform to NEMA MG 1.
- B. Unless otherwise noted, all motors shall be TEFC and shall furnish with a drain hole with porous drain/weather plug.
- C. Explosion-Proof (EXP):
- a. TEFC listed to meet UL 674 and NFPA 70 requirements for Class 1, Division 1, Group C and D hazardous locations.
 - b. Drain holes with drain and breather fittings.
 - c. Integral thermostat opening on excessive motor temperature in accordance with UL 547 and NFPA 70.
 - d. Thermostat leads to terminate in a terminal box separate from main terminal box.
- D. Dust-Ignition-Proof (DIP):
- a. TEFC listed to meet UL 674 and NFPA 70 requirements for Class II, Division 1, Group E, F, G.
 - b. Integral thermostat opening on excessive motor temperature in accordance with UL 547 and NFPA 70.
 - c. Thermostat leads to terminate in a terminal box separate from main terminal box.
- E. Submersible: In accordance with Paragraph SPECIAL MOTORS.
- F. Chemical Industry, Severe-Duty (CISD-TEFC): In accordance with Paragraph SPECIAL MOTORS.

2.10 TERMINAL (CONDUIT) BOXES

- A. Oversize main terminal boxes for all motors.
- B. Diagonally split, rotatable to each of four 90-degree positions. Threaded hubs for conduit attachment.
- C. Except ODP, furnish gaskets between box halves and between box and motor frame.
- D. Minimum usable volume in percentage of that specified in NEMA MG 1-11.06 and 20.62 and NFPA 70, Article 430:

Voltage	Horsepower	Percentage
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Below 600	15 thru 125	500
Below 600	150 thru 300	275
Below 600	350 thru 600	225
Above 600	All Sizes	200

- E. Terminal for connection of equipment grounding wire in each terminal box.

2.11 BEARINGS AND LUBRICATION

- A. Horizontal Motors:
 - a. 3/4 horsepower and Smaller: Permanently lubricated and sealed ball bearings, or regreasable ball bearings in labyrinth sealed end bells with removable grease relief plugs.
 - b. 1 Through 400 horsepower: Regreasable ball bearings in labyrinth sealed end bells with removable grease relief plugs.
 - c. Above 400 horsepower: Regreasable antifriction bearings in labyrinth sealed end bells with removable grease relief plugs.
 - d. Minimum 100,000 hours L-10 bearing life for ball and roller bearings as defined in AFBMA 9 and 11.
- B. Vertical Motors:
 - a. Thrust Bearings:
 - 1) Antifriction bearing.
 - 2) Manufacturer's standard lubrication 100 horsepower and larger.
 - 3) Oil lubricated 125 horsepower and larger.
 - 4) Minimum 50,000 hours L-10 bearing life.
 - b. Guide Bearings:
 - 1) Manufacturer's standard bearing type.
 - 2) Manufacturer's standard lubrication 200 horsepower and larger.
 - 3) Oil lubricated 250 horsepower and larger.
 - 4) Minimum 100,000 hours L-10 bearing life.
- C. Regreasable Antifriction Bearings:
 - a. Readily accessible, grease injection fittings.
 - b. Readily accessible, removable grease relief plugs.
- D. Oil Lubrication Systems:
 - a. Oil reservoirs with sight level gauge.
 - b. Oil fill and drain openings with opening plugs.
 - c. Provisions for necessary oil circulation and cooling.

2.12 NOISE

- A. Measured in accordance with IEEE 85 and NEMA MG 1.
- B. Motors controlled by adjustable frequency drive systems shall not exceed sound levels of 3 dBA higher than NEMA MG 1.

2.13 BALANCE AND VIBRATION CONTROL

- A. In accordance with NEMA MG 1-12.06.

2.14 EQUIPMENT FINISH

- A. External Finish: Prime and finish coat manufacturer's standard. Field painting in accordance with Section 09900, PAINTING AND PROTECTIVE COATINGS.
- B. Internal Finish: Bore and end turns coated with clear polyester or epoxy varnish.

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2.15 **SPECIAL FEATURES AND ACCESSORIES**

- A. Screen Over Air Openings: Stainless steel on motors with ODP, WPI, and WPII enclosures meeting requirements for Guarded Machine in NEMA MG 1.
- B. Winding Thermal Protection:
 - a. Thermostats:
 - 1) Motors for constant speed and adjustable speed application 30 through 75 horsepower.
 - 2) Bi-metal disk or rod type thermostats embedded in stator windings (normally closed contact).
 - 3) Automatic reset contacts rated 120 volts ac, 5 amps minimum, opening on excessive temperature. (Manual reset will be provided at motor controller.)
- C. Nameplates:
 - a. Raised or stamped letters on stainless steel or aluminum.
 - b. Display all motor data required by NEMA MG 1-10.37 and NEMA MG 1-10.38 in addition to bearing numbers for both bearings.
 - c. Premium efficiency motor nameplates to also display NEMA nominal efficiency, full load power factor, and maximum allowable kVAR for power factor correction capacitors.

2.16 **SPECIAL MOTORS**

- A. Requirements in this article take precedence over conflicting features specified elsewhere in this section.
- B. Submersible Pump Motors:
 - a. Manufacturers:
 - 1) Reliance.
 - 2) Flygt.
 - b. At 100 Percent Load:

Horsepower	Guaranteed Minimum Efficiency	Guaranteed Minimum Power Factor
5 thru 10	80	82
10.1 thru 50	85	82
50.1 thru 100	87	82
Over 100	89	82
 - c. Insulation System: Manufacturer's standard Class B or Class F.
 - d. Motor capable of running dry continuously.
 - e. Enclosure:
 - 1) Hermetically sealed, watertight, for continuous submergence up to 65-foot depth.
 - 2) Listed to meet UL 674 and NFPA 70 requirements for Class 1, Division 1, Group D hazardous atmosphere.
 - 3) Seals: Tandem mechanical.
 - f. Bearing and Lubrication:
 - 1) Permanently sealed and lubricated, replaceable antifriction guide and thrust bearings.
 - 2) Minimum 15,000 hours L-10 bearing life.

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- g. Inrush kVA/horsepower no greater than NEMA MG 1 and NFPA 70, Code F.
- h. Winding Thermal Protection:
 - 1) Thermal sensor and switch assembly, one each phase, embedded in stator windings and wired in series.
 - 2) Switches normally closed, open upon excessive winding temperature, and automatically reclose when temperature has cooled to safe operating level.
 - 3) Switch contacts rated at 5 amps, 120 volts ac.
- i. Motor Seal Failure Moisture Detection:
 - 1) Probes or sensors to detect moisture beyond seals.
 - 2) Probe or sensor monitoring module for mounting in motor controller, suitable for operation from 120-volt ac supply.
 - 3) Monitoring module with control power transformer, probe test switch and test light, and two independent 120-volt ac contacts, one opening and one closing when the flux of moisture is detected.
- j. Bearing Overtemperature Protection for Motors Larger than 100 Horsepower:
 - 1) Sensor on lower bearing housing monitoring bearing temperature.
 - 2) Any monitoring relay necessary to provide 120-volt ac contact opening on bearing overtemperature.
- k. Winding thermal protection, moisture detection, and bearing overtemperature specified above may be monitored by a single device providing two independent 120-volt ac contacts, one closing and one opening on malfunction.
- l. Connecting Cables:
 - 1) One cable containing power, control, and grounding conductors.
 - 2) Each cable suitable for hard service, submersible duty with watertight seal where cable enters motor.
 - 3) Length: 30 feet minimum, coordinate proper length.
 - 4) UL 1 listed and sized in accordance with NFPA 70.

2.17 **FACTORY TESTING**

- A. Tests:
 - a. In accordance with IEEE 112 for polyphase motors and IEEE 114 for single-phase motors.
 - b. Routine (production) tests on all motors in accordance with NEMA MG 1, plus no load power at rated voltage and polyphase, rated voltage measurement of locked rotor current. Test multispeed motors at all speeds.
 - c. For energy efficient motors, test efficiency at 50, 75, and 100 percent of rated horsepower:
 - 1) In accordance with IEEE 112, Test Method B, and NEMA MG 1, paragraphs 12.54 and 12.57.
 - 2) For motors 500 horsepower and larger where facilities are not available to test by dynamometer (Test Method B), determine efficiency by IEEE 112, Test Method F.
 - d. Power factor:
 - 1) Speed.
 - 2) Current at rated horsepower.
 - 3) kW input at rated horsepower.
 - 4) On motors of 100 horsepower and smaller, furnish a certified copy of a

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motor efficiency test report on an identical motor.

- B. Test Report Forms:
 - a. Routine Tests: IEEE 112, Form A-1.

PART 3 EXECUTION

3.1 INSTALLATION

- A. In accordance with manufacturer's instructions and recommendations.
- B. Align motor carefully and properly with driven equipment.
- C. Secure equipment to mounting surface with anchor bolts. Provide anchor bolts meeting manufacturer's recommendations and of sufficient size and number for the specified seismic conditions.

3.2 FIELD QUALITY CONTROL

- A. General: Inspection and testing limited to motors rated 5 horsepower and larger.
- B. Visual and Mechanical Inspection:
 - a. Proper electrical and grounding connections.
 - b. Shaft alignment.
 - c. Blockage of ventilating air passageways.
 - d. Operate Motor and Check For:
 - 1) Excessive mechanical and electrical noise.
 - 2) Overheating.
 - 3) Correct rotation.
 - 4) Check vibration detectors, resistance temperature detectors, or motor inherent protectors for functionality and proper operation.
 - 5) Excessive vibration.
 - e. Check operation of space heaters.
- C. Electrical Tests:
 - a. Insulation Resistance Tests:
 - 1) In accordance with IEEE 43 at test voltages established by NETA ATS, Table 10.2 for:
 - Motors above 200 horsepower for 10-minute duration with resistances tabulated at 30 seconds, 1 minute, and 10 minutes.
 - Motors 200 horsepower and less for 1-minute duration with resistances tabulated at 30 and 60 seconds.
 - 2) Insulation resistance values equal to, or greater than, ohmic values established by manufacturers.
 - b. Calculate polarization index ratios for motors above 200 horsepower. Investigate index ratios less than 1.5 for Class A insulation and 2.0 for Class B insulation.
 - c. Insulation resistance test on insulated bearings in accordance with manufacturer's instructions.
 - d. Measure running current and voltage and evaluate relative to load conditions and nameplate full-load amperes.
 - e. Overpotential Tests:
 - 1) Applied dc voltage in accordance with IEEE 95.
 - 2) Limited to 4,000-volt motors rated 1,000 horsepower and greater.
 - 3) Test results evaluated on pass/fail basis.

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3.3 SUPPLEMENTS

A. Table supplements:

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TABLE 1									
MOTOR PERFORMANCE REQUIREMENTS									
		% Guar. Min. Full Load Efficiency				%Guar. Min. Full Load Power Factor			
		Horizontal		Vertical		Horizontal		Vertical	
hp	Nom.Speed rpm	Drip-proof ODP	TEFC	Drip-proof ODP	TEFC	Drip-proof ODP	TEFC	Drip-proof ODP	TEFC
1	1800	80.0	81.5			Mfr.'s Std.	Mfr.'s Std.		
	1200	78.5	79.3			Mfr.'s Std.	Mfr.'s Std.		
1.5	3600	79.3	81.5			Mfr.'s Std.	Mfr.'s Std.		
	1800	79.3	82.0			Mfr.'s Std.	Mfr.'s Std.		
	1200	82.5	84.0		82.0	Mfr.'s Std.	Mfr.'s Std.		Mfr.'s Std.
2	3600	82.0	84.0			Mfr.'s Std.	Mfr.'s Std.		
	1800	81.5	83.7			Mfr.'s Std.	Mfr.'s Std.		
	1200	85.5	85.5	83.7	83.7	Mfr.'s Std.	Mfr.'s Std.	Mfr.'s Std.	Mfr.'s Std.
	900	82.9	82.5	82.9	81.7	Mfr.'s Std.	Mfr.'s Std.	Mfr.'s Std.	Mfr.'s Std.
3	3600	82.0	84.0	82.0	82.0	Mfr.'s Std.	Mfr.'s Std.	Mfr.'s Std.	Mfr.'s Std.
	1800	84.8	86.5	84.8	84.8	Mfr.'s Std.	Mfr.'s Std.	Mfr.'s Std.	Mfr.'s Std.
	1200	87.5	88.1	87.5	86.6	Mfr.'s Std.	Mfr.'s Std.	Mfr.'s Std.	Mfr.'s Std.
	900	84.1	82.9	84.1	82.9	Mfr.'s Std.	Mfr.'s Std.	Mfr.'s Std.	Mfr.'s Std.
5	3600	84.8	86.5	84.8	84.8	Mfr.'s Std.	Mfr.'s Std.	Mfr.'s Std.	Mfr.'s Std.
	1800	86.5	86.5	84.8	84.8	Mfr.'s Std.	Mfr.'s Std.	Mfr.'s Std.	Mfr.'s Std.
	1200	87.5	88.1	87.5	86.6	Mfr.'s Std.	Mfr.'s Std.	Mfr.'s Std.	Mfr.'s Std.
	900	87.5	86.5	87.5	86.6	Mfr.'s Std.	Mfr.'s Std.	Mfr.'s Std.	Mfr.'s Std.
7.5	3600	86.5	88.1	84.8	86.6	Mfr.'s Std.	Mfr.'s Std.	Mfr.'s Std.	Mfr.'s Std.
	1800	89.3	89.5	89.3	88.4	Mfr.'s Std.	Mfr.'s Std.	Mfr.'s Std.	Mfr.'s Std.
	1200	88.5	88.5	88.4	87.5	Mfr.'s Std.	Mfr.'s Std.	Mfr.'s Std.	Mfr.'s Std.
	900	87.5	86.5	87.5	86.6	Mfr.'s Std.	Mfr.'s Std.	Mfr.'s Std.	Mfr.'s Std.
10	3600	89.3	89.5	89.3	88.4	Mfr.'s Std.	Mfr.'s Std.	Mfr.'s Std.	Mfr.'s Std.

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TABLE 1									
MOTOR PERFORMANCE REQUIREMENTS									
		% Guar. Min. Full Load Efficiency				%Guar. Min. Full Load Power Factor			
		Horizontal		Vertical		Horizontal		Vertical	
hp	Nom.Speed rpm	Drip-proof ODP	TEFC	Drip-proof ODP	TEFC	Drip-proof ODP	TEFC	Drip-proof ODP	TEFC
	1800	89.3	89.5	89.3	88.4	Mfr.'s Std.	Mfr.'s Std.	Mfr.'s Std.	Mfr.'s Std.
	1200	89.5	89.5	89.3	88.4	Mfr.'s Std.	Mfr.'s Std.	Mfr.'s Std.	Mfr.'s Std.
	900	89.3	88.5	89.3	88.4	Mfr.'s Std.	Mfr.'s Std.	Mfr.'s Std.	Mfr.'s Std.
15	3600	88.5	89.8	88.4	88.4	Mfr.'s Std.	Mfr.'s Std.	Mfr.'s Std.	Mfr.'s Std.
	1800	91.0	91.0	90.9	90.2	Mfr.'s Std.	Mfr.'s Std.	Mfr.'s Std.	Mfr.'s Std.
	1200	90.2	90.2	90.2	89.3	Mfr.'s Std.	Mfr.'s Std.	Mfr.'s Std.	Mfr.'s Std.
	900	89.3	88.5	89.3	88.4	Mfr.'s Std.	Mfr.'s Std.	Mfr.'s Std.	Mfr.'s Std.
20	3600	91.0	90.6	90.9	89.3	Mfr.'s Std.	Mfr.'s Std.	Mfr.'s Std.	Mfr.'s Std.
	1800	91.7	91.7	91.7	90.9	Mfr.'s Std.	Mfr.'s Std.	Mfr.'s Std.	Mfr.'s Std.
	1200	91.0	90.6	90.2	89.3	Mfr.'s Std.	Mfr.'s Std.	Mfr.'s Std.	Mfr.'s Std.
	900	90.2	89.5	89.3	88.4	Mfr.'s Std.	Mfr.'s Std.	Mfr.'s Std.	Mfr.'s Std.
25	3600	91.7	91.0	91.7	90.2	Mfr.'s Std.	Mfr.'s Std.	Mfr.'s Std.	Mfr.'s Std.
	1800	92.4	92.4	92.4	91.7	Mfr.'s Std.	Mfr.'s Std.	Mfr.'s Std.	Mfr.'s Std.
	1200	91.7	91.0	90.9	89.3	Mfr.'s Std.	Mfr.'s Std.	Mfr.'s Std.	Mfr.'s Std.
	900	90.2	89.5	89.3	88.4	Mfr.'s Std.	Mfr.'s Std.	Mfr.'s Std.	Mfr.'s Std.
30	3600	91.7	91.4	89.5	88.4	Mfr.'s Std.	Mfr.'s Std.	Mfr.'s Std.	Mfr.'s Std.
	1800	92.4	92.4	92.4	91.7	Mfr.'s Std.	Mfr.'s Std.	Mfr.'s Std.	Mfr.'s Std.
	1200	91.7	91.0	91.7	90.2	Mfr.'s Std.	Mfr.'s Std.	Mfr.'s Std.	Mfr.'s Std.
	900	91.7	91.7	90.9	90.9	Mfr.'s Std.	Mfr.'s Std.	Mfr.'s Std.	Mfr.'s Std.
40	3600	91.7	91.7	90.2	89.3	86.6	86.1	87.0	89.0
	1800	93.6	93.0	92.8	91.7	78.2	78.2	83.0	84.5
	1200	92.4	92.4	91.7	90.9	81.5	81.5	81.5	81.5
	900	91.7	91.0	90.9	90.2	70.0	70.5	70.0	70.5
50	3600	92.0	92.0	90.2	89.3	85.1	86.7	89.0	89.0
	1800	93.6	93.0	92.8	91.7	79.5	79.4	82.5	82.5
	1200	92.4	92.4	91.7	90.9	81.5	81.5	81.5	81.5

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TABLE 1									
MOTOR PERFORMANCE REQUIREMENTS									
		% Guar. Min. Full Load Efficiency				%Guar. Min. Full Load Power Factor			
		Horizontal		Vertical		Horizontal		Vertical	
hp	Nom.Speed rpm	Drip-proof ODP	TEFC	Drip-proof ODP	TEFC	Drip-proof ODP	TEFC	Drip-proof ODP	TEFC
60	900	91.7	91.7	90.9	90.9	78.5	72.9	78.5	80.0
	3600	92.7	93.0	91.7	90.9	85.8	88.3	87.5	89.0
	1800	93.6	94.1	93.5	92.8	80.5	79.9	80.5	80.5
	1200	93.0	93.0	92.8	91.7	81.5	81.5	81.5	81.5
70	900	92.4	91.7	91.7	90.9	79.5	73.2	79.5	79.5
	3600	93.6	93.6	91.7	91.7	87.1	88.5	88.5	88.5
	1800	94.5	94.5	93.5	93.5	81.0	81.5	81.0	81.5
	1200	93.6	93.5	93.5	92.8	82.0	82.0	82.0	82.0
100	900	92.8	92.4	92.8	91.7	80.5	74.5	80.5	81.0
	3600	93.6	93.3	91.7	90.7	87.0	88.2	87.0	88.5
	1800	95.1	94.5	94.0	93.5	81.0	81.0	81.0	81.0
	1200	93.6	93.6	92.8	92.8	82.1	81.7	85.5	85.5
125	900	93.5	92.4	92.8	91.7	77.0	77.3	77.0	80.0
	3600	93.6	93.7	91.7	91.7	86.4	89.1	87.0	90.5
	1800	94.5	94.7	93.5	92.8	85.4	85.5	87.5	86.0
	1200	93.6	94.1	93.5	92.8	82.7	82.3	85.5	85.5
150	900	93.5	93.0	92.8	92.4	78.5	78.5	78.5	78.5
	3600	93.6	93.7	92.4	91.7	86.5	90.0	86.5	90.5
	1800	95.0	95.2	94.5	94.0	82.5	85.0	84.5	85.0
	1200	94.5	94.5	93.5	94.0	81.5	81.5	81.5	81.5
200	900	93.5	93.0	92.8	92.4	78.0	78.5	78.0	78.5
	3600	94.3	94.3	92.4	93.0	87.8	89.4	91.0	91.0
	1800	95.0	95.2	94.0	94.0	85.2	86.5	87.0	87.0
	1200	94.5	94.5	93.5	93.5	79.0	82.5	79.0	82.5
250	3600	94.3	94.7	91.7	92.4	85.0	86.5	85.0	96.5

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TABLE 1									
MOTOR PERFORMANCE REQUIREMENTS									
		% Guar. Min. Full Load Efficiency				%Guar. Min. Full Load Power Factor			
		Horizontal		Vertical		Horizontal		Vertical	
hp	Nom.Speed rpm	Drip-proof ODP	TEFC	Drip-proof ODP	TEFC	Drip-proof ODP	TEFC	Drip-proof ODP	TEFC
	1800	85.4	95.4	94.5	94.5	79.0	79.0	79.0	79.0
	1200	95.0	94.5	94.5	93.5	82.0	82.0	82.0	82.0
300	3600	93.7	94.3			89.8	89.9		
	1800	95.4	95.2	94.5	94.0	80.0	80.0	80.0	80.0
	1200	93.7	93.7			84.5	90.1		
350	3600	94.3	94.7			89.4	85.9		
	1800	94.7	94.7			85.9	85.9		
400	3600	94.3				88.4			
	1800	94.3				86.8			
450	3600	94.7				89.1			
500	3600	94.7				88.3			

END OF SECTION 16405

SECTION 03300
CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.1 SCOPE OF WORK

- A. Furnish and install a complete grounding system in strict accordance with Article 250 of the National Electric Code and as hereinafter specified and shown on the Drawings.

PART 2 PRODUCTS

2.1 GROUND RODS

- A. Ground rods shall be copper clad steel 5/8 inch diameter x 20 foot minimum length. Ground rods shall be Copperweld or be an approved equal product.

PART 3 EXECUTION

3.1 INSTALLATION

- A. DBF shall not allow any grounding connections to be painted. If the connections are painted, they shall be disassembled and remade with new fittings.
- B. Grounding electrodes shall be driven as required. Where rock is encountered, grounding plates may be used in lieu of grounding rods.
- C. All equipment enclosures, motor frames, conduits systems, exposed structural steel, and similar items shall be grounded.
- D. Exposed connections shall be made by means of approved grounding clamps. Exposed connections between different metals shall be sealed with No-Oxide Paint Grade A or approved equal. All buried connections shall be made by welding process equal to Cadweld.
- E. All grounding conductors shall be laid slack and where exposed to mechanical injury, shall be protected by pipes or other substantial guards. If guards are iron pipe or other magnetic material, conductors shall be electrically connected to both ends of the guard.
- F. The DBF shall exercise care to insure good ground continuity, in particular between the conduit system and equipment frames and enclosures. Where necessary, jumper wires shall be installed.

3.2 TESTS

- A. The DBF shall test the ground resistance of the system. Testing shall not be performed within 48 hours of rainfall. All test equipment shall be provided by the DBF and approved by the Engineer. Dry season resistance of the system shall not exceed 5 ohms. Submit test results to the Engineer for approval. In the event that the specified resistance cannot be achieved through the grounding as shown, provide additional grounding as directed by the Engineer.
- B. All grounding system continuity shall be checked with a low range ohmmeter.

END OF SECTION 16452

SECTION 16485
VARIABLE FREQUENCY DRIVES

PART 1 GENERAL

1.1 SCOPE OF WORK

- A. Provide all labor, materials, equipment, and incidentals required, and install, place in operation and field test variable frequency drive(s) (VFD's).
- B. The variable frequency drive shall be a space vector Pulse-Width Modulated (PWM) design. Modulation methods which incorporate "gear-changing" techniques are not acceptable. The final responsibility of distributor or packager modifications to a third- party standard product will reside with the VFD manufacturer. The VFD manufacturer shall have overall responsibility for the drives. All drives shall be supplied by one manufacturer. The VFD shall be manufactured within the United States of America to alleviate concerns of future serviceability and parts availability.
- C. VFD's shall be six (6) pulse units.

1.2 RELATED WORK SPECIFIED ELSEWHERE

- A. Pumps, General

1.3 QUALITY ASSURANCE

- A. The entire VFD system as described in section 2.01B shall be factory assembled and system tested by the VFD manufacturer to assure a properly coordinated system.
- B. Codes: Provide equipment in full accordance with the latest applicable rules, regulations, and standards of:
 - a. Local Laws and Ordinances.
 - b. State and Federal Laws.
 - c. National Electric Code (NEC).
 - d. Underwriters Laboratories (UL).
 - e. American National Standards Institute (ANSI).
 - f. National Electrical Manufacturers Association (NEMA).
 - g. Institute of Electrical and Electronics Engineers (IEEE).
- C. The complete drive system shall be UL listed.
- D. Acceptable Manufacturers:
 - a. Allen Bradley.
 - b. No Approved "or Equal"

1.4 SUBMITTALS

- A. Submittals shall be custom prepared by the VFD manufacturer for this specific application.
- B. Submittal information shall include, but not be limited to:
 - a. Equipment dimensions, including stub-up locations, shipping splits and shipping weights.
 - b. Catalog cuts of major components.
 - c. Spare parts list, per Paragraph 3.03.
 - d. Certifications, including:
 - 1) Warranty, per section 1.04.
 - 2) Efficiencies, per section 2.02.A.1.
 - e. Harmonic Distortion Analysis, per section 2.01D.

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CAST-IN-PLACE CONCRETE

1.5 WARRANTY

- A. All equipment furnished under this section shall be warranted for onsite parts and labor by the DBF and the equipment manufacturers for a period of five (5) years after completion of startup.

PART 2 PRODUCTS

2.1 MATERIAL AND EQUIPMENT

- A. Any modifications to a standard product required to meet this specification shall be performed by the VFD manufacturer only. Distributor or system integrator changes to the VFD manufacturer's product are specifically disallowed.
- B. The VFD system shall consist of a power factor correction / harmonic filter unit, input rectifier-grade phase-shifting transformer, 6 pulse converter section, output inverter and control logic section, harmonic filtering unit, and input line reactor. All components listed including power factor correction / harmonic filter shall be integral to the VFD lineup, factory wired and tested as a complete system. The entire VFD system shall meet the requirements of NEC article 409 and IEEE 508A for fault current withstand ratings as indicated on the project electrical drawings.
- C. Input circuit breaker, interlocked with the enclosure door, with through-the-door handle to provide positive disconnect of incoming AC power and shall be capable of being locked in the open position.
- D. VFD system shall maintain a 0.95 minimum true power factor throughout the entire speed range.

2.2 VARIABLE FREQUENCY DRIVES

- A. Ratings
 - a. The drive system shall be 96% efficient at full load and full speed and 95.5% efficient at 51% load and 80% speed. Losses to be utilized in drive system efficiency calculation shall include input transformer, harmonic filter, and power factor correction if applicable, VFD converter and output filter if applicable. Auxiliary controls, such as internal VFD control boards, cooling fans or pumps, shall be included in all loss calculations.
 - b. Rated Input Power: 460 Volts 60 Hz, +10%, -5% at rated load, 3-phase.
 - 1) Voltage Dip Ride-Through: VFD shall be capable of sustaining continued operation with a 40% dip in nominal line voltage. Output speed may decline only if current limit rating of VFD is exceeded.
 - 2) Power Loss Ride-through: VFD shall be capable of a minimum 3 cycle power loss ride-through without fault activation.
 - c. Output Power: As required by motors supplied.
 - d. Ambient Temperature Range: 0 to 40°C.
 - e. Elevation: Up to 3300 feet (1000 meters) above MSL without derating.
 - f. Atmosphere: Non-condensing relative humidity to 95%.
 - g. AC Line Frequency Variation: +/- 3 Hertz.
 - h. Power Unit Rating Basis: 110% rated current continuous, 150% rated current for one minute, at rated temperature.
- B. Construction
 - a. The controller shall produce an adjustable AC voltage/frequency output. It shall have an output voltage regulator to maintain correct output V/Hz ratio

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VARIABLE FREQUENCY DRIVES

despite incoming voltage variations.

- b. The controller shall have a continuous output current rating of 100% of motor nameplate current.
 - c. The converter section shall be 6 pulse minimum utilizing diodes.
 - d. The inverter output shall be generated by IGBTs. Pulse Width Modulation strategy will be of the space vector type implemented to generate a sine-coded output voltage. The VFD shall not induce excessive power losses in the motor. The worst-case RMS motor line current measured at rated speed, torque and voltage shall not exceed 1.05 times the rated RMS motor current for pure sine wave operation. The inverters shall be able to sustain 1600-volt surges.
 - e. The controller(s) shall be suitable for use with any standard NEMA-B squirrel-cage induction motor(s) having a 1.15 Service Factor or with existing standard NEMA-B squirrel-cage induction motor(s) with nameplate data as shown on the plans. Provide drives with dV/dT output filters manufactured by Trans-Coil type KLC if the pump is more than 50ft of cable length from VFD. At any time in the future, it shall be possible to substitute any standard motor (equivalent horsepower, voltage and RPM) in the field.
 - f. The control logic section shall be fully digital and not require analog adjustment pots or fixed selector resistors. A power failure will not necessitate a reload of any drive parameter or configuration.
 - g. Minimum Starting Speed: When called to operate, the VFD shall immediately ramp to a minimum speed. The minimum speed shall be adjustable but initially set at 70% of maximum speed. The 4-20 MA speed signal from the PLC and potentiometer on the front of the drive shall modulate the signal between the minimum speed setpoint and the maximum output speed of the drive; i.e., at the 4 MA signal, the VFD shall run at the minimum speed. At the 20 MA signal, the VFD shall run at full speed. The potentiometer shall also adjust speed between the minimum speed setpoint and the maximum running speed. Below the minimum speed setpoint, the potentiometer shall have no effect.
 - h. All 6-pulse VFD's shall be provided with 3% input line reactors.
- C. Basic Features
- a. The VFD shall include a customer selectable automatic restart feature. When enabled, the VFD shall automatically attempt to restart after a trip condition resulting from instantaneous overcurrent, overvoltage, out of saturation or overload. For safety, the drive shall shut down and require manual reset and restart if the automatic reset/restart function (programmable for up to 3 attempts) is not successful within a customer programmable time period. Auto-Restart shall be programmable to allow for individual fault selection.
 - b. A door-mounted membrane keypad with integral 2-line minimum, 24-character LCD display shall be furnished, capable of controlling the VFD and setting drive parameters. The keypad shall include the following features:
 - 1) The digital display must present all diagnostic message and parameter values in English engineering units when accessed, without the use of codes.
 - 2) The digital keypad shall allow the operator to enter exact numerical settings in English engineering units. A user menu written in plain English (rather than codes) shall be provided in software in nonvolatile memory as a guide to parameter setting and resettable in the field through the keypad. Multiple levels of password security shall be available to protect

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CAST-IN-PLACE CONCRETE

drive parameters from unauthorized personnel. The drive set up parameters must be able to be transferred to new boards to reprogram spare boards.

- 3) The following digital door-mounted keypad indications may be selectively displayed:
 - Speed demand in percent.
 - Output current in amperes.
 - Output Frequency in hertz.
 - Input voltage.
 - Output voltage.
 - Total 3-phase KW.
 - Kilowatt hour meter
 - Elapsed time running meter.
 - RPM.
 - DC bus voltage.
- 4) VFD shall have the capability of communicating via an RS-232, RS-422, or RS-485 port.
- 5) VFD parameters, fault log and diagnostic log shall be downloadable via the RS-232, RS-422, or RS-485 port.
- c. Refer to the VFD wiring diagram in the drawings for remote signals and alarms.
- D. Enclosure
 - a. All VFD components shall be factory mounted and wired on a dead front, grounded, NEMA-1 enclosure. If a free-standing enclosure is provided, it shall be suitable for mounting on a concrete housekeeping pad.
- E. Protective Features and Circuits: The controller shall include the following alarms and protective features:
 - a. Instantaneous overcurrent and overvoltage trip.
 - b. Undervoltage and power loss protection.
 - c. Power unit overtemperature alarm and protection. Upon sensing an overtemperature condition, the VFD is to automatically trip.
 - d. Electronic motor inverse time overload protection.
 - e. Responsive action to motor winding temperature detectors or thermostatic switches. A dry contact (NC) input to the VFD is required.
 - f. When power is restored after a complete power outage, the VFD shall be capable of catching the motor while it is still spinning and restoring it to proper operating speed without the use of an encoder.
 - g. The VFD shall be protected from damage due to the following, without requiring an output contactor:
 - 1) Three-phase short circuit on VFD output terminals.
 - 2) Loss of input power due to opening of VFD input disconnecting device or utility power failure during VFD operation.
 - 3) Loss of one (1) phase of input power.
 - h. The VFD shall continue to operate at a reduced capacity under a single-phase fault condition.
 - i. The VFD shall be able to withstand the following fault conditions without damage to the power circuit components:
 - 1) Failure to connect a motor to the VFD output.
 - 2) VFD output open circuit that may occur during operation.
 - 3) VFD output short circuit that may occur during operation.
 - j. Provide input line reactors (3% impedance) when no 12 or 18 pulse

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transformers are supplied or required.

- k. Three phase lightning and surge protection across the line input at each VFD. Lea International TVSS #GB-100.
 - l. Provide 120V motor heater power that is active when the motor is off and is off when the motor is active.
- F. Parameter Settings
- a. The following system configuring settings shall be provided and field adjustable, without exception, through the keypad/display unit. Except for Motor Nameplate Data, all parameters must be adjustable while the processor is on-line and the drive is running.
 - 1) Motor Nameplate Data.
 - Motor frequency.
 - Number of poles.
 - Full load speed.
 - Motor volts.
 - Motor full load amps.
 - Motor HP.
 - Current limit, max.
 - 2) VFD Configuration Parameters.
 - Independent accelerate/decelerate rates.
 - Max/Min speed (frequency).
 - Catch-a spinning load selection.
 - No load boosts.
 - Full load boost.
 - Volts/Hertz ratio.
 - Overspeed trip.
 - Overload trip curve selection.
 - Overload trip time selection.
 - 3) Automatic VFD Control.
 - PID utilizing an internal or external setpoint.
 - Three selectable critical speed avoidance bands with programmable bandwidths.
 - Auto start functions: On/Off, Delay On/Off. Operable from a 4- 20mA signal or from the PID output, command, or feedback signal.
 - Speed Profile: Programmable entry and exit points.
 - Programmable loss of signal control: Stop, maintain last speed, or default to preselected setpoint.
 - b. All drive setting adjustments and operation parameters shall be stored in a parameter log which lists allowable maximum and minimum points as well as the present set values. This parameter log shall be accessible via a RS-232, RS-422, or RS-485 serial port as well as on the keypad display.
- G. Input/Output Features
- a. Two programmable analog inputs: VFD speed in, spare.
 - b. Three programmable analog outputs: VFD speed output, Drive (output) current in Amps, spare.
 - c. Two programmable digital inputs: Run, spare.
 - d. Ten programmable digital outputs: VFD fault, VFD running, VFD in remote, 6 spare.
 - e. One Pot input (three wire control, +10 V, wiper and common).

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- f. System Program providing built-in drive control or application specific configuration capability.
- H. Diagnostic Features and Fault Handling
 - a. The VFD shall include a comprehensive microprocessor based digital diagnostic system that monitors its own control functions and displays faults and operating conditions.
 - b. A "Fault Log" shall be accessible via a RS-232, RS-422, or RS-485 serial link as well as line-by-line on the keypad display. The "FAULT LOG" shall record, store, display and output to a serial port upon demand, the following for the 64 most recent events:
 - 4) Date and time of day.
 - 5) Type of fault.
 - 6) All faults and events shall be stored and displayed in English, not fault codes.
 - c. A "HISTORIC LOG" shall record, store, and output to a RS-232, RS-422, or RS-485 serial link port upon demand, the following selectable control variables at 1 msec. intervals for the 58 intervals immediately preceding and the 20 intervals immediately following a fault trip:
 - 7) Torque demand.
 - 8) Torque command.
 - 9) Torque feedback.
 - 10) Torque error.
 - 11) Torque maximum.
 - 12) Current demand.
 - 13) Peak current.
 - 14) Motor current.
 - 15) DC bus voltage.
 - 16) Line voltage.
 - 17) Velocity demand.
 - 18) Velocity reference.
 - 19) PI min/max limit.
 - 20) Boost.
 - 21) VFD mode (Auto/Manual).

PART 3 EXECUTION

3.1 FACTORY TESTING

- A. **The VFD manufacturer shall provide as a minimum, the following quality assurance steps within his factory:**
 - 1. Incoming inspection of components and raw materials based on strategic supplier base and experience. Sampling plans based on MIL STD 105E.
 - 2. MIL STD 45662 calibration system.
 - 3. All products subject to 100% testing and final inspection; no sampling plans permitted.

3.2 PRE-DELIVERY TESTING COORDINATION

- A. One VFD unit of each specified type and application shall be shipped to the pump manufacturer's test facility for complete operational testing. The VFD Manufacturer shall provide a qualified representative at the pump Manufacturer's test facility during testing. All costs incurred by the VFD

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Manufacturer to meet this requirement shall be included in the bid.

- B. Certified test reports shall be submitted to the ENGINEER before the equipment is shipped to the project site.

3.3 STARTUP AND TRAINING

- A. VFD manufacturer shall provide the services of a factory technician for startup assistance and training. Verification of VFD input harmonic voltage and current distortion limits specified must be verified as part of final startup and acceptance. If harmonic distortion requirements are not met, it is the responsibility of the VFD supplier to meet the specification at the supplier's expense. A recording type Fluke 41 or equivalent harmonic analyzer displaying individual and total harmonic currents and voltages must be utilized.
- B. A 10% payment retainage will be released upon field test verification of harmonic specification requirements and final acceptance.

3.4 SPARE PARTS

- A. **The following spare parts shall be furnished:**
 - a. Three of each type of fuse rated 460V or less.
 - b. Two of each type of converter power semiconductor.
 - c. Two of each type of inverter power semiconductor.
 - d. One of each type of type control printed circuit board and gate firing boards.
 - e. One keypad assembly.

3.5 FIELD QUALITY CONTROL

- A. **Functional Test:**
 - a. Conduct on each VFD.
 - b. Inspect controller for electrical supply termination connections, interconnections, proper installation, and quiet operation.
 - c. Vibration Test: Complete assembly, consisting of motor, load, and flexible shafting, connected and in normal operation, shall not develop amplitudes of vibration exceeding limits recommended by current edition of Hydraulic Institute Standards. Where pumps and motors are separated by intermediate flexible shafting, measure vibration both at top motor bearing and at two points on top pump bearing, 90 degrees apart.
 - d. Record test data for report.
- B. **Performance Test:**
 - a. Conduct on each VFD.
 - b. Perform under actual or approved simulated operating conditions.
 - c. Test for continuous 48-hour period without malfunction.
 - d. Demonstrate performance by operating the continuous period while varying the application load, as the input conditions allow, in order to verify system performance.
 - e. Record test data for report.

END OF SECTION 16485

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CAST-IN-PLACE CONCRETE

PART 1 GENERAL**1.1 SCOPE OF WORK**

- A. Provide, install, and test all control panels and appurtenances as shown on the Drawings and as hereinafter specified.

1.2 STANDARDS

- A. Control panels shall be in accordance with the National Electric Code and NEMA as applicable.

1.3 QUALITY ASSURANCE

- A. The control panel manufacturer shall have total system control responsibility. The manufacturer shall have local experience in providing control panels of the types and functions as specified herein.
- B. All control panels shall be either UL 508 listed or constructed by an UL approved shop and labeled accordingly.

1.4 CONTROL PANEL FUNCTIONS

- A. The panel builder shall provide functions as described using his own standard schematics and arrangements. All wires shall be numbered and brought to numbered terminals. Complete schematics and outline Drawings shall be provided for approval.

PART 2 PRODUCTS**2.1 CONSTRUCTION**

- A. All panels furnished shall be of the arrangement and design as shown on the Drawings and specified herein.
- B. Panel construction shall be NEMA 4X 316 stainless steel with drip shield kit, 316 stainless-steel, with door gasket and three (3) point stainless steel latch, handle with nylon rollers and drip edge. Internal components shall be mounted on a back panel and selector switches, lights, etc., mounted on an interior dead-front panel. Enclosure shall be painted white and have sun shields on top and sides.
- C. Access doors or panels shall have continuous stainless-steel hinges. Fabrication shall be of 11 gauge thick, sheet steel with stainless steel hardware, suitably braced internally for structural rigidity and strength. Front panels or sections containing instruments shall be not less than 7-gauge thick stretcher leveled sheet steel or 1/4-inch-thick anodized aluminum, reinforced to prevent warping or distortion. All sections shall be descaled, degreased, filled, ground and finished with two rust-resistant phosphate prime coats and two (2) air dry silicone alkyd finish coats of enamel which shall be applied by either the hot air spray or conventional cold spray methods. The final finish shall be smooth, free of runs, and uniform in tone and thickness. Unless otherwise noted, the colors to be used shall be selected by the OWNER from color chips supplied by the panel manufacturer. All cutouts shall be properly finished, including deburring and touch-up painting.
- D. Nameplates shall be provided for all flush mounted equipment. The nameplates shall be constructed of black and white laminated, phenolic material having

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CONTROL PANELS

engraved letters approximately 1/4 inch high, extending through the black face into the white layer. Nameplates shall be attached to panels by self-tapping stainless-steel screws.

- E. Print storage pockets shall be provided on the inside of each panel. Its size shall be sufficient to hold all of the prints required to service the equipment. Reduced drawings shall be provided to be stored in these pockets.
- F. All panel equipment shall be mounted and wired on or within the cabinet. All wiring within the panel shall be grouped together with harnesses or ducts and secured to the structure. All wiring shall be numbered in accordance with the numbering system used on the wiring/connection diagrams. Power and low voltage DC signal wiring shall be routed in separate wire ways. Crossing of the two system wires shall be at right angles. Parallel troughs of different systems shall be separated by a minimum of 12 inches. Wiring through for supporting internal wiring shall be plastic type with snap-on covers. The side walls shall be open-top type to permit wire changing without disconnecting. Wiring troughs shall not be filled to more than 60 percent visible fill. Wiring through covers shall be match marked to identify placement. If component identification is shown on covers for visibility, the ID shall also appear on the mounting sub-panel.
- G. Power wire shall be minimum 12 AWG stranded, insulated for not less than 600 volts unless specified otherwise. Control wire shall be 14 AWG stranded, insulated and twisted shielded wire shall be 16 AWG. Use type XHHW-2 for outside to panel application and type MTW for wiring inside the panel. No THHN or other type of wire shall be used inside the control panel without the CITY approval. Wire color shall be, Line Power - Black; Neutral or common - White; AC Control - Red; DC Control - Blue; Equipment or Chassis Ground - Green; specified externally powered circuits - Orange.
- H. All wiring shall terminate in a master terminal board, rigid type and numbered. The master terminal board shall have a minimum of 25 percent spares. Terminal blocks shall be arranged in horizontal rows and separated into groups. (Power, AC control, DC signal, and alarm). Terminal blocks shall be barrier type with the appropriate voltage rating (600 volts minimum) and shall be the raised channel mounted type. Wire connectors shall be the hook fork type with non-insulated barrel for crimp type compression connection to the wire. Wire and tube markers shall be the sleeve type with heat impressed letters and members. Direct interlock wiring between equipment will not be allowed. Only one side of a terminal block row shall be used for internal wiring. The field wiring side of the terminal shall not be within six (6) inches of the side panel or adjacent terminal.
- I. All components shall be mounted in a manner that shall permit servicing, adjustment, testing and removal without disconnecting, moving or removing any other component. Components mounted on the inside panels shall be mounted on removable plates and not directly to the enclosure. Mounting shall be rigid and stable unless shock mounting is required by the manufacturer to protect equipment from vibration. Component mounting shall be oriented in accordance with the component manufacturer's and industries' standard practices. All internal components shall be identified with suitable plastic or metal engraved tags attached with drive pins adjacent to (not on) each component identifying the

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component in accordance with the drawing, specifications, and supplier's data.

2.2 PUSH BUTTONS

- A. Push buttons shall be heavy-duty, oil tight, with momentary contacts. Switches shall be supplied with the number of poles required for the application, an escutcheon plate, and contacts rated for 10 amperes at 120 volts AC. Push buttons shall be as manufactured by Square-D, Class 9001, Type K or approved equal by CITY.

2.3 ROTARY HAND SWITCHES

- A. Rotary selector switches shall be heavy duty oil tight, with the number of poles and number of positions as required. Switches shall have a pistol grip handle and be of the maintained contact type rated for 10 amps at 120 volts AC. The switches required for "electronic duty" shall have low, stable, contact resistance and gold contacts. Provide make-before-break bridging contacts where required. Rotary hand switches shall be as manufactured by Square-D, Class 9001, Type K, standard knob, or approved equal by CITY.

2.4 LED PILOT LIGHTS

- A. LED indicating lights shall be provided as shown on the Drawings. Units shall be approximately 1/2-inch diameter. Bulbs shall be of the push-to-test type shall be as manufactured by Square-D, unless otherwise noted on the drawings, or approved equal by CITY.

2.5 RELAYS

- A. Relays shall be double pole, double throw, octal plug-in type with a transparent dust cover. The relay shall be equipped with an indicating light to indicate when its coil is energized. The relays shall have 10 amperes 120-volt AC contacts. Relays shall be as manufactured by Square D, Class 8501, Type KP, unless otherwise noted on the drawings, or approved equal by CITY.

2.6 TIME DELAY RELAYS

- A. Time delay relays shall be of the pneumatic type with time delay and instantaneous contacts. Time delay relays shall be double pole, double throw with output contacts rated at 10 amperes, 120-volt AC minimum. The time delay relays shall be set for sixty seconds except where otherwise shown on the Drawings but shall be adjustable from 0 to 180 seconds. Time delay relays shall be as manufactured by Square-D, Class 9050, Type A, unless otherwise noted on the drawings, or approved equal by CITY.

2.7 TIMERS

- A. Timers shall be plug-in type with a dust and moisture resistant case. The timers shall be of the multirange/analog or digital type with selectable ranges. The output contacts shall be rated at 10 amperes 120-volt AC minimum. The timer shall have a "timing in progress" indication. Timers shall be manufactured by Square D or approved equal by CITY.

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2.8 CIRCUIT BREAKERS

- A. Circuit breakers shall be thermal-magnetic, molded case, permanent trip. Voltage, current, interrupting ratings, and number of poles required shall be as shown on the Drawings. Circuit breakers used in 120/240-volt control panels shall be UL listed and have an interrupting capacity of not less than 18,000 amperes, RMS, symmetrical. Circuit breakers shall be manufactured by Square D or approved equal by CITY.
- B. Do not substitute single-pole circuit breakers with handle ties for multi-pole breakers.

2.9 SURGE PROTECTIVE DEVICE (SPD) POWER APPLICATIONS

- A. Refer to specification 16050 – Electrical System Analyses

2.10 PHASE MONITOR

- A. Phase monitor shall be a three-phase solid state device with voltage sensing capabilities. Phase monitor shall have undervoltage capabilities with a UL listed relay. The monitor shall protect the motor against phase loss, phase unbalance, phase reversal, and undervoltage. Phase monitor shall be manufactured by ACT or approved equal by CITY.

2.11 MOTOR STARTER

- A. The motor starter shall be a full voltage non reversing, NEMA rated, three phase starter with thermal motor overload units. Overload units shall have manual resets. Motor starter shall be manufactured by Square D or approved equal by CITY.

2.12 CONTROL POWER TRANSFORMER

- A. If applicable, control power transformer shall be rated for 240x480V/120V A.C. and shall be rated with the appropriate kVA rating as called out in drawings. Control power transformer shall be manufactured by Square D or approved equal by CITY.

2.13 DUPLEX RECEPTACLE

- A. A 20A duplex receptacle shall be installed within the control panel. Receptacle shall be GFCI Type and shall be manufactured by Leviton Company Type 6599-I, unless otherwise noted on the drawings, or approved equal by CITY.

2.14 INTRINSICALLY SAFE RELAYS

- A. Intrinsically safe control relays shall be as manufactured by Pepperl + Fuchs, unless otherwise noted on the drawings, or approved equal by CITY.

2.15 ELAPSED TIME METER

- A. Elapsed time meter shall be as manufactured by Yokogawa Type 240, unless otherwise noted on the drawings, or approved equal by CITY.

2.16 TERMINAL BLOCKS

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- A. Terminal blocks shall be as manufactured by Square D Class 9080, unless otherwise noted on the drawings, or approved equal by CITY.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Seal all conduit entrances into control panels using sealing fittings as detailed on the drawings.

3.2 TESTS

- A. The supplier shall test all equipment at the factory prior to shipment. Coordinate with pump supplier for testing and startup at the site for each lift station.

3.3 ACCEPTANCE

- A. Upon successful completion of operation test and subsequent review and approval of the complete system's final documentation, the system shall be considered as acceptable.

END OF SECTION 16810

SECTION 16950
MISCELLANEOUS EQUIPMENT

PART 4 GENERAL

4.1 SCOPE OF WORK

- A. Furnish and install all miscellaneous equipment as hereinafter specified and as shown on the Drawings

PART 5 PRODUCTS

5.1 DISCONNECT SWITCHES

- A. Fusible and non-fusible disconnect switches shall be heavy-duty, quick-make, quick-break, visible blades, 600 volt, 3-pole with full cover interlock. All current carrying parts shall be copper. Enclosure Type shall be NEMA-4X, stainless steel, with stainless steel mounting hardware except as shown on the drawings. Disconnect switches shall be horsepower rated as manufactured by the Square-D Company, Class 3110, Type H, or approved equal.
- B. Surge arresters shall be installed on the main disconnect switch. Provide protection for each ungrounded conductor as required. These shall be connected to the line side of the protected equipment. Install a current limiting fuse in series with each pole of the arrester connection as recommended by the Manufacturer. All transient protection devices, including fuses, shall be installed within the protected equipment enclosures wherever possible. Surge arresters shall be as manufactured by the General Electric Company, Tranquell Series, Model 9L15 or approved equal.

END OF SECTION 16950

Pipe Bursting of Potable Water Mains Using Pre-Chlorinated Pipe

GUIDELINE SPECIFICATIONS

A proposed Contractor takes on all responsibility of ensuring that the project accounts for completion of all requirements, as noted in the other Supplemental Specifications and the City Development Criteria/Standards Manual.

The Contractor must be prepared to work with the City Utility Engineering and Water Maintenance Departments to resolve any City concerns during construction.

Any Contractor proposing to perform these methods on the project must meet the experience requirements listed, provide detailed references, and attend a pre-award interview at the City's offices.

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1.0 Outline of the Method of Pre-Chlorination of HDPE Pipe

Assuming all qualifications for skill and materials are met, the Pipe Bursting of Potable Water Mains using Pre-Chlorinated Pipe will repeat the method, outlined below for each section of pipe being rehabilitated. These processes may be performed in series or in parallel with other sections of pipe within the job; however each section will require these steps.

- a. Deliver notice of service outage to each affected property owner in advance of work.
- b. Chlorinate a length of product pipe that yields passing test results for potable water per AWWA, Regulatory Authority and City standards.
- c. Hydrostatic test of the product pipe section per City standards.
- d. Excavate a Burst Pit at one end of the section down to pipe grade for placement of the pipe bursting equipment.
- e. Excavate an Insertion Pit at the opposite end of the section down to pipe grade for entry of the product pipe.
- f. Excavate Service Connection Pits.
- g. Isolate the section to be rehabilitated from the rest of the system so as to maintain pressure integrity of the system as well as preventing any backflow of chlorinated solution or non-potable water into the system.
- h. Excavate and remove hydrant tees and valve tees from the host pipe.
- i. Rod string to be assembled as it is thrust through the host pipe from Burst Pit to Insertion Pit.
- j. Burst tooling and product pipe attached to rod end at Entry Pit.
- k. Rod string pulled back and disassembled simultaneously while tooling and product pipe travels from Insertion Pit to Burst Pit.
- l. Service Connections shall be made to the newly installed main.
- m. Super-Chlorinate main for 15 minutes to 300 ppm. A de-chlorination unit will be used to neutralize the residual chlorine when flushing. Flush the newly installed main with potable water.
- n. Inspect for leaks at new connections.
- o. Final connection of the replaced section of pipe into the system.

It should be noted that item “d” through “o” are to be accomplished within a single 10 hour day to eliminate the need for any temporary services. The length of pipe to be burst per run should be chosen to conform to this time frame. Items “d” through “f” (excavation items) may be performed one day prior to bursting operations to expedite process.

2.0 Prior to pipe bursting

2.1 Contractor Pre-Qualifications

In order to assure quality execution of the method, the contractor shall submit the following to the Authority:

- a. Experience – the contractor shall provide documented evidence of:
 1. Being actively engaged in the installation of pipe using the static pipe bursting method for a minimum of seven (7) years.
 2. Performing 100,000 feet or more of water main replacement using the process of pre-chlorinated pipe bursting in the United States of America over the past 24 month period.
 3. The work experience must have been performed under the company name.
 4. Experience must be with the use of a static pipe bursting system with evidence of 2", 4", 6", 8", 10" and 12" projects.
 5. Submitting the project reference sheet by listing five (5) similar projects successfully completed within the last two years. To be counted, each project reference must encompass: replacing potable water main, using the static pipe bursting method, using the pre-chlorination method and all projects must be from the state of Florida.
- b. Certification
 1. Certificate of training endorsed by the manufacturer of the pipe bursting equipment.
 2. Certificate of training endorsed by the manufacturer of thermal fusion equipment in butt fusing of HDPE pipe, in lieu of certificate, evidence of training may be substituted.
 3. Certificate of training endorsed by the supplier or manufacturer of HDPE electro-fusion fusion couplers to be used in the method. In lieu of certificate, evidence of training may be substituted.
- c. Hygiene a competency statement by contractor that all employees are medically cleared to work on restricted operations and have been trained in hygienic procedures.
- d. Personnel overseeing Pre-chlorination process shall be trained and qualified in process.

2.2 Pipe Specifications

- a. High Density Polyethylene Pipe shall be AWWA C906 (HDPE) and per City Specifications.
- b. Pipe must conform to ASTM F714 and NSF 61.
- c. HDPE resin shall be PE4710 characterized by ASTM D3350.
- d. All pipe shall be made of virgin material, no rework except that obtained from manufacturers own production.
- e. Pipe shall be a minimum of SDR 11 wall thickness or as directed by the Authority.
- f. Cuts or gouges, per ASTM F585 are acceptable up to 10% of wall thickness. Beyond 10% of wall, damage must be removed by cutting the damaged section from the pipe string and butt fusing the ends.
- g. Stripe along the length of the pipe shall be blue in color to identify the pipe as potable water.

2.3 Other Product Specifications

- a. Fittings for pressure systems shall be ductile iron and comply with AWWA C110. The minimum pressure rating shall be 150 PSI and meet all city standard specifications.
- b. Stiffener inserts per ASTM 240 shall be used for all fittings and connections to HDPE pipe. Stiffeners shall be 304 stainless steel and be of wedge type design.
- c. Service Connection Fittings shall be HDPE electro-fusion type and/or mechanical saddles with a minimum working pressure of 150 PSI and per City specification.
- d. Pipe Connection Fittings shall meet AWWA C906 and meet or exceed the pressure requirements of the HDPE Pipe

2.4 Product Compliance

- a. Certificate of compliance shall be supplied to the City that the Product Pipe is per specification 2.2 and as specified in the General Requirements Section.
- b. All materials (in excess of those specified above in 2.4a.) used with the coupling or connecting HDPE water main must be submitted and approved by the City.

2.5 Product Handling

- a. Pipe transport and handling shall be per manufacturer's recommendation.

- b. Product other than pipe must be stored and handled per manufacturer's recommendations.

2.6 Documentation and Planning

- a. Contractor shall submit a plan to the City on a marked up copy of the Project Drawings showing the Contractor's construction phasing and plans at the Pre-Construction Meeting. Plan details should include:
 - 1. Pit locations for pipe insertion and bust machine location.
 - 2. Pit locations for service re-connects.
 - 3. Schedule of when various sections are to be rehabilitated.
 - 4. Distances of each pull.
 - 5. Isolating points used to seal the system during the pipe burst.
 - 6. Chlorination/De-chlorination logs for each pipe section.
- b. The Project Construction drawings provided by the Owner shall be marked by the contractor to show actual locations of services, fittings, fire hydrants and other reconnects. These markups shall be done the day of the actual placement. A set of marked up plans shall be returned to the Owner within 15 days of substantial completion of job.
- c. Chlorination Submission Documents, pipes Pre-Chlorinated with intent to install under this specification must have a log sheet placed in a sealed waterproof envelope attached to the pipe at the start of the Chlorination process. This sheet makes up the Chlorination Submission Documents and shall be delivered to the Authority at the same time as the marked up construction drawing. Information on the log sheet shall at a minimum include:
 - 1. Date of Swabbing
 - 2. Date of Chlorinating and amount of chlorine used
 - 3. Date of samplings
 - 4. Results of Sample tests
 - 5. Date of pipe installation
 - 6. Date of Pressure Test
 - 7. Makeup water details (if any)
 - 8. End test pressure

9. Final pressure test results
10. Location of installation

2.7 Notification of Regulatory Authority

Prior to commencement of construction, the Owner and the Contractor shall notify the local regulatory agency (DEP) for their project review and oversight. Specifications for the construction processes and/or plans shall be provided to the agency as they require.

2.8 Interruption of Service to End Users

- a. Interruption of service to end users shall be minimized through the efforts of the contractor and use of the method outlined within. Outages shall be limited to 8:00 AM to 6:00 PM Monday through Friday. No interruption shall be permitted between 6:00 PM and 8:00 AM or on Saturday, Sunday or legal holidays without the approval of the owner.
- b. Only one (1) line segment may be shut down for rehabilitation at any one moment.
- c. End users shall be notified in writing (door hanger, flier, etc.) by the contractor in a manner approved by the Authority. General notice shall be provided (7) days in advance if possible. Detailed Notice shall be provided at minimum permissible advance of 48 hours prior to service interruption.

2.9 Joining of Pipe

- a. Fusing per Butt fusion methods in strict conformance to the pipe and/or fusing equipment manufacturers recommendations shall be used to join sections of High Density Polyethylene Pipe.
- b. Fusing of 'sticks' of pipe shall be performed in the general vicinity of the pipe insertion pit or lay down yard (staging area).
- c. Pipe supplied by the pipe manufacturer in a coil may be fused remote from the pipe insertion pit.
- d. Solvent cement joints performed by anyone other than the manufacturer are unacceptable for any HDPE pipe or fitting.

2.10 Pre-Chlorination of Product Pipe

Chlorination of pipes prior to bursting shall be carried out per ANSI/AWWA C651-14 Standard for Disinfecting Water Mains and in cooperation with the City's Water Maintenance Department. Any information here shall facilitate that method when performed on pipes not yet placed on grade. In general, the method includes the following:

- a. Disinfect all equipment, tools, end caps, pipe fittings or product that may contact pipe.

- b. Disinfection shall be carried out by immersing or rinsing items in a hypochlorous solution containing 1 to 5 percent chlorine measured by weight. See details of Chlorination solution in section 2.11.
- c. Product pipe shall be fused into a string of sufficient length to complete the designated section or be coiled in a manner suitable for delivery on a pipe reel. Maximum allowable length is 800 feet.
- d. The surface upon which the product pipe rests during Chlorination shall be relatively impervious and free from visible contamination. Coiled pipe must be laid horizontally to allow all air to be expelled.
- e. Swabbing, Chlorination and testing of the inside diameter of the pipe shall be accomplished by:
 - 1. Swab being inserted at the lowest end of the pipe.
 - 2. Calcium Hypochlorite tablets or granules as described in section 2.11. shall be placed behind the swab.
 - 3. Pressure tight end cap shall be mounted to the low end of the pipe either by fusing or mechanically assembled to the pipe.
 - 4. Potable water shall be introduced through this end cap at a controlled rate such that the swab is propelled at a velocity less than or equal to one foot per second. All air is to be expelled from the pipe.
 - 5. Upon discharge of the swab from the elevated end of the pipe, the elevated end shall be capped with a pressure tight seal. This seal having a tapped access hole of size at least 1.25" NPT or incorporating the ability to leak (purge) air or water at will by adjustment of clamping bolts. Additional potable water should be added after capping to ensure that no air remains between the caps.
 - 6. Pressure testing of the pipe section should be performed per details in section 2.12 upon replacement of the second end cap.
 - 7. Chlorinated solution should be maintained in the pipe for a minimum of 24 hours prior to flushing when water temperature is above 41 °F (5°C), 48 hours when water temperature is 41°F (5°C) or less. Time for retention of the chlorinated solution shall not be significantly over designated holding time so as to prevent damage to the pipe or end caps.
 - 8. After designated holding time, the pipe shall be drained, flushed and filled with potable water so as to expel the highly chlorinated solution. The spent Chlorinated solution shall not be allowed to enter any water shed, a sanitary sewer or any other area where environmental damage may occur without neutralizing it in an industry acceptable manner. Flushing water shall be from a source known to be of drinking water standard.

9. Test samples shall be taken from each end of the pipe on consecutive days, 24 hours apart. Samples shall be tested by a state certified lab within 30 hours of being taken.
10. Failure of any sample to pass a bacteriological test should result in the related section of pipe being re-flushed and retested. Should any sample again fail, the section must be chlorinated before retest.
11. Time before re-connection of a passing pipe section shall be limited to 14 days from the last sampling. After this time the pipe must be retested to be acceptable for use.
12. Drain the section of pipe prior to pipe bursting. The pipe shall be drained on the day of the pipe bursting, and sealed after draining and for the pipe bursting process.
13. Swabs should be designated by the manufacturer as suitable for potable water system use. Swabs are to be manufactured by Knapp Industries or be of equivalent design.

2.11 Chlorination Solutions

- a. Acceptable forms of chlorine include Calcium Hypochlorite conforming to ANSI/AWWA B300, preferably in 5 gram tablets, alternately in granular form. Material must be stored per manufacturer's recommendations.
- b. Unacceptable forms of chlorine include Calcium Hypochlorite intended for swimming pool use.
- c. Calcium Hypochlorite tablets shall be placed behind the swab in quantity based on pipe size and length per ANSI/AWWA C651-05 AWWA Standard for Disinfecting Water Mains.
- d. Calcium Hypochlorite in granular form shall be placed behind the swab in quantity based on pipe size and length per ANSI/AWWA C651-05 AWWA Standard for Disinfecting Water Mains.
- e. Solutions acceptable for pipe chlorination shall be acceptable for disinfection of equipment, tools, and caps, pipe fitting or product that may contact pipe.
- f. Dilute Chlorinated solutions over 7 days old shall be disposed of properly and not used as a disinfection agent.

2.12 Hydrostatic Pressure Testing

- a. Maximum allowable test pressure as referenced by PPI TR-31 shall be 1.5 times the pipe rated operating pressure (min. test pressure 125 psi) at the lowest point in the section under test or that of the lowest rated pressure component such as flanges, valves, fittings, etc.

- b. Air trapped in the product pipe must be purged before test.
- c. At the discretion of the Authority, the test method used may be either a Monitored Make-up Water Test or a Non-monitored Make-up Water Test. Either test shall be performed above ground without fittings prior to pipe bursting. If damage to the product pipe occurs during bursting that requires a fused joint repair, the Authority may require re-test, with or without fittings after bursting.
- d. Monitored Make-up Water Test shall be comprised of two stages.
 - 1. Initial expansion and stabilization stage. The initial test pressure is applied and the system is allowed to stand without make-up water during a 2 to 3 hour period. During this time the pipe is allowed to expand and stabilize.
 - 2. Test stage, after the stabilization is complete, the system is pumped back to test pressure and allowed to sit for 2 additional hours. Water is then added until the test pressure is attained. Water added shall not exceed that of Table 6.1.
- e. Non-monitored Make-up Water Test shall be comprised of two stages.
 - 1. Initial expansion and stabilization state. The initial test pressure is applied and the system is allowed to stand without make-up water during a 2 to 3 hour period. During this time the pipe is allowed to expand and stabilize.
 - 2. Test stage. After the stabilization is complete, the system is pumped back to test pressure and then reduced by 10 PSI. The pressure shall remain steady, not falling more than 5% from reduced pressure during a one hour test period.
 - 3. Total time allotted for test shall not exceed 8 hours. If successful test can not be completed in this period, then the test section must be depressurized and allowed to relax for a minimum of 8 hours before retest.
- f. Re-test after repair. Should the Authority require test after repair, refer to Equation 6.2 for Leakage Allowance due to fittings for the Monitored Make-up Water Test.
- g. Manifest shall be filled out with all pressure test results.

3.0 Pipe Bursting Operation

The pipe bursting operation described within provides guidance on the basic process. It is to be understood that the need to make exceptions or additions to this process are common. These changes are made to accommodate non standard conditions. The

contractor experience requirements make it reasonable to put the responsibility of devising these exceptions upon the contractor.

3.1 Pit Location and Excavation

- a. Burst pit and insertion pit locations shall be placed such that excavations are minimized. This may be accomplished by placing either or both of these pits at the point of a service connection.
- b. Burst length shall be 400 feet (+/-) 50 feet in length for first 2 bursts. After soil pipe friction is evaluated longer burst runs may be performed.
- c. All pits shall be shored to ensure worker safety per OSHA or other local regulations.
- d. All pits shall be roped off and or covered when not active per OSHA or local regulations to ensure public safety.
- e. Traffic control shall be accommodated for by Contractor as per the Contract specifications. Safe traffic passage around pit excavations that are located in or adjacent to streets or highways shall meet requirements of City Right-of-way Department. Parking of related employee vehicles, trucks and auxiliary and equipment shall be such that congestion and traffic delays are minimized.
- f. Utilities intersecting the hose pipe shall be exposed using an excavation technique appropriate for the utility. This Utility Crossing Pit shall exist prior to commencement of bursting. Man entry shoring is not required however appropriate safety precautions should be made.

3.2 Bursting Machine Location and Shoring

Bursting machines of the static pull style require preparation and planning for the bursting pit that they are to operate from.

- a. Burst pit shall be shored in accordance to 3.1 (c).
- b. Forward face of the Burst Pit or the surface that the machine bears against while pulling back, shall be shored in workman like manner. This shoring shall maintain perpendicular burst machine alignment to the pipe during pullback. Any loss of perpendicular alignment during pull shall result in stopping of the bursting process and improvement of the forward face shoring.
- c. Rearward shoring shall be provided to react rod thrust forces during payout. While these forces are substantially lower than pullback forces, shoring must be used to stabilize the bursting machine so as to maintain perpendicular alignment of the machine during payout. The weight of the machine can not be depended on to react thrust forces. Hose pipe at rear face of pit may only be utilized for rearward shoring if scheduled for replacement.

- d. Pipe face for Cast Iron, Ductile Iron or PVC shall be cut off using a saw or similar device to produce a square face for the bursting machine forward face to bear against. Final separation of cast iron pipe with a wedge may provide a clean face. Host Pipe shall be removed in sufficient length to accommodate burst machine.
- e. Burst machine must be positioned so as to have rod centerline at approximate centerline of host pipe.
- f. Rod Box delivery and removal between temporary rod storage location and Burst Pit must be accommodated for with appropriate lifting equipment and techniques. Additionally, movement and or placement of lifting machine must be included in Traffic Control plans.

3.3 Rod Payout Operation

- a. Rod payout is the process of assembling a string of rods and pushing them in a step wise manner from Burst Pit, through the interior of the host pipe to Insertion Pit.
- b. Lifting of rod boxes into or out of the Burst Pit shall be performed per OSHA or other applicable requirements with respect to equipment and method.
- c. Threads shall be cleaned of foreign matter before assembly.
- d. Counting of Rods during payout, or quantity of rods per box shall be monitored such that the operator is aware of the distance between the burst machine and the lead end of the rod string.
- e. Thrust force should be monitored by the operator. Should an unexpected sudden and significant increase in thrust force be experienced, the process shall be halted. The operator or contractor shall review the results of 3.3 (e.1) with the Authority to remedy per 3.3 (e.2) in an attempt to determine if offsets, valves or other features or obstruction exist that may cause the rod string to leave the pipe.
 - 1. Front end of the rod string should be located by distance from the Burst Pit.

Location should be painted and compared to as built plans.
 - 2. Appropriate action should be taken to remedy the cause. This action may include an additional pit at the obstruction to determine the cause, and remove or accommodate for the obstruction. The decision may be to continue thrusting if the obstruction is believed to be encrustation.
- f. Host pipe in the Insertion Pit shall be cut or broken prior to arrival of the rod string. Sufficient length shall be removed so as to allow the Burst Tooling to enter the host pipe and bend the product within the allowable radius specified by the pipe manufacturer. The second end of the host pipe in the Insertion Pit shall be positioned or worked so as not to damage the product pipe as it travels through the Insertion Pit.

- g. Workmen shall not enter the Insertion Pit when the rod string is nearing the Pit. A workman shall be in visual or radio contact with the burst machine operator so as to have the payout halted in a position that allows attachment of the Burst tooling. Burst tooling style shall be chosen based on anticipated properties of host pipe and host pipe repairs.
 - 1. Cast Iron or Asbestos Concrete host pipe anticipated to be free of either Ductile Iron repair sections or Dressor Style Couplings may use a simple conical burst head with a single or double longitudinal blade.
 - 2. Ductile Iron, PVC or hose pipe with Ductile Iron repair sections or Dressor Style Couplings require use of a rolling blade cutter (slitter) ahead of the conical expander.

3.4 Tooling and Attachment

- a. The Product Pipe shall be moved into position for attachment to the rod string. Appropriate traffic or pedestrian control will be exercised along the path of the Product Pipe.
- b. The lead and second rod shall be painted orange or yellow so as to give notice to the burst machine operator position of the Burst Tooling.
- c. Attachment of the Burst Tooling to the rod shall be through the use of removable pin joint allowing the tooling to pivot at least 46 degrees to the rod axis.
- d. Burst head diameter must be a minimum of 15% over size to the outside diameter of the Product Pipe. Actual size is left to the discretion of the contractor. A greater outside diameter allows for reduced pipe friction and increases bursting forces pushed and increases solid pipe placement.
- e. Attachment of the Product pipe to the Burst Tooling shall be with a swivel that permits rotation to relieve torsional (twist) stress on the Product pipe.
- f. Burst Head shall slide on the rod string such that the rear of the burst head overlaps the forward end of the Product Pipe to eliminate the chance of damage to the Product Pipe.

3.5 Pullback Operation

- a. Prior to commencement of pullback, there will be visual or radio contact between observers stationed adjacent to the Insertion Pit, the Burst Machine operator and a Product Pipe Observer stationed strategically along the length of the product pipe to watch for product pipe entanglement with above ground obstructions.
- b. The Burst Machine operator will begin the pullback with the OK of the Insertion Pit Observer. Progress will be made at a slow rate until the Observer sees the Burst Tooling has completely entered the Host Pipe.

- c. Pipe progress will be monitored for the first 20 feet of pullback by the Insertion Pit Observer and the Product Pipe Observer.
- d. As the Burst Tooling nears any Utility Crossing Pit, an observer in radio or visual contact with the Burst Machine Operator will monitor and control movement of the Burst Tooling past the utility.
- e. Should the forward shoring upon which the bursting machine bears yield sufficiently to bring the Bursting Machine out of square to the host pipe, the shoring will be reworked according to 3.2 (b).

3.6 Tooling Removal

- a. Burst Machine Operator shall note rod count and anticipate entry of painted rods into the Burst Pit. As the Pin Joint Connection nears the Burst Machine forward face, the burst is to be halted. Load on the forward face is relieved by reversing the rod direction slightly.
- b. The Burst Machine Shore Plate is to be removed, allowing the tooling to enter a cage or the hull of the Burst Machine. The tooling string will be disassembled and removed, in sections if necessary until the Product Pipe face has been pulled beyond the face of the Burst Pit. The distance past the face of the Burst Pit shall be at the discretion of the contractor anticipating the length required for connection/fusing.

4.0 After Pipe Bursting

Upon completion of the pipe bursting, certain tasks must be followed through in order to complete the overall process.

4.1 Pit Condition Prior to Taps or Joining System

- a. Maintaining sanitary conditions within the product pipe after pipe bursting must take high priority. Should any foreign matter, including ground water be allowed to enter the pipe interior, the condition of the pipe is no longer suitable for connection to the system. For this reason connections may not be made in standing water. Such water must be pumped or bailed prior to making the connection or unsealing the pipe. Areas under connections should be excavated below the pipe invert.
- b. Before joining a surface and before any special surface preparation to accommodate that joining, external surfaces should be clean and dry. Dust may be removed by wiping with clean, lint free cloth. Heavier deposits must be washed from the surface with soap and water and dried with a clean, lint free cloth.
- c. Incidental exposure of the interior of the pipe to any foreign matter shall require that one of the two following remedies be carried out:
 - 1. Complete chlorination per AWWA specifications for buried pipe.

2. Localized contamination at the end of the pipe may be removed and the contaminated interior surface of the pipe wiped with a solution of 1 to 5% hypochlorite disinfecting solution.

4.2 Service Taps and Service Lines

- a. Service taps shall be of a type approved by the Authority and must meet AWWA C906. Construction of taps shall be per the manufacturer's recommendation. Acceptable choices include:
 1. Electro-fusion type and/or mechanical saddles with a minimum working pressure of 100psi
 2. Socket Fusion
- b. Replacement or rehabilitation of service lines, if required, shall be according to contract.

Note: HDPE pipe is the preferred material for service line replacements to curb stops.

4.3 Post Chlorination

The section of main will be super-chlorinated to 300 ppm by inserting a swab at one end. The swab shall travel the entire length of the pipe section.

4.4 Service Reinstatement

Prior to connection of the newly installed pipe, the section of pipe shall be fully flushed with the use of a de-chlorination unit and ascorbic acid to neutralize the residual chlorine. Following flushing, the newly installed section may be connected to the main at both ends and service reinstated.

4.5 Backfill and Surface Reinstatement

- a. Backfill used to restore pits shall be per applicable sewer and water construction standards applicable in the municipality.
- b. Lawn restoration shall be per applicable sewer and water construction standards applicable in the municipality.
- c. Asphalt, concrete or other roadway surface restoration shall be per applicable sewer and water construction standards applicable in the municipality.

4.6 Documentation Finalization

Within (15) days of completion of the job, all records including manifests, marked up construction plans or documents pertinent to describing the system as installed shall be provided to the Authority.

5.0 Definitions

A

Authority: City and its Utility Engineering representatives

AWWA: American Water Works Association, see www.awwa.org

ASTM: American Society for Testing and Materials, see www.astm.org

B

Burst Head: Conical shaped portion of burst tooling used to expand fractured pipe and surrounding soil to accommodate product pipe.

Burst Pit: Excavation where Static Pull Pipe Bursting Machine is located. The product pipe is pulled toward this pit.

Burst Tooling: Tooling designed to crack the host pipe, expand the remains of the host pipe and surrounding soil so as to allow passage of the product pipe.

C

Chlorination Submission Documents: Written log attached to section of pipe detailing processes related to Pre-Chlorination and Hydrostatic Testing.

D

Dresser Coupling: Commonly used repair coupling, see www.dressercouplings.com

Ductile Iron Pipe: Centrifugally cast pipe with superior tensile and yield strength, high ductility (malleability) and impact resistant properties.

E

Electrofusion: Joint or saddle that connects two sections of HDPE pipe. These joints contain internal heating elements to facilitate a heat fused joint.

H

HDPE: High Density Poly-Ethylene, plastic material from which product pipe is manufactured.

Host Pipe: Existing pipe buried in the ground that will be rehabilitated by bursting (cracking) and pulling in a new replacement pipe (product pipe).

I

Insertion Pit: Excavation where product pipe enters the host pipe and bursting begins. Product pipe is pulled through the insertion pit towards the burst pit. Nominal depth of insertion it is 2.5 to 3.0 times depth of host pipe.

M

Manifest: Written log attached to section of pipe detailing processes related to Pre-Chlorination and Hydrostatic Testing.

P

Product Pipe: Newly installed pressure pipe made from HDPE

PPI: Plastic Pipe Institute, see www.plasticpipe.org

R

Rod String: Assembled string of rods that extend from Burst pit to insertion pit and serve to transmit tensile pullback forces to burst tooling.

U

Utility Crossing Pit: An excavation created at any point where another buried utility crosses the burst path.

6.0 Tables and Equations**6.1 Makeup Water Allowance Table**

Nominal Pipe Size In Inches	2	4	6	8	10	12	14	16	18	20	22	24	30
Makeup Water Allowance (Gallon/100 ft)	.1	.2	.6	1.0	1.3	2.3	2.8	3.3	4.3	5.5	7.0	8.9	12

6.2 Allowance for Leakage Due to Fittings Equation

$$L = [ND(P^{.50})]/[7,400]$$

Where:

L = Maximum allowable leakage, Gallons/Hour

N = Number of joints in the tested pipe (connections for pipes or fitting, not fuse joints)

D = Nominal inside diameter of pipe, Inches

P = Test Pressure, PSI

SEWER SLIP-LINING

PART 1 – GENERAL

It is the intent of this portion of the Specification to provide for rehabilitating sewer lines via the installation of a fiberglass, HDPE or PVC slip-lining pipe.

1.01 WORK INCLUDED

- A. Scope of Work
Shall be per the design submittal and the Contract Documents.
- B. Work may include installation of equipment and incidentals required for sanitary sewer system improvements, including sewer mains, laterals, manholes, flushing inlets, grease traps and interceptors, and pumping facilities in accordance with the requirements of the Contract Documents.
- C. Any and all work to be performed on the Collection System shall be inspected and approved by City Staff.
- D. The Contractor shall comply with the City's NPDES Discharge permit, as updated, for discharges to the storm drain system, including adherence to all applicable Best Management Practices to prevent pollutants, including sediment, from entering the storm drains.

1.02 RELATED REQUIREMENTS

1.03 REFERENCE STANDARDS

- A. ASTM C 900 "All Standard Applicable for SDR35, SDR26, SDR21 AND ASTM C 900 Pipe and Fittings"
- B. ASTM D 3034 "All Standards Applicable for SDR35, SDR26, SDR21 Pipe and Fittings"
- C. ASTM D 3350 "Standard Specification for Polyethylene Plastic Pipe and Fitting".
- D. ASTM F585 Standard Practice for Insertion of Flexible Polyethylene Pipe into Existing Sewers

- E. ASTM F 679 "All Standards Applicable for SDR35, SDR26, SDR21 Pipe and Fittings"

1.04 QUALITY ASSURANCE

- A. All materials and equipment furnished under this Section shall be:
 - 1. From a manufacturer who has been regularly engaged in the design and manufacture of the materials and equipment for at least five (5) years; and
 - 2. Approved by the Engineer before installation. The Engineer shall verify that the quality is equal to the materials and equipment made by those manufacturers specifically named herein, if an alternate product manufacturer is proposed.

1.05 SUBMITTALS

- A. Shop Drawings: Submit data to show that the product conforms to the specification requirements.
- B. Materials List: Submit a list of all materials proposed to be used on the project, showing manufacturer's name, product trade name, type, grade, and weight. Materials list shall be submitted and approved before any installation occurs.
- C. Manufacturer's Warranty: Submit manufacturer's warranty on the product and a certificate showing compliance with applicable ASTM Standards.

PART 2- PRODUCTS

2.01 MATERIALS

- A. Fiberglass pipe shall be centrifugally cast with glass fiber reinforcement in a cured thermosetting resin manufactured in accordance with ASTM D3262, cell classification Type 1, Liner 2, Grade 3. Fiberglass liner shall be shown by tests to be resistant to long-term corrosion. Testing shall be performed in accordance with ASTM D3681 using 1.0N sulfuric acid for sanitary sewage, and ASTM C581 for industrial sewage.
- B. PVC pipe shall have a minimum cell classification of 12364 B or C as defined in ASTM D1784. Pipe shall be closed profile. The joint shall be designed so that neither the outside diameter of the pipe is increased, nor the internal diameter of the pipe is decreased at the joint. The joint shall meet the requirements of ASTM D3212. PVC liner pipe shall have a minimum pipe stiffness of 46 psi when tested in accordance with ASTM D2412.

- C. Polyethylene pipe and fittings shall be manufactured from high-density compounds in accordance with ASTM D3350. All HDPE pipe shall be closed profile and have a minimum SDR rating of 35 and a minimum pipe stiffness of 46 psi.
- D. All pipes shall be provided with joints designed so that neither the outside diameter of the pipe is increased nor the internal diameter of the pipe is decreased at the joint.
- E. Cellular concrete grout for annular space provided under this Specification shall have the following characteristics:
 - 1. 250 psi, 28-day compressive strength; 100 psi, 24-hour compressive strength, minimum.
 - 2. Foam concentrate: ASTM C869.
 - 3. Cement: ASTM C150.
 - 4. Fly ash: ASTM C618, Class F, except loss of ignition shall not exceed 5%.
 - 5. Water: Potable.
 - 6. Admixtures: Only as approved by foam concentrate manufacturer and the Engineer.
- F. All connectors provided for reinstatement of laterals shall be as follows:
 - 1. All connectors shall be composed of synthetic rubber based compounds formulated to resist acids, alkalis, solvents, and greases encountered in sanitary and storm sewer and shall contain no reclaimed rubber. Contractor shall submit evidence of satisfactory testing in accordance with ASTM D543 with no weight loss in 1.0N sulfuric acid, 1.0N hydrochloric acid or 1.0N nitric acid. Materials shall show no etching, blistering, distortion or other evidence of chemical attack. Ultimate tensile strength shall exceed 750 psi at 80 degrees F and elongation shall exceed 150%. Water absorption shall not exceed 4% when tested in accordance with ASTM D570 and hardness shall not exceed 55 in a 5 second reading interval when tested in accordance with ASTM D2240, Type A Hardness.
 - 2. All compression bands shall be Series 316 Stainless Steel. All nuts and bolts shall be Series 305 Stainless Steel.
 - 3. The completed joint shall comply with ASTM C425 for resilient sewer pipe joints.

2.02 DESIGN REQUIREMENTS

A. Conveyance Capacity

1. Slip-lining pipe provided under this Specification shall provide the maximum conveyance capacity possible and in no case shall provide less capacity than currently exists.

B. Design Criteria

Slip liner structural properties shall be calculated and provided to the City prior to construction. In addition to the requirements for submittals set forth in the construction contracts and the requirements for submittals contained in companion sections of these specifications, Contractor shall submit the following:

1. Manufacturer's literature for materials used in liner, gaskets and fittings.
2. Proposed grout mixture and pressures.
3. Test results and certification of compliance for materials.
4. Proposed plan for bypassing sewage during liner installation, if applicable.
5. Manufacturer's design analysis.
6. Proposed method of reconnecting service laterals, if applicable.
7. Details identifying proposed installation method, equipment, and location of access shaft, pit or approach tunnel.

PART 3- EXECUTION

3.01 INSTALLATION

A. Cleaning

Prior to the installation of the slip-liner pipe, Contractor shall thoroughly clean the sewer designated to receive the liner. Cleaning shall constitute removal of all debris, solids, roots, deposits, and other matter, which would preclude the installation of the slip-liner into the sewer line.

B. Inspection of Pipelines

Prior to the installation of slip-liner, Contractor shall inspect the sewer designated to receive the liner by Closed Circuit Television Inspection (CCTV).to identify all structural defects and location of all sewer lateral and other connections.

C. Sewage Flow Control

1. Contractor shall provide for maintenance of flow in the affected portions of the sewer system during installation of the slip-liner.
2. Unless otherwise specifically required, Contractor shall locate excavation(s) for insertion of slip liner to cause the least disruption to existing utilities, traffic and area business. The existing sewer line shall be exposed for the length necessary to accommodate the maximum length of liner pipe and for equipment. If Contractor locates insertion pit at an existing precast concrete manhole location, Contractor shall remove manhole frame, cover, cone, riser and manhole sections as necessary and store for reinstallation upon completion.
3. Sections of liner shall be field connected above the insertion pit using low profile bell and spigot joints, butt-fused joints or jacking pipe sleeve joints. Bell and spigot and jacking pipe sleeve joints shall be equipped with an elastomeric gasket meeting the requirements of ASTM F477 to provide a watertight seal at each joint. Maximum allowable deflection shall be two degrees. Contractor shall take precautions to prevent ragged edges of broken sewer pipe from scoring slip liner as it is being pushed/ pulled into sewer.
4. Contractor shall seal the annular space between the slip liner and the existing sewer pipe with cellular concrete as specified. Contractor shall take appropriate precautions to avoid over pressurization, buckling and floating of the slip liner pipe during the grouting process. Contractor shall comply with pipe manufacturer's recommendations for grouting procedures and with the grout manufacturer's procedures for placement of grout, grout pressures and grout quantity. Multiple grout lift installations may be required to avoid buckling of the liner pipe. Contractor shall also take precautions to avoid movement of the liner during the grouting operation. No grout shall be placed until service connections have been restored. Grout placement method and pressure shall be in accordance with manufacturer's recommendations and shall be submitted to the Engineer prior to the placement of grout.

D. Service Connections

1. Contractor shall reconnect all service connections to the sewer unless the Engineer deems connection to be inactive or abandoned. Contractor shall machine core through liner at each connection point, and comply with the following connection procedures:
 - i. Contractor shall excavate and install a tee fitting with saddle configured to the outside diameter of the slip liner and of tee length necessary to connect existing service or lateral. Contractor shall bond saddle to outside of liner pipe per manufacturer's recommendations. A minimum of 90% capacity restoration is required.
 - ii. To join pipes of dissimilar material, Contractor shall joint plain ends and connect the existing pipes and services using flexible pipe connectors equipped with stainless steel bands and fastening devices as specified.

E. Manholes

1. Contractor shall cut the upper half of liner out at manholes, and as required to accommodate lateral and service connections at manholes. Contractor shall reconstruct manhole benches to match new invert elevations
2. Where existing manhole locations have been used as access pit sites, Contractor shall reconstruct precast manholes using salvaged materials. If existing manhole materials are not suitable for salvage, Contractor shall reconstruct manhole utilizing cast-in-place or new precast concrete manhole elements. All construction shall comply with the companion sections of these specifications

3.02 TESTING AND ACCEPTANCE

- A. Contractor shall employ an independent testing agency to conduct and report compressive strength testing of the grout utilized in the construction. Contractor shall prepare and submit for testing four cellular concrete cylinders from each day's grouting activities. Testing shall occur at one (1) and twenty-eight (28) days. All test results shall be submitted to the City.
- B. After all work is completed, Contractor shall provide the City with a DVD showing both the pre- and post-installation conditions, including the restored connections. All defects discovered during the post-installation television inspection shall be corrected by the Contractor at its expense before the work under the Contract will be considered for Substantial Completion. After the defects, if any, are corrected, the affected sewer segment(s) shall be video inspected again. The post-installation television inspection shall be

submitted in sufficient time to allow the City to review the video prior to the Substantial Completion milestone.

PART 4- MEASUREMENT AND PAYMENT

- A. Payment shall include all bypass pumping, cleaning, pre- and post-construction televising, labor, equipment, material, supervision, sheeting, shoring, bracing, installation, manhole reconstruction at access pit locations, safety, dust/erosion control, testing, site restoration and all other work specified or not which is reasonably required to provide a completed installation. Any item not specified shall be considered incidental to the work. Contractor shall include all incidental cost in the unit price for the slip liner.
- B. Contractor shall receive payment for building sewer lateral reinstatement on a unit price basis per lateral connection diameter reinstated in accordance with the unit prices contained in the Contract Documents.
- C. Contractor shall receive payment for Mobilization/Demobilization and Traffic Control on a lump sum basis in accordance with the prices contained in the Contract Documents.

- END OF SECTION -

Division 53: Slip-Lining of Existing Sewer Line

53.01 GENERAL: This section includes all labor, materials, transportation, equipment necessary to rehabilitate by means of Institutform deteriorated sections of Sanitary Sewer within project limits, as relatively free of infiltration or inflow. It is the intent of this section of this specification to provide for rehabilitating sanitary sewer lines by the "Institutform" process. When complete the liner pipe should extend from one manhole to the next manhole in a continuous watertight length.

53.02 REFERENCE SPECIFICATION: This specification references American Society For Testing Materials (ASTM) standard specifications which are made a part hereof by such reference and shall be the latest edition and revision thereof.

53.03 MATERIALS FOR SEWER LINER PIPE AND FITTINGS: The following materials are approved for installation in sanitary sewer lines:

The sewer liner pipe and fittings shall be manufactured from a polyethylene compound which conforms to ASTM D-1248 and meets the requirements for Type II or III, Class B or C, Grades P23, P33, or P34, Category 5.

A. Pipe made from this compound must have a long-term hydrostatic strength rating of 1250 psi or more.

B. When the environmental stress crack resistance (ESCR) of the compound is measured in accordance with ASTM D-1693, Condition C, the compound shall withstand not less than 192 hours in 100% solution Igepal CO-630 at 100 degrees F. before reaching a 20% failure point (F₂₀).

53.04 LINER MATERIAL TESTS: Tests for compliance with this specification shall be made according to the applicable ASTM Specification. A certificate of compliance with this specification upon request shall be provided by the manufacturer for all material furnished under this specification. In addition, the Owner and/or Engineer may, at his own expense, witness inspection and test of the materials.

53.05 LINER PIPE DIMENSIONS: The outside diameter and minimum wall thickness shall be as shown on the plans when measured in accordance with ASTM D-2122. Where existing conditions prevent the use of the size stated on the plans, appropriate corrective actions shall be taken as detailed later in these specifications to permit installation of the size noted in the Plans.

The following Table I gives the Standard Dimension Ratios for line pipe when measured in accordance with ASTM D-2122 TABLE I.

I.D. of Original Sewer (Inches)	O.D. of the Liner Pipe (Inches)	Minimum Wall Thickness (Inches)		
		SDR 26	SDR 21	SDR 17
	4			.167
	6			.215
	6	.207	.257	.317
	8	.316	.390	
	8	.274	.340	.420
	10	.332	.411	.508
	12	.414	.512	.633
	15	.491	.607	.750
	15	.515	.638	.788
	18	.616	.762	.942
	21	.693	.858	1.058
	21	.720	.891	1.100

24	22.00	.848	1.050	1.248
27	24.80	.954	1.181	1.406
30	28.00	1.075		
36	31.50			
42	35.43			
42	39.37			
8	38.37			
54	47.24			

The Standard Dimension Ratios (SDR's) are 32.5, 26, 21 and 17. These are referred to as SDR 32.5, SDR 26, SDR 21 and SDR 17. Standard Dimension Ratio is calculated by dividing the specified outside diameter by the minimum wall thickness.

The wall thickness tolerance shall be within plus 12%.

53.06 REJECTION: Any materials may be rejected for failure to meet any of the requirements of this specification.

53.07 INSTALLATION PROCEDURES: The following installation procedures shall be adhered to unless otherwise approved by the Engineer.

- A. Cleaning of Sewer Line: Prior to any slip-lining of a line so designated, it shall be the responsibility of the Contractor to clean the debris out of the sewer line in accordance with Section III "Sewer Line Cleaning" NASSCO Specifications for Sewer Collection System Rehabilitation. This work shall be considered incidental and shall be paid for as part of "Slip-Lining of Sewers: for the appropriate manhole section.
- B. Television Inspection: The Contractor shall inspect by closed circuit T.V. the section to be slip-lined and shall record the locations of all obstructions and service taps. This work shall be considered incidental and shall be paid for as part of "Slip-Lining of Sewers" for the appropriate manhole section.
- C. Bypassing Sewage: The Contractor shall bypass the sewage around the sections of line that are to be slip-lined if the annular space and pulling head openings are incapable of handling the flow. The bypass shall be made by plugging an existing upstream manhole if necessary and pumping the sewage into a downstream manhole or adjacent system. The pump and bypass lines shall be of adequate capacity and size to handle the flow. All bypassing systems shall be approved by the Engineer. Approval of the bypassing system by the Engineer shall in no way be construed as relieving the Contractor of any responsibility under this Contract as related to protection of the interest of the Owner and the general public.

At the end of each working day, temporary tie-in shall be made between the relined section and the existing system and the bypass plug removed.

Under no circumstances will the dumping of raw sewage on private property or in city streets be allowed.

This work shall be considered incidental to the Contract and be paid for under "Slip-lining of Sewer" for the appropriate manhole section.

- D. Line Obstructions: It shall be the responsibility of the Contractor to clear the line of obstructions, solids, dropped joints, or collapsed pipe that will prevent the insertion of the liner. If inspection reveals an obstruction which would prevent the installation of the specified size liner, such as a badly dropped or misaligned joint, protruding services, that are not at the point of the entry shaft, then the Contractor shall make a point repair excavation to uncover and remove or repair the obstruction. Such excavation shall be approved in writing by the Engineer prior to the commencement of the work and shall be considered as a pay item under Point Repairs if the misaligned or protrusion is equal to or more than fifteen (15) percent of the internal diameter of the sewer pipe being lined. If the obstruction or protrusion is less than fifteen (15)

percent of the internal diameter of the sewer to be lined, or could have been removed by bucket machines or swabbing using conventional cleaning methods, no pay item will be granted.

- E. **Excavation:** Where excavations for insertion of the polyethylene line are made in a line section between two manholes, the Contractor will establish the excavation points on the basis of location of the lines to be slip-lined, pulling distances and traffic conditions. When possible, intermediate access excavations can coincide with building service connection excavations or critical obstructions in the sewer. The locations of the excavation points should be such as to minimize traffic disruption. The number of excavations can be reduced by planning to insert the pipe in both directions from a single opening. Normally, a pipe length of 2-3 manhole sections can be lined from a single excavation. The insertion pit(s) should be long enough to avoid imposing a bending radius of less than 35 times the outside diameter of the pipe liner during insertion. The insertion pit(s) should be sufficient to allow the entry of the workmen. Sheathing and bracing requirements will depend on depth and ground conditions and the Contractor shall determine the necessity for such sheathing and bracing. The top of the existing sewerline shall be exposed to the springline and the crown of the pipe shall be removed as necessary for insertion of the liner. Care should be taken not to disturb the bottom portion of the existing sewer line as this will afford a stable base for the liner pipe. All locations for insertion pits shall be approved by the Engineer prior to any work being done.
- F. **Pipe Joining:** Sections of the polyethylene pipe shall be assembled and joined together prior to insertion of the pipe. Assembly shall be accomplished above ground, either at the job site or a remote location. Joining shall be accomplished by the Thermal Butt Fusion method, in strict accordance with the manufacturer's recommendations and in accordance with applicable specifications of ASTM D-2657. All fusion joining shall be performed with equipment designed for butt fusion of thermoplastic pipe and by trained personnel. Tensile strength at yield of the butt-fusion joints shall not be less than the pipe. Joining of the liner, in cases where the insertion pit is not a manhole, may be accomplished by use of a stainless steel full encirclement clamp or the installation of a new manhole. Table II details the recommended minimum length of such clamps to afford adequate pull-out protection. Exposed steel liner clamps shall be encased with a minimum of six (6) inches of concrete.

TABLE II

O.D. of the Liner Pipe (Inches)	Minimum Length of Clamp (Inches)
3.500	7.50
4.500	10
5.375	10
6.625	15
7.125	15
8.625	15
10.750	20
12.750	20
13.375	20
16.000	30
18.000	30
22.050	30
24.800	30
27.950	30
31.500	48
35.430	48
39.370	60
47.240	60

- G. **Insertion of the Liner:** The polyethylene liner shall be inserted into the existing sewer line with a power

winch and steel cable connected to the end of the liner by use of an appropriate pulling head. A second pulling head may be attached to the other end of the liner for attachment of a tag line to pull the liner back out of the sewer line, if necessary. Length of the liner pipe to be inserted at any one time shall be governed by the winch drum capacity and winching power available and consideration of the size and condition of the sewer.

During insertion, precautions should be taken to protect the liner pipe from scoring the outside of the liner as it is being pulled into the sewer.

Once the insertion is initiated, it is desirable to continue the pull to completion without interruption.

The manufacturer's recommendations should be followed regarding relaxation of the liner prior to connecting services and sealing the annular space between the liner and the existing sewer pipe at the manhole.

- H. Manhole Replacement: In those places where the entrance shaft is excavated at an existing manhole, the manhole shall be replaced with a new manhole in accordance with the engineering drawings.
- I. Sealing Polyethylene Pipe in Manhole: The annular space between the polyethylene liner and the existing sewer line shall be sealed where the sewer line enters or exists each manhole. This annular space shall be sealed for a distance of 12 to 18 inches inside the old sewer line. The method of sealing shall be approved by the Engineer, but activated oakum and grout are acceptable.

Form sealant should not protrude into the manhole and should be finished over with a quick-set, non-shrink type of cement grout. Finishing inside the manhole shall be accomplished using a quick-set cement type grout to raise the invert to the grade of the line pipe. Note: Only the upstream seal should be made prior to connecting services.

- 53.09 SERVICE CONNECTIONS:** After the liner has been secured in the upstream manhole, all existing active services shall be reconnected. All existing inactive services serving vacant or undeveloped properties shall be reconnected. A portion of the existing sewer, at the liner pipe around each service connection shall be removed to expose the liner pipe to provide adequate working space for making the new service connection. Service laterals shall be connected to the liner pipe using either polyethylene heat fusion saddles or strap-on saddles as conditions require or as specified. Strap-on saddles shall be secured to the liner pipe using stainless steel bands. A neoprene gasket shall be inserted between the liner and the strap-on saddle.

Connections of the saddle fittings to the existing lateral shall be made using elastomeric boots, full encirclement clamps or by other methods specified by the Engineer.

Prior to backfilling, the annular space between the existing sewer and the new liner shall be sealed to preclude migration of the backfill material into this annular space. This annular space may be sealed with cement, expandable foam or the upper half of the sewer pipe may be replaced and grouted. The exposed connection shall be completely replaced and grouted. The exposed connection shall be completely encased in 6 inches (min.) of concrete. The cost of testing for and reconnecting service connections shall be considered incidental to the cost for "Slip Lining of Sewers" for the appropriate manhole section.

- 53.10 BACKFILL:** At all points where the polyethylene pipe has been exposed, such as at the insertion shafts, at service connection fittings, or other points where the old pipe must be removed, the polyethylene pipe and fittings shall be encased in 6 inches (min.) concrete or other high density material as specified by the Engineer to prevent deflection due to earth loading or subsidence.

At this point, in preparation for the placing of the encasement material, debris and soil shall be removed along each side of the existing pipe down to the spring line to exposed undisturbed soil.

After the encasement material is in place and accepted by the Engineer, it shall be allowed to set up for a minimum of 16 hours prior to backfilling; backfill is placed and compacted to required finished grade in accordance with these specifications. Particular care shall be taken to ensure compaction of earth beneath the lateral pipe in order to reduce subsidence and resultant bending at the lateral connection at the sewer main, care shall be taken to prevent damage or collapse of the liner.

53.11 TESTING

- A. Air Test: After installation of the liner and before any taps are made, the Contractor shall run a test on the sewer line to determine if it is watertight.

The Contractor shall furnish all necessary equipment to conduct the test. Acceptable method is a low pressure air test. Air test procedure shall be as follows:

1. Pressurize the test section to 4.0 psi and hold above 3.5 psi for not less than 2 minutes. Add air if necessary to keep the pressure above 3.5 psi. At the end of this 2 minute saturation period, note the pressure (must be 3.5 psi minimum) and begin the timed period. If the pressure drops 0.5 psi in less than the time given in Table 3, the section of pipe shall not have passed the test.

Sewer Size (Inches)	Minimum Test Time (Minutes)
4	2
6	3
8	4
10	5
12	6
15	7 ½
18	9
21	10 ½
24	12
27	13 ½
30	15
36	18
42	21
48	24
54	27

2. When the prevailing ground water is above the sewer being tested, air pressure shall be increased 0.43 psi for each foot the water table is above the flow line of the sewer.
3. If the time for the pressure to drop 0.5 psi is 125 percent or less of the time given in the table, the line shall immediately be repressurized to 3.5 psi and the test repeated.
4. If building sewers have been preconnected they shall be considered part of the lateral to which they are connected and no adjustment of test time shall be allowed to compensate for the smaller diameter of the house sewers.

5. The pressure gauge used shall be supplied by the Contractor, shall have a minimum divisions of 0.10 psi, and shall have an accuracy of 0.004 psi.

B. Manholes shall be tested in accordance with requirements in Division 34.

53.12 CLEAN-UP: After the installation work has been completed and all testing acceptable, the Contractor shall clean up the entire project area and return the ground cover to grade. All excess material and debris not incorporated in the permanent installation shall be disposed of by the Contractor. Sidewalks, driveways, street surfaces, and other surface restoration not part an eligible Point Repair shall be considered incidental to "Slip-Lining of Sewers" of the appropriate manhole section.

53.13 METHOD OF MEASUREMENT AND BASIS OF PAYMENT: It is the intent of these Specifications that Slip-lining, excluding eligible Point Repairs to be a complete process. The total footage to be bid for rehabilitation by Base Bid, Alternate I and Alternate II are different. Certain areas cannot be lined because of cave-in already occurred. Cost comparison will be made between Base Bid, Alternate I and Alternate II in all areas where all of these rehabilitation techniques can be used.

A. The length of sewer pipe satisfactorily slip-lined will be measured in place by the engineer. The pipe shall not be measured through manholes.

B. Payment will be made for the quantities so measured at the unit prices specified in the Bid Proposal.



**City of Pompano Beach, Purchasing Division
1190 N.E. 3rd Avenue, Building C
Pompano Beach, Florida, 33060**

June 9, 2022

ADDENDUM #1, RFP E-15-22

Trenchless Rehabilitation and Pipe-Bursting Technology

To Whom It May Concern,

“Exhibit G – Price List” has been added to the Attachments tab of the City’s eBid System.

Addendum #1 is posted on the City’s eBid website: <http://pompanobeachfl.ionwave.net>. Acknowledge receipt of this Addendum using the Addendum Attribute on the Attributes tab in the eBid System.

The deadline for receipt of written questions in the eBid System has passed.

The deadline for acceptance of proposals in the eBid system is **2:00:00 p.m. (local), June 13, 2022.**

The remainder of the solicitation is unchanged at this time.

Sincerely,

Jeff English, Purchasing Agent

cc: website

RFP E-15-22				
Trenchless Technology Rehabilitation and Pipe-Bursting Technology				
Vendor:				
		QTY	Unit	Unit Price
The following items apply as applicable to sections B thru O and as needed in section A items 1-7:				
1	Mobilization	1	Day	
	Pre-Construction Video	1	LF	
	a) Survey/As-builts	1	LF	
2	Erosion Control	1	LF	
3	MOT			
	a) Signage	1	Day	
	b) Flagmen	1	HR	
4	Excavation/Backfill			
	a) 0-4 feet deep	1	CuYd	
	b) 4-6 feet deep	1	CuYd	
	c) 6-10 feet deep	1	CuYd	
	d) Dewatering to include wellpoint system or drawdown pump per pit	1	Day	
5	Trench Shoring			
	a) 4-6 feet deep	1	F Trench	
	b) 6-10 feet deep	1	LF Trench	
6	Surface Restoration			
	a) Sod	1	SF	
	b) 4-inch concrete	1	SF	
	c) 6-inch concrete	1	SF	
	d) 2-inch asphalt	1	SF	
	e) 3-inch asphalt	1	SF	
	f) Curb	1	LF	
7	Material extras			
	a) Lime Rock	1	SY	
	b) 57/Washed Stone	1	SY	
	c) Imported Sand	1	SY	
	d) Gravel	1	SY	
	e) Geo Grid	1	SY	
B) Pipe Bursting with HDPE for Gravity Sewer Lines				
	HDPE DR 17			
8	6-inch diameter	1	LF	
9	8-inch diameter	1	LF	
10	10-inch diameter	1	LF	
11	12-inch diameter	1	LF	
12	14-inch diameter	1	LF	
13	16-inch diameter	1	LF	
14	18-inch diameter	1	LF	
15	20-inch diameter	1	LF	
	Manhole Connections			
16	6-inch	1	EA	
		QTY	Unit	Unit Price
17	8-inch	1	EA	
18	10-inch	1	EA	
19	12-inch	1	EA	
20	14-inch	1	EA	
21	16-inch	1	EA	
22	18-inch	1	EA	
23	20-inch	1	EA	
	Sewer Later Connections			
24	4-inch connection			
	a) 0-4 feet deep	1	EA	
	b) 4-6 feet deep	1	EA	
	c) 6-10 feet deep	1	EA	
25	6-inch connection			
	a) 0-4 feet deep	1	EA	
	b) 4-6 feet deep	1	EA	
	c) 6-10 feet deep	1	EA	
	Clean-out Installation			
26	4-inch	1	EA	
27	6-inch	1	EA	
	Sewer Lateral Pipe Bursting			
28	4-inch	1	LF	
29	6-inch	1	LF	

C) Pipe Bursting with Pre-Chlorination for Water Main Replacement Procedure				
	HDPE DR 11			
30	3-inch diameter	1	LF	
31	4-inch diameter	1	LF	
32	6-inch diameter	1	LF	
33	8-inch diameter	1	LF	
34	10-inch diameter	1	LF	
35	12-inch diameter	1	LF	
36	14-inch diameter	1	LF	
37	16-inch diameter	1	LF	
38	18-inch diameter	1	LF	
39	20-inch diameter	1	LF	
40	24-inch diameter	1	LF	
	Note: Installation with HDPE, Fusible PVC/Ductile Iron available at market price			
	Fittings			
	a) Bends and sleeves, DI			
41	6-inch	1	EA	
42	8-inch	1	EA	
43	10-inch	1	EA	
44	12-inch	1	EA	
45	14-inch	1	EA	
46	16-inch	1	EA	
47	18-inch	1	EA	
48	20-inch	1	EA	
49	24-inch	1	EA	
	b) Tees, DI			
50	6x6x4	1	EA	
51	6x6x6	1	EA	
52	8x8x4	1	EA	
53	8x8x6	1	EA	
54	8x8x8	1	EA	
55	10x10x4	1	EA	
56	10x10x6	1	EA	
57	10x10x8	1	EA	
58	10x10x10	1	EA	
59	12x12x6	1	EA	
60	12x12x8	1	EA	
61	12x12x10	1	EA	
66	12x12x12	1	EA	
67	14x14x14	1	EA	
68	16x4 tee	1	EA	
69	16x6x6 cross	1	EA	
70	16x6 tee	1	EA	
71	16x6 tee blowoff	1	EA	
72	16x8x8 cross	1	EA	
73	16x20 reducer	1	EA	
74	18x18x18	1	EA	
75	20 tee	1	EA	
76	20 cross	1	EA	
77	24 tee	1	EA	
78	24 cross	1	EA	
	a) Fittings available per Pound	1	LB	
	Gate Valves			
79	4-inch	1	EA	
80	6-inch	1	EA	
81	8-inch	1	EA	
		<u>QTY</u>	<u>Unit</u>	<u>Unit Price</u>
82	10-inch	1	EA	
83	12-inch	1	EA	
84	14-inch	1	EA	
85	16-inch	1	EA	
86	18-inch	1	EA	
87	20-inch	1	EA	
88	24-inch	1	EA	
89	Remove valve only	1	EA	
90	Install new valve vault	1	EA	
91	Fire Hydrants	1	EA	
	Connection at Services			
	a) Up to 1" service, short side up to 5-feet			
92	4-inch main	1	EA	
93	6-inch main	1	EA	

94	8-inch main	1	EA	
95	10-inch main	1	EA	
96	12-inch main	1	EA	
97	16-inch main	1	EA	
98	18-inch main	1	EA	
99	20-inch main	1	EA	
100	24-inch main	1	EA	
	b) Up to 2" service, short side up to 5-feet			
101	4-inch main	1	EA	
102	6-inch main	1	EA	
103	8-inch main	1	EA	
104	10-inch main	1	EA	
105	12-inch main	1	EA	
106	16-inch main	1	EA	
107	18-inch main	1	EA	
108	20-inch main	1	EA	
109	24-inch main	1	EA	
	c) Up to 1" service, long side up to 25-feet			
110	4-inch main	1	EA	
111	6-inch main	1	EA	
112	8-inch main	1	EA	
113	10-inch main	1	EA	
114	12-inch main	1	EA	
115	16-inch main	1	EA	
116	18-inch main	1	EA	
117	20-inch main	1	EA	
118	24-inch main	1	EA	
	d) Up to 2" service, long side up to 25-feet			
119	4-inch main	1	EA	
112	6-inch main	1	EA	
113	8-inch main	1	EA	
114	10-inch main	1	EA	
115	12-inch main	1	EA	
116	16-inch main	1	EA	
117	18-inch main	1	EA	
118	20-inch main	1	EA	
119	24-inch main	1	EA	
	e) Additional service length			
120	Over 30-feet x 1"	1	LF	
121	Over 30-feet x 2"	1	LF	
	Note: Service pipe HDPE, Copper available at market price			
	Line Stops			
122	4-inch	1	EA	
123	6-inch	1	EA	
124	8-inch	1	EA	
125	10-inch	1	EA	
126	12-inch	1	EA	
127	16-inch	1	EA	
128	18-inch	1	EA	
129	20-inch	1	EA	
120	24-inch	1	EA	
	Bypass for water main pipe bursting or CIPP lining			
121	2-inch temporary	1	LF	
122	4-inch temporary	1	LF	
123	6-inch temporary	1	LF	
	Temporary service connections for water main bypass			
124	2-inch short side	1	EA	
125	2-inch long side	1	EA	
126	4-inch short side	1	EA	
127	4-inch long side	1	EA	
128	6-inch short side	1	EA	
129	6-inch long side	1	EA	
	D) Polyethylene (PE) Sewer Pipe Sliplining			
	PE Pipe DR 22.5			
130	4-inch	1	LF	
131	6-inch	1	LF	
132	8-inch	1	LF	
133	10-inch	1	LF	
134	12-inch	1	LF	
135	Annular Space - Grouting	1	CY	
		QTY	Unit	Unit Price
	E) Procedures for Rehabilitation of Existing Pipelines			

	Pipe String Fusion			
136	4-inch	1	LF	
137	6-inch	1	LF	
138	8-inch	1	LF	
139	10-inch	1	LF	
140	12-inch	1	LF	
	Pressure Testing			
141	4-12 inch	1	LF	
142	Charge Water	1	K-Gals	
	Chlorination			
143	4-inch	1	LF	
144	6-inch	1	LF	
145	8-inch	1	LF	
146	10-inch	1	LF	
147	12-inch	1	LF	
148	BT Test	1	EA	
	Flushing			
149	4-12 inch	1	LF	
150	Charge Water	1	K-Gals	
	Dechlorination			
151	4-12 inch	1	K-Gals	
		<u>QTY</u>	<u>Unit</u>	<u>Unit Price</u>
F) Trenchless Rehabilitation/Reconstruction of Pipelines and Conduits				
	Compression Fit HDPE Pipe Lining			
	a) Camera			
152	0-10 inch	1	LF	
153	10-24 inch	1	LF	
154	25-36 inch	1	LF	
155	37-48 inch	1	LF	
156	Over 48 inch	1	LF	
	b) Clean			
157	0-10 inch	1	LF	
158	10-24 inch	1	LF	
159	25-36 inch	1	LF	
160	37-48 inch	1	LF	
161	Over 48 inch	1	LF	
	c) Pigging	See item G) Pig Cleaning		
	d) Gauging			
162	0-10 inch	1	LF	
163	10-24 inch	1	LF	
164	25-36 inch	1	LF	
165	37-48 inch	1	LF	
166	Over 48 inch	1	Per-inch	
167	e) Obstruction Removal	1	EA	
	f) Pipe Liner Insertion			
	1) PE 4710 DR 41			
168	4-inch	1	LF	
169	6-inch	1	LF	
170	8-inch	1	LF	
171	10-inch	1	LF	
172	12-inch	1	LF	
173	16-inch	1	LF	
174	18-inch	1	LF	
175	20-inch	1	LF	
176	24-inch	1	LF	
177	30-inch	1	LF	
178	36-inch	1	LF	
179	42-inch	1	LF	
180	48-inch	1	LF	
181	54-inch	1	LF	
	2) PE 4710 DR 32.5			
182	4-inch	1	LF	
183	6-inch	1	LF	
184	8-inch	1	LF	
185	10-inch	1	LF	

186	12-inch	1	LF	
187	16-inch	1	LF	
188	18-inch	1	LF	
189	20-inch	1	LF	
190	24-inch	1	LF	
191	30-inch	1	LF	
192	36-inch	1	LF	
193	42-inch	1	LF	
194	48-inch	1	LF	
195	54-inch	1	LF	
	3) PE 4710 DR 26			
		<u>QTY</u>	<u>Unit</u>	<u>Unit Price</u>
196	4-inch	1	LF	
197	6-inch	1	LF	
198	8-inch	1	LF	
199	10-inch	1	LF	
200	12-inch	1	LF	
201	16-inch	1	LF	
202	18-inch	1	LF	
203	20-inch	1	LF	
204	24-inch	1	LF	
205	30-inch	1	LF	
206	36-inch	1	LF	
207	42-inch	1	LF	
208	48-inch	1	LF	
209	54-inch	1	LF	
	4) PE 4710 DR 21			
210	4-inch	1	LF	
211	6-inch	1	LF	
212	8-inch	1	LF	
213	10-inch	1	LF	
214	12-inch	1	LF	
215	16-inch	1	LF	
216	18-inch	1	LF	
217	20-inch	1	LF	
218	24-inch	1	LF	
219	30-inch	1	LF	
220	36-inch	1	LF	
221	42-inch	1	LF	
222	48-inch	1	LF	
223	54-inch	1	LF	
	5) PE 4710 DR 17			
224	4-inch	1	LF	
225	6-inch	1	LF	
226	8-inch	1	LF	
227	10-inch	1	LF	
228	12-inch	1	LF	
229	16-inch	1	LF	
230	18-inch	1	LF	
231	20-inch	1	LF	
232	24-inch	1	LF	
233	30-inch	1	LF	
234	36-inch	1	LF	
235	42-inch	1	LF	
236	48-inch	1	LF	
237	54-inch	1	LF	
	G) Pig Cleaning			
	Foam Pig			
238	0-12 inch	1	LF	
239	13-24 inch	1	LF	
240	25-36 inch	1	LF	
241	37-48 inch	1	LF	
242	Over 48 inch	1	LF	
	Wire Bullet Pig			
243	0-12 inch	1	LF	
244	13-24 inch	1	LF	
245	25-36 inch	1	LF	
245	37-48 inch	1	LF	
247	Over 48 inch	1	LF	

	Blade Scraper Pig			
248	0-12 inch	1	LF	
249	13-24 inch	1	LF	
250	25-36 inch	1	LF	
251	37-48 inch	1	LF	
252	Over 48 inch	1	LF	
H) Time and Material Unit Rates for Change Orders				
	Materials, Subcontractors and Rentals			
253	Markup = 15%			
254	Sales Taxes = Per Jurisdiction			
	Labor			
255	Executive Supervisor	1	HR	
	a) Project Management	1	HR	
256	Superintendent	1	HR	
		QTY	Unit	Unit Price
257	Administrator	1	HR	
258	Crew Chief	1	HR	
259	Equipment Operator	1	HR	
260	Pipelayer - Skilled	1	HR	
261	Pipelayer - Helper	1	HR	
262	Laborer - Unskilled	1	HR	
I) Directional Drilling & Pipe Installation				
263	2-inch	1	LF	
264	4-inch	1	LF	
265	6-inch	1	LF	
266	8-inch	1	LF	
267	10-inch	1	LF	
268	12-inch	1	LF	
269	14-inch	1	LF	
270	16-inch	1	LF	
280	18-inch	1	LF	
281	20-inch	1	LF	
282	24-inch	1	LF	
J) Gravity Sewer CIPP Lateral Renewal Systems				
283	4 inch lateral up to 25 lf	1	EA	
284	6 inch lateral up to 25 lf	1	EA	
285	4 inch tophat installation	1	EA	
286	6 inch tophat installation	1	EA	
K) Manhole Rehabilitation				
287	4 foot diameter	1	VF	
288	6 foot diameter	1	VF	
289	Lift station rehabilitation	1	SF	
290	Existing coating removal	1	SF	
291	Adjust existing manhole cover and ring (grass)	1	EA	
292	Adjust existing manhole cover and ring (Asphalt)	1	EA	
293	Install new manhole ring and cover (grass)	1	EA	
294	Install new manhole ring and cover (Asphalt)	1	EA	
295	Furnish and install manhole chimney seal	1	EA	
296	Re-construct manhole bench and channel flow	1	EA	
L) Slip-lining down to DR 11				
297	4-inch	1	EA	
298	6-inch	1	EA	
299	8-inch	1	EA	
300	10-inch	1	EA	
301	12-inch	1	EA	
302	16-inch	1	EA	
303	18-inch	1	EA	
304	24-inch	1	EA	
305	30-inch	1	EA	
306	36-inch	1	EA	
307	42-inch	1	EA	
308	48-inch	1	EA	
309	54-inch	1	EA	
310	63-inch	1	EA	
M) Large Diameter HDPE				
	Pipe String Fusion			
311	14-inch	1	LF	

312	16-inch	1	LF	
313	18-inch	1	LF	
314	20-inch	1	LF	
315	24-inch	1	LF	
316	30-inch	1	LF	
317	36-inch	1	LF	
318	48-inch	1	LF	
	Pressure Testing			
319	14-48 inch	1	LF	
320	Charge Water	1	K-Gals	
	N) Pipe Bursting for Force Main Replacement Procedure			
	HDPE DR 11			
321	3-inch diameter	1	LF	
322	4-inch diameter	1	LF	
323	6-inch diameter	1	LF	
324	8-inch diameter	1	LF	
325	10-inch diameter	1	LF	
326	12-inch diameter	1	LF	
327	14-inch diameter	1	LF	
328	16-inch diameter	1	LF	
329	18-inch diameter	1	LF	
330	20-inch diameter	1	LF	
331	24-inch diameter	1	LF	
332	30-inch diameter	1	LF	
333	36-inch diameter	1	LF	
334	42-inch diameter	1	LF	
335	48-inch diameter	1	LF	
336	54-inch diameter	1	LF	
	Plug Valves			
337	4-inch	1	EA	
338	6-inch	1	EA	
339	8-inch	1	EA	
340	10-inch	1	EA	
341	12-inch	1	EA	
342	16-inch	1	EA	
343	18-inch	1	EA	
344	20-inch	1	EA	
345	24-inch	1	EA	
346	30-inch	1	EA	
347	36-inch	1	EA	
348	42-inch	1	EA	
349	48-inch	1	EA	
350	54-inch	1	EA	
	ARV Vacuum/Air/With structure			
351	2-inch	1	EA	
352	4-inch	1	EA	
353	6-inch	1	EA	
	Blow Off/With box			
354	2-inch	1	EA	
355	4-inch	1	EA	
356	6-inch	1	EA	
357	Tracer Wire	1	LF	
	O) Modular Pipe Bursting			
358	Manhole set up fee	1	EA	
359	8-inch	1	LF	
360	10-inch	1	LF	
361	12-inch	1	LF	
362	14-Inch	1	LF	
363	16-inch	1	LF	
364	18-inch	1	LF	
	P) Extended Warranty			
365	Past 1 year, extended warranty offered at 1.93% of contract value per year			



E-15-22 Addendum 1

Murphy Pipeline Contractors, LLC

Supplier Response

Event Information

Number: E-15-22 Addendum 1
 Title: Trenchless Rehabilitation and Pipe-Bursting Technology
 Type: Invitation To Bid
 Issue Date: 5/12/2022
 Deadline: 6/13/2022 02:00 PM (ET)
 Notes: The City of Pompano Beach (the "City") will receive sealed proposals for Request for Proposals (RFP) **E-15-22, Trenchless Rehabilitation and Pipe-Bursting Technology** until **2:00:00 p.m. (local), June 13, 2022.** Proposals must be submitted electronically through the eBid System on or before the due date and time as specified herein. RFP openings are open to the public. All Proposers and/or their representatives are invited to be present. Any proposal received after the due date and time specified will not be considered. Any uncertainty regarding the time a proposal is received will be resolved against the Proposer.

Proposer must be registered on the City's eBid System in order to view the RFP Documents and respond to this RFP. The solicitation documents can be downloaded for free from the eBid System as a pdf at: <https://pompanobeachfl.ionwave.net>. The City is not responsible for the accuracy or completeness of any documentation the Proposer receives from any source other than from the eBid System. Proposer is solely responsible for downloading all required documents. A list of Proposers will be read aloud in a public forum. To attend the virtual public meeting, go to <https://www.pompanobeachfl.gov/meetings> to

find the Zoom link.

Contact Information

Contact: Jeff English

Address: Purchasing

1190 NE 3rd Avenue

Building C

Pompano Beach, FL 33060

Phone: (954) 786-4098

Fax: (954) 786-4168

Email: purchasing@copbfl.com

Murphy Pipeline Contractors, LLC Information

Contact: Cindy Viers
 Address: 12235 New Berlin Road
 Jacksonville, FL 32226
 Phone: (904) 764-6887
 Email: cviers@teamipr.com

By submitting this Response I affirm I have received, read and agree to the all terms and conditions as set forth herein. I hereby recognize and agree that upon execution by an authorized officer of the City of Pompano Beach, this Response, together with all documents prepared by or on behalf of the City of Pompano Beach for this solicitation, and the resulting Contract shall become a binding agreement between the parties for the products and services to be provided in accordance with the terms and conditions set forth herein. I further affirm that all information and documentation contained within this response to be true and correct, and that I have the legal authority to submit this response on behalf of the named Supplier (Offeror).

Cindy Viers

Signature

Submitted at 6/13/2022 11:28:26 AM

cviers@teamipr.com

Email

Requested Attachments

Proposal Package

Proposal Package.pdf

Proposer shall upload response as one (1) file to the eBid System. The file size for uploads is limited to 250 MB. If the file size exceeds 10 MB, the response must be split and uploaded as two (2) separate files.

Proposal Bond From

E-15-22 Bid Bond Executed.pdf

Proposal Bond Form from the attachments tab must be completed and uploaded to this tab.

Qualification of Proposers Form

E-15-22 Qualification of Proposers Package.pdf

Qualification of Bidders Form from the attachments tab must be completed and uploaded to this tab.

Exhibit G - Price List

Exhibit G - Price List MPC Numbers Final.pdf

Exhibit G - Price List from the Attachments tab is to completed and uploaded here.

Bid Attributes

1 Extension of prices, terms and conditions to other governmental entities

If awarded the contract resulting from this bid, will your company agree to extend the same prices, terms and conditions to other governmental entities? (Note -- Optional, agreement not required for contract award.) All Purchases made by other governmental entities shall be understood to be transactions between that entity and the awarded vendor; the City of Pompano Beach shall not be a party to or be responsible for any such purchases. Indicate by selecting yes or no from the drop down menu.

Yes

2 Drug-Free Workplace

Whenever two or more bids which are equal with respect to price, quality, and service are received for the procurement of commodities or contractual service, a bid received from a business that certifies that it has implemented a Drug-free Workplace Program shall be given preference in the award process. If bidder's company has a Drug-free Workplace Program as outlined in General Conditions, section 32., indicate that by selecting yes in the drop down menu.

Yes

3 Conflict of Interest

For purposes of determining any possible conflict of interest, all bidders must disclose if any City of Pompano Beach employee is also an owner, corporate officer, or employee of their business. Indicate either "Yes" (a City employee is also associated with your business), or "No". (Note: If answer is "Yes", you must file a statement with the Supervisor of Elections, pursuant to Florida Statutes 112.313.) Indicate yes or no below with the drop down menu.

4 Vendor Certification Regarding Scrutinized Companies Lists (Over \$1,000,000.00)

Section 287.135, Florida Statutes, prohibits agencies from contracting with companies, for goods or services over \$1,000,000, that are on either the Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List. Further, Section 215.4725, Florida Statutes, prohibits agencies from contracting (at any dollar amount) with companies on the Scrutinized Companies that Boycott Israel List, or with companies that are engaged in a boycott of Israel. As the person authorized to electronically sign on behalf of Respondent, I hereby certify by selecting the box below that the company responding to this solicitation is not listed on the Scrutinized Companies with Activities in Sudan List, the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, or the Scrutinized Companies that Boycott Israel List. I also certify that the company responding to this solicitation is not participating in a boycott of Israel, and is not engaged in business operations in Syria or Cuba. I understand that pursuant to sections 287.135 and 215.4725, Florida Statutes, the submission of a false certification may subject company to civil penalties, attorney's fees, and/or costs.

☒ Certified (Certified)
5 Acknowledgement of Addenda

Check this box to acknowledge that you have reviewed all addenda issued for this solicitation.

☒ Yes (Yes)
6 Terms & Conditions

Check the box indicating you agree to the terms and conditions of this solicitation.

☒ Agree (Agree)

QUALIFICATION OF PROPOSERS

COMPLETE THE QUALIFICATIONS OF PROPOSERS – CONSTRUCTION FORM IN THE EBID ATTACHMENTS TAB. PROPOSERS ARE TO COMPLETE FORM IN ITS ENTIRETY AND UPLOAD THE COMPLETED FORM TO THE RESPONSE ATTACHMENTS TAB FOR THE PROPOSAL IN THE EBID SYSTEM

To demonstrate qualifications to perform the Work, and to be considered for award, each Proposer must submit written evidence, such as previous experience, present commitments and other such data as may be called for below (or in SUPPLEMENTARY CONDITIONS). Each Proposal must contain evidence of Proposer's qualification to do business in the State where the Project is located or covenant to obtain such qualification prior to executing the Agreement.

1 How many years has your organization been in business as an Underground Utility and Excavation Contractor?

2 State of Florida Contractor's license # _____

Broward County Certificate of Competency #: _____

Expiration Date: _____

3 What is the last project of this nature that you have completed?

4 Have you ever failed to complete work awarded to you? If Yes, where and why?

5 List all work performed over the last year.

Project Name _____

Owner's Name _____

Owner's Address _____

Phone Number _____

Nature of Work _____

Original Contract Completion Time (Days) _____

Original Contract Completion Date _____

Actual Final Contract Completion Date _____

Original Contract Price _____

Actual Final Contract Price _____

(Attach additional information as required)

6 List all work of similar type, complexity, and comparable value over the past five (5) years and the nature of work performed. (Attach additional information on separate sheet)

Project Name _____

Owner's Name _____

Owner's Address _____

Phone Number _____

Nature of Work _____

Original Contract Completion Time (Days) _____

Original Contract Completion Date _____

Actual Final Contract Completion Date _____

Original Contract Price _____

Actual Final Contract Price _____

7 The following are names as three (3) individuals or corporations for which you have performed work of this nature and to which you list as references, excluding the City of Pompano Beach.

<u>NAME</u>	<u>ADDRESS</u>	<u>TELEPHONE</u>	<u>CONTACT PERSON</u>
-------------	----------------	------------------	-----------------------

8 Have you personally inspected the proposed work and have you a complete plan for its performance?

9 The following information shall be provided for this project:

(a) Estimated total construction manhours _____

(b) Percent manhours to be performed by Contractor's permanent staff _____

(c) Percent manhours to be performed by direct hire employees _____

Equipment

10 What equipment do you own that is available for the proposed work?

11 What equipment will you purchase for the proposed work, and the estimated delivery period from time order is placed for equipment?

Bid E-15-22 Qualification – 12 Month Summary

The Town of Davie Brentwood Improvements

Owner: Town of Davie Utility Department
7351 SW 30th St NW 30th St
Davie, FL 33314
954-324-3769

Job Description: Replacement of approximately 2400 LF of 6" AC Water Main with 8" HDPE and 800 LF of 2" DIP with 6" DIP; 33 Services Total

Original Contract Value: \$799,808.00 **Contract Value:** \$644,000.00

Contract Days: 90 Days March 2022- June 2022

Bal Harbour Trenchless Rehabilitation of Utility Infrastructure

Owner: Village of Bal Harbour
655 95th St, Bal Harbour FL 33154
786-566-3461

Job Description: Multi-phased project that consists of the replacement and upgrade of water and sewer main ranging in size from 6" to 20" throughout the community. Included in the scope are over 250 service connections

Current Contract Value (All phases): \$8,945,000.00

October 2019 –Current

S. Westshore Boulevard Water Main Replacement II, City of Tampa

Owner: City of Tampa
306 E. Jackson St
Tampa, FL 49286

Job Description: The Westshore Blvd Project consisted of the replacement of approximately 18,000 LF of 12" CIP with 12" HDPE along a high traffic commercial thoroughfare.

Original Contract Value: \$4,006,560.00 **Final Contract Value:** \$3,210,000.00

Contract Days: 300 Days **Contract Completed:** 275 Days June 2021 – May 2022

Public Works/Construction Services Water System Mains Maint/Rep Water Main Upgrade Services Project, City of Pompano Beach

Owner: City of Pompano Beach
1201 NE 3rd Avenue
Pompano Beach, FL 33060
954-942-2202

Job Description: Project consisted of (4) different phases of replacing approximately 4,300 LF of 6" Cast Iron pipe with 6" HDPE; approximately 30 services

Original PO Value: \$948,067.00 **Final Contract Value:** \$810,265.00

Project Schedule: Completed in 9 Wks Completed March 2022

Bid E-15-22 Qualification – 12 Month Summary

NW 70th St Pipe Bursting Project, City of Tamarac

Owner: City of Tamarac

7525 NW 88th Ave

Tamarac, FL 33321

954-597-3704

Job Description: Project comprised of the replacement of approximately 3,800 LF of 8" Cast Iron Water Main and upgrading to 10" HDPE.

Original Contract Value: \$684,284.00 **Final Contract Value:** \$634,025.00

Contract Days: 90 Days **Contract Completed:** 90 Days October 2021

South Murphy Rd AC Water Line

Owner: City of Murphy Texas

206 N. Murphy Rd

Murphy, Texas 75094

972-468-4007

Job Description: Replacement of approximately 3400 LF of 6" AC pipe with 8" HDPE via pre-chlorinated pipe bursting.

Original Contract Value: \$598,172.00 **Final Contract Value:** \$597,304.00

Contract Days: 120 Days **Contract Completed:** 90 Days November through January 2022

Bid E-15-22 Qualification Project Reference Summary

Summary Includes:

- **Five Similar Projects within the last (5) years**
- **Five years of experience in urban environments of Florida having successfully installed 25,000 LF of trenchless water distribution and/or wastewater collection systems**
- **Performing 300 water service line installations or more using the process of pit launched mini-horizontal directional drill over the last (5) years**

S. Westshore Boulevard Water Main Replacement II, City of Tampa

The Westshore Blvd Project consisted of the replacement of approximately 18,000 LF of 12" CIP with 12" HDPE along a high traffic commercial thoroughfare. Project construction complete and in final phases of restoration. POC: James King (Office 813-781-7023 james.king@tampagov.net)
Contract Value: \$4,006,560.00

Public Works/Construction Services Water System Mains Maint/Rep Water Main Upgrade Services Project, City of Pompano Beach

Project consisted of (4) different phases of replacing approximately 4,300 LF of 6" Cast Iron pipe with 6" HDPE. Project Construction Complete March 2022 POC: Nathaniel Watson (Office) 954-942-2202 nathaniel.watson@copbfl.com
Contract Value: \$810,265.00

NW 70th St Pipe Bursting Project, City of Tamarac

The NW 70th St Pipe Bursting Project was comprised of the replacement of approximately 3,800 LF of 8" Cast Iron Water Main and upgrading to 10" HDPE. Completed October 2021. POC: Christopher Lyle (Office) 954-597-3704 christopher.lyle@tamarac.org
Contract Value \$634,025.00

Victoria Park A and B Small Water Main Improvements, City of Fort Lauderdale

The Victoria Park Small WM Project was comprised of the replacement of approximately 60,000 LF of 4" WM to 6" HDPE. There were approximately 950 water services, the majority of which were completed via Pit Launch Mini-Horizontal Directional Drill, that included 70 rear meter conversions to City right of way that required plumbing permits. Completed June 2021
POC: Daniel Fisher (Office) 954-828-5850 dfisher@fortlauderdale.gov
Contract Value: \$10,947,563.00

Bermuda Water Main Improvements, City of Fort Lauderdale

The Bermuda project required MPC to upgrade the existing 22,000 LF of 6" CIP Water Main to 8" HDPE. Additionally, there were roughly 300 water services for which 65 required a plumbing permit for relocation within the City right of way. Completed June 2020.
POC: Axel Rivera (Office) 954-828-5124 axrivera@fortlauderdale.gov
Contract Value: \$3,564,824.00

Altamonte Springs Florida, San Sebastian Neighborhood Project

The MPC Team performed 11,000 LF 8"-10" of water main installation with 90 1-inch/1.5-inch services installed. Pit Launch Mini-Horizontal Directional Drill was used for services under asphalt. Completed Q1 2020 POC: Trey Sisk (Office) 407-571-7023 tsisk@altamonte.org
Contract Value: \$1,229,084.00

Bid E-15-22 Qualification Project Reference Summary

Croissant Park Small Water Main Improvements, City of Fort Lauderdale

The Croissant Park WM project consisted of the replacement and upsizing of approximately 16,000LF of 6" CIP Water Main to 8" HDPE. There were approximately 385 water services for which 221 required a plumbing permit for relocation within the City right of way. Completed July 2019 POC: Scott Teschky (Office) 954-828-6195 steschky@fortlauderdale.gov
Contract Value: \$2,422,579.00

The City of Coral Gables Sanitary Sewer Improvement Upgrade

Design-Build with partners Chen Moore & Associates. The project consisted of the design, permitting and execution of manhole-to-manhole modular pipe installation of approximately 1,700 LF of existing gravity sewer in an affluent, commercial district in the City of Coral Gables in support of current and future urban development. Project was completed with minimal impact to local business. Completed December 2018. POC: Philip Parenteau (Office) 786-623-2808 philip@astorcompanies.com Contract Value: \$883,083.00

City of Tamarac 24" Drainage Sliplining

Project consisted of the replacement of roughly 2500 LF of 24" CMP with 24" HDPE via sliplining through a narrow corridor of an established neighborhood in Tamarac. Christopher Lyle (Office) 954-597-3704 christopher.lyle@tamarac.org Completed February 2019
Contract Value: \$1,300,000

Escape Valencia Water Main Improvements, City of Sunrise

The Escape/Valencia project encompassed upgrading the existing system of the City of Sunrise located in the Town of Davie, approximately 30,000 LF of 4-6" AC Pipe replaced with 8" HDPE. As the City of Sunrise infrastructure was located in the Town of Davie. Our team coordinated inspections with both entities. Completed November 2018 . POC: Earl Prizlee (Office) 954-888-6002 Eprizlee@sunrisefl.gov Contract Value: \$4,000,000.00

Trailers	Bix Tex	2016 Gooseneck Trailer	16VGX2524G6071861
Trailers	Bix Tex	2016 25G Gooseneck Trailer	16VGX3527G6046541
Trucks	CAT	Dump Truck CT660	1HTJGTJT4DJ192567
Trailers	Big Tex	BIG TEX 4XPH-24+5AIR BRAKE DUAL AXLE TRAILER	16VHX242X82801562
MISC.	Professer-Weld Mach	Green Welder Trailer	
Fusion Machines	McElroy	T900 Fusion Machine	C54696
Burst Rigs	TT Technologies	1250G GrundoBurst Pipe Burster	410032
Trailers	United Rental	500 Gallon Water Trailer	JW516126B000007
Winches	Hammerhead Winch	Yellow Winch	912-2700
Trucks	Isuzu	2018 NQR-HD Crew Cab Box Truck #1	JALE5J168J7900751
Trucks	Ford	2017 F450 Flatbed	1FD0W4HT7HEC47689
Excavators	CAT	325F Excavator	CAT0325FVXAA10197
Trucks	MACK	2007 Dump Truck	1M1AJ06437N007942
Trucks	Ford	2016 F350 Flatbed	1FD8W3HTXGEC46435
Excavators	Yanmar	Excavator Vi055	61195
Skid Steers	Bobcat	2017 Skidsteer S850	B47711173
Fusion Machines	McElroy	Track Star 412 AT1213002/ AT1816501	C71940 / C71598
Trucks	Ford	2015 Ford F550 Flatbed Truck	1FD0W5HT4FEB83596
Backhoe's	CAT	Backhoe 420 FIT	CAT0420FLJWJ02828
Burst Rigs	TT Technologies	800G Pipe Bursting Unit	
Trailers	ARNI	2011 Cargo Trailer	5YCBE2021BH003139
Trailers	Big Tex	2015 Gooseneck Trailer	16VGX2520E2615969
Burst Rigs	Scandinavian No-Dig	T87 Pipe Bursting unit.	T87-16-08-03
Trucks	Isuzu	2011 Box Truck	JALB4W17XB7400474
Trucks	Ford	2016 F450 Flatbed	1FD0W4HT7GEA60581
Trucks	Isuzu	2014 Box Truck	JALC4J164E7003040
Backhoe's	CAT	Backhoe 420F2IT	CAT0420FHHWD01196
Excavators	Yanmar	Excavator VI055-6A	YMRVI055EGAJ61118
Excavators	Yanmar	Excavator VI055-6A	AF400 S/N: 11310
Excavators	Yanmar	Excavator VI055-6A	AF424 SN: 11457
Skid Steers	CAT	Skid Steer 272D2	CAT0272DLBL200873
Fusion Machines	McElroy	2065	6300102 Serial: C02973
Trucks	Ford	2017 F450 Flatbed	1FD0W4HTXHEE42301
Trucks	Isuzu	2016 NPR-HD Box Truck	JALC4J16XG7000873
Trucks	Ford	2015 Ford F350 Flatbed Truck	1FD8W3HTXFEB05587
Trailers	Big Tex	2015 Gooseneck Trailer	1P9GF272XFL375357
Trailers	Homemade	2009 Air Compressor SUL AIR 185DPO	FLZCS257G909
Excavators	Yanmar	Excavator VIO55	AF360
Trailers	Airman	Air Compressor PDST85S	B4-6B43192
Burst Rigs	TT Technologies	800G Power Pack	1000060715100
Fusion Machines	McElroy	No.28 A860701	C70747
Backhoe's	CAT	Backhoe 420 FIT	CAT0420FKHWD00329
Trucks	Ford	2020 F750 Dump Truck	1FDXF7DC2KDF14739
Trucks	Ford	2020 Ford F-550	1FD0W5HT2LED41848
Winches	HAMMERHEAD WINCH	HG5 Red	1E9WE1211CC196252
Trailers	Express Trailers	2014 Enclosed CCTV Trailer (camera)	5GLBE1425EC000408
Excavators	Yanmar	VI055 Excavator	AG656
Burst Rigs	Scandinavian No-Dig	T87 Pipe Bursting unit. 2	T87-102
Skid Steers	Bobcat	S850 Skid Steer	B47711645
Skid Steers	Bobcat	S850 Skid Steer	B47711648
Excavators	Yanmar	VI050 Excavator	60716
Skid Steers	Bobcat	S850 Skid Steer	B47711807
Trailers	Atlas Copco	XAS 185 JD7 PE	4500A1016DR042224
Excavators	Yanmar	SV100 2020	AG102 86589
Fusion Machines	World Poly	1600 Hydra A	1902183964
Fusion Machines	World Poly	1600 Hydra B	1902183965
Winches	TT Technologies	2008 RW40 Grundowinch	2008W304
Trucks	Ford	2019 F550 Crew Cab	1FD0W5HT3KEG58746

Trucks	Ford	2019 F550 Crew Cab	1FD0W5HT9KEG54345
Trucks	Ford	Ford F150	1FTEW1E50KFB58854
Trailers	Doosan	2012 Air Compressor C185WKUB-T4I	434601ULVD95
Trucks	Ford	2018 Ford F550	1FDUF5HTXJDA02923
Excavators	Yanmar	2018 SV100	YMRSV100HJAJAF787
Excavators	Yanmar	Excavator Sv100	AF656
Excavators	Yanmar	Excavator SV100	AF657
Excavators	Yanmar	Excavator SV100	AF658
Burst Rigs	TT Technologies	2500G Power Pack	
Burst Rigs	TT Technologies	2500G Burst Rig	
Trucks	Isuzu	NPR HD 2020	54DC4J1B8KS811572
Fusion Machines	McElroy	Pit Bull NO. 28 (AT805501)	C24083
Burst Rigs	TT Technologies	800G Pipe Bursting Unit	
Excavators	Yanmar	Excavator VI055-6A	AF803
Trucks	Toyota	2018 Toyota Tacoma	5TFRX5GN4JX115825
Trucks	Toyota	2018/19 Toyota Tacoma	5TFRX5GN3JX126444
Trailers	Big Tex	2019 40' Gooseneck	16VGX3528K6049196
Excavators	CAT	942KQCCAB	0PWR03933
Burst Rigs	Hammerhead	Yellow 30/38 Pipe Burster	HB3810009
Excavators	CAT	M318D	D8W00445
Trucks	Ford	2019 F150	1FTEW1E57KFC02932
Skid Steers	CAT	Skid Steer 272D2	CAT0272DKBL200963
Trailers		Cargo Trailer	53BCTEA20FU013271
Burst Rigs	Scandinavian No-Dig	T87S Pipe Bursting unit	T87S-001
Trucks	Ford	2017 F450 Flatbed	1FD0W4HT0HED46208
Trailers	Big Tex	2017 35 + 5 Pop Up	16VGX3521F6020998
Fusion Machines	McElroy	Trackstar 412 AT1816501	C76382
Trailers	Atlas Copco	Air compressor, XAS 185 JD RSC	4500A1013BR038984
Trailers	Wanco	Message Board Trailer Model WTLMB-A10	5F12S1610E1003134
Trailers	Wanco	Message Board Trailer WTLMB-A10	5F12S1XE1003206
Excavators	Yanmar	SV100 2019	V92612 SN: AG371
Trucks	Ford	2018 F750 Dump Truck	1FDWF7DX3JDF03567
Trailers	Atlas Copco	Atlas Copco Air Compressor	10149433
Trucks	Hamm	HD12VV Roller	H2001665
Trucks	Ford	2017 F450 Flatbed	1FD0W4HT3HED53766
Trucks	Ford	2016 F550 Flatbed	1FD0W5HT2GED31942
Trailers	Cargo Express	Black Tool Trailer	53BCTEA25FU012553
Trailers	LMT	2008 Utility Trailer	5L8GP282381013818
Trucks	Isuzu	2018 NQR-HD Crew Cab Box Truck #2	JALE5J166J7901400
Trucks	Isuzu	2016 Box Truck	JALE5J164G7901047
Trailers	Myers	Seth Pump Trailer 3"/4" pump	MSPSF1820
Skid Steers	Trailer	United Rentals Water Trailer	
Backhoe's	CAT	Backhoe 420 FIT	CAT0420FJHWD02549
Excavators	Yanmar	Excavator Sv100	AF414
Trailers	Cascade	2010 500Gal Water Trailer	1C9FA0822AC673041
Excavators	Yanmar	Excavator VI055-6A	YMRVI055CGAJ61015
Excavators	Yanmar	Excavator Vi055	60943
Backhoe's	John Deere	Backhoe 310SK	1T0310SKHEE268377
Skid Steers	Bobcat	Skid Steer S850	ATF412427
Trucks	Hyster	Forklift	E7D2151R
Trucks	Ford	2020 Ford F450	1FD0W4HT9KEG58745
Trailers	Whisperwatt	DF-2400J 3 Phasae Generator Trailer	DCA-220SSJ
Fusion Machines	McElroy	Dynamac 250 In hole	C50143
Fusion Machines	McElroy	Pitbull NO. 618 (AT1213001)	C25674 and Serial:6182010-1
Trailers	Road Clipper	2013 Gooseneck Trailer	46UFU4020D1148471
Trucks	GMC	6500 Dump Truck	1GDJ7HMOVJ520194
Fusion Machines	McElroy	TracStar T500 Fusion Machine AT5034201	C51366 and C47198

Trucks	Ford	2015 Ford F550	1FD0W5HT9FEB96862
Trailers	North Star Compressor	Compressor	459382H Serial: 1119 6783
Trailers	Wanco	Message Board Trailer WTLMB-A10	5F12S1617F1002094
Trailers	Wanco	Message Board Trailer WTLMB-A10	5F12S1615F1000180
MISC.	54 Inch Roller Assembly	54" Roller Assembly	
MISC.	54 Inch Roller Assembly	54" Roller Assembly 2017	
Winches	ABS 1900	Winch	
Winches	ABS 1900	Winch Rope	
Trailers	Atlas Copco	Air Compressor Xas 185 JDHH	H0P034446
Trailers	Atlas Copco	Air compressor, XAS 185 JD RSC	DRO42168
MISC.	Bobcat	Street Sweeper Angled Broom	231411904
MISC.	CE Attachments Inc	Hydraulic Compactor	651118
Trailers	Diac	2010 All Pro Cargo Trailer	5UZBE2022AD013940
MISC.	Expander Shells	Swagelining	
Trucks	Ford	2018 Ford Escape	1FMCU0F73JUB67867
Trucks	Ford	2018 Ford Explorer	1FM5K8F8XJGB75307
Trucks	Ford	2019 F250 Lariat	1FT7W2BT4KED42203
Trucks	Ford	2019 F250 Lariat	1FT7W2BT2KED42202
Trucks	Ford	2019 F250 Lariat	1FT7W2BT9KED42195
Trucks	Ford	2019 F250 Lariat	1FT7W2BT7KED42146
Trucks	Ford	2019 F250 Lariat	1FT7W2BT6KED42106
Trucks	Dodge	2020 Ram 2500	3C6UR5FL6LG236942
Trucks	Dodge	2020 Ram 2500	3C6UR5FL1LG236976
Trucks	Dodge	2020 Ram 2500	3C6UR5FL7LG236951
Trucks	Dodge	2020 Ram 2500	3C6UR5FLXLG236930
Trucks	Dodge	2020 Ram 2500	3C6UR5FL7LG236948
Trucks	Dodge	2021 Ram 2500	3C6UR5FL9MG670774
Trucks	Dodge	2021 Ram 2500	3CUR5FL2MG629032
Trucks	Dodge	2021 Ram 2500	3C6UR5FL8MG629035
Trucks	Dodge	2021 Ram 2500	3C6UR5FL6MG631205
Trucks	Dodge	2021 Ram 2500	3C6UE5FL9MG631215
Trucks	Ford	F250 Tuscany	1FT7W2BT8JEB61541
Trucks	GMC	2014 GMC Denali	1GT125E88EF136133
Burst Rigs	Hammerhead	50/58 Pipe Burster	HB5810109
MISC.	Honda	EU2200i Generator	EAMT- 1073415
MISC.	Honda	EU220i Generator	EAMT-1181413
MISC.	Honda	EU220i Generator	EAMT-1172911
MISC.	Honda	WB20XT 2" Water Pump	3155899
Trucks	Jeep	2020 Grand Cherokee	1C4RJFBG6LC234423
MISC.	Kelley	Jackhammer Attachment CB750	400M824
MISC.	Little Jumping Jack	RAMMER B560-4AS	24268936
Fusion Machines	McElroy	PB14	
Fusion Machines	McElroy	Pit Bull No.14	C71748
Fusion Machines	McElroy	Pit Bull No.26 708502	C71632
Fusion Machines	McElroy	Pit Bull No.28 No. AT805506	C70840
Fusion Machines	McElroy	Pitbull no.26	C40155
Trailers	Not sure/United Rentals	500 Gallon Water Trailer	N/A
MISC.	Okada	OAC 200 Compactor	B1356
MISC.	Okada	OAC 200 Compactor	B1397
MISC.	Okada	OAC100	B614
MISC.	Okada	Top 55 Breaker	72V1045
MISC.	Okada	TOP55B	72V954
Winches	Reeling Machine	Wire Rope	
Mini-Drill	Roddie Inc	Pit Shot Service Drill	RI8459632
Burst Rigs	Scandinavian No-Dig	T87 Pipe Bursting Unit .3	
Burst Rigs	Scandinavian No-Dig	T87 Pipe Bursting Unit. 3 Power Pack	T87-109
MISC.	Street Saw Walk Behind	FS524 (965150214)	2014 1400006
RV TRAILER	Stryker RV	2018 Stryker Model ST-2916	5RXGB3522J2377808

Trailers	Sulair	XAS 185 JD RSC		4500A1013BR038984
MISC.	Thrust Frame	Swagelining		
MISC.	Trench Boxes	8 Trench Boxes and Spreader Bars		
MISC.	Troy Built	Briggs & Stratton 7000W Generator		1411121600195
Burst Rigs	TT Technologies	1250G Extra Rods		
Burst Rigs	TT Technologies	1250G Extra Rods		
Burst Rigs	TT Technologies	1250G Extra Rods		
Burst Rigs	TT Technologies	800G Grundoburst Pipe Burster		
Burst Rigs	TT Technologies	800G Power Pack		1000080822100
Burst Rigs	TT Technologies	Rods TT Tech		
MISC.	Wacker Neuson	Rammer BS60-4AS		24417053
MISC.	Welding Rig	Welder		
MISC.	Whacker Rammer Large	RAMMER B560-4AS		24271171
Winches	Winch Rope Bobby			
RV TRAILER	Wlidwood RV	2018 FVWW	Small RV Trailer	4X4TWDW45JY091496
RV TRAILER	Wlidwood RV	2018 FVWW	Small RV Trailer	4X4TWDW14JY091483
MISC.		Big Jumping Jack		



PIPE BURSTING, PRE-CHLORINATION, SLIPLINING, Compression-Fit WORK EXPERIENCE – 7 Year Summary

Project Name	Type	Owner	Contact & Phone	Host Pipe & Size	New Pipe & Size	Length Installed	Dates
The Town of Davie Brentwood Improvements	Water	Town of Davie	Robert Walker 954-327-3769	6" AC	8" HDPE	2400 lf of HDPE Pre-Chlorinated Pipe Bursting	In Progress
Continuing Construction Services – Pre-Chlorinated Pipe Bursting	Water	City of Altamonte Springs, FL	Lone "Trey" Sisk 407-571-8572	6" AC	6" HDPE	5000 lf of HDPE Pre-Chlorinated Pipe Bursting	In Progress
S. Westshore Blvd Water Main Replacement II	Water	City of Tampa	James King 813-781-7023	12" Cast Iron	12" HDPE	18,000 lf of HDPE Pre-Chlorinated Pipe Bursting	In Progress
Salt Lake City Upper Conduit Repair Phase 1	Water	Salt Lake City Department of Public Utilities	T. Dimond Zollinger	42"	42" HDPE	1600 lf of HDPE; Sliplining	In Progress
NE 12 th St, NE 15 th St, NE 24 th Ave, NE 24 th Terr, and NW 27 th Way	Water	City of Pompano Beach	Nathaniel Watson	4-6" Cast Iron	6" HDPE	4300lf of HDPE Pre-Chlorinated Pipe Bursting	January 2022 – March 2022

Wilton Manors Jenada	Water	City of Wilton Manors, FL	Bert Fisher	4" Cast Iron to 6" HDPE	Yes	3500 lf HDPE Pre- Chlorinated pipe burst	July 2021- August 2021
Tamarac 10 Inch Water Main Replacement	Water	City of Tamarac	Chris Lyle	8" Cast Iron to 10" HDPE	10" HDPE	3,800 lf Pre-Chlorinated Pipe Bursting	August 2021- October 2021
Victoria Park A and B, North and South Small Water Main Replacement	Water	City of Fort Lauderdale, FL	Daniel Fisher 954-828-5850	2" Cast Iron to 6" HDPE	6" HDPE	61,000 lf 6" Pre-Chlorinated pipe bursting	March 2019 – June 2021
Bal Harbour Village Phase 3A	Sewer	Bal Harbour Village, FL	John Oldenburg 305-993-7436	6-8" Cast Iron	8-10" HDPE	1500lf 6-8" Sewer Main	January 2021 – March 2021
Bal Harbour Village Phase 4	Water	Bal Harbour Village, FL	John Oldenburg 305-993-7436	10" Cast Iron	20" HDPE	5000lf of HDPE pre- chlorinated HDD project	December 2020 – July 2021
Water Main Replacement Project	Water	Harris County Municipal Utility District No. 5, TX	Gerald Gehman 713-201-5534	4"-6"-8"- 12" AC/Cast Iron	4"-6"-8"- 12" HDPE	48,600lf pre-chlorinated pipe bursting with temporary services	February 2021- December 2021
Florida City Project No 10 & 11	Sewer	City of Florida City	Pedro Gonzalez 305-598-0191	6"-10" PVC	6-12" HDPE	4,000 lf FM Replacement	September 2020 – August 2021

Bermuda Riviera Small Water Main Improvements Project	Water	City of Fort Lauderdale, FL	Jose Custodio 954-828-5248	6" PVC to 8" HDPE	8" HDPE	9,223lf 8" HDPE HDD 12,512lf 8" HDPE pre-chlorinated pipe bursting 640lf 8" HDPE Aerial crossing 1,220 8" HDPE open cut	July 2019- June 2020
Texas A&M	Water	Texas A&M University	Clyde Oberg 979-845-1042	8" Ductile Iron	12" HDPE DR17	680LF HDPE Pre-Chlorinated Pipe Bursting	July 2020
Hearde Lane 10" Waterline	Water	City of Galveston Texas	Chris New 713-691-0923	10" Cast Iron	8-10" HDPE DR 11	5,450 lf 10" HDPE Watermain Pre-Chlorinated Pipe Bursting 1,100lf 8" HDPE Watermain Pre-Chlorinated Pipe Bursting	May 2020 June 2020
Berkshire Villas Water Main Replacement	Water	Bloomfield Township, Oakland County, Michigan	Christopher Ross 248-330-7344	6-8" Ductile Iron	8" HDPE DR17	3,837lf 8" HDPE DR 17 Pre-Chlorinated Pipe Bursting 426lf HDPE DR17 HDD 106LF 8" HDPE DR17 Open Cut	October 2020- December 2020
Arlington and Sherwood WM Replacement Ph.1	Water	City of Fort Wayne, Indiana	Austyn Smedberg 260-427-2708	6" Cast Iron	6" HDPE	10,200lf HDPE pre-chlorinated pipe bursting	May 2020- January 2021
Bal Harbour Village Phase 2A	Water	Bal Harbour Village, FL	John Oldenburg 305-993-7436	6-8" Cast Iron	8-12" HDPE	515lf 12" HDPE pre-chlorinated pipe bursting pilot project	November 2019
Pre-Chlorinated Pipe Bursting with Restoration. San Sebastian NEP	Water	City of Altamonte Springs, FL	Lone "Trey" Sisk 407-571-8572	6" AC	8-10" HDPE	11,000lf pre-chlorinated pipe bursting with temporary services	January 2020- April 2020

City of Lake Worth WM Project	Water	City of Lake Worth, FL	Steve Cheatham Project Manager 561-307-4915	6" Cast Iron	6" HDPE	4,500lf 6" HDPE pre-chlorinated pipe bursting	August 2019-November 2020
Allied States R19 Pompano Sanders Park	Water	City of Pompano Beach, FL	Nathaniel Watson 954-828-5248	6" PVC	6" HDPE	1,350lf 6" HDPE pre-chlorinated pipe bursting	July 2019
EPWWS Cast Iron Pipe Replacement Project	Water	Eagle Pass Water Works System, Texas	Louis Stock (830)-773-2291	4-12" Cast Iron	8-12" HDPE	8,005 HDD 8" HDPE 1,791 HDD 12" HDPE 51,486lf 8" pre-chlorinated pipe bursting 4,316lf 10" pre-chlorinated pipe bursting 3,450lf 12" pre-chlorinated pipe bursting	August 2019-May 2021
2019 Watermain Replacement WUWS19001	Water	City of Arlington, Texas	Jessie Allen 817-459-6610	6-12" AC & Cast Iron	6-12" HDPE DR11 PE4710	11,781lf 12" Static Pipe bursting of 6" Line. 3,511lf 12" Static Pipe burst of 12" line	Feb 2016-October 2016
NE 6 th Ave and NE 26 th St WM Replacement	Water	City of Wilton Manors, FL	Bert Fisher	6-8" Cast Iron	6-8" HDPE DR11	6,320lf 8" Pre-Chlorinated Pipe Bursting. 775LF 6" Pre-Chlorinated Pipe Bursting	September 2019 – March 2020
Pompano Beach Cypress Creek	Water	City of Pompano Beach, FL	Nathaniel Watson 954-828-5248	6" Cast Iron	6" DIPS DR11	1,400lf Pre-chlorinated Pipe Bursting.	August 2018 – October 2019
2018 Water Main Replacement	Water	City of Arlington, TX	Jessie Allen 817-459-6610	4"-6"-8"-12" AC/Cast Iron	8"-12" HDPE	25,400lf pre-chlorinated pipe bursting with temporary services	October 2016-August 2017

Croissant Park Small Water Main Improvement	Water	City of Fort Lauderdale, FL	Jose Custodio 954-828-5248	4"-6" Cast Iron to 8" HDPE	8" JDPE	8,420lf pre-chlorinated pipe bursting with temporary services 6,350lf HDD HDPE	January 2019 - July 2019
Central Seacrest Corridor Drainage Improvements and WM Replacement	Water	City of Boynton Beach, FL/ Ric-Man International, Inc.	Jimmy Richie 561-248-0727	4"-6" Cast Iron/AC	8" HDPE	22,483lf pre-chlorinated pipe bursting with temporary services 8,372lf HDD	September 2018- September 2019
SSNOCWTA C-200 PVC Pipeline Replacement Project.	Force Main	South Seminole, North Orange County Water Transmission Authority, FL	Stefano Ceriana 407-679-5358	10"-12"-16" PVC	12"-18" HDPE	7,765lf static pipe bursting 4,430lf open cut 5,820lf HDD	Feb 2018- Sept 2019
Sunrise Escape/Valencia Watermain Improvements	Water	City of Sunrise, Florida	Earl Prizlee 954-888-6002	4"-6"-8" AC to 4"-6"-8" HDPE	6"-8" HDPE	31,650 lf pre-chlorinated pipe bursting, with over 725 service connections	Spring 2019- Fall 2019
2015 Water Main Replacement Program	Water	City of Grosse Pointe Farms, MI	Eddie Zmich 248-454-6300	6"-8" Cast Iron	8" HDPE	4,300lf pre-chlorinated pipe bursting using DI fittings	May 2015-July 2015
Golden Shores Water Main Replacement Phase 2 & 3	Water	North Miami Beach, Florida	Karim Rossy 305-948-2980	4" - 6" Cast Iron	6" HDPE	7,800lf pre-chlorinated pipe bursting using DI fittings	March 2016- June 2016
Replacement of 6" Waterline Arlington National Cemetery Phase 4	Water	US Army, Arlington National Cemetery, Virginia	John Gilmore 240-216-7931	6" Cast Iron	6" HDPE	7,000lf static pipe bursting using DI fittings	January 2016- March 2016

Eyerly Avenue Water Main Replacement	Water	Port St. Lucie, Florida	Laney Southerly 772-873-6442	6" - 8" AC	6" - 8" HDPE	7,435lf pre-chlorinated pipe bursting using DI fittings	May 2016-September 2016
Replacement of 39" Water Transmission Main Calder Road	Water	Gulf Coast Water Authority, Texas	James Vanderwater 281-687-7270	39" PCCP	42" 1000mm HDPE DR 17	6,800lf CompressionFit HDPE	January 2018-April 2018
Replacement of 6" Waterline Arlington National Cemetery Phase 5	Water	US Army, Arlington National Cemetery, Virginia	John Gilmore 240-216-7931	6" Cast Iron	6" HDPE	13,540lf static pipe bursting using DI fittings	May 2017-October 2017
Replacement of 6" Waterline Arlington National Cemetery Phase 3	Water	US Army, Arlington National Cemetery, Virginia	John Gilmore 240-216-7931	6" Cast Iron	6" HDPE	9,000lf static pipe bursting using DI fittings	January 2018-May 2020
Replacement of 6" Waterline Arlington National Cemetery Phase 2	Water	US Army, Arlington National Cemetery, Virginia	John Gilmore 240-216-7931	6" Cast Iron	6" HDPE	8,220lf static pipe bursting using DI fittings	June 2017-September 2017
18" Water Transmission Main	Water	Texas A&M University, College Station, Texas	Nathan Jones 979-862-4606	18" Cast Iron	20" HDPE DR 26	2,600lf CompressionFit HDPE using DI fittings	March 2017-April 2017
20" Chilled Water Line Replacement	Water	Texas A&M University, College Station, Texas	Nathan Jones 979-862-4606	20" Steel	22" HDPE DR 26	3,800lf CompressionFit HDPE using electro fusion fittings	March 2018-April 2018

Water System Capital Improvement	Water	City of Livonia, Michigan	Dan Mitchell 248-454-6322	6" - 8" - 12" Cast Iron	8" - 12" HDPE	27,000lf pre-chlorinated pipe bursting and 1,118lf directional drill using DI fittings	June 2018-March 2019
Water System Improvements	Water	City of Big Spring, Texas	Steve Bennett 806-473-2200	2" - 4" - 6" - 8" - 12" Cast Iron	2" - 4" - 6" - 8" - 12" HDPE	17,300lf pre-chlorinated pipe bursting using DI fittings	March 2018-June 2018
Pre-chlorinated Water Pipe Bursting Term Contract	Water	City of Sanford, Florida	Greg McIntyre 407-417-5602	4" - 6" AC	4" - 6" HDPE	16,500lf pre-chlorinated pipe bursting using DI fittings	January 2018-May 2018
Greenlawn Place Blue Tubing and Water Line Replacement	Water	City of Round Rock, Texas	David Freireich 512-671-2756	6" - 8" AC	8" HDPE	17,000lf pre-chlorinated pipe bursting using DI fittings	April 2017-September 2017
Highland Park Water Main Replacement	Water	Ft. Wayne, Indiana	Matthew Wirtz 260-427-2690	6" Cast Iron	6" - 8" HDPE	8,750lf pre-chlorinated pipe bursting using DI fittings	March 2017-June 2017
Casselberry Water Mains	Water	City of Casselberry, Florida	Gerald Chancellor 386-878-8998	2"- 6" Galvanized and AC	2" HDPE, 6" Fusible PVC	1,700lf of 2" 600lf of 6", pre-chlorinated pipe bursting with 54 services	November 2016- Feb 2017
A1A Ponte Vedra	Water	United Water	Gordon Gruhn 904-838-6585	4"- 6" AC	8" HDPE	2,600lf pre-chlorinated pipe burst with electro-fusion fittings	August 2015-September 2015
Everglades National Park	Water	National Park Service	Andrew Lynn 615-377-1337	4"- 6" AC	4" - 6" HDPE	26,000lf pre-chlorinated pipe bursting with electro-fusion fittings	August 2009-April 2010

South Indian River Drive	Water	Ft. Pierce, Florida	David Mellert 772-466-1600 x3423	6" Cast Iron	6" HDPE	12,500lf pre-chlorinated pipe bursting using electro-fusion fittings	October 2014- July 2015



PIPE BURSTING, PRE-CHLORINATION, SLIPLINING, Compression-Fit WORK EXPERIENCE – Last 24 Months

Project Name	Type	Owner	Contact & Phone	Host Pipe & Size	New Pipe & Size	Length Installed	Dates
The Town of Davie Brentwood Improvements	Water	Town of Davie	Robert Walker 954-327-3769	6" AC	8" HDPE	2400lf of HDPE Pre-Chlorinated Pipe Bursting	In Progress
Continuing Construction Services – Pre-Chlorinated Pipe Bursting	Water	City of Altamonte Springs, FL	Lone "Trey" Sisk 407-571-8572	6" AC	6" HDPE	5000lf of HDPE Pre-Chlorinated Pipe Bursting	In Progress
S. Westshore Blvd Water Main Replacement II	Water	City of Tampa	James King 813-781-7023	12" Cast Iron	12" HDPE	18,000 lf of HDPE Pre-Chlorinated Pipe Bursting	In Progress
Salt Lake City Upper Conduit Repair Phase 1	Water	Salt Lake City Department of Public Utilities	T. Dimond Zollinger	42"	42" HDPE	1600 lf of HDPE; Sliplining	In Progress
NE 12 th St, NE 15 th St, NE 24 th Ave, NE 24 th Terr, and NW 27 th Way	Water	City of Pompano Beach	Nathaniel Watson	4-6" Cast Iron	6" HDPE	4300lf of HDPE Pre-Chlorinated Pipe Bursting	January 2022 – March 2022

Wilton Manors Jenada	Water	City of Wilton Manors, FL	Bert Fisher	4" Cast Iron to 6" HDPE	Yes	3500 lf HDPE Pre- Chlorinated pipe burst	July 2021- August 2021
Tamarac 10 Inch Water Main Replacement	Water	City of Tamarac	Chris Lyle	8" Cast Iron to 10" HDPE	Yes	3,500 lf Pre-Chlorinated Pipe Bursting	August 2021- October 2021
Victoria Park A and B, North and South Small Water Main Replacement	Water	City of Fort Lauderdale, FL	Daniel Fisher 954-828-5850	2" Cast Iron to 6" HDPE	Yes	61,000lf 6" Pre-Chlorinated pipe bursting	March 2019 – June 2021
Bal Harbour Village Phase 3A	Sewer	Bal Harbour Village, FL	John Oldenburg 305-993-7436	6-8" Cast Iron	8-10" HDPE	1500lf 6-8" Sewer Main	January 2021 – March 2021
Bal Harbour Village Phase 4	Water	Bal Harbour Village, FL	John Oldenburg 305-993-7436	10" Cast Iron	20" HDPE	5000lf of HDPE pre- chlorinated HDD project	December 2020 – July 2021
Water Main Replacement Project	Water	Harris County Municipal Utility District No. 5, TX	Gerald Gehman 713-201-5534	4"-6"-8"- 12" AC/Cast Iron	4"-6"-8"- 12" HDPE	48,600lf pre-chlorinated pipe bursting with temporary services	February 2021- December 2021
Bermuda Riviera Small Water Main Improvements Project	Water	City of Fort Lauderdale, FL	Jose Custodio 954-828-5248	6" PVC to 8" HDPE	Yes	9,223lf 8" HDPE HDD 12,512lf 8" HDPE pre- chlorinated pipe bursting 640lf 8" HDPE Aerial crossing 1,220 8" HDPE open cut	July 2020- March 2021

Texas A&M	Water	Texas A&M University	Clyde Oberg 979-845-1042	8" Ductile Iron	12" HDPE DR17	680LF HDPE Pre-Chlorinated Pipe Bursting	July 2020
Hearde Lane 10" Waterline	Water	City of Galveston Texas	Chris New 713-691-0923	10" Cast Iron	8-10" HDPE DR 11	5,450 lf 10" HDPE Watermain Pre-Chlorinated Pipe Bursting 1,100lf 8" HDPE Watermain Pre-Chlorinated Pipe Bursting	May 2020 June 2020
Berkshire Villas Water Main Replacement	Water	Bloomfield Township, Oakland County, Michigan	Christopher Ross 248-330-7344	6-8" Ductile Iron	8" HDPE DR17	3,837lf 8" HDPE DR 17 Pre-Chlorinated Pipe Bursting 426lf HDPE DR17 HDD 106LF 8" HDPE DR17 Open Cut	October 2020- December 2020



Corporate Headquarters
OFFICE: 904.764.6887 FAX: 904.379.6193
ADDRESS: 12235 New Berlin Rd Jacksonville, FL 32226
South Florida Office
OFFICE: 954-842-4771
ADDRESS: 5400 S University Dr Unit 101 Davie, FL 33328
murphypipelines.com swagelining.com

**Re: Attachment to bid No. E-15-22; City of Pompano Beach Trenchless
Rehabilitation & Pipe Bursting Technology - FINANCIAL
STATEMENTS - CONFIDENTIAL MATERIALS**

Dear Selection Committee Members:

Enclosed in this package are Murphy Pipeline Contractors financial statement. We respectfully request that the information provided be treated confidentially by the City of Pompano Beach, as Murphy Pipeline Contractor is a privately held company.

Murphy Pipeline Contractor identifies Florida Statutes. 815.045 - Trade Secret Information and s. 119.071.3.(c) as the statutes that authorizes the exemption from the Public Records Law.

- **CONFIDENTIAL** - Contains Trade Secrets - Must Be Kept Confidential pursuant to Florida Statute s. 815.045. Exempt from Public Records Act.
- Financial statements are exempt from Florida Public Records requirements, as noted in Florida Statute Chapter 119: Exemption: 119.071.3.(c) Any financial statement that an agency requires a prospective bidder to submit in order to prequalify for bidding or for responding to a proposal for a road or any other public works project is exempt from s. 119.07(1) and s. 24(a), Art. I of the State Constitution.

We appreciate the City's efforts to maintain the confidentiality of our financial records.

Sincerely,

Ed Steele
General Manager

MURPHY PIPELINE CONTRACTORS, LLC

Financial Statement

As of December 2020

Balance Sheet
As of Period Ending December 2020

	<u>12/31/2020</u>
ASSETS	
Current Assets	
CASH	\$ 3,926,238.49
Contract Receivables	\$ 11,027,797.59
Costs in Excess of Earnings	\$ 2,286,574.00
Other Assets	\$ 130,956.86
Total Current Assets	<u>\$ 17,371,566.94</u>
Intangible Assets	<u>\$ 37,240,016.00</u>
Property and Equipment, Net	<u>\$ 6,026,174.82</u>
TOTAL ASSETS	<u>\$ 60,637,757.76</u>
LIABILITIES & STOCKHOLDER'S EQUITY	
Current Liabilities	
Accounts Payable and accrued Expens	\$ 8,582,101.30
Billings in Excess	\$ -
Total Current Liabilities	<u>\$ 8,582,101.30</u>
NOTES PAYABLE, NON CURRENT	<u>\$ 10,845.79</u>
Total Liabilities	<u>\$ 8,592,947.09</u>
Equity	
30100 · Common Stock	\$ 75.00
30200 · Additional Paid in Capital	\$ 2,375,223.00
31400 · Distributions	\$ (5,725,573.99)
32000 · Retained Earnings	\$ 5,353,358.80
Net Income	<u>\$ 50,041,727.86</u>
Total Equity	<u>\$ 52,044,810.67</u>
TOTAL LIABILITIES & EQUITY	<u>\$ 60,637,757.76</u>

BROWARD COUNTY LOCAL BUSINESS TAX RECEIPT

115 S. Andrews Ave., Rm. A-100, Ft. Lauderdale, FL 33301-1895 – 954-831-4000

VALID OCTOBER 1, 2021 THROUGH SEPTEMBER 30, 2022**DBA:**
Business Name: MURPHY PIPELINE CONTRACTORS LLC**Receipt #:** 189-272548
Business Type: ALL OTHER TYPES CONTRACTOR
(UNDERGROUND UTILITY AND
EXCAVATION CONTRACTOR)**Owner Name:** ANDREW JOHN MAYER/QUALIFER**Business Location:** 5400 S UNIVERSITY DR STE 101/
DAVIE**Business Opened:** 10/13/2015**State/County/Cert/Reg:** CUC1223787**Exemption Code:****Business Phone:** 954-842-4771**Rooms****Seats****Employees**

12

Machines**Professionals**

For Vending Business Only						
Number of Machines:			Vending Type:			
Tax Amount	Transfer Fee	NSF Fee	Penalty	Prior Years	Collection Cost	Total Paid
54.00	5.40	0.00	5.40	0.00	0.00	64.80

THIS RECEIPT MUST BE POSTED CONSPICUOUSLY IN YOUR PLACE OF BUSINESS**THIS BECOMES A TAX RECEIPT****WHEN VALIDATED**

This tax is levied for the privilege of doing business within Broward County and is non-regulatory in nature. You must meet all County and/or Municipality planning and zoning requirements. This Business Tax Receipt must be transferred when the business is sold, business name has changed or you have moved the business location. This receipt does not indicate that the business is legal or that it is in compliance with State or local laws and regulations.

Mailing Address:

MURPHY PIPELINE CONTRACTORS LLC
5400 S UNIVERSITY DR STE
101/102
DAVIE, FL 33328-5300

Receipt # 30A-21-00005954
Paid 04/26/2022 5.40

2021 - 2022



Ron DeSantis, Governor

Halsey Beshears, Secretary



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

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

MAYER, ANDREW JOHN

MURPHY PIPELINE CONTRACTORS, LLC
12235 NEW BERLIN ROAD
JACKSONVILLE FL 32226

LICENSE NUMBER: CUC1223787

EXPIRATION DATE: AUGUST 31, 2022

Always verify licenses online at MyFloridaLicense.com



Do not alter this document in any form.

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



Florida's Warmest Welcome

REQUEST FOR PROPOSALS E-15-22

TRENCHLESS REHABILITATION AND PIPE-BURSTING TECHNOLOGY



Submitted By

Richard Crow

Director of Engineering and Special Projects

Corporate Headquarters

OFFICE: 904.764.6887 FAX: 904.379.6193

ADDRESS: 1876 Everlee Rd Jacksonville FL 32216

South Florida Office

OFFICE: 954-842-4771

ADDRESS: 5400 S. University Dr. Unit 101 Davie, FL 33328

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June 10, 2022

Jeff English
 City of Pompano Beach Purchasing
 1190 NE 3rd Avenue
 Building C
 Pompano Beach, FL 33060

RE: Request for Proposals E-15-22 Trenchless Rehabilitation and Pipe-Bursting Technology

Dear. Mr. English

Murphy Pipeline Contractors, LLC. (MPC) is pleased to submit our response to RFP No. E-15-22 for the Trenchless Rehabilitation and Pipe-Bursting Technology.

The MPC Team has an extensive amount of experience in Pipe Bursting, Slip-lining, Open-cut installation, community coordination, dewatering and MOT that not only exceeds the minimum requirements of this RFP but exceeds the needs of City of Pompano Beach and more importantly its citizens. The MPC Team has the widest array of trenchless utility construction technology experience available to meet the City's needs while still providing the least disruption to the residents and business owners within the project's boundaries.

The MPC Team, has worked on a wide variety of projects including thousands of linear feet of traditional open cut, pipe bursting, slip-lining and horizontal directional drill under the most difficult schedule constraints for multiple municipalities. Furthermore, the MPC Team has recently worked on 08 projects for the City of Pompano Beach. This experience has allowed the MPC Team to be fully aware of the City of Pompano Beach's requirements and expectations. We understand the importance of the City's projects and the various challenges that need to be addressed during construction.

MPC was established in Florida in 2000 as a trenchless utility contractor with the purpose of bringing the trenchless technologies of Europe to the United States. MPC is one of the leading trenchless installation contractors in the country that specializes in static pipe bursting, slip-lining and horizontal directional drilling for water main, sewer main, gravity sewer and force main, ranging from 2" through 63".

Over the last seven years, MPC has received numerous awards including:

- 2021 Trenchless Project of the Year Honorable Mention (City of Fort Lauderdale, Large Diameter HDPE Force Main)
- 2019 Trenchless Project of the Year Honorable Mention (Powell River, BC Canada Slip Lining Project)
- 2018 Trenchless Project of the Year Honorable Mention (Ft. Lauderdale Design Build using Compression Fit HDPE pipe lining and Directional Drill)
- 2017 PE Alliance Leadership Award (JEA, FL Swagelining Project)
- 2015 Trenchless Project of the Year (Arlington National Cemetery Water Pipe Bursting Project)

The MPC Team has the experience and exceptional understanding of the uniqueness of the City of Pompano Beach that will enable a safe and effective execution of these projects. Selecting the MPC Team will provide the City of Pompano Beach with a team that has unparalleled proven experience to successfully deliver these projects to the City and its residents.

We would like to thank you for the opportunity to submit qualifications and once again look forward to working with the City of Pompano Beach. If you have any questions, feel free to contact us at any time.

Respectfully submitted,

A handwritten signature in blue ink, appearing to read "Richard Crow", is positioned above the typed name and title.

Murphy Pipeline Contractor
Richard Crow
Director of Engineering and Special Projects

CC:
Andy Mayer, President of Murphy Pipeline Contractors

COMPLETE THE PROPOSER INFORMATION FORM ON THE ATTACHMENTS TAB IN THE EBID SYSTEM. PROPOSERS ARE TO COMPLETE FORM IN ITS ENTIRITY AND INCLUDE THE FORM IN YOUR PROPOSAL THAT MUST BE UPLOADED TO THE RESPONSE ATTACHMENTS TAB FOR THE RFP IN THE EBID SYSTEM.

PROPOSER INFORMATION PAGE

RFP _____, _____
(number) (RFP name)

To: The City of Pompano Beach, Florida

The below named company hereby agrees to furnish the proposed services under the terms stated subject to all instructions, terms, conditions, specifications, addenda, legal advertisement, and conditions contained in the RFP. I have read the RFP and all attachments, including the specifications, and fully understand what is required. By submitting this proposal, I will accept a contract if approved by the City and such acceptance covers all terms, conditions, and specifications of this proposal.

Proposal submitted by:

Name (printed) _____ Title _____

Company (Legal Registered) _____

Federal Tax Identification Number _____

Address _____

City/State/Zip _____

Telephone No. _____ Fax No. _____

Email Address _____



Corporate Headquarters
OFFICE: 904.764.6887 FAX: 904.379.6193
ADDRESS: 12235 New Berlin Road, Jacksonville FL 32226
Feasibility Support Office
OFFICE: 414.321.2247 FAX: 414.321.2297
ADDRESS: 1973 S 91st Street Milwaukee WI 53227
murphypipelines.com

Murphy Pipeline Contractors, LLC. Total Recordable Incident Rate.

The formula for TRIR is:

**The number of incidents, multiplied by 200,000,
then divided by the total number of hours worked in a year.**

The number 170,000 is used because it is the total number of hours 85 employees would work in a year (100 workers x 40 hours x 50 weeks).

MPC TRIR for the following years:

2015: 0 Incidences x 200,000 / 73,247.65 Hours = **0** TRIR for 2015.

2016: 0 Incidences x 200,000 / 74,048 Hours = **0** TRIR for 2016.

2017: 0 Incidences x 200,000 / 92,257.95 Hours = **0** TRIR for 2017.

2018: 0 Incidences x 200,000 / 117,405.50 = **0** TRIR for 2018.

2019: 0 Incidences x 200,000 / 190,000.00 Hours = **0** TRIR for 2019.

2020: 0 Incidences x 200,000 / 170,000.00 Hours = **0** TRIR for 2020.

Any questions please do not hesitate to ask/Contact me.

A handwritten signature in blue ink, appearing to read 'Taylor Morris'.

Taylor Morris.
Project Manager

OSHA's Form 300A (Rev. 01/2004)

Summary of Work-Related Injuries and Illnesses

Year 20 13
U.S. Department of Labor
Occupational Safety and Health Administration
 Form approved OMB no. 1218-0076

All establishments covered by Part 1904 must complete this Summary page, even if no work-related injuries or illnesses occurred during the year. Remember to review the Log to verify that the entries are complete and accurate before completing this summary.

Using the Log, count the individual entries you made for each category. Then write the totals below, making sure you've added the entries from every page of the Log. If you had no cases, write "0".

Employees, former employees, and their representatives have the right to review the OSHA Form 300 in its entirety. They also have limited access to the OSHA Form 301 or its equivalent. See 29 CFR Part 1904.35, in OSHA's recordkeeping rule, for further details on the access provisions for these forms.

Number of Cases

Total number of deaths	Total number of cases with days away from work	Total number of cases with job transfer or restriction	Total number of other recordable cases
<u>0</u> (G)	<u>0</u> (H)	<u>0</u> (I)	<u>0</u> (J)

Number of Days

Total number of days away from work	Total number of days of job transfer or restriction
<u>0</u> (K)	<u>0</u> (L)

Injury and Illness Types

Total number of . . .	(1) Injuries	(4) Poisonings
(M)	<u>0</u>	<u>0</u>
(2) Skin disorders	<u>0</u>	(5) Hearing loss
(3) Respiratory conditions	<u>0</u>	<u>0</u>
		(6) All other illnesses
		<u>0</u>

Post this Summary page from February 1 to April 30 of the year following the year covered by the form.

Public reporting burden for this collection of information is estimated to average 58 minutes per response, including time to review the instructions, search and gather the data needed, and complete and review the collection of information. Persons are not required to respond to the collection of information unless it displays a currently valid OMB control number. If you have any comments about these estimates or any other aspects of this data collection, contact: US Department of Labor, OSHA Office of Statistical Analysis, Room N-3644, 200 Constitution Avenue, NW, Washington, DC 20210. Do not send the completed forms to this office.

Establishment information

Your establishment name Murphy Pipeline Contractors, Inc.
 Street 1876 Everlee Rd.
 City Jacksonville State FL ZIP 32216
 Industry description (e.g., Manufacture of motor truck trailers) Highway and other heavy highway contractor
 Standard Industrial Classification (SIC), if known (e.g., 3745) 1623

OR

North American Industrial Classification (NAICS), if known (e.g., 336212) 237110

Employment information (If you don't have these figures, see the Worksheet on the back of this page to estimate.)

Annual average number of employees 55
 Total hours worked by all employees last year 78,536.4

Sign here

Knowingly falsifying this document may result in a fine.

I certify that I have examined this document and that to the best of my knowledge the entries are true, accurate, and complete.

Company executive 904 764 6887 Title President
 Phone 329 15 Date

OSHA's Form 300 (Rev. 01/2004)

Log of Work-Related Injuries and Illnesses

Attention: This form contains information relating to employee health and must be used in a manner that protects the confidentiality of employees to the extent possible while the information is being used for occupational safety and health purposes.

You must record information about every work-related death and about every work-related injury or illness that involves loss of consciousness, restricted work activity or job transfer, days away from work, or medical treatment beyond first aid. You must also record significant work-related injuries and illnesses that are diagnosed by a physician or licensed health care professional. You must also record work-related injuries and illnesses that meet any of the specific recording criteria listed in 29 CFR Part 1904.12. Feel free to use two lines for a single case if you need to. You must complete an Injury and Illness Incident Report (OSHA Form 301) or equivalent form for each injury or illness recorded on this form. If you're not sure whether a case is recordable, call your local OSHA office for help.



Year 20 15

U.S. Department of Labor
Occupational Safety and Health Administration

Form approved OMB no. 1218-0176

Establishment name Murphy before Corridor
City Bucksville State Florida

Identify the person		Describe the case		Classify the case				Enter the number of days the injured or ill worker was:		Check the "injury" column or choose one type of illness:						
(A) Case no.	(B) Employee's name	(C) Job title (e.g., Welder)	(D) Date of injury or onset of illness	(E) Where the event occurred (e.g., Loading dock north end)	(F) Describe injury or illness, parts of body affected, and object/substance that directly injured or made person ill (e.g., Second degree burns on right forearm from acetylene torch)	Remained at Work		Away from work	On job transfer or restriction	(M) Injury						
						Days away from work (H)	Job transfer or restriction (I)	Other recordable cases (J)	(K)	(L)	(1)	(2)	(3)	(4)	(5)	(6)
<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>/</u> month/day	<u>N/A</u>	<u>N/A</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>days</u>	<u>days</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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OSHA's Form 300A (Rev. 01/2004)

Summary of Work-Related Injuries and Illnesses

All establishments covered by Part 1904 must complete this Summary page, even if no injuries or illnesses occurred during the year. Remember to review the Log to verify that the entries are complete.

Using the Log, count the individual entries you made for each category. Then write the totals below, making sure you've added the entries from every page of the log. If you had no cases write "0."

Employees former employees, and their representatives have the right to review the OSHA Form 300 in its entirety. They also have limited access to the OSHA Form 301 or its equivalent. See 29 CFR 1904.35. In OSHA's Recordkeeping rule, for further details on the access provisions for these forms.

Number of Cases

Total number of deaths	Total number of cases with days away from work	Total number of cases with job transfer or restriction	Total number of other recordable cases
0	0	0	0
(G)	(H)	(I)	(J)

Number of Days

Total number of days away from work	Total number of days of job transfer or restriction
0	0
(K)	(L)

Injury and Illness Types

Total number of...	(1) Injury	(2) Skin Disorder	(3) Respiratory Condition	(4) Poisoning	(5) Hearing Loss	(6) All Other Illnesses
(M)	0	0	0	0	0	0

Post this Summary page from February 1 to April 30 of the year following the year covered by the form

Public reporting burden for this collection of information is estimated to average 58 minutes per response, including time to review the instruction, search and gather the data needed, and complete and review the collection of information. Persons are not required to respond to the collection of information unless it displays a currently valid OMB control number. If you have any comments about this data collection, contact: US Department of Labor, OSHA Office of Statistics, Room N-3844, 200 Constitution Ave. NW, Washington, DC 20210. Do not send the completed forms to this office.

Year 2016

U.S. Department of Labor
Occupational Safety and Health Administration

Form approved OMB no. 1218-0178

Establishment information

Your establishment name Murphy Pipeline Contractors, Inc.

Street 1878 Everlee Road

City Jacksonville FL State Florida Zip 32216

Industry description (e.g., Manufacture of motor truck trailers)
Underground Utility Construction

Standard Industrial Classification (SIC), if known (e.g., SIC 3715)

OR North American Industrial Classification (NAICS), if known (e.g., 336212)

Employment information

Annual average number of employees 59
Total hours worked by all employees last year 83938.5

Sign here

Knowingly falsifying this document may result in a fine.

I certify that I have examined this document and that to the best of my knowledge the entries are true, accurate, and complete.

Secretary
Title

904 764-6887
Phone
2/25/2017
Date

Summary of Work-Related Injuries and Illnesses

All establishments covered by Part 1904 must complete this Summary page, even if no work-related injuries or illnesses occurred during the year. Remember to review the Log to verify that the entries are complete and accurate before completing this summary.

Using the Log, count the individual entries you made for each category. Then write the totals below, making sure you've added the entries from every page of the Log. If you had no cases, write "0."

Employees, former employees, and their representatives have the right to review the OSHA Form 300 in its entirety. They also have limited access to the OSHA Form 301 or its equivalent. See 29 CFR Part 1904.35, in OSHA's recordkeeping rule, for further details on the access provisions for these forms.

Number of Cases

Total number of deaths	Total number of cases with days away from work	Total number of cases with job transfer or restriction	Total number of other recordable cases
0	0	0	0
(G)	(H)	(I)	(J)

Number of Days

Total number of days away from work	Total number of days of job transfer or restriction
0	0
(K)	(L)

Injury and Illness Types

Total number of ...	(1) Injuries	(2) Skin disorders	(3) Respiratory conditions	(4) Poisonings	(5) Hearing loss	(6) All other illnesses
(M)	0	0	0	0	0	0

Post this Summary page from February 1 to April 30 of the year following the year covered by the form.

Public reporting burden for this collection of information is estimated to average 58 minutes per response, including time to review the instructions, search and gather the data needed, and complete and review the collection of information. Persons are not required to respond to the collection of information unless it displays a currently valid OMB control number. If you have any comments about these estimates or any other aspects of this data collection, contact: US Department of Labor, OSHA, Office of Statistical Analysis, Room N-3644, 200 Constitution Avenue, NW, Washington, DC 20210. Do not send the completed forms to this office.

Establishment information

Your establishment name Shopy Pipeline Contractors, Inc.
Street 1876 Eureka Rd
City Sebastian State FL ZIP 32926

Industry description (e.g., Manufacture of motor truck trailers)

Underground utility construction

Standard Industrial Classification (SIC), if known (e.g., 3715)

1623

OR

North American Industrial Classification (NAICS), if known (e.g., 336212)

237110

Employment information (If you don't have these figures, see the Worksheet on the back of this page to estimate.)

Annual average number of employees

65

Total hours worked by all employees last year

92,474.06

Sign here

Knowingly falsifying this document may result in a fine.

I certify that I have examined this document and that to the best of my knowledge the entries are true/accurate, and complete.

Company executive [Signature] Title Secretary
Phone (804) 784-6557 Date 5-15-18

Summary of Work-Related Injuries and Illnesses

All establishments covered by Part 1904 must complete this Summary page, even if no work-related injuries or illnesses occurred during the year. Remember to review the Log to verify that the entries are complete and accurate before completing this summary.

Using the Log, count the individual entries you made for each category. Then write the totals below, making sure you've added the entries from every page of the Log. If you had no cases, write "0."

Employees, former employees, and their representatives have the right to review the OSHA Form 300 in its entirety. They also have limited access to the OSHA Form 301 or its equivalent. See 29 CFR Part 1904.35, in OSHA's recordkeeping rule, for further details on the access provisions for these forms.

Number of Cases

Total number of deaths	Total number of cases with days away from work	Total number of cases with job transfer or restriction	Total number of other recordable cases
0	0	0	0
(G)	(H)	(I)	(J)

Number of Days

Total number of days away from work	Total number of days of job transfer or restriction
0	0
(K)	(L)

Injury and Illness Types

Total number of ...	(1) Injuries	(2) Skin disorders	(3) Respiratory conditions	(4) Poisonings	(5) Hearing loss	(6) All other illnesses
(M)	0	0	0	0	0	0

Post this Summary page from February 1 to April 30 of the year following the year covered by the form.

Public reporting burden for this collection of information is estimated to average 58 minutes per response, including time to review the instructions, search and gather the data needed, and complete and review the collection of information. Persons are not required to respond to the collection of information unless it displays a currently valid OMB control number. If you have any comments about these estimates or any other aspect of this data collection, contact: US Department of Labor, OSHA Office of Statistical Analysis, Room N-3644, 200 Constitution Avenue, NW, Washington, DC 20210. Do not send the completed forms to this office.

Establishment information

Your establishment name Murphy Kiefer Contractors, Inc.
Street 1876 Eichele Rd
City Jacksonville State FL ZIP 32216
Industry description (e.g., Manufacture of motor truck trailers)
Underground Utility Contractors
Standard Industrial Classification (SIC), if known (e.g., 3715) 1623
OR
North American Industrial Classification (NAICS), if known (e.g., 336212) 237110

Employment information (If you don't have these figures, see the Worksheet on the back of this page to estimate.)

Annual average number of employees 65
Total hours worked by all employees last year 92474.06

Sign here

Knowingly falsifying this document may result in a fine.

I certify that I have examined this document and that to the best of my knowledge the entries are true, accurate, and complete.

Murphy Kiefer Title Secretary
Company Signature Date 5/15/19
Phone (904) 764-6587

Log of Work-Related Injuries and Illnesses

You must record information about every work-related death and about every work-related injury or illness that involves loss of consciousness, restricted work activity or job transfer, days away from work, or medical treatment beyond first aid. You must also record significant work-related injuries and illnesses that are diagnosed by a physician or licensed health care professional. You must also record work-related injuries and illnesses that meet any of the specific recording criteria listed in 29 CFR Part 1904.8 through 1904.12. Feel free to use two lines for a single case if you need to. You must complete an Injury and Illness Incident Report (OSHA Form 301) or equivalent form for each injury or illness recorded on this form. If you're not sure whether a case is recordable, call your local OSHA office for help.

Identify the person

(A) Case no. (B) Employee's name

(C) Job title (e.g., Welder)

(D) Date of injury or onset of illness

(E) Where the event occurred (e.g., Loading dock north end)

(F) Describe injury or illness, parts of body affected, and object/substance that directly injured or made person ill (e.g., Second degree burns on right forearm from acetylene torch)

Describe the case

Classify the case

CHECK ONLY ONE box for each case based on the most serious outcome for that case:

Days away from work (H) ☐ Job transfer or restriction (I) ☐ Other recordable cases (J) ☐

Away from work (K) ☐ On job transfer or restriction (L) ☐

Enter the number of days the injured or ill worker was:

Check the "injury" column choose one type of illness:

(M)	Injury	(1)	(2)	(3)	(4)	(5)
	Skin disorder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Respiratory condition	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Poisoning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Hearing loss	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Page totals

Be sure to transfer these totals to the Summary page (Form 300A) before you post it.

Injury	(1)	(2)	(3)	(4)	(5)
Skin disorder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Respiratory condition	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Poisoning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hearing loss	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Page ____ of ____

Public reporting burden for this collection of information is estimated to average 14 minutes per response, including time to review the instructions, search and gather the data needed, and complete and review the collection of information. Persons are not required to respond to the collection of information unless it displays a currently valid OMB control number. If you have any comments about these estimates or any other aspects of this data collection, contact: US Department of Labor, OSHA Office of Statistical Analysis, Room N-3644, 200 Constitution Avenue, NW, Washington, DC 20210. Do not send the completed forms to this office.

Attention: This form contains information relating to employee health and must be used in a manner that protects the confidentiality of employees to the extent possible while the information is being used for occupational safety and health purposes.



Year 20 18

U.S. Department of Labor
Occupational Safety and Health Administration

Form approved OMB no. 1218-0

Establishment name Chapin-Robbe Construction

City Belleville State Florida

OSHA's Form 300A (Rev. 01/2004)

Summary of Work-Related Injuries and Illnesses

Year 20 11

U.S. Department of Labor
Occupational Safety and Health Administration

Form approved OMB no. 1218-0176

All establishments covered by Part 1904 must complete this Summary page, even if no work-related injuries or illnesses occurred during the year. Remember to review the Log to verify that the entries are complete and accurate before completing this summary.

Using the Log, count the individual entries you made for each category. Then write the totals below, making sure you've added the entries from every page of the Log. If you had no cases, write "0."

Employees, former employees, and their representatives have the right to review the OSHA Form 300 in its entirety. They also have limited access to the OSHA Form 301 or its equivalent. See 29 CFR Part 1904.35, in OSHA's recordkeeping rule, for further details on the access provisions for these forms.

Number of Cases

Total number of deaths	Total number of cases with days away from work	Total number of cases with job transfer or restriction	Total number of other recordable cases
<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
(G)	(H)	(I)	(J)

Number of Days

Total number of days away from work	Total number of days of job transfer or restriction
<u>0</u>	<u>0</u>
(K)	(L)

Injury and Illness Types

Total number of . . . (M)		
(1) Injuries	<u>0</u>	(4) Poisonings <u>0</u>
(2) Skin disorders	<u>0</u>	(5) Hearing loss <u>0</u>
(3) Respiratory conditions	<u>0</u>	(6) All other illnesses <u>0</u>

Post this Summary page from February 1 to April 30 of the year following the year covered by the form.

Public reporting burden for this collection of information is estimated to average 58 minutes per response, including time to review the instructions, search and gather the data needed, and complete and review the collection of information. Persons are not required to respond to the collection of information unless it displays a currently valid OMB control number. If you have any comments about these estimates or any other aspects of this data collection, contact: US Department of Labor, OSHA Office of Statistical Analysis, Room N-3644, 200 Constitution Avenue, NW, Washington, DC 20210. Do not send the completed forms to this office.

Establishment information

Your establishment name Murphy Pipeline Contractors, Inc.

Street 12235 New Berlin Rd

City Sacksonville State FL ZIP 32226

Industry description (e.g., Manufacture of motor truck trailers)
Underground Utility Contractors

Standard Industrial Classification (SIC), if known (e.g., 3715)
1623

OR

North American Industrial Classification (NAICS), if known (e.g., 336212)
237110

Employment information (If you don't have these figures, see the Worksheet on the back of this page to estimate.)

Annual average number of employees 105

Total hours worked by all employees last year 218,400

Sign here

Knowingly falsifying this document may result in a fine.

I certify that I have examined this document and that to the best of my knowledge the entries are true, accurate, and complete.

<u>[Signature]</u>	<u>Secretary</u>
Company Representative	Title
<u>904 764 6867</u>	<u>2/18/20</u>
Phone	Date

(1)	(2)	(3)	(4)	(5)	(6)
Injury	Skin disorder	Respiratory condition	Poisoning	Hearing loss	All other illnesses

OSHA's Form 300A (Rev. 01/2004)

At establishments covered by Part 1904 must complete this Summary page, even if no injuries or illnesses occurred during the year. Remember to review the Log to verify that the entries are complete. Using the Log, count the individual entries you made for each category. Then write the totals below, making sure you've added the entries from every page of the log. If you had no cases write "0."

Employees former employees, and their representatives have the right to review the OSHA Form 300 in its entirety. They also have limited access to the OSHA Form 301 or its equivalent. See 29 CFR 1904.35, in OSHA's Recordkeeping rule, for further details on the access provisions for these forms.

Number of Cases

Total number of deaths	Total number of cases with days away from work	Total number of cases with job transfer or restriction	Total number of other recordable cases
0	0	0	0
(G)	(H)	(I)	(J)

Number of Days

Total number of days away from work	0	(K)
Total number of days of job transfer or restriction	0	(L)

Injury and Illness Types

Total number of....	
(M)	
(1) Injury	0
(2) Skin Disorder	0
(3) Respiratory Condition	0
(4) Poisoning	0
(5) Hearing Loss	0
(6) All Other Illnesses	0

Post this Summary page from February 1 to April 30 of the year following the year covered by the form

Public reporting burden for this collection of information is estimated to average 58 minutes per response, including time to review the instruction, search existing data sources, gather the data needed, and complete and review the collection of information. Persons are not required to respond to the collection of information unless it displays a currently valid OMB control number. If you have any comments about these estimates or any aspects of this data collection, contact: US Department of Labor, OSHA Office of Statistics, Room H-3644, 200 Constitution Ave., NW, Washington, DC 20210. Do not send the completed forms to this office.

Establishment information

Your establishment name Murphy Pipeline Contractors LLC.

Street 12235 New Berlin Rd

City Jacksonville State _____ Florida _____ Zip 32226

Industry description (e.g., Manufacture of motor truck trailers)

Underground Utility Contractor

Standard Industrial Classification (SIC), if known (e.g., SIC 3715)

1 6 2 3

OR North American Industrial Classification (NAICS), if known (e.g., 336212)

Employment information

Annual average number of employees	85
Total hours worked by all employees last year	176,800

Sign here

Knowingly falsifying this document may result in a fine.

I certify that I have examined this document and that to the best of my knowledge the entries are true, accurate, and complete.

complete.


Company executive

Project Manager Title

904-764-6887
Phone _____
10/5/2021
Date _____

RFP E-15-22				
Trenchless Technology Rehabilitation and Pipe-Bursting Technology				
Vendor:				
		QTY	Unit	Unit Price
The following items apply as applicable to sections B thru O and as needed in section A items 1-7:				
1	Mobilization	1	Day	\$216.20
	Pre-Construction Video	1	LF	\$4.32
	a) Survey/As-builts	1	LF	\$1.78
2	Erosion Control	1	LF	\$5.41
3	MOT			
	a) Signage	1	Day	\$270.25
	b) Flagmen	1	HR	\$48.65
4	Excavation/Backfill			
	a) 0-4 feet deep	1	Cu ft	\$2.16
	b) 4-6 feet deep	1	Cu ft	\$3.24
	c) 6-10 feet deep	1	Cu ft	\$4.32
	d) Dewatering to include wellpoint system or drawdown pump per pit	1	Day	\$167.56
5	Trench Shoring			
	a) 4-6 feet deep	1	F Trench	\$27.03
	b) 6-10 feet deep	1	LF Trench	\$37.84
6	Surface Restoration			
	a) Sod	1	SF	\$2.16
	b) 4-inch concrete	1	SF	\$9.19
	c) 6-inch concrete	1	SF	\$11.35
	d) 2-inch asphalt	1	SF	\$5.41
	e) 3-inch asphalt	1	SF	\$7.57
	f) Curb	1	LF	\$37.84
7	Material extras			
	a) Lime Rock	1	SY	\$54.05
	b) 57/Washed Stone	1	SY	\$54.05
	c) Imported Sand	1	SY	\$43.24
	d) Gravel	1	SY	\$48.65
	e) Geo Grid	1	SY	\$8.38
B) Pipe Bursting with HDPE for Gravity Sewer Lines				
	HDPE DR 17			
8	6-inch diameter	1	LF	\$37.84
9	8-inch diameter	1	LF	\$43.24
10	10-inch diameter	1	LF	\$48.65
11	12-inch diameter	1	LF	\$54.05
12	14-inch diameter	1	LF	\$77.83
13	16-inch diameter	1	LF	\$99.45
14	18-inch diameter	1	LF	\$123.23
15	20-inch diameter	1	LF	\$148.10
	Manhole Connections			
16	6-inch	1	EA	\$162.15
		QTY	Unit	Unit Price
17	8-inch	1	EA	\$216.20
18	10-inch	1	EA	\$270.25
19	12-inch	1	EA	\$324.30
20	14-inch	1	EA	\$378.35
21	16-inch	1	EA	\$432.40
22	18-inch	1	EA	\$486.45
23	20-inch	1	EA	\$540.50
	Sewer Later Connections			
24	4-inch connection			
	a) 0-4 feet deep	1	EA	\$1026.95
	b) 4-6 feet deep	1	EA	\$1,621.50
	c) 6-10 feet deep	1	EA	\$2,702.50
25	6-inch connection			
	a) 0-4 feet deep	1	EA	\$1,297.20
	b) 4-6 feet deep	1	EA	\$2,053.90
	c) 6-10 feet deep	1	EA	\$3,134.90
	Clean-out Installation			
26	4-inch	1	EA	\$405.38
27	6-inch	1	EA	\$513.48
	Sewer Lateral Pipe Bursting			
28	4-inch	1	LF	\$33.51
29	6-inch	1	LF	\$37.84
C) Pipe Bursting with Pre-Chlorination for Water Main Replacement Procedure				

	HDPE DR 11			
30	3-inch diameter	1	LF	\$29.19
31	4-inch diameter	1	LF	\$33.51
32	6-inch diameter	1	LF	\$43.24
33	8-inch diameter	1	LF	\$48.65
34	10-inch diameter	1	LF	\$54.05
35	12-inch diameter	1	LF	\$59.46
36	14-inch diameter	1	LF	\$101.61
37	16-inch diameter	1	LF	\$129.72
38	18-inch diameter	1	LF	\$145.94
39	20-inch diameter	1	LF	\$183.77
40	24-inch diameter	1	LF	\$237.82
	Note: Installation with HDPE, Fusible PVC/Ductile Iron available at market price			
	Fittings			
	a) Bends and sleeves, DI			
41	6-inch	1	EA	\$405.38
42	8-inch	1	EA	\$459.43
43	10-inch	1	EA	\$540.50
44	12-inch	1	EA	\$864.80
45	14-inch	1	EA	\$1,297.20
46	16-inch	1	EA	\$1,594.48
47	18-inch	1	EA	\$1,891.75
48	20-inch	1	EA	\$247.25
49	24-inch	1	EA	\$3,243.00
	b) Tees, DI			
50	6x6x4	1	EA	\$459.43
51	6x6x6	1	EA	\$513.48
52	8x8x4	1	EA	\$621.58
53	8x8x6	1	EA	\$648.60
54	8x8x8	1	EA	\$756.70
55	10x10x4	1	EA	\$675.63
56	10x10x6	1	EA	\$810.75
57	10x10x8	1	EA	\$891.83
58	10x10x10	1	EA	\$972.90
59	12x12x6	1	EA	\$1,189.10
60	12x12x8	1	EA	\$1,243.15
61	12x12x10	1	EA	\$1,297.20
66	12x12x12	1	EA	\$1,378.28
67	14x14x14	1	EA	\$1,729.60
68	16x4 tee	1	EA	\$2,972.75
69	16x6x6cross	1	EA	\$4,053.75
70	16x6 tee	1	EA	\$3,188.95
71	16x6 tee blowoff	1	EA	\$3,783.50
72	16x8x8 cross	1	EA	\$4,269.95
73	16x20 reducer	1	EA	\$1,351.25
74	18x18x18	1	EA	\$2,378.20
75	20 tee	1	EA	\$4,594.25
76	20 cross	1	EA	\$5,405.00
77	24 tee	1	EA	\$5,675.25
78	24 cross	1	EA	\$6,486.00
	a) Fittings available per Pound	1	LB	\$5.03
	Gate Valves			
79	4-inch	1	EA	\$748.00
80	6-inch	1	EA	\$1490.00
81	8-inch	1	EA	\$2,100.00
		QTY	Unit	Unit Price
82	10-inch	1	EA	\$2,450.00
83	12-inch	1	EA	\$3,175.00
84	14-inch	1	EA	\$5,945.50
85	16-inch	1	EA	\$7,250.00
86	18-inch	1	EA	\$11,000.00
87	20-inch	1	EA	\$15,750.00
88	24-inch	1	EA	\$22,750.00
89	Remove valve only	1	EA	\$270.25
90	Install new valve vault	1	EA	\$6,486.00
91	Fire Hydrants	1	EA	\$4,750.00
	Connection at Services			
	a) Up to 1" service, short side up to 5-feet			
92	4-inch main	1	EA	\$432.40
93	6-inch main	1	EA	\$486.45
94	8-inch main	1	EA	\$513.48
95	10-inch main	1	EA	\$540.50
96	12-inch main	1	EA	\$594.55
97	16-inch main	1	EA	\$756.70

98	18-inch main	1	EA	\$918.85
99	20-inch main	1	EA	\$1,189.10
100	24-inch main	1	EA	\$1,513.40
	b) Up to 2" service, short side up to 5-feet			
101	4-inch main	1	EA	\$648.60
102	6-inch main	1	EA	\$702.65
103	8-inch main	1	EA	\$729.68
104	10-inch main	1	EA	\$756.70
105	12-inch main	1	EA	\$810.75
106	16-inch main	1	EA	\$972.90
107	18-inch main	1	EA	\$1,189.10
108	20-inch main	1	EA	\$1,459.35
109	24-inch main	1	EA	\$1,675.55
	c) Up to 1" service, long side up to 25-feet			
110	4-inch main	1	EA	\$837.78
111	6-inch main	1	EA	\$918.85
112	8-inch main	1	EA	\$945.88
113	10-inch main	1	EA	\$972.90
114	12-inch main	1	EA	\$1026.95
115	16-inch main	1	EA	\$1,189.10
116	18-inch main	1	EA	\$1,351.25
117	20-inch main	1	EA	\$1,783.65
118	24-inch main	1	EA	\$1,945.80
	d) Up to 2" service, long side up to 25-feet			
119	4-inch main	1	EA	\$1,081.00
112	6-inch main	1	EA	\$1,135.05
113	8-inch main	1	EA	\$1,162.08
114	10-inch main	1	EA	\$1,189.10
115	12-inch main	1	EA	\$1,243.15
116	16-inch main	1	EA	\$1,567.45
117	18-inch main	1	EA	\$1,783.65
118	20-inch main	1	EA	\$2,107.95
119	24-inch main	1	EA	\$2,378.20
	e) Additional service length			
120	Over 30-feet x 1"	1	LF	\$12.97
121	Over 30-feet x 2"	1	LF	\$16.22
	Note: Service pipe HDPE, Copper available at market price			
	Line Stops			
122	4-inch	1	EA	\$3,783.50
123	6-inch	1	EA	\$4,864.50
124	8-inch	1	EA	\$5,405.00
125	10-inch	1	EA	\$5,405.00
126	12-inch	1	EA	\$7,567.00
127	16-inch	1	EA	\$16,215.00
128	18-inch	1	EA	\$19,458.00
129	20-inch	1	EA	\$20,539.00
120	24-inch	1	EA	\$22,701.00
	Bypass for water main pipe bursting or CIPP lining			
121	2-inch temporary	1	LF	\$24.86
122	4-inch temporary	1	LF	\$28.11
123	6-inch temporary	1	LF	\$33.51
	Temporary service connections for water main bypass			
124	2-inch short side	1	EA	\$297.28
125	2-inch long side	1	EA	\$405.38
126	4-inch short side	1	EA	\$324.30
127	4-inch long side	1	EA	\$432.40
128	6-inch short side	1	EA	\$351.33
129	6-inch long side	1	EA	\$459.43
	D) Polyethylene (PE) Sewer Pipe Sliplining			
	PE Pipe DR 22.5			
130	4-inch	1	LF	\$27.03
131	6-inch	1	LF	\$32.43
132	8-inch	1	LF	\$37.84
133	10-inch	1	LF	\$43.24
134	12-inch	1	LF	\$48.65
135	Annular Space - Grouting	1	CY	\$324.30
		QTY	Unit	Unit Price
	E) Procedures for Rehabilitation of Existing Pipelines			
	Pipe String Fusion			
136	4-inch	1	LF	\$32.43
137	6-inch	1	LF	\$37.84
138	8-inch	1	LF	\$43.24
139	10-inch	1	LF	\$48.65
140	12-inch	1	LF	\$54.05

	Pressure Testing			
141	4-12 inch	1	LF	\$2.16
142	Charge Water	1	K-Gals	\$1.08
	Chlorination			
143	4-inch	1	LF	\$1.08
144	6-inch	1	LF	\$1.62
145	8-inch	1	LF	\$2.16
146	10-inch	1	LF	\$2.70
147	12-inch	1	LF	\$3.24
148	BT Test	1	EA	\$270.25
	Flushing			
149	4-12 inch	1	LF	\$0.54
150	Charge Water	1	K-Gals	\$0.54
	Dechlorination			
151	4-12 inch	1	K-Gals	\$1.08
		QTY	Unit	Unit Price
F) Trenchless Rehabilitation/Reconstruction of Pipelines and Conduits				
	Compression Fit HDPE Pipe Lining			
	a) Camera			
152	0-10 inch	1	LF	\$1.08
153	10-24 inch	1	LF	\$1.62
154	25-36 inch	1	LF	\$2.16
155	37-48 inch	1	LF	\$2.70
156	Over 48 inch	1	LF	\$3.24
	b) Clean			
157	0-10 inch	1	LF	\$2.70
158	10-24 inch	1	LF	\$3.24
159	25-36 inch	1	LF	\$3.78
160	37-48 inch	1	LF	\$4.32
161	Over 48 inch	1	LF	\$4.86
	c) Pigging	See item G) Pig Cleaning		
	d) Gauging			
162	0-10 inch	1	LF	\$5.41
163	10-24 inch	1	LF	\$8.65
164	25-36 inch	1	LF	\$11.89
165	37-48 inch	1	LF	\$15.13
166	Over 48 inch	1	Per-inch	\$1.08
167	e) Obstruction Removal	1	EA	\$648.60
	f) Pipe Liner Insertion			
	1) PE 4710 DR 41			
168	4-inch	1	LF	\$10.81
169	6-inch	1	LF	\$21.62
170	8-inch	1	LF	\$27.03
171	10-inch	1	LF	\$37.84
172	12-inch	1	LF	\$54.05
173	16-inch	1	LF	\$81.08
174	18-inch	1	LF	\$102.70
175	20-inch	1	LF	\$140.53
176	24-inch	1	LF	\$194.58
177	30-inch	1	LF	\$259.44
178	36-inch	1	LF	\$302.68
179	42-inch	1	LF	\$367.54
180	48-inch	1	LF	\$432.40
181	54-inch	1	LF	\$513.48
	2) PE 4710 DR 32.5			
182	4-inch	1	LF	\$21.62
183	6-inch	1	LF	\$27.03
184	8-inch	1	LF	\$32.43
185	10-inch	1	LF	\$43.24
186	12-inch	1	LF	\$59.46
187	16-inch	1	LF	\$86.48
188	18-inch	1	LF	\$113.51
189	20-inch	1	LF	\$162.15
190	24-inch	1	LF	\$216.20
191	30-inch	1	LF	\$281.06
192	36-inch	1	LF	\$324.30
193	42-inch	1	LF	\$389.16

194	48-inch	1	LF	\$454.02
195	54-inch	1	LF	\$513.48
	3) PE 4710 DR 26			
		QTY	Unit	Unit Price
196	4-inch	1	LF	\$27.03
197	6-inch	1	LF	\$32.43
198	8-inch	1	LF	\$37.84
199	10-inch	1	LF	\$48.65
200	12-inch	1	LF	\$64.86
201	16-inch	1	LF	\$97.29
202	18-inch	1	LF	\$129.72
203	20-inch	1	LF	\$189.18
204	24-inch	1	LF	\$237.82
205	30-inch	1	LF	\$302.68
206	36-inch	1	LF	\$324.30
207	42-inch	1	LF	\$410.78
208	48-inch	1	LF	\$475.64
209	54-inch	1	LF	\$545.91
	4) PE 4710 DR 21			
210	4-inch	1	LF	\$32.43
211	6-inch	1	LF	\$37.84
212	8-inch	1	LF	\$43.24
213	10-inch	1	LF	\$54.05
214	12-inch	1	LF	\$70.27
215	16-inch	1	LF	\$108.10
216	18-inch	1	LF	\$140.53
217	20-inch	1	LF	\$205.39
218	24-inch	1	LF	\$259.44
219	30-inch	1	LF	\$335.11
220	36-inch	1	LF	\$356.73
221	42-inch	1	LF	\$432.40
222	48-inch	1	LF	\$497.26
223	54-inch	1	LF	\$578.34
	5) PE 4710 DR 17			
224	4-inch	1	LF	\$37.84
225	6-inch	1	LF	\$43.24
226	8-inch	1	LF	\$48.65
227	10-inch	1	LF	\$59.46
228	12-inch	1	LF	\$75.67
229	16-inch	1	LF	\$118.91
230	18-inch	1	LF	\$151.34
231	20-inch	1	LF	\$221.61
232	24-inch	1	LF	\$281.06
233	30-inch	1	LF	\$367.54
234	36-inch	1	LF	\$389.16
235	42-inch	1	LF	\$464.83
236	48-inch	1	LF	\$524.29
237	54-inch	1	LF	\$599.96
	G) Pig Cleaning			
	Foam Pig			
238	0-12 inch	1	LF	\$0.54
239	13-24 inch	1	LF	\$1.62
240	25-36 inch	1	LF	\$2.70
241	37-48 inch	1	LF	\$3.78
242	Over 48 inch	1	LF	\$5.41
	Wire Bullet Pig			
243	0-12 inch	1	LF	\$3.24
244	13-24 inch	1	LF	\$4.32
245	25-36 inch	1	LF	\$6.49
245	37-48 inch	1	LF	\$9.73
247	Over 48 inch	1	LF	\$12.97
	Blade Scraper Pig			
248	0-12 inch	1	LF	\$0.54
249	13-24 inch	1	LF	\$1.62
250	25-36 inch	1	LF	\$2.70
251	37-48 inch	1	LF	\$3.78
252	Over 48 inch	1	LF	\$5.41
	H) Time and Material Unit Rates for Change Orders			
	Materials, Subcontractors and Rentals			

253	Markup = 15%			
254	Sales Taxes = Per Jurisdiction			
	Labor			
255	Executive Supervisor	1	HR	\$91.89
	a) Project Management	1	HR	\$81.08
256	Superintendent	1	HR	\$48.65
		QTY	Unit	Unit Price
257	Administrator	1	HR	\$27.03
258	Crew Chief	1	HR	\$43.24
259	Equipment Operator	1	HR	\$37.84
260	Pipelayer - Skilled	1	HR	\$32.43
261	Pipelayer - Helper	1	HR	\$30.27
262	Laborer - Unskilled	1	HR	\$27.03
I) Directional Drilling & Pipe Installation				
263	2-inch	1	LF	\$20.54
264	4-inch	1	LF	\$28.11
265	6-inch	1	LF	\$37.84
266	8-inch	1	LF	\$43.24
267	10-inch	1	LF	\$59.46
268	12-inch	1	LF	\$77.83
269	14-inch	1	LF	\$96.21
270	16-inch	1	LF	\$108.10
280	18-inch	1	LF	\$124.32
281	20-inch	1	LF	\$194.58
282	24-inch	1	LF	\$259.44
J) Gravity Sewer CIPP Lateral Renewal Systems				
283	4 inch lateral up to 25 lf	1	EA	\$1,621.50
284	6 inch lateral up to 25 lf	1	EA	\$1,891.75
285	4 inch tophat installation	1	EA	\$756.70
286	6 inch tophat installation	1	EA	\$972.90
K) Manhole Rehabilitation				
287	4 foot diameter	1	VF	\$270.25
288	6 foot diameter	1	VF	\$281.06
289	Lift station rehabilitation	1	SF	\$19.46
290	Existing coating removal	1	SF	\$5.41
291	Adjust existing manhole cover and ring (grass)	1	EA	\$432.40
292	Adjust existing manhole cover and ring (Asphalt)	1	EA	\$648.60
293	Install new manhole ring and cover (grass)	1	EA	\$756.70
294	Install new manhole ring and cover (Asphalt)	1	EA	\$1,189.10
295	Furnish and install manhole chimney seal	1	EA	\$540.50
296	Re-construct manhole bench and channel flow	1	EA	\$540.50
L) Slip-lining down to DR 11				
297	4-inch	1	EA	\$32.43
298	6-inch	1	EA	\$37.84
299	8-inch	1	EA	\$43.24
300	10-inch	1	EA	\$54.05
301	12-inch	1	EA	\$75.67
302	16-inch	1	EA	\$108.10
303	18-inch	1	EA	\$124.32
304	24-inch	1	EA	\$259.44
305	30-inch	1	EA	\$345.92
306	36-inch	1	EA	\$410.78
307	42-inch	1	EA	\$454.02
308	48-inch	1	EA	\$518.88
309	54-inch	1	EA	\$691.84
310	63-inch	1	EA	\$810.75
M) Large Diameter HDPE				
	Pipe String Fusion			
311	14-inch	1	LF	\$59.46
312	16-inch	1	LF	\$70.27
313	18-inch	1	LF	\$81.08
314	20-inch	1	LF	\$91.89
315	24-inch	1	LF	\$113.51
316	30-inch	1	LF	\$145.94
317	36-inch	1	LF	\$183.77
318	48-inch	1	LF	\$237.82
	Pressure Testing			
319	14-48 inch	1	LF	\$4.32
320	Charge Water	1	K-Gals	\$1.08

N) Pipe Bursting for Force Main Replacement Procedure				
	HDPE DR 11			
321	3-inch diameter	1	LF	\$51.89
322	4-inch diameter	1	LF	\$61.62
323	6-inch diameter	1	LF	\$79.99
324	8-inch diameter	1	LF	\$103.78
325	10-inch diameter	1	LF	\$116.75
326	12-inch diameter	1	LF	\$145.94
327	14-inch diameter	1	LF	\$162.15
328	16-inch diameter	1	LF	\$199.99
329	18-inch diameter	1	LF	\$227.01
330	20-inch diameter	1	LF	\$264.85
331	24-inch diameter	1	LF	\$297.28
332	30-inch diameter	1	LF	\$378.35
333	36-inch diameter	1	LF	\$416.19
334	42-inch diameter	1	LF	\$459.43
335	48-inch diameter	1	LF	\$540.50
336	54-inch diameter	1	LF	\$648.60
	Plug Valves			
337	4-inch	1	EA	\$1,148.02
338	6-inch	1	EA	\$1,837.70
339	8-inch	1	EA	\$2,413.87
340	10-inch	1	EA	\$3,312.18
341	12-inch	1	EA	\$3,829.98
342	16-inch	1	EA	\$5,516.34
343	18-inch	1	EA	\$9,238.23
344	20-inch	1	EA	\$14,471.35
345	24-inch	1	EA	\$19,715.28
346	30-inch	1	EA	\$34,002.86
347	36-inch	1	EA	\$48,703.37
348	42-inch	1	EA	\$59,199.88
349	48-inch	1	EA	\$66,939.84
350	54-inch	1	EA	\$75,468.93
	ARV Vacuum/Air/With structure			
351	2-inch	1	EA	\$4,942.33
352	4-inch	1	EA	\$12,477.98
353	6-inch	1	EA	\$15,806.38
	Blow Off/With box			
354	2-inch	1	EA	\$2,750.06
355	4-inch	1	EA	\$4,971.52
356	6-inch	1	EA	\$8,448.02
357	Tracer Wire	1	LF	\$1.76
O) Modular Pipe Bursting				
358	Manhole set up fee	1	EA	\$26,754.75
359	8-inch	1	LF	\$168.64
360	10-inch	1	LF	\$183.77
361	12-inch	1	LF	\$201.07
362	14-inch	1	LF	\$217.28
363	16-inch	1	LF	\$244.31
364	18-inch	1	LF	\$289.71
P) Extended Warranty				
365	Past 1 year, extended warranty offered at 1.93% of contract value per year			

IN WITNESS WHEREOF, the said Murphy Pipeline Contractors, LLC,
 as Principal herein, has caused these presents to be signed in the name by its Assistant Secretary
General Manager and attested by its General Manager under its corporate seal,
 and the said Everest Reinsurance Company
as Surety herein, has caused these presents to be signed in its name by
Attorney-in-Fact
 under its corporate seal, this 8th day of June A.D. 2022
 (year)

Signed, sealed and delivered in
 the presence of:

Ed Steele
Ed Steele
 As to Principal

Sean T. Lyons
Sean T. Lyons, Witness

Murphy Pipeline Contractors, LLC
 Principal -

By: Andrew Mayer

Everest Reinsurance Company
 Surety
 By: Victoria P. Parkerson
 Victoria P. Parkerson Attorney-in-Fact
 (Power-of-Attorney to be attached)
 By: Jessica L. Piccirillo
 Non- Resident Agent
 Jessica L. Piccirillo

END OF SECTION



**POWER OF ATTORNEY
EVEREST REINSURANCE COMPANY
DELAWARE**

KNOW ALL PERSONS BY THESE PRESENTS: That Everest Reinsurance Company, a corporation of the State of Delaware ("Company") having its principal office located at 477 Martinsville Road, Liberty Corner, New Jersey 07938, do hereby nominate, constitute, and appoint:

***Russell M. Canterbury, Jessica L. Piccirillo, Steven E. Susanin, Woodrow M. Baird, Diane Moraski,
Victoria P. Parkerson, Adam Martin, Kathleen M. Flanagan, Richard A. Leveroni***

its true and lawful Attorney(s)-in-fact to make, execute, attest, seal and deliver for and on its behalf, as surety, and as its act and deed, where required, any and all bonds and undertakings in the nature thereof, for the penal sum of no one of which is in any event to exceed UNLIMITED, reserving for itself the full power of substitution and revocation.

Such bonds and undertakings, when duly executed by the aforesaid Attorney(s)-in-fact shall be binding upon the Company as fully and to the same extent as if such bonds and undertakings were signed by the President and Secretary of the Company and sealed with its corporate seal.

This Power of Attorney is granted and is signed by facsimile under and by the authority of the following Resolutions adopted by the Board of Directors of Company ("Board") on the 28th day of July 2016:


RESOLVED, that the President, any Executive Vice President, and any Senior Vice President and Anthony Romano are hereby appointed by the Board as authorized to make, execute, seal and deliver for and on behalf of the Company, any and all bonds, undertakings, contracts or obligations in surety or co-surety with others and that the Secretary or any Assistant Secretary of the Company be and that each of them hereby is authorized to attest to the execution of any such bonds, undertakings, contracts or obligations in surety or co-surety and attach thereto the corporate seal of the Company.

RESOLVED, FURTHER, that the President, any Executive Vice President, and any Senior Vice President and Anthony Romano are hereby authorized to execute powers of attorney qualifying the attorney named in the given power of attorney to execute, on behalf of the Company, bonds and undertakings in surety or co-surety with others, and that the Secretary or any Assistant Secretary of the Company be, and that each of them is hereby authorized to attest the execution of any such power of attorney, and to attach thereto the corporate seal of the Company.


RESOLVED, FURTHER, that the signature of such officers named in the preceding resolutions and the corporate seal of the Company may be affixed to such powers of attorney or to any certificate relating thereto by facsimile, and any such power of attorney or certificate bearing such facsimile signatures or facsimile seal shall be thereafter valid and binding upon the Company with respect to any bond, undertaking, contract or obligation in surety or co-surety with others to which it is attached.

IN WITNESS WHEREOF, Everest Reinsurance Company has caused their corporate seals to be affixed hereto, and these presents to be signed by their duly authorized officers this 28th day of July 2016.




Attest: Nicole Chase, Assistant Secretary

Everest Reinsurance Company


By: Anthony Romano, Vice President

On this 28th day of July 2016, before me personally came Anthony Romano, known to me, who, being duly sworn, did execute the above instrument; that he knows the seal of said Company; that the seal affixed to the aforesaid instrument is such corporate seal and was affixed thereto; and that he executed said instrument by like order.

LINDA ROBINS
Notary Public, State of New York
No 01R06239736
Qualified in Queens County
Term Expires April 25, 2023



Linda Robins, Notary Public

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the seal of said Company, at the Liberty Corner, this 8th day of June 2022.

Exhibit B
General Conditions

ARTICLE 1. DEFINITIONS.

- 1.01 **The Contract Documents:** The Contract Documents consist of the Agreement Form, Addenda, Supplementary Conditions, General Conditions, Documents contained in the Project Manual, Drawings, Plans, Specifications, and all modifications issued after execution of the Contract and all documents as defined in Article 9., "CONTRACT DOCUMENTS", of the Construction Agreement.
- 1.02 **The Owner, the Contractor, and the Project Consultant:** are those mentioned as such in the Contract Documents.
- 1.02.01 **Owner:** The City of Pompano Beach, Florida, (also referred to as the "City").
- 1.02.02 **Contractor:** The "party of the second part" to the Contract. The person, firm or corporation with whom a contract has been made with the Owner for the performance of the Work defined by the Contract Documents.
- 1.02.03 **Project Consultant:** The individual, partnership, corporation, association, joint venture, or any combination thereof, of properly registered professional architects, engineers or other design professionals who has entered into a contract with the Owner to provide professional services for development of the design and Contract Documents for the Work of this Project and provide Construction Contract Administration as described in the Contract Documents.
- 1.03 **City Engineer:** City Engineer of the City of Pompano Beach, Florida.
- 1.04 **Final Completion:** Means that date subsequent to the date of Substantial Completion at which time the Contractor has completed all of the Work (or designated portion thereof) in accordance with the Contract Documents as certified by the Project Consultant and/or approved by the Owner. In addition, Final Completion shall not be deemed to have occurred until any and all governmental bodies, boards, entities, etc., which regulate or have jurisdiction of the Work, have inspected, approved and certified the Work.
- 1.06 **Inspector:** An employee(s) of The City of Pompano Beach, Florida, referred to hereinafter as the "Inspector," who(m) is/are assigned by the City Engineer to periodically inspect the Project during the construction process, and who assist(s) the City Engineer in reviewing field performance and its compliance with the Contract Documents.
- 1.06.01 **Resident Inspector:** An employee or subconsultant of the **Project Consultant** employed to perform either periodic or full-time specific inspection duties.
- 1.07 **Other Contractors:** Any person, firm or corporation with whom a Contract has been made by the Owner for the performance of any work on the site, which work is not a portion of the Work covered by the Contract.
- 1.08 **Owner's Representative:** The City Official who has been delegated responsibility by the City Manager to act as the City's project coordinator. (In most cases, the City Engineer shall be assigned this duty.)
- 1.09 **Phase:** A designated subdivision of the Work, usually with its own requirements for Substantial and Final Completion, and liquidated damages. A Phase may be designated for completion by the Owner's own forces, or by Other Contractors.
- 1.10 **The Project:** The total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner or by separate contractors.

- 1.11 **Punch List:** A list of items of work required to render complete, satisfactory, and acceptable the construction services provided for in the Contract Documents and created pursuant to Florida Statute 218.735(7)(a).
- 1.12 **Subcontractor:** A person or entity other than a materialman or laborer who enters into a Contract with Contractor for the performance of any part of Contractor's Work. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a separate contractor or subcontractors of a separate contractor.
- 1.13 **Sub-subcontractor:** A person or entity other than a materialman or laborer who enters into a contract with a Subcontractor for the performance of any part of such Subcontractor's contract. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor. The term "Sub-subcontractor" does not include separate subcontractors of a separate contractor.
- 1.14 **Submittals:** Are prepared by the Contractor or those working on his behalf (subcontractors, material suppliers, and others) to show how a particular aspect of the Work is to be fabricated and installed. The Contractor's submittals include shop drawings, product data, samples, mock-ups, test results, warranties, maintenance agreements, workmanship bonds, project photographs, record documents, field measurement data, operating and maintenance manuals, reports, certifications, periodic and final "as-builts", surveys, videos and other types of information described in the specifications.
- 1.15 **Substantial Completion:** The term Substantial Completion as used herein, shall mean that point at which, as certified in writing by the Project Consultant, the Work, or a designated portion thereof, is at a level of completion in substantial compliance with the Contract Documents such that the Owner or its designee can enjoy use or occupancy and can use or operate it in all respects for its intended purpose. In the event the Work includes more than one Phase, the Owner, at its discretion, may set Substantial Completion dates for each Phase and may impose provisions for liquidated damages for each Phase.
- 1.16 **Subconsultant:** A person or organization of properly registered professional architects, engineers or other design professionals who has entered an agreement with the Project Consultant to furnish professional services in support of the Project Consultants agreement with the Owner.
- 1.17 **Superintendent:** The executive representative for the Contractor present on the work at all times during progress, authorized to receive and fulfill instructions from the Owner and the Project Consultant and capable of superintending the work efficiently.
- 1.18 **Work:** The totality of the obligations, including construction and other services, imposed on the Contractor by the Contract Documents, whether completed or partially completed, and including all labor, materials, equipment, and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.
- 1.19 **Written Notice:** Shall be deemed to have been duly served if delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, if delivered at or sent by certified mail or other traceable delivery service to the last business address known to him who gives notice. Trackable electronic transmissions shall also be considered as written notice.

ARTICLE 2. THE WORK.

- 2.01 The Contractor shall perform all of the Work required by the Contract Documents and shall provide materials, supplies, tools, equipment, labor and services directly related to the Work, and shall perform the Work in a good and workmanlike manner with sufficient manpower to perform the Work in accordance with the time requirements set forth in the Contract Documents, and shall perform all other acts and supply all other things necessary to complete the Work in strict accordance with the Contract Documents.

- 2.02 When completed the Work shall conform to the requirements of the Contract Documents and be completely ready for occupancy and finally completed.
- 2.03 The Contractor represents and warrants to the Owner that:
 - 2.03.01 It is financially solvent and has sufficient working capital to perform the obligations under this Construction Contract;
 - 2.03.02 It is experienced and skilled in the construction of the type of project described in the Contract Document;
 - 2.03.03 It is able to provide the labor, materials, equipment and machinery necessary to complete the Work for the agreed upon price;
 - 2.03.04 It is fully licensed under all applicable laws and authorized to do business in the State of Florida in the name of the entity identified as the "Contractor" in the Construction Contract, and is legally permitted to perform all the work set forth in this Construction Contract.
 - 2.03.05 It has visited the jobsite and examined its nature and location, including without limitation: the surface conditions of the site and any structure or obstruction both natural or man-made; the surface water conditions and water ways of the site and surrounding area; the subsurface conditions of the land as disclosed by soil test borings; and the location of electric and utility lines and water, sanitary, sewer and storm drain lines, as well as site ingress and egress. The Contractor acknowledges receipt and has reviewed the site geotechnical report provided for the Owner.
 - 2.03.06 It will comply with all federal, state and local governmental laws, rules and regulations relating to its responsibilities as set forth in the Contract Documents.

ARTICLE 3. COORDINATION AND CORRELATION OF DRAWINGS AND SPECIFICATIONS.

- 3.01 The Contractor represents that:
 - 3.01.01 The Contractor and Subcontractors have fully examined and compared all Drawings, Specifications and other Contract Documents including but not limited to those relating to the architectural, structural, mechanical, electrical, civil engineering and plumbing elements and have compared and reviewed all general and specific details on the Drawings and the various technical and administrative requirements of the Specifications.
 - 3.01.02 All construction materials, labor, methods, means, techniques, sequences and procedures required to carry out the Work, all safety precautions and programs required in connection with carrying out the Work, all conflicts, discrepancies, errors and omissions that Contractor is aware of as a result of the examination and comparison of the Contract Documents have been either corrected or clarified to the satisfaction of the Contractor prior to execution of this Construction Contract.
 - 3.01.03 The Contract Sum is reasonable compensation and represents the total lump sum cost for the Work and that all systems and Work shall be functional and in accordance with the requirements of the Contract Documents.
 - 3.01.04 The Contract Time is adequate for the performance of the Work.
- 3.02 The Contractor is responsible for all means, methods, techniques and sequencing of construction.
- 3.03 If, after execution of this Construction Contract, the Contractor detects a conflict, discrepancy, error or omission in the Contract Documents then it shall immediately notify Project Consultant and Owner prior to proceeding with the specific portion of the Work.

ARTICLE 4. INTENT AND INTERPRETATION.

- 4.01 With the respect to the intent and interpretation of this Contract, the Owner and the Contractor agree as follows:
- 4.01.01 The Contractor shall have a continuing duty to read, examine, review, compare and contrast each of the documents which make up this Contract and shall immediately give written notice to the Owner and the Project Consultant of any conflict, ambiguity, error or omission which the Contractor may find with respect to these documents before proceeding with the affected Work.
- 4.01.02 The Contract Documents are complementary, and what is called for by one shall be as binding as if called for by all.
- 4.01.03 The intent of the Contract Documents is to include all labor, materials, equipment services and transportation necessary for the proper execution of the Work. The Contractor shall continually refer to drawing, specifications and other Contract Documents in this regard.
- 4.01.04 In the event of a conflict among the Contract Documents, the most stringent requirement to the Contractor shall control.
- 4.02 The Project Consultant shall be the initial interpreter of the requirements of the Contract Documents and the judge of the performance thereunder.
- 4.02.01 The Project Consultant shall render interpretations necessary for the proper execution or progress of the Work with reasonable promptness on written request of either the Owner or the Contractor, and shall render written decisions, within a reasonable time, on all claims, disputes, change order requests, substitution requests, requests for interpretation and other matters in question between the Owner and the Contractor relating to the execution or progress of the Work or the interpretation of the Contract Documents.
- 4.02.02 Interpretations and decisions of the Project Consultant shall be consistent with the intent of and reasonably inferable from the Contract Documents.
- 4.02.03 In the capacity of interpreter the Project Consultant shall endeavor to secure faithful performance by both the Owner and the Contractor, and shall not show partiality to either.

ARTICLE 5. OWNERSHIP OF THE CONTRACT DOCUMENTS WHICH MAKE UP THE CONTRACT

- 5.01 Subject to any rights the Project Consultant may have, the Contract Documents and each of them, as well as any other documents, intellectual property, software, computer-assisted material or disks relating to or regarding the Work, shall be and remain the property of the Owner. This shall be the case even if prepared, created or provided by the Project Consultant, Contractor, Subcontractor or others.
- 5.02 The Contractor shall have the right to keep copies of same upon completion of the Work; provided, however, that in no event shall the Contractor use, or permit to be used, any portion or all of same on other projects without the Owner's prior written authorization.
- 5.03 The Contractor agrees to provide any and all items referred to in this Paragraph to Owner upon demand by Owner. In the event Contractor fails to provide same to Owner as demanded, Contractor acknowledges that the Owner will need same and will be irreparably harmed and be subject to an injunction to provide same.

ARTICLE 6. TEMPORARY UTILITIES.

- 6.01 **Water For Execution of the Work:** The Contractor shall provide temporary water lines sufficient to supply all water needed for the construction and other services required by the Contract Documents and shall pay for all service connections and water used by the Contractor or Subcontractors unless the contrary is provided for elsewhere in the Contract Documents.

- 6.02 Electrical Energy: The Contractor shall provide temporary electrical energy and power lines sufficient to supply all electricity needed for the construction and other services required by the Contract Documents and shall pay for all service connections and electricity used by the Contractor or Subcontractors unless the contrary is provided for elsewhere in the Contract Documents.
- 6.03 Temporary Sanitary Facilities And Sewers:
- 6.03.01 The Contractor shall provide and maintain in a neat and sanitary condition such accommodations and facilities for the use of his employees as may be necessary to comply with the regulations of any governmental agencies, departments, etc. which address or govern these issues.
- 6.03.02 No nuisance will be permitted.
- 6.03.03 Upon completion of Work, such facilities shall be removed and the premises left in a sanitary condition.
- 6.03.04 Contractor is not permitted to use restrooms or other sanitary facilities within the Owner's existing building or on-site facilities unless the contrary is provided for elsewhere in the Contract Documents.

ARTICLE 7. PROGRESS.

- 7.01 Contractor shall provide the Owner with full information in advance as to its plans for performing each part of the Work. This shall include, but not be limited to, schedules provided to the Owner as Post-Award Information and subsequently updated schedules submitted to the Owner on a monthly basis as required in Article 10 below, as a condition precedent to payment(s).
- 7.01.01 Such schedule shall be in a form acceptable to the Owner.
- 7.01.02 The Contractor's schedule shall be updated no less frequently than monthly (unless the parties otherwise agree in writing) and shall be updated to reflect conditions encountered from time to time and shall apply to the total Project.
- 7.01.03 Each such revision shall be provided to the Owner and the Project Consultant.
- 7.01.04 Compliance with the requirements of this Subparagraph shall be a condition precedent to payment to the Contractor, and failure by the Contractor to comply with said requirements shall constitute a material breach of this Contract.
- 7.01.05 By providing these Schedules to Owner, Owner does not in any way acknowledge or consent that the Schedules are acceptable or reasonable, but it is simply reviewing same for its own informational purposes.
- 7.02 If at any time during the progress of Work, the Contractor's actual progress is inadequate to meet the requirements of the Contract Documents, such as the required completion dates, the Owner may so notify Contractor who shall thereupon take such steps as may be necessary to improve its progress so as to complete the Work on or before the required Substantial Completion Date.
- 7.02.01 If within a reasonable period as determined by Owner, the Contractor does not improve performance to meet the requirements of the Contract Documents, such as the required completion dates, then the Owner may require an increase in any or all of the following: Contractor's Subcontractor crews and Contractor's own labor force, the number of shifts, overtime operation, Contractor's supervision and additional days of work per week, all without cost to Owner.
- 7.02.02 Neither such notice by Owner nor Owner's failure to issue such notice shall relieve Contractor of its obligation to achieve the quality of work and rate of progress required by the Contract Documents.

- 7.03 Failure of Contractor to comply with the instructions of the Owner may be grounds for determination by Owner that Contractor is not prosecuting its Work with such diligence as will assure completion within the time specified.
- 7.04 Upon such determination, Owner, in addition to any and all other rights set forth in the Contract Documents and remedies afforded Owner under the Contract Documents or at law, may:
- 7.04.01 Elect to proceed with the Work with its own employees, agents, contractors, subcontractors, suppliers and assess all costs, expenses or fees for same against contractors and/or
- 7.04.02 Terminate for cause Contractor's right to proceed with the performance pursuant to the Contract Documents, or any separable part thereof, in accordance with the applicable provisions of the Contract Documents.

ARTICLE 8. EXPEDITING

- 8.01 The Work, equipment and material provided under this Contract may be subject to expediting by Owner.
- 8.02 Owner shall be allowed reasonable access to the shops, factories and other places of business of the Contractor and/or Subcontractors for expediting purposes.
- 8.03 As required by Owner, Contractor shall supply schedules and progress reports for Owner's use in expediting, and Contractor shall cooperate with Owner and require Subcontractors to cooperate with Owner in such expediting.
- 8.04 Any expediting performance by Owner shall not relieve Contractor of its sole and primary responsibility for timeliness of delivery of the equipment and material to be provided under the Contract Document.

ARTICLE 9. COMPLETION

- 9.01 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Project Consultant a comprehensive Punch List of items to be completed or corrected prior to final payment. Failure to include an item on the Punch List does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.
- 9.01.01 For a Project with an estimated cost of less than \$10 million, the Punch List shall be completed within thirty (30) calendar days after Substantial Completion of the Project, as same is defined in the Contract Documents. If Substantial Completion is not defined in the Contract Documents, the list shall be completed upon reaching beneficial occupancy or use.
- 9.01.02 For a Project with an estimated cost of \$10 million or more, the Punch List shall be completed within thirty (30) calendar days, unless otherwise extended elsewhere in the Contract Documents, but not to exceed sixty (60) calendar days, after reaching Substantial Completion, as same is defined in the Contract Documents. If Substantial Completion is not defined in the Contract Documents, the list shall be completed upon reaching beneficial occupancy or use.
- 9.02 For a Project involving the construction of more than one building or structure, or involving a multiphased project, a Punch List shall be created for each building, structure, or phase of the Project pursuant to the limitations provided for above in 9.01.01 and 9.01.02, as applicable.
- 9.03 The failure to include any corrective work or pending items not yet completed on the List does not alter the responsibility of the Contractor to complete all the construction services purchased pursuant to the contract. All items that require correction under the Contract Documents and that are identified after the preparation and delivery of the Punch List remain the obligation of the Contractor as defined by the Contract Documents.

- 9.04 Upon completion of all of the items on the Punch List, the Contractor may submit a payment request for all remaining retainage withheld by the local governmental entity pursuant to this section. If a good faith dispute exists as to whether one or more items identified on the list have been completed pursuant to the Contract Documents, the Owner may continue to withhold an amount not to exceed 150 percent of the total costs to complete the outstanding item.
- 9.05 In the event that the Contractor fails, in whole or in part, to comply with the obligations and responsibilities required hereunder in paragraph 9.01, the Owner need not pay or process any payment request for remaining retainage.

ARTICLE 10. CONTRACT PAYMENTS

- 10.01 Schedule of Values:
- 10.01.01 The Contractor shall maintain and update the Schedule of Values originally provided to the Owner as Post-Award Information.
- 10.01.02 The Contractor's Schedule of Values apportions the Contract Price among the different elements of the required Work for purposes of periodic and final payments and shall be submitted as detail in support of the Contractor's monthly Application for Payment.
- 10.01.03 The Schedule of values shall be presented with such detail, and supported with whatever information the Project Consultant or the Owner reasonably requests.
- 10.01.04 The Contractor shall not imbalance its Schedule of Values nor artificially inflate or exaggerate any element thereof. Contractor's failure to comply with this provision shall be grounds for Owner to terminate Contractor, as provided for elsewhere herein.
- 10.02 The Owner shall pay the Contract Price to the Contractor in accordance with the procedures provided herein.
- 10.02.01 On or before the **15th** day of each month after commencement of performance, but no more frequently than once monthly, the Contractor may submit an Application for Payment to the Owner for the period ending the last day of the previous month or other pay period as mutually defined and agreed to by the Contractor and Owner and as provided for in the Contract Documents. The Contractor shall also deliver a copy of the Application for Payment to the Project Consultant.
- 10.02.02 Said Application for Payment shall be in the format required elsewhere in the Contract Documents and include whatever supporting information as may be required by the Project Consultant, the Owner, or both.
- 10.02.03 The Owner shall not be required to pay for stored materials or equipment except as set forth in Article 25 below.
- 10.02.04 Each Application for Payment shall be signed by the Contractor and shall constitute the Contractor's representation that the quantity of work has reached the level for which payment is requested, that the Work has been properly installed or performed in substantial compliance with the requirements of the Contract Documents, and that the Contractor knows of no reason why payment should not be made as requested.
- 10.02.05 Upon receipt of the Application for Payment, the Project Consultant shall:
- a. Within ten (10) days review the Application for Payment and may also review the Work at the Project site or elsewhere to determine whether the quantity and quality of the Work is as represented in the Application for Payment and is as required by the Contract Documents.
 - b. Approve in writing the amount which, in the opinion of the Project Consultant, is properly owing to the Contractor.

- 10.02.06 The Owner shall make payment to the Contractor within fifteen (15) days following the Project Consultant's written approval of the Application for Payment but in no event later than twenty-five (25) days after the invoice was received by the Owner.
- 10.02.07 The Owner may reject the Application for Payment within twenty (20) business days after the date on which the Application for Payment is stamped as received. The rejection shall be in writing and shall specify the deficiency in the payment request or invoice and the action necessary to make the payment request or invoice proper.
- 10.02.08 If the Owner disputes a portion of an Application for Payment, the undisputed portion must be timely paid.
- 10.02.09 The Contractor may submit a corrected Application for Payment which corrects the deficiency or deficiencies specified in writing by the Owner. The Owner shall either pay or reject the corrected Application for Payment within ten (10) business days after receipt of same.
- 10.02.10 If a dispute regarding the Application for Payment cannot be resolved pursuant to the process outlined herein, it must be resolved in accordance with the dispute resolution procedures outlined in Article 45.
- 10.02.11 The amount of each monthly payment shall be the amount approved for payment by the Project Consultant less such amounts, if any, otherwise owing by the Contractor to the Owner or which the Owner shall have the right to withhold as authorized by the Contract Documents or reasonable business practices. In the event of a dispute with regard to a portion of the Application for Payment, the Owner shall pay the undisputed portion pursuant to the timeline established in this Section.
- 10.02.12 The Project Consultant's approval of the Contractor's Applications for Payment shall not preclude the Owner from the exercise of any of its rights as set forth in the Contract Documents.
- 10.02.13 The submission by the Contractor of an Application for Payment also constitutes an affirmative representation and warranty that all Work for which the Owner has previously paid is free and clear of any lien, claim, or other encumbrance by any person whatsoever.
- 10.02.14 As a condition precedent to payment, the Contractor shall, as required elsewhere in the Contract Documents and as required by the Owner, also provide to the Owner documents relating to the Project, including but not limited to, updated schedules and daily logs, properly executed documents that all subcontractors, materialmen, suppliers or others having rights, acknowledge receipt of all sums due pursuant to all prior Payment Requests and waive and relinquish any rights or other claims of any nature relating to the Project.
- 10.02.15 Furthermore, the Contractor warrants and represent that, upon payment of the Application for Payment submitted, title to all work included in such payment shall be vested in the Owner.
- 10.02.16 Dollar Value/Time Graphs: Each of the Contractor's Application for Payment shall be accompanied by a graph, prepared by the Contractor, that consecutively tracks the percentage of completion of both the Application for Payment's dollar value attained and the contract time (calendar days) elapsed, all coinciding with the date of the Application for Payment.
- 10.03 When payment is received from the Owner, the Contractor shall within five (5) days pay all subcontractors, materialmen, laborers and suppliers the amounts they are due for all work covered by such payment. In the event such payments are not made in a timely manner the Owner may, in its discretion, invoke reasonable procedures in order to protect Owner's interest or Owner's desire to assist in having subcontractors, laborers, suppliers, materialmen or others paid.
- 10.04 It is mutually agreed that payments made under this Contract shall not constitute acceptance of defective or improper materials or workmanship nor shall same act as a waiver or release of future performance in accordance with the Contract Documents.

ARTICLE 11. WITHHOLDING PAYMENT TO CONTRACTOR

- 11.01 The Owner may withhold as retainage five (5) percent of the payment owed to the Contractor until completion of the Project.
- 11.02 If the City pays the retainage amount upon the Contractor's request which is attributable to the labor, services, or materials supplied by one or more contractors or suppliers, the Contractor shall timely remit payment of such retainage to those subcontractors or suppliers.
- 11.03 Regardless of the provisions in this Article, in no event shall the Owner be required to pay or release any amounts that are the subject of a good faith dispute, a claim brought pursuant to Fla. Stat. § 255.05, or otherwise the subject of a claim or demand by the Owner.
- 11.04 In addition to the Retainage, payments, including but not limited to Final Payment, may be withheld or reduced by the Owner in its sole discretion if any of the following exists:
- 11.04.01 The Work is not proceeding in accordance with the Construction Documents Schedule as anticipated by the Project Consultant or the Owner. In that event, the Project Consultant or the Owner will assess the anticipated delay and the Owner will use the amounts specified for Liquidated Damages as the basis for amounts withheld. Said funds shall be held until such time as the Project Consultant or Owner determine that the Work is back on schedule. By making said funds available to Contractor, Owner does not waive its right to assess liquidated damages at the completion of the Project;
- 11.04.02 Liquidated Damages as set forth in this Contract;
- 11.04.03 Defective Work unremedied;
- 11.04.04 Punch-List items unremedied;
- 11.04.05 Subject to Owner's written notice to Contractor in accordance with the Contract Documents back charge items for work performed by Owner or another contractor at the request of Owner, which work is within the scope of the Work under this Construction Contract;
- 11.04.06 Claims filed by subcontractors, laborers, suppliers, materialmen or others;
- 11.04.07 Failure to comply with any and all insurance requirements;
- 11.04.08 Failure of the Contractor to make payment properly to Subcontractors or others;
- 11.04.09 Damage to the Owner or another contractor;
- 11.04.10 Reasonable evidence that the Work will not be completed on or before the Substantial Completion or Final Completion Date;
- 11.04.11 Failure of the Contractor to carry out any of its obligations in accordance with the Contract Documents;
- 11.04.12 Failure of the Contractor to submit the information or documents required by this Contract or reasonably required by Owner, including but not limited to schedules and daily logs.

ARTICLE 12. CONTRACTOR'S RIGHT UPON NONPAYMENT.

- 12.01 If within thirty (30) days of the date payment to the Contractor is due, the Owner, without cause or basis hereunder, fails to pay the Contractor any amounts then due and payable to the Contractor, the Contractor shall have the right to cease work until receipt of proper payment after first providing ten (10) days written notice of its intent to cease work to the Owner.

ARTICLE 13. INFORMATION AND MATERIAL SUPPLIED BY THE OWNER.

- 13.01 The Owner shall furnish to the Contractor, prior to the execution of the Contract, any and all written and tangible material, including but not limited to surveys and other information concerning existing conditions on the Site.
- 13.02 The Owner shall also furnish, if appropriate, the legal description of the Project site, and any required survey.

ARTICLE 14. LICENSES AND PERMITS.

- 14.01 All licenses and permits necessary to commence and prosecute the Work to completion shall be procured and paid for by the Contractor, unless expressly provided for elsewhere in the Contract Documents.
- 14.03 All easements and rights-of-way will be procured and paid for by the Owner unless otherwise specifically provided within the Contract Documents.

ARTICLE 15. CEASE AND DESIST ORDER.

- 15.01 In the event the Contractor fails or refuses to perform the Work as required herein, the Owner may instruct the Contractor to cease and desist from performing the Work in whole or in part. Upon receipt of such instruction, the Contractor shall immediately cease and desist as instructed by the Owner and shall not proceed further until the cause for the Owner's instructions has been corrected and the Owner instructs that the Work may resume.
- 15.02 In the event the Owner issues such instruction to cease and desist, and in the further event the Contractor fails and refuses within seven (7) days of receipt of same to provide adequate assurance to the Owner that the cause of such instructions will be eliminated or corrected, then the Owner shall have the right, but not the obligation, to carry out the Work with its own forces, or with the forces of another contractor, and the Contractor shall be fully responsible and liable for the costs of performing such work by the Owner.
- 15.03 The rights set forth herein are in addition to, and without prejudice to, any other rights or remedies the Owner may have against the Contractor.

ARTICLE 16. DUTIES, OBLIGATIONS AND RESPONSIBILITIES OF THE CONTRACTOR.

- 16.01 The Contractor shall perform the Work in accordance with the Contract Documents.
- 16.02 The Contractor shall supervise the Work and bear full responsibility for any and all acts or omissions of those engaged in the Work on behalf of the Contractor.
- 16.03 The Contractor hereby warrants that all labor provided under this Contract shall be competent to perform the tasks undertaken, that the product of such labor shall yield only first-class results, that all material and equipment provided shall be new and of high quality, that the Work will be complete, of high quality, without defects, and in compliance with the requirements of the Contract Documents. Any Work not complying with the requirements of this Subparagraph shall constitute a breach of the Contractor's warranty.
- 16.04 Unless expressly provided for elsewhere in the Contract Documents, the Contractor shall obtain and pay for all required permits, fees, and licenses and shall comply with all legal requirements applicable to the Work.
- 16.05 The Contractor shall prepare and submit schedules and supporting documentation as required elsewhere in the Contract Documents.
- 16.06 Record Keeping on Site:

- 16.06.01 The Contractor shall keep a daily log, an updated copy of the Contract Documents, approved shop drawings and other submittals, and other documents and materials as required by the Contract Documents at the site.
- 16.06.02 All of these items shall be available to the Owner and the Project Consultant at all regular business hours.
- 16.06.03 Upon final completion of the Work, all of these items shall be finally updated and provided to the Owner and shall become the property of the Owner.
- 16.07 Shop Drawings And Other Submittals:
- 16.07.01 The Contractor shall submit for approval with reasonable promptness and in a timely manner so as to cause no delay in the Work, various submittals including shop drawings as required for the Work of the various trades.
- 16.07.02 These shop drawings and other submittals shall be in accordance with the requirements of the Contract Documents and shall be carefully checked in every respect and signed by the Contractor before submitting same to the Project Consultant.
- 16.07.03 Shop drawings and other submittals from the Contractor are not part of the Contract Documents but are documents prepared and utilized by the Contractor to coordinate the Work.
- 16.07.04 The Contractor shall not do any Work requiring shop drawings or other submittals unless such have been approved in writing by the Project Consultant.
- 16.07.05 All Work requiring approved shop drawings or other submittal shall be done in compliance with such approved documents. However, approval by the Project Consultant or the Owner shall not be evidence that Work installed pursuant thereto conforms with the requirements of the Contract Documents.
- 16.07.06 The Owner and the Project Consultant shall have no duty to review partial submittal or incomplete submittal except as may be provided otherwise within the Contract Documents.
- 16.07.07 The Contractor shall maintain a submittal log which shall include, at a minimum, the date of each submittal, the date of any resubmittal, the date of any approval or rejection, and the reason for any approval or rejection.
- 16.07.08 The Contractor shall have the duty to carefully review, inspect and examine any and all submittal and resubmittals before submission of same to Owner or the Project Consultant.
- 16.08 The Contractor shall maintain the Project site in a reasonably clean condition during performance of the Work. Upon final completion, the Contractor shall thoroughly clean the Project site of debris, trash and excess materials or equipment. In the event the Project is located at or near occupied facilities, then Owner may establish additional rules and regulations regarding condition at the Project, including but not limited to, keeping the Project and the occupied premises clean, safe and secure.
- 16.09 At all times, the Contractor shall permit the Owner and the Project Consultant to enter upon the Project site and to review or inspect the Work.

ARTICLE 17. SUBCONTRACTS.

- 17.01 The Contract Documents make no attempt to fix the scope of the Work of any Subcontractor nor the responsibilities of any such Subcontractor, it being understood that the Contractor shall fix the scope of all Work and responsibilities of the Subcontractor. Contractor shall not replace Subcontractor without good cause.

- 17.02 The Contractor shall continuously update information concerning Subcontractors submitted to the Owner as Post-Award Information by submitting:
- 17.02.01 The general form of Subcontract Agreement used by the Contractor within thirty (30) days of execution of the Construction Contract.
- 17.02.02 Updated listings of Subcontractors denoting changes to the list submitted as Post-Award Information within ten (10) days of said change.
- 17.02.03 Copies of executed Subcontractor Contracts within ten (10) days of their execution.
- 17.02.04 A complete accounting of all payments made to Subcontractors and the balances owed to the Subcontractors with each Application For Payment submitted by the Contractor.
- 17.03 All contracts with Subcontractors shall incorporate by reference the terms and conditions of this Construction Contract.
- 17.04 The Contractor shall cause and require to be included in all Subcontracts a provision for the benefit of the Owner binding the Subcontractors to remain bound by the Subcontracts in the event the Contractor is replaced by another contractor pursuant to the terms of the Contract Documents. The Contractor shall also include in all Subcontracts a provision requiring the Subcontractor, in the event of the Contractor's termination, to consent to the assignment of their Subcontracts to the Owner.
- 17.05 The Owner may at any time request from the Subcontractors, or any of them, a sworn statement of account with the Contractor and the Contractor shall cause to be included in all Subcontracts a requirement that the Subcontractors provide said sworn statement upon Owner's request.
- 17.06 Each Subcontractor and supplier must agree to assign all of its warranties to Owner. In addition each Subcontractor and supplier must warrant all of its Work, equipment, materials and labor to Owner in accordance with the terms and provisions of its contractual obligations to Contractor and any legal or statutory provisions that apply to its work, materials or equipment.
- 17.07 Owner may at its discretion require Contractor to have major sub-subcontractors or suppliers comply with the requirements of this Article 16 or other provisions of the Contract Documents.

ARTICLE 18. CONTRACTOR'S SUPERINTENDENT

- 18.01 Before starting the Work, Contractor shall designate an English speaking, competent, authorized representative (hereinafter Superintendent), acceptable to the Owner, to represent and act for the Contractor. The Contractor shall:
- 18.01.01 Inform Owner, in writing, of the name and address of such representative together with a clear definition of the scope of his authority to represent and act for Contractor and shall specify any and all limitation on such authority.
- 18.01.02 Keep the Owner informed of any subsequent changes in the foregoing.
- 18.02 The Superintendent shall be present (or be temporarily represented by a person familiar with the project work activities and schedule) at the site of the Work at all times when the Work is actually in progress.
- 18.04 All notices, determinations, instructions and other communications given to the Contractor's Superintendent shall be binding upon the Contractor.
- 18.05 The Superintendent shall maintain a daily log/report which shall include at least the following information: weather conditions; trades at site; manpower totals by trade; heavy equipment in use; activities in progress;

and inspections at site. Copies of the daily entries shall be provided to the Owner once per month, or as required elsewhere in the Contract Documents.

ARTICLE 19. COOPERATION WITH OTHERS.

- 19.01 The Owner and other contractors and subcontractors may be working at the site during the performance of the Construction Contract, and Contractor's work may be interfered with as a result of such concurrent activities. Contractor shall fully cooperate with Owner and other contractors to avoid any delay or hindrance of the Work. Owner may require that certain facilities be used concurrently by Contractor and other parties and Contractor shall comply with such requirements.
- 19.02 If any part of the Contractor's work depends on proper execution or results from any work performed by the Owner or any separate contractor, the Contractor shall, prior to proceeding with the Work, promptly report to the Owner any apparent discrepancies or defects in such work that render it unsuitable for such proper execution and results. Failure of the Contractor to so report shall constitute an acceptance of the Owner or separate contractor's work as fit and proper to receive Contractor's Work, except as to defects which may subsequently become apparent in such work performed by others.

ARTICLE 20. SITE CONDITIONS.

- 20.01 Contractor shall have the sole responsibility to conduct reasonable inspection of the site and to satisfy itself concerning the nature and location of the Work and the general and local conditions, and particularly, but without limitation, with respect to the following: those affecting transportation, access, disposal, handling and storage of material; availability and quality of labor, water and electric power; availability and condition of roads; climatic conditions; location of underground utilities as depicted in the Contract Documents; governmental processes and requirements for obtaining permits other than issuance of the original building permits, certificates of occupancy and other regulatory/utility approvals; physical conditions at the work sites and the Project area as a whole; topography and ground surface conditions; subsurface geology, and nature and quality of surface and subsurface materials to be encountered; equipment and facilities needed preliminary to and during performance of the Construction Contract; and all other matter which can in any way affect performance of the Construction Contract, or the cost associated with such performance.
- 20.02 The failure of Contractor to acquaint itself with any applicable condition will not relieve it from the responsibility for properly estimating either the duration, difficulties, or the costs of successfully performing the Work.
- 20.03 Contractor may reasonably rely upon site documentation provided by the Owner. In the event that during the course of the Work Contractor encounters an underground utility facility that was not shown on the Contract Documents; or subsurface or concealed conditions at the Project site which differ materially from those shown on the Contract Documents and from those ordinarily encountered and generally recognized as inherent in work of the character called for in the Contract Documents; or unknown physical conditions of the Project site, of an unusual nature, which differ materially from that ordinarily encountered and generally recognized as inherent in work of the character called for in the Contract Documents, Contractor, without disturbing the conditions and before performing any work affected by such conditions, shall, within forty-eight (48) hours of their discovery, notify Owner and Project Consultant in writing of the existence of the aforesaid conditions. Project Consultant and Owner shall, within two (2) business days after receipt of Contractor's written notice, investigate the site conditions identified by Contractor. If, in the sole opinion of Project Consultant, the conditions do materially so differ and cause an increase or decrease in Contractor's cost of, or the time required for, the performance of any part of the Work, whether or not changed as a result of the conditions, Project Consultant shall recommend an equitable adjustment to the Contract Price, or the Contract Time, or both. If Owner and Contractor cannot agree on an adjustment in the Contract price or the Contract time, the adjustment shall be referred to Project Consultant for determination. Should Project Consultant determine that the conditions of the Project site are not so materially different to justify a change in the terms of the Contract, Project Consultant shall so notify Owner and Contractor in writing, stating the reasons, and such determination shall be final and binding upon the parties hereto. No request by Contractor for an equitable adjustment to the Contract under this provision shall be allowed unless Contractor has given

written notice in strict accordance with the provisions of this Article. No request for an equitable adjustment or change to the Contract Price or Contract Time for differing site conditions shall be allowed if made after the date certified by Project Consultant as the date of substantial completion.

ARTICLE 21. RESPONSIBILITY FOR WORK SECURITY.

- 21.01 Contractor shall at all times conduct, at its expense, all operations under the Construction Contract in a manner to avoid the risk of loss, theft or damage by vandalism, sabotage or other means to any property.
- 21.01.01 Contractor shall promptly take such reasonable precautions as are necessary and adequate against any conditions which involve risk of a loss, theft or damage to its property.
- 21.01.02 Contractor shall continuously inspect all of its Work, materials, equipment and facilities to discover and determine any such conditions and shall be solely responsible for discovery, determination and correction of any such condition.
- 21.02 Contractor shall comply with all applicable laws and regulations.
- 21.02.01 Contractor shall cooperate with Owner on all security matters as set forth elsewhere in the Contract Documents and shall promptly comply with any project security requirements established by Owner.
- 21.02.02 These security requirements may be more stringent in the event portions of the facilities or project are occupied or otherwise being used.
- 21.02.03 Such compliance with these security requirements shall not relieve Contractor of its responsibility for maintaining property security for the above noted items, nor shall it be constructed as limiting in any manner Contractor's obligation to undertake reasonable action as required to establish and maintain secure conditions at the site.
- 21.03 Contractor shall prepare and maintain accurate reports of incidents of loss, theft or vandalism and shall provide these reports to Owner in a timely manner.

ARTICLE 22. PROTECTION OF WORK IN PROGRESS, MATERIALS AND EQUIPMENT.

- 22.01 Contractor shall be responsible for and shall bear any and all risks of loss or damage to Work in progress, all materials delivered to the site, and all materials and equipment involved in the Work until completion and final acceptance of the Work under this Contract.
- 22.02 Permanent openings for the introduction of work and materials to the structure and construction site shall be protected so that upon completion, the Work will be delivered to the Owner in proper, whole and unblemished condition.

ARTICLE 23. ADMINISTRATION OF THE CONTRACT.

- 23.01 The Project Consultant will provide Administration of the Contract.
- 23.01.01 For those projects for which the City Engineer serves as the Project Consultant, all references to the Project Consultant shall be considered to be the City Engineer.
- 23.01.02 In the event the Owner should find it necessary to replace the Project Consultant, the Owner shall retain a replacement and the role of the replacement shall be the same as the role of the original Project Consultant.
- 23.02 Unless otherwise directed by the Owner in writing, the Project Consultant will perform those duties and discharge those responsibilities allocated to the Project Consultant by the Owner.

- 23.03 Neither the Project Consultant nor the Owner will be responsible for construction means, methods, techniques, sequences or procedures, safety precautions and programs in connection with the Work or for the acts of omission or commission of the Contractor, its Subcontractors or their agents or employees.
- 23.04 The Project Consultant and Owner will each have the authority to reject Work which does not conform to the Contract Documents and to require special inspection or testing with prior approval by the Owner. Neither the Project Consultant's nor the Owner's authority to act under this Paragraph, nor any decision made by them in good faith either to exercise or not to exercise such authority, shall give rise to any duty or responsibility of the Project Consultant or the Owner to the Contractor, any Subcontractor, any of their agents or employees, or any other person performing any of the Work.
- 23.05 The Contractor shall forward all communications to the Project Consultant, with simultaneous copies to the Owner.
- 23.06 The Project Consultant will review and certify the Contractor's Application for Payments which the Owner must subsequently approve prior to Payment of the Contractor.
- 23.07 The Project Consultant shall approve shop drawings for design only, the Contractor being responsible for all dimensions, quantities, etc., necessary to complete the Work in compliance with the Drawings and Specifications and other Contract Documents.
- 23.08 The duties, responsibilities and limitations of authority of the Project Consultant and the Owner will not be modified nor extended without written consent of the Contractor, the Project Consultant, and the Owner.
- 23.09 Notwithstanding anything to the Contrary in these General Conditions or any other "Contract Document" as that term is defined in the Professional Services Agreement between the City of Pompano Beach, Florida and the Project Consultant, it is not the intention nor shall any of the provisions of those documents act as a release, limitation or discharge of the obligations or responsibilities of the Project Consultant pursuant to its agreement with the Owner.
- 23.10 The Project Consultant will utilize the Contractor Performance Report to monitor and record the Contractor's performance for the work specified by the contract. The Contractor Performance Report has been included as an exhibit to the contract.

ARTICLE 24. MATERIALS.

- 24.01 The Contractor shall provide materials and equipment as required in the Contract Documents. No substitution will be permitted except in the instance where a material is no longer available during the progress of the Work or is deemed by the Owner to be no longer suitable or appropriate for incorporation into the Work or for obvious economic benefits accruable to the Owner.
- 24.01.01 Any such substitution must be approved by the Project Consultant and Owner prior to incorporation of the proposed substitution into the Work.
- 24.01.02 Proposed substitutions must be submitted for consideration from the Contractor to the Project Consultant and the Owner. Documentation for the proposed substitution must include, but is not limited to substantiation of the Contractor's efforts to obtain the originally specified materials including documentary evidence from the original materials' manufacturer that such materials are not available.
- 24.01.03 Product delivery lead times shall not serve as a basis for any substitution request except for where approved in advance by the Owner.
- 24.01.04 All additional costs incurred by the Owner as the result of any substitution will be the direct responsibility of and borne by the Contractor.

- 24.02 The Contractor shall make written request to the Project Consultant for and obtain his written approval of the use of any materials proposed for use when "approval" materials are specified or a performance type specification is utilized without mentioning any standard by name.
- 24.03 If, in the opinion of the Project Consultant, a specified product or equipment no longer meets the quality of the products or equipment required for the Work, Project Consultant shall request a Change Order Proposal from the Contractor for modifying the Contract to incorporate the respective changes to the Work required, the Contract amount, and the Contract Time as beneficial to the Owner.

ARTICLE 25. STORED MATERIALS.

- 25.01 Contractor shall, at its expense, receive, unload, store in a secure place, and deliver from storage to the construction site all materials and equipment required for the performance of the Contract.
- 25.01.01 Contractor is not entitled to payment for same except for those materials which in Owner's discretion are properly stored and are going to be installed or incorporated into the construction of the Project within thirty (30) days of delivery to the construction site.
- 25.01.02 The storage facilities and methods of storing shall meet Owner's approval and shall be in accordance with manufacturer's recommendations, or Owner will not be obligated to pay for same.
- 25.01.03 Materials and equipment subject to degradation by outside exposure shall be stored in a weather tight enclosure provided by Contractor at its expense.
- 25.01.04 Owner may at its discretion require material to be stored in an air-conditioned location.
- 25.02 Provided the above conditions are met, the stored materials may be included in a subsequent Application for Payment if the Contractor also complies with the following:
- 25.02.01 An applicable purchase order is provided listing the materials in detail and identifying the Contract Documents, by name, with verification that the total value of the purchase order amount reconciles with the corresponding application for payment stored materials line item value.
- 25.02.02 Evidence that proper storage security is provided.
- 25.02.03 The Owner is provided legal title (free of liens or encumbrances of any kind) to the material that is stored or stockpiled.
- 25.02.04 The Contractor and/or its Subcontractor have provided insurance for the Stored Materials against loss, damage (from whatever source), or disappearance, including loss or theft prior to incorporation into the Work. By execution of the Contract, Contractor releases Owner from any responsibility for Stored Materials and assumes all liability for and risk of loss or damage, by whatever means, including Owner's alleged negligence, regardless of whether the Owner has paid for said Stored Materials.
- 25.03 Once any Stored Material is paid for by Owner, it shall not be removed from the designated storage area except for incorporation into the Project or upon subsequent written approval by Owner.
- 25.04 No Applications for Payment shall be submitted nor payments made based on the value of materials stored at locations other than the Project, unless otherwise approved in writing by the Owner.
- 25.05 It is further agreed between the parties that the transfer of title and the Owner's payment for any Stored Material pursuant to the Contract Documents shall in no way relieve the Contractor of the responsibility for providing and installing such material in accordance with the requirements of the Contract Documents.
- 25.06 The Contractor warrants that title to all of the Work or Stored Materials covered by the Application for Payment will pass to the Owner either by incorporation in the Project or upon receipt of payment by the

Contractor, whichever occurs first, free and clear of all liens, claims, security, interest or encumbrance; and that none of the Work and none of the Stored Materials covered by the Application for Payments will have been acquired by the Contractor, or by any other person performing the Work at the site or providing materials and equipment to the Project, subject to an agreement under which an interest therein or encumbrance thereon is retained by the seller or otherwise imposed by the Contractor or such person.

- 25.07 In the event stored materials which Owner is paying for in advance of their being installed or incorporated into the Project pursuant to this Paragraph are not installed or incorporated into the Project within thirty (30) days of when they are delivered to the site, Contractor shall not be entitled to payment for any future stored materials on this Project and the amounts previously approved for payment for said materials shall be deducted from the Contractor's next application for payment..

ARTICLE 26. INSPECTION: REJECTION OF MATERIALS AND WORKMANSHIP.

- 26.01 All material and equipment provided and work performed shall be properly inspected by Contractor, at its expense, and shall at all times be subject to quality surveillance, inspections, observations or quality audit by Owner, Project Consultant and any inspectors conducting an inspection pursuant to code, law, regulations, etc.
- 26.01.01 Contractor shall provide safe and adequate facilities, and all samples, drawings, lists and documents necessary for such quality surveillance, observation or quality audit.
- 26.01.02 The Contractor shall permit and facilitate inspection of the Work by the Owner, Project Consultant, Inspectors for any governmental agency, authority, or board.
- 26.01.03 Owner also reserves the right to designate others such as consultants, commissioning authorities, test and balance agents, forensic specialists, etc. to conduct inspections during or subsequent to the Work as Owner in its discretion desires.
- 26.01.04 Owner and Project Consultant shall be afforded full and free access to the shops, factories or places of business of Contractor and its Subcontractors for such quality surveillance, observation or quality audit and to determine the status of the Work.
- 26.01.05 In the event the Project Consultant or Owner requires a factory inspection, the Contractor shall notify the suppliers that the material shall not be produced or fabricated without due notice to the Project Consultant and Owner and an opportunity for such inspection.
- 26.02 If any Work should be covered up without approval or consent of the Project Consultant or Owner, it must, if required by the Project Consultant or Owner, be uncovered for examination at the Contractor's expense.
- 26.03 If any material, equipment or workmanship is determined by Owner, City Engineer, Project Consultant or Inspector either during performance of the Work or on final quality surveillance, or during any applicable warranty period, to be defective or not complying with the requirements of this Construction Contract, Owner, City Engineer, Project Consultant or Inspector will notify Contractor in writing that such material, equipment or portions of the Work is rejected and Owner reserves the right to withhold payment on any such item or seek compensation from Contractor for same. Thereupon, Contractor shall, at its own expense, immediately remove, replace or correct such defective material, equipment or portions of the Work by making the same comply strictly with all requirements of the Contract Documents. The Contractor shall be responsible for the costs of any additional site observations, special inspections and/or testing, or other activities of either the Project Consultant or the Owner made necessary by the correction of such defective materials, equipment or portions of the Work.
- 26.04 Neither the failure to make such quality surveillance, observation or quality audit, nor to discover defective workmanship, materials, or equipment, shall prejudice the rights of Owner to correct or reject the same as hereinafter provided.

ARTICLE 27. WARRANTY.

- 27.01 Unless otherwise provided elsewhere in the Contract Documents, all material and equipment incorporated into any Work covered by the Contract Documents shall be new and, where not specified, of the most suitable grade of their respective kinds for their intended use, and all workmanship shall be in accordance with construction practices acceptable to Owner and Project Consultant.
- 27.02 Unless otherwise provided in the Contract Documents, Contractor warrants all Work, equipment, materials and workmanship to be in accordance with the Contract Documents, any and all applicable codes, proper and workmanlike, first class and free from defects for a period of twelve (12) months (unless longer guarantees or warranties are provided for elsewhere in the Contract Documents in which case the longer periods of time shall prevail) from and after Final Completion of the Work under the Contract Documents, regardless of whether the same were provided or performed by Contractor or by any Subcontractor.
- 27.03 Contractor's warranty with respect to latent defects shall be in accordance with Chapter 95, Florida Statutes, and other applicable provisions of State law.
- 27.04 In the event of damage or injury to persons or property or other consequential or resultant damages result from Contractor's breach of any warranties, then the Contractor will be responsible for same.

ARTICLE 28. OFFICE SPACE FOR THE OWNER'S PERSONNEL.

- 28.01 The Contractor shall provide, at Contractor's expense, for the duration of the Work, a suitable lockable office for any Owner designated personnel.

ARTICLE 29. PROJECT RECORD DOCUMENTS AND SURVEY.

- 29.01 A marked up record set of the Contract Documents and other project records as required elsewhere within the Contract Documents will be kept up to date by the Contractor on the jobsite at all times. These documents will be given to the Project Consultant at the completion of the Work as required by the Contract Documents, and properly labeled as "Project Record Documents."
- 29.02 In addition to the "Project Record Documents", the Contractor will cause to have prepared by a Surveyor, registered in the State of Florida, a site survey clearly representing all Work done under this Contract and updating the original survey as may have been provided by the Owner.
- 29.03 The Contractor shall submit Project Record Documents and Survey in the manner and format specified elsewhere in the Contract Documents.
- 29.04 This is a critical item and final payment will be withheld from the Contractor until "Project Record Documents" and survey are provided by the Contractor and approved by the Project Consultant.

ARTICLE 30. SALVAGE.

- 30.01 Any salvage resulting from clearing, grubbing, grading, draining, remodeling or altering any existing facilities on this site shall be the property of the Owner; and this material shall be piled or stacked on the site if the Owner desires this material.
- 30.02 If this material is not desired by the Owner, it shall be disposed of by the Contractor at his expense.

ARTICLE 31. CLAIMS BY THE CONTRACTOR.

- 31.01 Although Contractor acknowledges the No Damage for Delay clause set forth in Article 6 of the Agreement between Owner and Contractor, in the event the Contractor is entitled to assert any other claim against Owner for any reason, claims by the Contractor against the Owner (except for claims asserted under Article 20 which are treated as set forth therein), are subject to the following terms and conditions:

- 31.01.01 All Contractor claims against the Owner shall be initiated by a written claim submitted to the Owner, c/o the City Engineer, and the Project Consultant. Such claim shall be received by the Owner and the Project Consultant no later than fifteen (15) calendar days after the event, or the first appearance of the circumstances causing the claim, and same shall set forth in detail all known facts and circumstances supporting the claim and the actual damages or injuries suffered;
- 31.01.02 The Contractor shall continue diligently with its performance hereunder regardless of the existence of any claims submitted by the Contractor;
- 31.01.03 In the event the Contractor seeks to make a claim, as a condition precedent to any such claim the Contractor shall strictly comply with the notice requirements above and such claim shall be made by the Contractor before proceeding to execute any additional or changed Work. Failure of the condition precedent to occur, i.e., providing notice as required in Article 31.01.01 above, shall constitute a complete waiver by the Contractor of any claim for additional compensation or extension of time. This written notice requirement may not be waived by verbal representations or the acts of representatives of the Owner or Project Consultant;
- 31.01.04 In connection with any claim by the Contractor against the Owner for compensation in excess of the Contract Price, any liability of the Owner for the Contractor's cost shall be strictly limited to direct cost of labor and materials incurred by the Contractor at the jobsite and shall in no event include indirect cost, overhead, loss of profit, or consequential damages of the Contractor. The Owner shall not be liable to the Contractor for claims of third parties including, but not limited to, subcontractors, suppliers, laborers, etc.

ARTICLE 32. CHANGE ORDERS.

- 32.01 One or more changes to the Work within the general scope of this Contract may be ordered by the Owner by Change Order, Project Consultant's Supplementary Instructions, and Construction Change Directives.
- 32.02 The Contractor shall proceed with any extra Work or changes which alter the Contract by adding to, or deducting from the Contract Sum or Contract Time in strict accordance with the following terms and conditions:
- 32.02.01 Change Order shall mean a written order to the Contractor executed by the Owner and the Project Consultant after execution of this Contract, directing a change in the Work and may include a change in the Contract Price or the time for the Contractor's performance, or any combination thereof;
- 32.02.02 Any change in the Contract Price or time resulting from a Change Order shall be determined as follows:
- a. By mutual agreement between the Owner and the Contractor as evidenced by (a) the change in the Contract Price or time being set forth in Change Order in accordance with Article 32.02.08 below, and (b) the execution of the Change Order; or,
 - b. If no mutual agreement occurs between the Owner and the Contractor, the change in the Contract Price, if any, shall be derived based upon the Cost Plus Price basis (as set forth in Article 32.02.08 below) by determining the "total actual costs" (in accordance with Article 32.02.09 below), incurred or savings achieved, resulting from revisions in the Work. Such total actual costs or savings shall include a component for direct jobsite overhead and profit but under no circumstances shall it include non-job site overhead expenses or costs or any other indirect costs or components. Any such costs or savings shall be documented in the format, and with such content and detail as the Owner or the Project Consultant requires. If agreement is not reached as to the change in time, Contractor shall be given a reasonable time based upon the scope of Work required by the change.
- 32.02.03 The execution of a Change Order by the Contractor shall constitute conclusive evidence of the Contractor's agreement to the ordered changes in the Work and the change in the Contract Price and the

time for performance by the Contractor. The Contractor, by executing the Change Order, waives and forever releases any claim against the Owner for additional time or compensation for issues or matters relating to or arising out of or resulting from the Work included within or affected by the executed Change Order.

- 32.02.04 The Contractor shall notify and obtain the consent and approval of the Contractor's surety with reference to all Change Orders if such notice, consent or approval are required by the Owner, the Project Consultant, the Contractor's surety or by law. The Contractor's execution of the Change Order shall constitute the Contractor's warranty to the Owner that the surety has been notified of, and consents to, such Change Order and the surety shall be conclusively deemed to have been notified of such Change Order and to have expressly consented thereto, and that the penal sums of the performance and payment bonds furnished by Contractor and Surety are adjusted coextensively with the amount of the Change Order.
- 32.02.05 The Owner, without invalidating the Contract, may require the change for any reason whatsoever. All such Work shall be executed under the terms of the original Contract.
- 32.02.06 All change orders and adjustments shall be in writing and executed by the Contractor and Owner; otherwise, no claim for additional compensation or time will be allowed.
- 32.02.07 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change which results in a net decrease in the Contract Sum shall be the total actual cost (as set forth in Article 32.02.09 below) saved as confirmed by the Project Consultant. The amount shall not include an amount for the overhead and profit of the Contractor which the Owner is not required to pay as a result of the deletion or decrease. When both additions and credits covering related Work or substitutions are involved in a change, the overhead and profit shall be calculated on the basis of net increase, if any, with respect to that change.
- 32.02.08 The value of any change ordered under the Contract for extra Work and/or any reductions in Work required, shall be determined under one or more of the following procedures before a written Change Order is issued.
- a. By **UNIT PRICES** named in the Contract or subsequently agreed upon by the Owner and the Contractor, which prices shall include Contractor's overhead and profit.
 - b. By **LUMP SUM PRICE** agreed upon actual reasonable costs and direct job site overhead by the Owner and the Contractor, which price shall include Contractor's overhead and profit but under no circumstances shall it include non job site overhead, expenses or costs or any other indirect costs; a breakdown of the estimated costs comprising the lump sum price may be required by the Project Consultant for his review. Percentage for overhead and profit shall be determined in accordance with the method listed for **COST PLUS PRICE**, subparagraph (c.) below.
 - c. By a **COST PLUS PRICE** based on total actual costs as defined in Article 32.02.09 below, plus an added percentage, all determined as follows:

OVERHEAD AND PROFIT:

JOB SITE OVERHEAD, including supervision and the furnishing, use and maintenance of small tools and ordinary equipment incidental to and required for the work of subcontractors (whether performed by them or others) shall be considered to be just and fully compensated for, by adding an amount equal to five percent (5%) of the sum of material costs (as defined under Article 34.08.09(a) below) and labor costs (as defined under Article 34.08.09(b) below), and rentals (as defined under Article 32.08.09(c) below). There shall be no compensation for any non job site overhead, expenses or costs.

PROFIT, may then be added by the subcontractor to the above material costs and labor costs, including the **JOB SITE OVERHEAD** allowance, at the rate of 10% of the sum of those costs.

JOB SITE OVERHEAD, including general supervision and the furnishing, use and maintenance of small equipment incidental to and required for the Work of the General Contractor (including that of his subcontractors) shall be considered to be just and fully compensated for by adding an amount equal to ten percent (10%) of the sum of material costs (as defined under Article 32.08.09(a) below and labor costs (as defined under Article 32.08.09(b) below) and rentals (as defined under Article 32.08.09(c) below). There shall be no compensation for any non job site overhead expenses or costs.

PROFIT may then be added by the Contractor to the above material costs and labor costs, including the JOB-SITE OVERHEAD allowance, at the rate of five percent (5%) of the sum of those costs.

- d. BOND ALLOWANCE, for maintaining the Performance Bond at 100% of the contract amount, a sum of one percent (1%) of the total cost of the change, (including material, labor, overhead and profit, and equipment rentals) shall be allowed on all change orders.

32.02.09 The total actual costs of materials, labor and equipment rentals may include the following only:

- a. Material costs actually recorded by the Contractor and/or subcontractors as they are delivered to the site and as evidenced from originally receipted invoices, listing appropriate quantities and unit prices. Records in proper form shall be maintained and available to the Project Consultant at all times.
- b. Labor costs represented by the actual wages paid to all laborers, apprentices, journeymen, and foremen involved in and necessary to completing the particular construction operations, for each day and every hour such labor teams and foremen are actually employed and on the extra Work required, including the net cost of insurance, Social Security and Workmen's Compensation. The furnishing, use and maintenance of small tools and ordinary equipment normal to the work of individual workmen in the trades will be considered part of the labor costs. Records in proper form shall be maintained and available to the Project Consultant at all times.
- c. Rentals for special equipment or machinery such as power driven roller, tractors, trucks, shovels, drills, mixers, pumps, hoists, etc., required for the economical performance of the Work, at reasonable rental prices agreed upon before work commences, shall be allowed the Contractor and/or his subcontractors by the Project Consultant for each and every hour such special equipment is in use on the particular work.

32.02.10 The Contractor is obligated to proceed with the Work for a Change Order, even though there has not been an agreement reached with the Owner as to an adjustment to the Contract Price or time, and even if there is a dispute as to same. In such instances the Owner, City Engineer or Project Consultant will issue a Construction Change Directive to Contractor providing for the scope of work to be performed and the payment therefore based on 32.02.09 above. A Change Order or proposed Change Order shall not be the basis of the Contractor not performing pursuant to the Contract Documents.

32.02.11 The Contractor, Owner and Project Consultant shall administer and document the Change Order process by utilizing the documentation specified elsewhere in the Contract Documents, including a Construction Change Directive.

32.03 The Project Consultant will have authority to order minor changes in the Work not involving an adjustment to the Contract Sum or Contract Time and not inconsistent with the intent of the Contract Documents. Such changes shall be effected by written order of the Project Consultant and such changes shall be binding on the Owner and the Contractor.

32.04 The Owner has authorized the following approval thresholds for Change Orders in the Name of The City of Pompano Beach, Florida under its General Services Manual, the rules of which are incorporated below:

- A. The City Manager is authorized to approve change orders up to the cumulative total of 10 percent of the original construction contract amount, not to exceed \$75,000 in the aggregate.
- B. When the cumulative total of all change orders on a project has exceeded the ceiling established in 32.04A above, all subsequent change orders will require prior City Commission approval, except in emergency cases as declared by the City Manager, or where the change order in question would be in the form of a credit, thereby reducing the adjusted contract amount.
- C. Approval of change orders under this policy shall be for the purposes of expediting the work in progress and shall be confirmed by City Commission action at the next regular meeting of the City Commission.

ARTICLE 33. DISCOVERING AND CORRECTING DEFECTIVE OR INCOMPLETE WORK.

- 33.01 In the event that the Contractor covers, conceals or obscures its work in violation of this Contract or in violation of a directive from the Owner or the Project Consultant, such work shall be uncovered and displayed for the Owner's or Project Consultant's inspection upon request, and shall be reworked at no cost in time or money to the Owner.
- 33.02 If any of the work is covered, concealed or obscured in a manner not covered by Subparagraph (A) above, it shall, if directed by the Owner or the Project Consultant, be uncovered and displayed for the Owner's or Project Consultant's inspection. If the uncovered work conforms substantially with this Contract, the costs incurred by the Contractor to uncover and subsequently replace such work shall be borne by the Owner; otherwise, such costs shall be borne by the Contractor.
- 33.03 The Contractor shall, at no additional cost in money to the Owner or extension of time correct work rejected by the Owner or by the Project Consultant as defective or failing to conform to this Contract. Additionally, the Contractor shall reimburse the Owner for all testing, inspections and other expenses incurred as a result thereof.
- 33.04 In addition to its warranty obligations set forth elsewhere herein, the contractor shall be specifically obligated to correct any and all defective or nonconforming work for a period of twenty-four (24) months following final completion upon written direction from the Owner.
- 33.05 The Owner may, but shall in no event be required to, choose to accept defective or nonconforming work.
- 33.05.01 In such event, the Contract Price shall be reduced, at Owner's option, by the greater of (i) the reasonable costs of removing and correcting the defective or nonconforming work, or (ii) the difference between the fair market value of the Project as constructed and the fair market value of the Project had it not been constructed in such a manner as to include defective or nonconforming work.
- 33.05.02 If the remaining portion of the unpaid Contract Price, if any, is insufficient to compensate the Owner for the acceptance of defective or nonconforming work, the Contractor shall, upon written demand from the Owner, pay the owner such remaining compensation for accepting defective or nonconforming work.

ARTICLE 34. SAFETY, PROTECTION OF WORK AND PROPERTY.

- 34.01 Contractor shall be fully and solely responsible for conducting all operations under this Construction Contract at all times in such a manner as to avoid the risk of bodily harm to persons and damage to property. Contractor shall continuously and diligently inspect all Work, material and equipment to discover any conditions which might involve such risks and shall be solely responsible for discovery and correction of any such conditions.
- 34.02 Contractor shall instruct its personnel on the requirements of the Contractor's safety program and shall coordinate with other contractors and subcontractors on safety matters.

- 34.03 Contractor shall provide safety equipment and enforce the use of such equipment by its employees.
- 34.04 Contractor shall maintain accurate accident and injury reports and shall provide to Owner a monthly summary of injuries and man hours lost due to injuries.
- 34.05 Contractor shall maintain all portions of the Work in a neat, clean and sanitary condition at all times.
- 34.06 Contractor shall assure that all Subcontractors shall, without expense to Owner, comply with the foregoing.
- 34.07 Contractor shall comply with any and all rules, regulations, laws, etc., which apply to safety requirements, including but not limited to OSHA requirements.
- 34.08 Safety Precautions and Programs:
- 34.08.01 The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the performance of the Contract.
- 34.08.02 In the event the Contractor encounters on the site material reasonably believed to be asbestos or polychlorinated biphenyl (PCB) which has not been rendered harmless, the Contractor shall immediately stop Work in the area affected and report the condition to the Owner and Project Consultant in writing. The Work in the affected area shall not thereafter be resumed except by written notice from the Owner. The Work in the affected area shall be resumed in the absence of asbestos or polychlorinated biphenyl (PCB), or when it has been rendered harmless, by written agreement of the Owner, Contractor and Project Consultant.
- 34.08.03 The Contractor shall not be required to perform without consent any Work relating to asbestos or polychlorinated biphenyl (PCB).
- 34.09 Safety of Persons and Property
- 34.09.01 The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury or loss to:
- a. Employees on the Work and other persons who may be affected thereby;
 - b. The Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody or control of the Contractor or the Contractor's Subcontractors or Sub-subcontractors; and
 - c. Other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.
- 34.09.02 The Contractor shall give notices and comply with applicable laws, ordinances, rules, regulations and lawful orders of public authorities bearing on safety of person or property or their protection from damage, injury or loss.
- a. The Contractor and his Subcontractors shall comply with and conform in all respects to the standard set forth in the Occupational Safety and Health Act (OSHA) of 1970.
 - b. The Contractor shall prominently post and maintain on the jobsite:
 - 1) OSHA 200: Log and summary of occupational injuries and illnesses.
 - 2) OSHA 2203: Provisions of the Act poster.

- 34.09.03 The Contractor shall implement and maintain a continuing safety program applicable to all Contractor employees, Subcontractors, and Sub-subcontractors, to include:
- a. Designating a responsible member of the Contractor's organization at the site as the Contractor's "Safety Officer" whose duty shall be the prevention of accidents, safety inspections, and accident documentation. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner and the Project Consultant.
 - b. Holding weekly safety meetings with employees and Subcontractors.
 - c. Implementing OSHA Voluntary Protection Programs.
 - d. Ensuring the presence of an American Red Cross (or other organization acceptable to the Owner) certified Cardiopulmonary Resuscitation (CPR) and first-aid trained individual on site at all times.
 - e. Compliance with the Drug Free Work Place Act of 1988, the Federal Omnibus Transportation Employee Testing Act of 1991, and the certification of compliance with the same as required by the Owner in Document 00457, Drug-Free Workplace Certification.
 - f. Erecting and maintaining reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards, promulgating safety regulations and notifying owners and users of adjacent sites and utilities.
 - g. Ensuring that employees are not discriminated against or discharged for filing reasonable safety or health complaints or for otherwise exercising their rights in these regards.
- 34.09.04 When use of hazardous materials or equipment or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.
- 34.09.05 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to properly caused in whole or in part by the Contractor, a Subcontractor or a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is reasonable, except damage or loss attributable to acts or omissions of the Owner or Project Consultant or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault of negligence of the Contractor.
- 34.09.06 The Contractor shall not load or permit any part of the construction or site to be loaded so as to endanger its safety.
- 34.09.07 Building materials, Contractor's equipment and other supplies may be stored on the premises, but the placing of same shall be in substantial, watertight storage sheds upon the premises where directed in which he shall store all materials which would be damaged by weather. This shall in no manner relieve the Contractor from full responsibility for such materials. Sheds and other storage structures must be secured and anchored in a manner sufficient to withstand hurricane force winds as defined by applicable codes but not less than a 120 mile per hour wind uplift force.
- 34.10 **Emergencies:** In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury or loss.

ARTICLE 35. ROYALTIES AND PATENTS.

- 35.01 The Contractor shall pay all royalties and license fees.

- 35.02 The Contractor shall be responsible for all infringement of patent rights and shall assume the defense, including payment of attorney fees and costs, of any suit brought against Contractor and/or Owner for infringement of any United States patent or for wrongful use of proprietary information of any third party.
- 35.03 Contractor hereby indemnifies and shall defend and hold harmless Owner, its officers, its officials, its agents, its employees, and its representatives, respectively, from and against all claims, losses, costs, damages, and expenses, including attorney's fees, incurred by Owner and its representatives, respectively, as a result of or in connection with any claims or actions based upon infringement or alleged infringement of any patent, and arising out of the use of the equipment or materials provided under this Construction Contract by Contractor, or out of the process of actions employed by, or on behalf of Contractor in connection with the performances of this Construction Contract. Contractor shall, at its sole expense, promptly defend against any such claim or action unless directed otherwise by Owner or its representatives; provided that Owner or its representatives shall have notified Contractor upon becoming aware of such claims or actions, and provided further, that Contractor's aforementioned obligations shall not apply to equipment, materials, or processes furnished or specified by Owner or its representatives.
- 35.04 Contractor shall have the right, in order to avoid such claims or actions, to substitute at its expense non-infringing equipment, materials, or processes, or to modify such infringing equipment, materials and processes so they become non-infringing, or obtain the necessary licenses to use the infringing equipment, materials or processes, provided that such substituted and modified equipment, materials and processes shall meet all the requirements and be subject to all the provisions of the Contract Documents.
- 35.05 The indemnification pursuant to Florida Statute 725.06 and other Florida laws, etc., shall have a separate consideration of \$1.00, receipt of which is hereby acknowledged and incorporated into the project sum. This is incorporated by reference into the Bid Documentation and Specifications if any.

ARTICLE 36. TAXES.

- 36.01 Contractor shall pay all taxes, levies, duties and assessments of every nature which may be applicable to any Work under this Contract.
- 36.02 The Contract Sum and any agreed changes thereto shall include all taxes imposed by law. Contractor shall make any and all payroll deductions as required by law.
- 36.03 Contractor herein indemnifies and holds the Owner harmless from any liability on account of any and all such taxes, levies, duties, assessments and deductions.

ARTICLE 37. INDEMNITY AND HOLD HARMLESS.

- 37.01 To the fullest extent permitted by law, the Contractor shall defend, indemnify and hold harmless the Owner, its officers, its officials, its agents and employees and each of them hereinafter collectively referred to as the Owner, from and against any and all judgments, demands, claims, causes of action, liability, expenses, losses, costs, fines, and damages (including reasonable attorney's fees and expert's fees) of every kind and character brought against the Owner by any person, party or entity of any kind or nature whatsoever arising out of, incident to, relating or regarding the Contractor's performance under this Agreement, the condition of the premises, and/or the Contractor's acts of omission or commission.
- 37.02 Contractor, however, shall not be responsible to Owner for damages resulting out of bodily injury or damages to property which a Court of competent jurisdiction determines as being attributed to the negligence of Owner, its respective agents, servants, employees or officers.
- 37.03 Said indemnifications by Contractor shall be extended to include all "Subcontractors", deliverers, suppliers, furnishers of material or anyone acting for, on behalf of, or at the request of the Contractor.
- 37.04 Contractor recognized the broad nature of this indemnifications and hold harmless clause and voluntarily makes this covenant and expressly acknowledge the receipt of Ten (\$10.00) Dollars, which payment is

incorporated into the Contract Sum, and such other good and valuable consideration provided by Owner in support of this indemnification in accordance with the laws of the State of Florida.

- 37.05 This clause shall survive termination of this Agreement and pursuant to Florida Statute 725.06 be incorporated by reference into any and all Bid Documentation or Specifications.

ARTICLE 38. TERMINATION BY THE CONTRACTOR.

- 38.01 If the Owner repeatedly fails to perform its material obligations to the Contractor for a period of 30 days after receiving written notice from the Contractor of its intent to terminate hereunder, the Contractor may terminate performance under this Contract by written notice to the Owner and the Project Consultant.
- 38.02 In such event, the Contractor shall be entitled to recover from the Owner as though the Owner had terminated the Contractor's performance for convenience pursuant to the terms and conditions of this Contract.

ARTICLE 39. OWNER'S RIGHT TO SUSPEND CONTRACTOR'S PERFORMANCE.

- 39.01 The Owner shall have the right at any time to direct the Contractor to suspend its performance, or any designated part thereof, for any reason whatsoever, or without reason. If any such suspension is directed by the Owner, the Contractor shall immediately comply with same;
- 39.02 In the event the Owner directs a suspension of performance under this Paragraph through no fault of the Contractor, the Owner shall pay the Contractor as full compensation for such suspension the Contractor's reasonable costs, actually incurred and paid, of the following items only:
- 39.02.01 Demobilization and remobilization, including such costs paid to subcontractors;
- 39.02.02 Preserving and protecting Work in place;
- 39.02.03 Storage of materials or equipment purchased for the Project, including insurance thereon;
- 39.02.04 Performing in a later, or during a longer, time frame than that contemplated by this Contract.

ARTICLE 40. TERMINATION BY THE OWNER.

- 40.01 The Owner may, at the Owner's option, for any reason and at any time terminate for convenience, any work under this Contract, in whole or, from time to time, in part, in accordance with the following terms and conditions:
- 40.02 The Owner shall give written notice of such termination to Contractor 7 days before it becomes effective.
- 40.02.01 The Contractor shall incur no further obligations in connection with the Work and the Contractor shall stop work when such termination becomes effective.
- 40.02.02 The Contractor shall also terminate outstanding orders and subcontracts.
- 40.02.03 The Contractor shall settle the liabilities and claims arising out of the termination of subcontracts and orders.
- 40.02.04 The Owner may direct the Contractor to assign the Contractor's right, title and interest under termination orders or subcontracts to the Owner or its designee.
- 40.02.05 The Contractor shall transfer title and deliver to the Owner such completed or partially completed Work and materials, equipment, parts, fixtures, information and Contract rights as the Contractor has.
- 40.02.06 When terminated for convenience, the Contractor shall be compensated as follows:

- a. The Contractor shall submit a termination claim within one year to the Owner and the Project Consultant specifying the amounts due because of the termination for convenience together with costs, pricing or other data required by the Owner or the Project Consultant. If the Contractor fails to file a termination claim with the Owner's Project Consultant within one (1) year from the effective date of termination, the Owner shall have no further obligation to the Contractor and Contractor waives any and all rights for compensation based upon the termination.
 - b. The Owner and the Contractor may agree to the compensation, if any, due to the Contractor hereunder;
 - c. Absent agreement to the amount due to the Contractor, the Owner shall pay the Contractor the following amounts:
 - 1. Contract prices for labor, materials, equipment and other services accepted under this Contract;
 - 2. Reasonable costs incurred in preparing to perform and in performing the terminated portion of the Work, and in terminating the Contractor's performance, plus a fair and reasonable allowance for direct jobsite overhead (and not home office or other overhead) and profit thereon (such profit shall not include anticipated profit or consequential damages); provided, however, that if it appears that the Contractor would have not profited or would have sustained a loss if the entire Contract would have been completed, no profit shall be allowed or included and the amount of compensation shall be reduced to reflect the anticipated rate of loss, if any;
 - 3. Reasonable costs of settling and paying legitimate claims arising out of the termination of subcontractors or orders pursuant to this Paragraph. These costs shall not include amounts paid in accordance with other provisions hereof.
 - 4. The total sum to be paid the Contractor under this Subparagraph shall not exceed the total Contract Price, as properly adjusted, reduced by the amount of payments otherwise made, and shall in no event include duplication of payment.
- 40.03 The Owner may terminate this Contract for cause in accordance with the following terms and conditions:
- 40.03.01 If the Contractor does not perform the Work, or any part thereof, in a timely manner, supply adequate labor, supervisory personnel or proper equipment or materials, or if it fails to timely discharge its obligations for labor, equipment and materials or proceeds to disobey applicable law, or otherwise commits a violation of a material provision of this Contract, then the Owner, in addition to any other rights it may have against the Contractor or others, may terminate the performance of the Contractor for cause upon seven (7) day written notice and assume possession of the Project site and of all materials and equipment at the site and may complete the Work.
- 40.03.02 In such case, the Contractor shall not be paid further until the Work is complete.
- 40.03.03 After final completion has been achieved, if any portion of the Contract Price (as it may be modified hereunder) remains after the cost to the Owner of completing the Work, including all costs and expenses of every nature incurred, has been deducted by the Owner, such remainder shall be paid to the Contractor. Otherwise, the Contractor shall pay the Owner any and all costs, fees, damages or expenses which the Owner has paid or is obligated to pay in excess of the contract price (as it may be modified hereunder). This obligation for payment shall survive the termination of the Contract. In the event the employment of the Contractor is terminated by the Owner for cause pursuant to this Subparagraph and it is subsequently determined by a Court of competent jurisdiction that such termination was without cause, such termination shall thereupon be deemed a Termination for Convenience and the terms of Article 40.02 shall apply.

ARTICLE 41. CONTRACTOR'S INSURANCE

- 41.01 The Contractor shall maintain such insurance as will protect the Contractor and Owner from claims under Workmen's Compensation Acts, and from any other claims or damages for personal injury, including death and property damage, which may arise from operations under this Contract, whether such operations be by himself or by any subcontractor or anyone directly or indirectly employed by either, as more fully set forth below and in the amounts provided herein. Prior to commencement of the Work, all Certificates of Insurance executed by authorized representatives of the insurance company shall be filed with the Owner and shall be subject to its approval for accuracy of protection. In addition, the Owner may at any time require that Contractor or its insurer provide any other documentation regarding insurance to Owner including, but not limited to, the policy. The Contractor shall not commence Work under this Contract until the provisions of this paragraph have been complied with. Owner may withhold payments due to Contractor in accordance with this Contract or terminate or suspend this Contract with all costs or expenses associated with same to be paid by Contractor in the event Contractor fails to comply with any requirement in the Contract regarding insurance. In the event of cancellation of any policy, Contractor is obligated to immediately notify Owner of same and obtain policy(s) in accordance with the Contract Documents.
- 41.02 Contractor shall comply with any and all insurance obligation required by law, rules, regulations, etc., including but not limited to those required by State Regulations for Educational Facilities.
- 41.03 The Contractor will be required to provide a Certificate of Insurance indicating that Workers' Compensation has been provided for all employees in compliance with Chapter 440, Florida Statutes.
- 41.04 The Contractor shall procure and carry Comprehensive General Liability insurance including contractual and indemnification liability covering this Contract and Products/Completed Operations Liability Insurance covering personal injury and bodily injury in limits of not less than \$1,000,000 for injury or death to any one person and not less than \$2,000,000 each occurrence; and shall carry insurance against property damage in limits of not less than \$1,000,000 per claimant and \$2,000,000 per occurrence as a minimum coverage. The Contractor shall also procure and carry Owner's and Contractor's protective liability insurance. In the event that work to be performed hereunder by Contractor involves the removal and disposal of asbestos-related materials, Contractor shall, in addition to the foregoing coverages, also provide and carry Asbestos Liability-Occurrence form only, with \$1,000,000 per occurrence, \$2,000,000 aggregate. All insurance shall name the Owner as an additional insured, and shall remain in full force and effect for two (2) years following Contractor's completion of the work.
- 41.05 The Contractor shall carry at no additional expense to the Owner, Builders' Risk Insurance for the perils of fire, vandalism, malicious mischief and those included in extended coverage in the amount of one hundred percent (100%) of the values at risk. Such policies shall be written to protect the Contractor and the Owner as their interest may appear.
- 41.06 All Contractors shall maintain automobile liability insurance against bodily injury and property damage in at least the amounts of one million dollars (\$1,000,000) per claimant, one million dollars (\$1,000,000) per occurrence.
- 41.07 The insurance coverage amounts provided for in this Section are the minimum required insurance amounts. The Owner may require additional insurance or coverage on a case-by-case basis. Any insurance or coverage amounts in addition to those provided for herein shall be specified in the Contract Documents.
- 41.08 The Owner is not maintaining any insurance on behalf of Contractor covering against loss or damage to the Work or to any other property of Contractor. In the event Contractor maintains insurance against physical loss or damage to Contractor's construction equipment and tools, such insurance shall include an insurer's waiver or rights of subrogation in favor of Owner.

- 41.09 The requirements contained herein as to types and limits, as well as Owner's approval of insurance coverage to be maintained by Contractor, are not intended to and shall not in any manner limit or qualify the liabilities and obligations assumed by Contractor under the Contract.
- 41.10 The policies of such insurance in force, shall be issued by companies qualified to do business in the State of Florida and be acceptable to the Owner and shall provide that the Owner be given thirty (30) days advance written notice of the cancellation, expiration or any material change in the coverage afforded thereunder. The companies must be rated at least A-VI by AM Best or Aa3 by Moody's Investor Service. All policies must remain in effect during performance of the Work and for a period of one year after final completion.
- 41.11 Uninsured Claims. If any action by any person, firm or corporation is brought or threatened against the Owner or against the Contractor and the Owner for any alleged loss, damage or injury arising out of or in the consequence of the performance or nonperformance of the Contract which, in the reasonable opinion of the Owner, may not be covered by the contingent liability, public liability or property damage insurance policy, or, which together with other such actions or claims seeks a recovery in excess of the amount payable under such policies, the amount of such recovery sought or so much thereof as the Owner reasonably deems necessary, may be withheld by the Owner from any money due the Contractor. The Owner in its sole discretion may permit the Contractor to substitute other satisfactory security in lieu of the monies so withheld. If the liability of the Owner is determined by judgment or award of a court or other tribunal of competent jurisdiction, or if such recovery sought shall have been admitted by the Contractor to be valid, the Owner may pay such judgment, award of admitted recovery out of the monies retained by the Owner under the provisions of this subparagraph and return the remaining balance, if any, to the Contractor.
- 41.12 Adequate funds shall be retained for the insurance costs listed in the Schedule of Values attached to the Contractor's respective Applications for Payment to account for insurance coverage renewals on multi-year projects coupled with invoices to substantiate the annual costs.

ARTICLE 42. PERFORMANCE BOND AND PAYMENT BOND

- 42.01 For a Project with an estimated cost of \$200,000.00 or more, the Contractor shall furnish bonds covering faithful performance of the Contract and payment of obligations arising thereunder as specifically required in the Contract Documents on the date of execution of the Contract.

ARTICLE 43. RIGHT TO AUDIT PROVISIONS

- 43.01 Contractor's records which shall include but not be limited to accounting records, written policies and procedures, computer records, disks and software, videos, photographs, subcontract files (including proposals of successful and unsuccessful bidders), originals estimates, estimating worksheets, correspondence, change order files (including documentation covering negotiated settlements), and any other supporting evidence necessary to substantiate charges related to this contract (all the foregoing hereinafter referred to as "records") shall be open to inspection and subject to audit and/or reproduction, during normal working hours, by Owner's agent or its authorized representative to the extent necessary to adequately permit evaluation and verification of any invoices, payments or claims submitted by the contractor or any of his payees pursuant to the execution of the contract. Such records subject to examination shall also include, but not be limited to, those records necessary to evaluate and verify direct and indirect costs (including overhead allocations) as they may apply to costs associated with this contract.
- 43.02 For the purpose of such audits, inspections, examinations and evaluations, the Owner's agent or authorized representative shall have access to said records from the effective date of this contract, for the duration of the Work, and until 5 years after the date of final payment by Owner to Consultant pursuant to this contract.
- 43.03 Owner's agent or its authorized representative shall have access to the Contractor's facilities, shall have access to all necessary records, and shall be provided adequate and appropriate work space, in order to

conduct audits in compliance with this article. Owner's agent or its authorized representative shall give auditees reasonable advance notice of intended audits.

- 43.04 Contractor shall require all subcontractors, insurance agents, and material suppliers (payees) to comply with the provisions of this article by insertion of the requirements hereof in any written contract agreement. Failure to obtain such written contracts which include such provisions shall be reason to exclude some or all of the related payees' costs from amounts payable to the Contractor pursuant to this contract.
- 43.05 If an audit inspection or examination in accordance with this article, discloses overcharges (of any nature) by the Contractor to the Owner in excess of 10% percent of the total contract billings, the actual cost of the Owner's audit shall be paid by the Contractor.

ARTICLE 44. LAWS AND REGULATIONS

- 44.01 Contractor and its employees and representative shall at all times, comply with all applicable laws, ordinances, statutes, rules and regulations in effect at the time Work is performed pursuant to the Contract Documents.
- 44.02 If, during the term of this Construction Contract, there are any changed or new laws, ordinances or regulations not in existence at the time of signing this Construction Contract which become effective and which affect the cost or time of performance of the Construction Contract, Contractor shall within fifteen (15) days of the discovery of said law, ordinance or regulation, notify Owner in writing and submit detailed documentation of such effect in terms of both time and cost of performing the Construction Contract. Upon concurrence by Owner as to the effect of such changes, an adjustment in the compensation and/or time of performance may be made at Owner's discretion.
- 44.03 If any discrepancy or inconsistency should be discovered between the Contract Documents and any law, ordinance, regulation, order or decree, Contractor shall within fifteen (15) days of discovery of same report the same in writing to Owner who will issue such instructions as may be necessary.

ARTICLE 45. DISPUTE RESOLUTION.

- 45.01 The Owner and Contractor agree that, in the event of a dispute, the parties will attempt to resolve such dispute without litigation and that resolution through mediation procedures will be encouraged.
- 45.02 The existence of a dispute between the parties shall not be the basis of the Contractor unilaterally electing not to continue performance pursuant to the terms of the Contract Documents.

ARTICLE 46. GOVERNING LAW AND ATTORNEYS FEES.

- 46.01 The Construction Contract shall be governed by the laws of the State of Florida.
- 46.02 In the event either party institutes litigation regarding or relating to this Contract or for breach of any of its terms all litigation and appeals shall have venue in Broward County, Florida or in the U.S. District Court for the Southern District of Florida.
- 46.03 To the fullest extent permitted by law, Owner, Contractor, and Contractor's Surety do hereby each waive the right to trial by jury in any action or proceeding, including any counterclaims/crossclaims/third (or more remote) party complaints which may be brought by Owner, Contractor, or Surety, jointly and/or severally, arising out of or in any way related to this Construction Contract and/or attendant suretyship including, without limiting the generality thereof, any claim for damages resulting from any act or omission of Owner, Contractor, or Surety, jointly or severally, in any way connected with this Construction Contract.

ARTICLE 47. RIGHTS AND REMEDIES.

- 47.01 The duties and obligations imposed by the Contract Documents and the rights and remedies available thereunder shall be in addition to and not a limitation of any duties, obligations, rights and remedies otherwise imposed or available by law.

ARTICLE 48. SUCCESSORS, ASSIGNS AND ASSIGNMENT.

- 48.01 The Owner and the Contractor each binds itself, its partners, successors, assigns and legal representatives to the other party in respect to all covenants, agreements and obligations contained in the Construction Contract. It is agreed that the Contractor shall not assign, transfer, convey or otherwise dispose of the contract or its right, title and interest in and to the same or any part thereof, without previous consent of the Owner and concurred to by the Sureties.
- 48.02 If requested by Owner the Contractor agrees to assign all Subcontracts required for performance of this Contract to the Owner upon the Owner or Project Consultant's determination that Contractor has defaulted under the Contract Documents. The Contractor shall include in all Subcontracts, equipment leases and purchase orders a provision requiring the subcontractor, equipment lessor or supplier, in the event of Contractor's default under this Contract, to consent to the assignment of their subcontracts to the Owner.

ARTICLE 49. PUBLIC RECORDS.

- 49.01 A. The City of Pompano Beach is a public agency subject to Chapter 119, Florida Statutes. The Contractor shall comply with Florida's Public Records Law, as amended. Specifically, the Contractor shall:
- a. Keep and maintain public records required by the City in order to perform the service;
 - b. Upon request from the City's custodian of public records, provide the City with a copy of requested records or allow the records to be inspected or copied within a reasonable time at a cost that does not exceed the cost provided in Chapter 119, Florida Statutes or as otherwise provided by law;
 - c. Ensure that public records that are exempt or that are confidential and exempt from public record requirements are not disclosed except as authorized by law;
 - d. Ensure that public records that are exempt or confidential and exempt from public records disclosure requirements are not disclosed except as authorized by law for the duration of the contract term and following completion of the contract if the Contractor does not transfer the records to the City; and
 - e. Upon completion of the contract, transfer, at no cost to the City, all public records in possession of the Contractor, or keep and maintain public records required by the City to perform the service. If the Contractor transfers all public records to the City upon completion of the contract, the Contractor shall destroy any duplicate public records that are exempt or confidential and exempt from public records disclosure requirements. If the Contractor keeps and maintains public records upon completion of the contract, the Contractor shall meet all applicable requirements for retaining public records. All records stored electronically must be provided to the City, upon request from the City's custodian of public records in a format that is compatible with the information technology systems of the City.
- 49.02 The failure of Contractor to comply with the provisions set forth in this Article shall constitute a Default and Breach of this Agreement and the City shall enforce the Default in accordance with the provisions set forth in Article 40.

PUBLIC RECORDS CUSTODIAN

IF THE CONTRACTOR HAS QUESTIONS REGARDING THE APPLICATION OF CHAPTER 119, FLORIDA STATUTES, TO THE CONTRACTOR'S DUTY TO PROVIDE PUBLIC RECORDS RELATING TO THIS CONTRACT, CONTACT THE CUSTODIAN OF PUBLIC RECORDS AT:

**CITY CLERK
100 W. Atlantic Blvd., Suite 253
Pompano Beach, Florida 33060
(954) 786-4611
RecordsCustodian@copbfl.com**