BID DOCUMENT AND SPECIFICATIONS

RWS EXTENSION
OCOEE-APOPKA RD.
(HARMON RD. – ALSTON BAY BLVD.)

September 2016

BID NUMBER: 2017-01

CITY OF APOPKA

Mayor:	JOE KILSHEIMER
City Commissioners:	BILLIE L. DEAN
	DIANE VELAZQUEZ
	DOUG BANKSON
	KYLE BECKER
Chief Administrator:	GLENN IRBY, MPA
Public Services Director:	R. JAY DAVOLL, P.E.

PUBLIC SERVCES DEPARTMENT
DESIGN ENGINEERING DIVISION
CITY OF APOPKA
748 E. CLEVELAND STREET
APOPKA, FLORIDA 32703
(407) 703-1731

CITY OF APOPKA

RWS Extension Ocoee-Apopka Rd.
(Alston Bay Blvd-Keene Rd.)

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SECTION 00010
BID NO. 2017-01

INVITATION TO BID

Sealed bids will be received by the City of Apopka until 10:00 a.m. E.S.T. on Thursday, November 3, 2016 at the Apopka City Clerk's office, 120 E. Main Street, Apopka, Florida 32703 for the construction of the following project:

RWS Extension
Ocoee - Apopka Rd.
(Harmon Rd. – Alston Bay Blvd.)

and publicly opened and read aloud at 10:15 a.m. in the City Council Chambers. The project consists of furnishing all transportation, materials, equipment, labor, services and supplies necessary to construct the above described improvements. The project includes, but not limited to, the construction of approximately 2,230 linear feet of a 30 inch.

A pre-bid meeting has been scheduled for Tuesday, October 18, 2016 at 10:00 a.m. at the Public Services Complex.

Copies of the plan and specifications are available at the Public Services Complex, 748 E. Cleveland Street, Apopka, Florida 32703, telephone (407) 703-1731, for $30.00 per set (non-refundable). Payments by check or money order are to be made payable to City of Apopka. If shipment is required, provide a commercial carrier (FedEx or UPS) account number. Plans and specifications are also available electronically at no charge, reference businesses section at www.apopka.net. and on Demand Star. It is recommended that interested bidders also visit the same website to confirm and be aware of any addendums that may have been issued prior to submitting their bid.

Each bid shall be made out and submitted in <u>duplicate</u> on a form furnished as part of the Bid Document and must be accompanied by cashier's check, certified check or a bidder's bond in the amount of five percent (5%) of the total bid price, make payable to the City of Apopka. Said check or bond shall be given as guarantee that the bidder will enter into a contract with the owner and furnish a performance bond and payment bond in the amount of 100% of the total bid price within fifteen (15) days from the date of notification of award. Bonds are required from companies licensed in the State of Florida.

In accordance with the Americans with Disabilities Act (ADA), persons with disabilities needing assistance to participate in any of these proceedings should contact the City Clerk's Office at 120 East Main Street, Apopka FL 32703, Telephone: 407-703-1704, no less than 48 hours prior to the proceeding.

The Owner reserves the right to reject any and all bids and to waive any and all irregularity in any bid.

SECTION 00020
INSTRUCTIONS TO BIDDERS

1. Defined Terms

Terms used in these Instructions to Bidders which are defined in the General Terms and Conditions, Section 00160, have the meanings assigned to them in the General Terms and Conditions. The term "Successful Bidder" means the lowest, qualified, responsible Bidder to whom Owner (on the basis of Owner's evaluation as hereinafter provided) makes an award.

2. Copies of Bidding Documents

2.1 Complete sets of the Bidding Documents in the number and for the deposit sum, if any, stated in the Advertisement of invitation may be obtained from Engineer (unless another issuing office is designated in the Advertisement of Invitation to Bid).

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

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

3. Qualifications of Bidders

To demonstrate qualifications to perform the Work, each Bidder must be prepared to submit within seven (7) days of Owner's request written evidence of the types set forth here, such as financial data, previous experience and evidence of authority to conduct business in the jurisdiction where the Project is located. Each Bid must contain evidence of Bidder's qualification to do business in the state where the Project is located or covenant to obtain such qualification prior to award of the contract.

In order for the Owner to obtain the best quality of work in a reasonable period of time, the Owner reserves the right to reject bids from Contractors who are unable to meet the following requirements.

a. Contractor must have had at least three (3) years experience in the construction of similar projects of this size and larger.

b. Contractor must have successfully constructed, as prime Contractor, at least three (3) projects similar in scope to this project in the last five (5) years.

c. Contractor must have good recommendations from at least three (3) clients similar to the Owner.

d. Contractor must be able to provide evidence of authority to conduct business in the jurisdiction in which the project is located.

e. The Contractor's superintendent and assistant must be qualified in similar projects in all categories.

4. Examination of Contract Documents and Site

4.1 Before submitting a Bid, each Bidder must (a) examine the Contract Documents thoroughly, (b) visit the site to familiarize himself with local conditions that may in any manner affect cost, progress or performance of the Work, (c) familiarize himself with federal, state and local laws, ordinances, rules and regulations that may in any manner affect cost, progress or performance of the work; and (d) study and carefully correlate Bidder's observations with the Contract Documents.

4.2 Reference is made to the Special Provisions for the identification of those reports of investigations and test of subsurface and latent physical conditions at the site or otherwise affecting cost, progress or performance of the Work which have been relied upon by Engineer in preparing the Drawings and Specifications. Owner will make copies of such reports available to any Bidder requesting them. These reports are not guaranteed as to accuracy or completeness, nor are they part of the Contract Documents. Before submitting his Bid each Bidder will, at his own expense, make such additional investigations and tests as the performance of the Work in accordance with the time, price and other terms and conditions of the Contract Documents.

4.3 On request Owner will provide each Bidder access to the site to conduct such investigations and tests as each Bidder deems necessary for submission of his bid.

4.4 The lands upon which the Work is to be performed, rights-of-way for access thereto and other lands designated for use by Contractor in performing the Work are identified in the Special Provisions, General Requirements or Drawings.

4.5 The submission of a Bid will constitute an incontrovertible representation by the Bidder that he has complied with every requirement of this Article 4 and that the Contract Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance of the Work.

5. Interpretations

All questions about the meaning or intent of the Contract Documents shall be submitted to R. John Dufresne, 150 E. Main Street, Apopka Florida 32703 or Rdufresne@apopka.net in writing. Replies will be issued by Addenda posted to Demand Star and the City website wwww.apopka.net. Questions received less than five days prior to the date for opening of Bids will not be answered. Only questions answered by formal written Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.

6. Bid Security

6.1 Bid Security shall be made payable to Owner, in the amount specified in the Bid Form and in the from of a certified or bank check or a Bid Bond (see Section 00050).

6.2 The Bid Security of the Successful Bidder will be retained until such Bidder has executed the Agreement and furnished the required Contract Security, whereupon it will be returned; if the successful Bidder fails to execute and deliver the Agreement and furnish the required Contract Security within 15 days of the Notice of Award, Owner may annul the Notice of Award and the Bid Security of the Bidder will be forfeited. The Bid Security of any Bidder whom Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earlier of the seventh day after the "effective date of the Agreement" (which term is defined as the date on which the Agreement is signed by the representative for the City of Apopka) and the required Contract Security is furnished or the sixty-first day after the Bid opening. Bid Security of other Bidders will be returned within seven days of the Bid opening.

7. Contract Time

The number of days within which, or the date by which, the Work is to be completed (the Contract Time) is set forth in the Bid Form and will be included in the Agreement.

8. Liquidated Damages

Provisions for liquidated damages, if any, are set forth in the Agreement.

9. Substitute Material and Equipment

The Contract, if awarded, will be on the basis of material 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 Contractor if acceptable to Engineer until after the "effective date of the Agreement". The procedure for submittal of any such application by Contractor and consideration by Engineer is set forth in Article 7 of the General Terms and Conditions.

10. Subcontractors, etc.

10.1 The General Terms and Conditions require the identity of certain Subcontractors and other person and organizations to be submitted to Owner in advance of the Notice of Award. The apparent Successful Bidder, and any other Bidder so requested, will within seven days after the day of the Bid opening submit to Owner a list of all Subcontractors and other persons and organizations (including those who are to furnish the principal items of material and equipment) proposed for those portions of the Work as to which such identification is so required. Such list shall be accompanied by an experience statement with pertinent information as to similar projects and other evidence of qualification for each such

Subcontractor, person and organization if requested by Owner. If Owner or Engineer after due investigation has reasonable objection to any proposed Subcontractor, other person or organization, either may before giving the Notice of Award request the apparent Successful Bidder to submit an acceptable substitute without an increase in Bid price. If the apparent Successful Bidder declines to make any such substitution will not constitute grounds for sacrificing his Bid Security. Any Subcontractor, other person or organization to listed and to whom Owner or Engineer does not make written objection prior to the giving of the Notice of Award will be deemed acceptable to Owner and Engineer.

10.2 No Contractor shall be required to employ any Subcontractor, other person or organization against whom he has reasonable objection.

11. Bid Form

11.1 The Bid Form is attached hereto; additional copies may be obtained from Engineer.

11.2 Bid Forms must be completed in ink or by typewriter. The Total Bid price on the form must be stated in words and numerals.

11.3 Bids by corporations must be executed in the corporate name by the president or a vice-president (or other corporate officer accompanied by evidence of authority to sign) and the corporate seal must be affixed and attested by the secretary. The corporate address and state of incorporation shall be shown below the signature.

11.4 Bids by partnerships must be executed in the partnership name and signed by a partner, whose title must appear under the signature and the official address of the partnership must be shown below the signature.

11.5 All names must be typed or printed below the signature.

11.6 The bid shall contain an acknowledgment of receipt of all Addenda (the numbers of which shall be filled in on the Bid Form).

11.7 The address to which communications regarding the Bid are to be directed must be shown.

11.8 All supporting information requested in the Bid Form must be furnished. Do not leave any questions or requests unanswered.

12. Submission of Bids

12.1 Bids shall be submitted at the time and place indicated in the Invitation to Bid and shall be included in an opaque sealed envelope, marked with the Project title and name and address of the Bidder and accompanied by a completed Section 00150, Statement on Public Entity Crimes, a completed Section 00140, Sworn Statement Under the Florida Trench Safety Act, the Bid Security and other

required documents which are included in the Contract Documents. If the Bid is sent through the mail or other delivery system the sealed envelope shall be enclosed in a separate envelope with the notation "BID ENCLOSED" on the face thereof.

12.2 The successful Bidder will be responsible for compliance with all applicable safety-related Federal and State statutes and regulations, including, but not limited to, the OSHA excavation safety standards, 20 C.F.R., Part 1926, Subpart P-Excavations, Trenching and Shoring, which are adopted by reference of the newly-enacted Florida "Trench Safety Act", Section 553.60 et.seq., Florida Statutes. The Bidder who will perform trench excavation work on a construction project with trench excavation(s) over 5 feet in depth must allocate and include in its bid the cost of compliance with trench safety standards and any special shoring requirements. The Bidder must indicate in the sworn statement the method(s) he intends to use to achieve compliance with each item (i.e., trench box, sheet piling, cribbing, wood shoring, or other method selected by Bidder).

13. Modification and Withdrawal of Bids

13.1 Bids may be modified or withdrawn by an appropriate document duly executed (in the manner that a Bid must be executed) and delivered to the place where Bids are to be submitted at any time prior to the opening of Bids.

13.2 If, within twenty-four hours after Bids are opened, any Bidder files a duly signed written notice with Owner and promptly thereafter demonstrates to the reasonable satisfaction of Owner that there was a material and substantial mistake in the preparation of his Bid, that Bidder may withdraw his Bid and the Bid Security will be returned. Thereafter, that Bidder will be disqualified from further bidding on the Work.

14. Opening of Bids

Bids will be opened publicly. When Bids are opened publicly they will be read aloud, and an abstract of the amounts of the base Bids and major alternates (if any) will be made available after the opening of Bids.

15. Bids to Remain Open

All Bids shall remain open for sixty days after the day of the Bid opening, but Owner may, at his sole discretion, release any Bid and return the Bid Security prior to that date.

16. Waivers

The City in its sole discretion, reserves the right to reject any and all proposals, accept any proposal or any combination of proposals or waive any minor irregularity or technicality in proposals received and may, at its sole discretion, request a re-proposal, when in its sole judgment, it will best serve public interest.

17. Award of Contract

17.1 Owner reserves the right to reject any and all Bids, to waive any and all informalities and to negotiate contract terms with the Successful Bidder, and the right to disregard all nonconforming, nonresponsive or conditional Bids. Discrepancies between words and figures will be resolved in favor of words. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum. Discrepancies between the indicated extension of unit prices and the correct extension thereof will be resolved in favor of the correct extension.

17.2 In evaluating Bids, Owner shall consider the qualifications of the bidders, whether or not the Bids comply with the prescribed requirements, and alternates and unit prices if requested in the bid forms. It is Owner's intent to accept alternates (if any are accepted) in the order in which they are listed in the Bid form but Owner may accept them in any order or combination.

17.3 Owner may consider the qualifications and experience of Subcontractors and other persons and organizations (including those who are to furnish the principal items of material or equipment) proposed for those portions of the Work as to which the identity of Subcontractors and other persons and organizations must be submitted as provided in the Supplementary Conditions. Operating costs, maintenance considerations, performance data and guarantees of materials and equipment may also be considered by Owner.

17.4 Owner may conduct such investigations as he deems necessary to assist in the evaluation of any Bid and to establish the responsibility, qualifications and financial ability of the Bidders, proposed Subcontractors and other persons and organizations to do the Work in accordance with the Contract Documents to Owner's satisfaction within the prescribed time.

17.5 Owner reserves the right to reject the Bid of any Bidder who does not pass any such evaluation to Owner's satisfaction.

17.6 If the contract is to be awarded it will be awarded to the lowest responsive, responsible Bidder on the basis of the Total Base Bid.

17.7 If the contract is to be awarded, Owner will give the Successful Bidder a Notice of Award within sixty days after the day of the Bid opening.

18. Performance and Other Bonds

Section 4 of the Agreement Form sets forth Owner's requirements as to performance and other Bonds. When the Successful Bidder delivers the executed Agreement to Owner it shall be accompanied by the required Contract Security.

19. Signing of Agreement

When Owner gives a Notice of Award to the Successful Bidder, it will be accompanied by at least three unsigned counterparts of the Agreement and all other Contract Documents. Within fifteen days thereafter Contractor shall sign and deliver at least three counterparts of the Agreement to Owner with all other contract Documents attached. Within ten days thereafter Owner will deliver all fully signed counterparts to Contractor. Engineer will identify those portions of the Contract Documents not fully signed by Owner and Contractor and such identification shall be binding on all parties.

20. Definitions

19.1 OWNER refers to the City of Apopka.

19.2 DAYS refers to calendar days unless otherwise specified.

21. Construction Specifications

Utility construction specifications are incorporated within the plan sheets and project bid documents. If there should be a conflict between the plans and the specifications, the language within the specifications shall take presidence.

22. Construction Qualified Business License Requirements

Prior to award of contract, the successful apparent low bidder must possess a Construction Qualified Business License issued by the State of Florida Department of Business and Professional Regulation.

END OF SECTION

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, CITY CLERK LINDA GOFF AT (407.703.1704, lgoff@apopka.net and 120 EAST MAIN STREET, APOPKA, FL 32703.)

SECTION 00030
BID FORM
PROPOSAL TO THE CITY OF APOPKA

RWS EXTENSION
OCOEE - APOPKA RD.
(HARMON RD. – ALSTON BAY BLVD.)

NAME OF BIDDER: _____

BUSINESS ADDRESS: _____

_____

PHONE NO: _____

FAX NO: _____

TO THE CITY COUNCIL OF THE CITY OF APOPKA.

Pursuant to and in compliance with your notice inviting sealed proposals and the other documents related thereto, the undersigned bidder having familiarized himself with the terms of the Contract Documents, local conditions affecting the place where the work is to be done, hereby proposes and agrees to perform within the time stipulated in the Contract, including all of its component parts and everything required to be performed, and to provide and furnish any and all utility and transportation services necessary to perform the contract and complete in a workmanlike manner, all of the work required in connection with the construction of said work all in strict conformity with the plans and specifications and other Contract Documents, including Addenda Nos. _____, _____ and _____.

The work will be substantially completed within 40 days after the date when the Contract Time commences to run, and completed and ready for final payment within 5 days after the date of substantial completion.

The undersigned as bidder, declares that the only persons or parties interested in this proposal as principals are those named herein; that this proposal is made without collusion with any person, firm or corporation; and he proposes and agrees, if the proposal is accepted, that he will execute a contract with the Owner in the form set forth in the Contract Documents and that he will accept in full payment thereof the following prices to wit:

Table of Material Quantities

RWS Extension
Ocoee - Apopka Rd.
(Harmon Rd. – Alston Bay Blvd.)

ITEM NO.	SECTION NO.	DESCRIPTION	QTY	UNIT	UNIT PRICE	TOTAL
1	101-1	MOBILIZATION	1	LS		
2	102-1	MAINTENANCE OF TRAFFIC	1	LS		
3	104-13-2	PREVENTION, CONTROL, AND ABATEMENT OF EROSION	1	LS		
4	105-1	PROTECTION AND RESTORATION OF EXISTING FACILITIES ***	1	LS		
5	110-1-1	CLEARING AND GRUBBING	1	LS		
6	1050-11-425	UTILITY PIPE (30" DI, C-151/A21.51, PC 250)	2,230	LF		
7	1055-11-415	UTILITY FITTINGS (30" DI, 45° ELBOW)	2	EA		
8	1080-11-504	UTILITY FIXTURES (30" BUTTERFLY VALVE ASSEMBLY)	1	EA		
9	1080-11-506	UTILITY FIXTURES (30" VAC/AIR ASSEMBLY, 3" ARV)	3	EA		
10	1080-11-509-A	UTILITY FIXTURES (30" MECHANICAL JOINT RESTRAINT, PIPE)	3	EA		
11	1080-11-509-B	UTILITY FIXTURES (30" MECHANICAL JOINT RESTRAINT, FITTING)	6	EA		
TOTAL PRICE IN NUMBER						

TOTAL PRICE IN WORD: _____

****** Any Concrete Removal / Replacement or Roadway Reconstruction shall be included in restoration.***

Note: All material for the RWM (Pipe, Fittings and Valves) to be provided by the City. Price for the pipe shall be for install only and as shown in the contract documents. All other material required for restoration will be the contractor's responsibility and should be included in their proposal accordingly under Pay Item 105-1.

The evaluation of the Bid will be done in accordance with the Instructions to Bidders and on the total basis of the bid.

Each bid shall be made out and submitted in duplicate on a form furnished as part of the Bid Document and must be accompanied by cashier's check, certified check or a bidder's bond in the amount of five percent (5%) of the total bid price, made payable to the City of Apopka. Said check or bond shall be given as guarantee that the bidder will enter into a contract with the Owner and furnish a performance bond and payment bond in the amount of 100% of the total bid price within fifteen (15) days from the date of notification of award. Bonds are required from companies licensed in the State of Florida.

The Owner reserves the right to reject any and all bids and to waive any and all irregularity in any bid.

bidder or other interested person is a corporation, state a legal name of corporation, and names of the president; if a partnership, state true name of firm, also names of all individual co-partners composing firms; if bidder or other interested person is an individual, state first and last names in full):

_____

_____

_____

_____

Licensed in accordance with an Act providing for the registration of contractors.

CONTRACTOR'S LICENSE NO: _____

NOTE: If bidder is a corporation, the legal name of the corporation shall be set forth below, together with the signature of the officer or officers authorized to sign contracts on behalf of the corporation and corporate seal; if bidder is a co-partnership, the true name of the firm shall be set forth below, together with the signature of the partner or partners authorized to sign contracts on behalf of the co-partnership; and if the bidder is an individual, his signature shall be placed below; if a special partnership, the names of the general partners.

SIGNATURE OF BIDDER: _____

_____

BY: _____

ITS: _____

DATED: _____

SECTION 00040

BIDDER'S CERTIFICATION

I have carefully examined the Invitation to Bid, Instructions to Bidders, General and/or Special Conditions, Notes, Specifications, proposed agreement and any other documents accompanying or made a part of this Invitation.

I hereby propose to furnish the goods or services specified in the Invitation at the prices or rates quoted in my bid. I agree that my bid will remain firm for a period of up to _____ days in order to allow the City adequate time to evaluate the bids.

I agree to abide by all conditions of this bid and understand that a background investigation may be conducted by the Apopka Police Department prior to award.

I certify that all information contained in this bid is truthful to the best of my knowledge and belief. I further certify that I am duly authorized to submit this bid on behalf of the vendor/contractor as its act and deed and that the vendor/contractor is ready, willing and able to perform if awarded the bid.

I further certify, under oath, that this bid is made without prior understanding, agreement, connection, discussion, or collusion with any other person, firm or corporation submitting a bid for the same product or service; no officer, employee or agent of the City of Apopka or of any other bidder is interested in said bid; and that the undersigned executed this Bidder's Certification with full knowledge and understanding of the matters therein contained and was duly authorized to do so.

_____
NAME OF BUSINESS

BY:

_____
SIGNATURE

_____
NAME & TITLE, TYPE OR PRINTED

_____
MAILING ADDRESS

_____
CITY, STATE, ZIP CODE

_____

Sworn to and subscribed

before me this _____ day of

_____ 20__

_____
Notary Public

State of _____

My Commission Expires:_____

SECTION 00050
BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned,

_____

as Principle, and _____ as Surety,

are held and firmly bound unto the City of Apopka hereinafter called the OWNER in the penal

sum of _____

_____ Dollars ($_____), lawful money of

the United States, for the payment of which sum well and truly be made, we bind ourselves, our

heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

The condition of this obligation is such that whereas the Principal has submitted the

accompanying bid dated _____, 20__ for the construction of

RWS Extension
Ocoee - Apopka Rd.
(Harmon Rd. – Alston Bay Blvd.)

NOW THEREFORE, if the Principal shall not withdraw said bid within the period of time set forth in the contract documents, and shall within fifteen (15) calendar days after the prescribed forms are presented to him for signature enter into a written contract with the OWNER in accordance with the bid as accepted, and if the Principal shall give the required bonds with good and sufficient sureties for the faithful performance and proper fulfillment of such contract and for the protection of laborers and material men, or in the event of the withdrawal of said bid within the periods specified, or the failure to enter into said contract, and give such bonds within the time specified, if the Principal shall within sixty (60) days after request by the OWNER pay to the OWNER the difference between the amount specified in said bid and the amount for which the OWNER may procure the required work if the latter amount be in excess of the former, then the above obligation shall be void and of no effect, otherwise to remain in full force and virtue.

It is further agreed that if the OWNER is required to initiate legal proceedings to recover on this bond, it may also recover its costs relating thereto including a reasonable amount for attorneys' fees.

IN WITNESS WHEREOF, the above-bounden parties have executed this instrument under their several seals this ____ day of _____, 20__, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative pursuant to authority of its governing body.

WITNESSES (if individual)

_____

_____

PRINCIPAL

_____

By _____

Title _____

ATTEST (if corporation)

_____

Title _____

Corporate Seal

SURETY

By _____

Title _____

Any claims under this bond may be addressed to:

Name and Address of Surety _____

_____

_____

Telephone Number _____

Name and Address of Agent
or Representative in Florida if
Different From Above _____

_____

_____

Telephone Number _____

ATTEST

_____

Title _____

Corporate Seal

SECTION 00060
AGREEMENT FORM

THE CITY OF APOPKA, FLORIDA, ("Owner"), hereby contracts with _____, to perform all work ("Work") in connection with the construction of the reclaimed water distribution main improvements and associated infrastructure within the City of Apopka generally referred to as RWS Extension Ocoee - Apopka Rd. (Harmon Rd. – Alston Bay Blvd.) as said Work is set forth in the Plans and Specifications prepared by Owner and the other Contract Documents, all of such documents being hereafter specified. Notwithstanding the foregoing, wherever the term "Engineer" is used herein, especially with regard to the administration of this Contract, it shall be deemed to mean the Engineer, Owner, or another consultant of Owner, as may be designated by Owner in writing from time to time. Owner is sometimes referred to as the "City" in the Contract Documents.

Owner and Contractor, for the consideration herein set forth, agree as follows:

Section 1 Contract Documents

A. The Contract Documents consist of this Agreement, all Change Orders, Work Directive Changes, Field Orders and Amendments hereafter executed by the parties in writing, in accordance with the terms herein. All of the foregoing Contract Documents are incorporated by reference and made a part of this Agreement (all of said documents including the Agreement sometimes being referred to herein as the "Contract Documents" and sometimes as the "Agreement"). A copy of the Contract Documents shall be maintained by Contractor at the Project site at all times during the performance of the Work.

B. Owner shall furnish to the Contractor up to five (5) sets of the Contract Documents as are reasonably necessary for execution of the Work. Additional copies of the Contract Documents shall be furnished, upon request, at the cost of reproduction.

Section 2 Scope of Work

Contractor agrees to furnish and pay for all management, supervision, financing, labor, materials, tools, fuel, supplies, utilities, equipment and services of every kind and type necessary to diligently, timely, and fully perform and complete in a good and workmanlike manner the following work required:

Installation of approximately 1,780 linear feet of 30 inch DIP including fittings, valves and all other appurtenances as necessary to complete the project as required by the Contact Documents.

Section 3 **Contract Amount**

A. In consideration of the faithful performance by Contractor of the covenants in this Agreement, to the full satisfaction and acceptance of Owner, Owner agrees to pay or cause to be paid to Contractor, in accordance with the terms of this Agreement, an amount equal to the sum of the unit prices established for each separately identified item of Work times the corresponding estimated quantity for those items, all set forth in Contractor's bid sheet attached hereto as Bid Form, Section 00030 (herein "Contract Amount"). Based upon the estimated quantities set forth in Bid Form, Section 00030, the total estimated amount of the Contract Amount_____. As hereby stated, estimated quantities are not guaranteed, and determination of actual quantities and classifications is to be made by Engineer as provided in sub paragraph 4.1.1. of the General Conditions. The established unit prices have been computed as provided in sub paragraph 4.1.2 of the General Conditions.

B. Contractor hereby acknowledges that the bid it submitted, as well as the Contract Documents, reference the trench safety standards that will be in effect during the period of construction of the Project and that the Contractor shall perform all trench excavation in compliance with all applicable trench safety standards.

Section 4 **Bonds**

A. Contractor shall provide Performance and Payment Bonds, in the form prescribed in Section 00070, in the amount of 100% of the Contract Amount, the costs of which to be paid by Contractor. The Performance and Payments Bonds shall be underwritten by a surety authorized to do business in the State of Florida and otherwise acceptable to Owner; provided, however, the surety shall be rated as "A" or better as to general policy holders rating and Class "V" or higher rating as to financial size category and the amount required shall not exceed 5% of the reported policy holders surplus, all as reported in the most current Best Key Rating Guide, published by A.M. Best Company, Inc. of 75 Fulton Street, New York, New York 10038.

B. If the surety for any bond furnished by Contractor is declared bankrupt, becomes insolvent, its right to do business is terminated in the State of Florida, or it ceases to meet the requirements imposed by the Contract Documents, the Contractor shall, within five (5) calendar days thereafter, substitute another bond and surety, both of which shall be subject to the Owner's approval.

Section 5 **Contract Time and Liquidated Damages**

A. Time is of the essence in the performance of the Work under this Agreement. The "Commencement Date" shall be established in the Notice to Proceed to be issued by the Owner or the Engineer within thirty (30) days from the date this Agreement has been executed by both parties. Contractor shall commence the Work within five (5) calendar days from the Commencement Date. No Work shall be performed at the Project site prior to the Commencement Date. Any Work performed by Contractor prior to the Commencement Date shall be at the sole risk of Contractor. The Work shall be substantially completed within forty calendar days (40) from the Commencement Date (herein "Contract Time"). The Work shall be fully completed and ready for final acceptance by the Owner within five (5) calendar days after the date Substantial Completion of the Work is achieved.

B. Owner and Contractor recognize that, since time is of the essence for this Agreement, Owner will suffer financial loss if the Work is not substantially completed within the time specified above, as said time may be adjusted as provided herein. Should Contractor fail to substantially complete the Work within the Contract Time, as said time period may be adjusted pursuant to the terms herein, Owner shall be entitled to assess, as liquidated damages, but not as a penalty, $500 for each calendar day thereafter until substantial completion is achieved. The Project shall be deemed to be substantially completed on the date the Work has progressed to the point where, in the reasonable opinion of the Engineer and Owner, it is sufficiently complete, in accordance with the requirements of the Contract Documents, so that the Work can be utilized for the purposes for which it is intended. The date of substantial completion shall be noted in a Certificate of Substantial Completion, to be issued by Engineer pursuant to the terms hereof. Contractor hereby expressly waives and relinquishes any right which it may have to seek to characterize the above noted liquidated damages as a penalty, which the parties agree represents a fair and reasonable estimate of the owner's actual damages at the time of contracting if Contractor fails to substantially complete the Work in a timely manner.

C. When any period of time is referenced to by days herein, it shall be computed to exclude the first day and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday the law of the applicable jurisdiction, such day shall be omitted from the computation, and the last day shall become the next succeeding day which is not a Saturday, Sunday or legal holiday.

Section 6 The following documents are expressly agreed to be incorporated by reference and made a part of this Agreement.

DIVISION 0: BIDDING AND CONTRACT REQUIREMENTS

00010 Invitation to Bid
00020 Instruction to Bidders
00030 Bid Form
00040 Bidder's Certification
00050 Bid Bond
00060 Agreement Form
00070 Performance and Payment Bond
00080 Bid Protest Procedures
00090 Insurance Requirements
00100 Certificate of Insurance – Worker's Compensation
00110 Certificate of Insurance – General Liability
00120 Drug Free Workplace
00130 Questions Regarding Specifications Or Submittal Process
00140 Florida Trench Safety Act
00150 Public Entity Crimes
00160 General Terms and Conditions
00170 Special Provisions
00180 Notice of Award Form
00190 Notice to Proceed Form
00200 Change Order Form
00210 Application for Payment Form
00220 Certificate of Substantial Completion Form
00230 Release and Affidavit
00240 Contractor Request for Information Form

Sections:

101 Mobilization
102 Maintenance of Traffic
104 Prevention, Control and Abetment of Erosion and Water Pollution
105 Protection and Restoration of Existing Facilities
110 Clearing and Grubbing
1050 Utility Pipe
1055 Utility Fittings
1080 Utility Fixtures

DIVISION 1 - GENERAL REQUIREMENTS

01001 General Requirements
01025 Measurement and Payments
01720 Project Record Documents

DIVISION 2 – SITE CONSTRUCTION

02140 Dewatering
02220 Excavating, Backfilling and Compacting
02662 Reclaimed Water Transmission/Distribution Mains

DIVISION 3 – CONCRETE
03100 Concrete Formwork
03200 Concrete Reinforcement
03300 Cast-in-Place Concrete

DIVISIONS 4-14 NOT USED

DIVISION – 15 MECHANICAL

15062 Ductile Iron Pipe and Fittings

DIVISION – 16 APPENDICES
Appendix D List of Approved Products

Section 7 **Notices**

A. All notices required or made pursuant to this Agreement by the Contractor to the Owner shall be in writing and delivered by hand or by United States Postal Service Department, first class mail, postage pre-paid, return receipt requested, addressed to the following:

City of Apopka
Public Services Department
748 E. Cleveland St.
Apopka FL 32703
Phone (407) 703-1731
Fax (407) 703-1748
Attn: R. Jay Davoll, P.E.

B. All notices required or made-pursuant to this Agreement by Owner to Contractor shall be made in writing and shall be delivered by hand or by United States Postal Service Department, first class mail, postage pre-paid, return receipt requested, addressed to the following:

_____

_____

_____

_____

C. Either party may change its above noted address by giving written notice to the other party in accordance with the requirements of this Section.

Section 8 **Modification**

No modification or change to the Agreement shall be valid or binding upon the parties unless in writing and executed by the party or parties intended to be bound by it.

Section 9 **Successors and Assigns**

Subject to other provisions hereof, the Agreement shall be binding upon and shall insure to the benefit of the successors and assigns of the parties to the Agreement.

Section 10 **Governing Law**

The Agreement shall be interpreted under and its performance governed by the laws of the State of Florida.

Section 11 **No Waiver**

The failure of the Owner to enforce at any time or for any period of time any one or more of the provisions of the Agreement shall not be construed to be and shall not be a waiver of any such provision or provisions or of its right thereafter to enforce each and every such provision.

Section 12 **Entire Agreement**

Each of the parties hereto agrees and represents that the Agreement comprises the full and entire agreement between the parties affecting the Work contemplated, and no other agreement or understanding of any nature concerning the same has been entered into or will be recognized, and that all negotiations, acts, work performed, or payments made prior to the execution hereof shall be deemed merged in, integrated and superseded by the Agreement.

Section 13 **Severability**

Should any provision of the Agreement be determined by a court to be unenforceable, such a determination shall not affect the validity or enforceability of any other section or part thereof.

IN WITNESS WHEREOF, the parties have executed this Agreement on the date(s) indicated below.

CONTRACTOR:

ATTEST:

_____

By: _____

Print Name: _____

_____

Its:

Secretary

Date:_____

[Corporate Seal]

ATTEST:

OWNER:

CITY OF APOPKA, FLORIDA

_____

City Clerk

By:_____

Print Name:

Its:

Date:_____

SECTION 00070
PERFORMANCE AND PAYMENT BOND

BOND NO. _____

KNOW ALL MEN BY THESE PRESENTS: That _____ _____, as Principal, and _____ _____, as Surety, located at _____ _____, (Business Address) are held and firmly bound unto _____ _____ County, Florida, as Obligee in the sum of _____ _____ ($_____) for the payment whereof we bind ourselves, our heirs, executors, personal representatives, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, Principal has entered into a contract dated as of the ____ day of _____ 20 ___, with Obligee for _____

_____

_____

in accordance with drawings and specifications, which contract is by reference made a part hereof, and is hereinafter referred to as the Contract.

THE CONDITION OF THIS BOND is that if Principal:

1. Performs the Contract at the times and in the manner prescribed in the Contract; and

2. Promptly make payments to all claimants as defined in Section 255.05(1), Florida Statutes, supplying the Principal with labor, materials or supplies, as used directly or indirectly by the Principal in the prosecution of the work provided for in the Contract; and

3. Pays Obligee any and all losses, damages, costs and attorneys' fees, including appellate proceedings, that Obligee sustains because of any default by Principal under the Contract, including all delay damages (whether liquidated or unliquidated); and

4. Performs the guarantee of all work and materials furnished under the Contract for the time specified in the Contract, then this bond is void; otherwise it remains in full force.

The Surety, for value received, hereby stipulates and agrees that no changes, extensions of time, alterations or additions to the terms of the Contract or other work to be performed hereunder, or the specifications referred to therein, nor compliance or noncompliance with any formalities connected with the Contract or any changes thereto, shall in anywise affect or alter its obligation under this bond,

and it does hereby waive notice of any such changes, extensions of time, alterations, additions, compliance or noncompliance.

This bond is intended to be a statutory bond pursuant to Section 255.05, Florida Statutes, and shall be construed accordingly.

IN WITNESS WHEREOF, the above bounded parties have executed this instrument under their several seals this ____ day of _____, 20___ the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

Signed, sealed and delivered
in the presence of:

_____

_____
Witnesses as to Principal

PRINCIPAL:

_____

By: _____

Name: _____

Its: _____

OR

_____
Witnesses as to Attorney In Fact

By: _____

Name: _____

Its: _____

Attorney In Fact
(Attach Power)

STATE OF _____

COUNTY OF _____

I, the undersigned authority, hereby certify that on this ____ day of _____ _____, 20__ , before me personally appeared _____ as _____ of _____, to me known to be the person(s) described in and who executed the foregoing instrument, and acknowledged execution thereof to be a free act and deed for the use and purposes therein mentioned.

WITNESS my hand and official seal on the date aforesaid.

_____(SEAL)

Notary Public, State of _____

at Large

My commission Expires: _____

ATTEST:

SURETY:_____

(Printed Name)

_____

_____

_____

(Business Address)

_____

Witness

_____

Witness

_____

(Authorized Signature)

_____

(Printed Name)

OR

_____

Witness

_____

As Attorney In Fact (Attach Power)

_____

_____

_____

(Business Address)

_____

(Printed Name)

_____

(Telephone Number)

SECTION 00080
POLICY NO. 109
BID PROTEST PROCEDURES

109.1 OVERVIEW

1. It is the policy of the City of Apopka (the City) to provide those participants in its competitive award process whose interests are adversely affected by bid document provisions and/or an award recommendation with respect to City capitol projects involving the expenditure of over twenty-five thousand dollars ($25,000.00) the opportunity to protest.

2. The requirements and procedures described herein govern a bid protest brought by an adversely affected participant in any competitive process utilized for selection of a person or other entity to design and/or construct any public improvement, to provide supplies, materials or services (including professional or management services), or to lease any City property.

3. A Party (as hereafter defined) who wishes to file a protest regarding the terms, conditions, or specifications contained in a solicitation, including any provisions governing the methods for ranking bids, proposals, or replies, awarding contracts, reserving rights of further negotiation, or modifying or amending any contract, shall file such a protest according to the procedures and requirements established in Section 109.2, below. Failure to file a notice of protest or failure to file a formal written protest in the manner provided in Section 109.2 shall constitute a waiver of the opportunity to protest the terms, conditions, and specifications contained in the solicitation.

4. A Party who wishes to file a protest regarding a proposed bid award or a proposed rejection of some or all responses to a solicitation, shall file such a protest according to the procedures and requirements established in Section 109.3, below. Failure to filed a notice of protest or failure to file a formal written protest in the manner provided in Section III shall constitute a waiver of the opportunity to protest such proposed award.

5. For the purposes of these Bid Protest Procedures, the term "Party" shall mean a bidder, proposer, potential bidder, or potential proposer whose substantial interests are adversely affected by the City's decision or proposed decision regarding a contract solicitation, contract award, or rejection of one or more responses to a contract solicitation.

6. Monies required hereunder as bid protest security shall be in the form of either a protest bond issued by a Florida-licensed surety agency or a cashier's check issued by a bank located and authorized to transact business in the State of Florida.

109.2 PROTESTING BIDDING DOCUMENT SPECIFICATIONS

1. All contract solicitation documents issued by the City shall contain the following statement:

   Failure to file a protest within the time prescribed by the City of Apopka's Bid Protest Procedures shall constitute a waiver of right to protest.

2. Within seventy-two (72) hours (excluding Saturdays, Sundays, and City holidays) after a Party's receipt of any contract solicitation documents, the Party wishing to protest the terms, conditions, or specification contained in such documents shall deliver to the City Clerk a written notice of intent to protest. Delivery is not deemed to have been completed until the notice of intent to protest is actually received by the office of the City Clerk.

3. The notice of intent to protest shall be accompanied by a cashier's check or a protest bond from a Florida-licensed agency payable to the City in the amount of $5,000.00. Should the protesting Party be successful, the security submitted will be returned to the Party. Should the protesting Party be unsuccessful, the security submitted shall be retained by the City as liquidated damages and Party shall have no right to any refund of such security.

4. Within five (5) days from the delivery of its notice of protest, including Saturdays, Sundays, and City holidays, the Party shall deliver to the City Clerk a Formal Written Protest that states the facts and law upon which its protest is based. If the fifth day falls on a Saturday, Sunday, or City holiday, the deadline for delivery of the Formal Written Protest shall be extended until 5:00 p.m. on the next day that is not a Saturday, Sunday, or City holiday. Delivery is not deemed to have been completed until the Formal Written Protest is actually received by the office of the City Clerk.

5. Upon receipt of a timely filed Formal Written Protest, the City shall stop the solicitation process until the subject of the Formal Written Protest is resolved. However, the City may continue with the solicitation process if it determines, in writing, that halting the solicitation process

   a) would cause or perpetuate an immediate and serious danger to public health, safety or welfare;

   b) would result in a substantial loss of funding to the City; or

   c) would otherwise be detrimental to the interests of the City.

6. The City shall refer the protest for proceedings before the City Administrator or his delegee. The Party shall have fourteen (14) days, including Saturdays, Sundays, or City holidays, to submit to the City Administrator or his delegee any documents and sworn testimony in support of its protest. The City Administrator shall issue a decision, in writing, within fourteen (14) days thereafter and shall provide a copy to the Party by certified mail.

109.3 PROTESTING AWARD DECISION OR REJECTION OF BIDS

1. All bids and proposals shall be evaluated by the City for compliance with the terms, conditions, and specifications of the solicitation documents.

2. All notices of decision or notice of intended decision regarding the award of a contract or the rejection of one or more bids or proposals shall be posted by the City in a public place designated by the City for that purpose.

3. The notice of decision or notice of intended decision shall contain the following statement:

   Failure to file a protest within the time prescribed by the City of Apopka's Bid Protest Procedures shall constitute a waiver of right to protest.

4. Within seventy-two (72) hours (excluding Saturdays, Sundays, and City holidays) after the City's posting of notice of a decision or proposed decision to award a contract or reject one or more bids or proposals, a Party wishing to protest the decision or proposed decision shall deliver to the City Clerk a written notice of intent to protest. Delivery is not deemed to have been completed until the notice of intent to protest is actually received by the office of the City Clerk.

5. The notice of intent to protest shall be accompanied a cashier's check or a protest bond from a Florida-licensed agency payable to the City in the amount of $5,000.00 or one percent (1%) of the contract price submitted by the Party, whichever is greater. Should the protesting Party be successful, the security submitted shall be returned to the Party. Should the protesting Party be unsuccessful, the security submitted shall be retained by the City as liquidated damages and Party shall have no right to any refund of such security.

6. Within five (5) days from the delivery of its notice of protest, including Saturdays, Sundays, and City holidays, the Party shall deliver to the City Clerk a Formal Written Protest that states the facts and law upon which its protest is based. If the fifth day falls on a Saturday, Sunday, or City holiday, the deadline for delivery of the Formal Written Protest shall be extended until 5:00 p.m. on the next day that is not a Saturday, Sunday, or City holiday. Delivery is not deemed to have been completed until the Formal Written Protest is actually received by the office of the City Clerk.

7. Upon receipt of a timely filed Formal Written Protest, the City shall stop the solicitation process until the subject of the Formal Written Protest is resolved. However, the City may continue with the solicitation process if it determines, in writing, that halting the solicitation process
   a) would cause or perpetuate an immediate and serious danger to public health, safety or welfare;

   b) would result in a substantial loss of funding to the City; or

c) would otherwise be detrimental to the interests of the City.

8. The City shall refer the protest for proceedings before the City Administrator or his delegee. The Party shall have fourteen (14) days, including Saturdays, Sundays, or City holidays, to submit to the City Administrator or his delegee any documents and sworn testimony in support of its protest. The City Administrator shall issue a decision, in writing, within fourteen (14) days thereafter and shall provide a copy to the Party by certified mail.

END OF SECTION

SECTION 00090

INSURANCE REQUIREMENTS

90.1 The Contractor shall furnish proof of insurance requirements as indicated below. The coverage is to remain in force at all times during the contract period. The following minimum insurance coverage is required. The City is to be added as an "additional insured" with relation to General Liability Insurance. This MUST be written in the description section of the insurance certificate, even if you have a check-off box on your insurance certificate. Any costs for adding the City as "additional insured" will be at the contractor's expense.

90.2 The City of Apopka shall be given notice ten (10) days prior to cancellation or modification of any stipulated insurance. The insurance provided shall be endorsed or amended to comply with this notice requirement. In the event that the insurer is unable to accommodate, it shall be the responsibility of the Contractor to provide the proper notice. Such notification will be in writing by registered mail, return receipt requested and addressed to the Procurement Services Department.

90.3 The Contractor's insurance must be provided by an A.M. Best's "A" rated or better insurance company authorized to issue insurance policies in the State of Florida, subject to approval by the City's Risk Manager. Any exclusions or provisions in the insurance maintained by the contractor that precludes coverage for work contemplated in this RFP shall be deemed unacceptable, and shall be considered breach of contract.

90.4 Any firm performing work on behalf of the City of Apopka must provide Workers' Compensation insurance. Exceptions and exemptions can only be made if they are in accordance with Florida Statute.

90.5 Commercial General Liability Insurance covering premises-operations, products completed operations, independent contractors and contractual liability.

Limits: Combined single limit bodily injury/property damage $1,000,000.

This coverage should include, but not limited to:

a. Coverage for the liability assumed by the contractor under the indemnity provision of the contract.

b. Coverage for Premises/Operations

c. Personal and Advertising Injury Liability

d. Products/Completed Operations

e. Broad Form Contractual Liability

Covering all owned, hired, and non-owned automobile equipment, and other vehicles used by the successful bidder in the performance of the work with the following limits of liability:

Limits: Combined single limit bodily injury/property damage $1,000,000

Professional Liability (Errors & Omissions)

Limits: $2,000,000 per occurrence

This coverage should include, but not limited to:

a. Coverage for the liability assumed by the contractor under the indemnity provision of the contract.

b. Coverage for Premises/Operations

c. Products/Completed Operations

d. Broad Form Contractual Liability

90.6 Automobile Liability Insurance

Covering all owned, hired, and non-owned automobile equipment, and other vehicles used by the successful bidder in the performance of the work with the following limits of liability:

Limits: Bodily injury $500,000 each person,

$500,000 each occurrence Property damage $100,000 each occurrence

Professional Liability (Errors & Omissions)

Limits: $2,000,000 per occurrence

A copy of ANY current Certificate of Insurance must be included with your proposal.

90.7 In the event that you are the successful bidder, you will be required to provide a certificate naming the City as an "additional insured" for General Liability.

90.8 Certificate holder should be addressed as follows:
City of Apopka

City Clerk

120 E. Main Street

Apopka, FL 32703

90.9 Indemnification:

Vendor shall defend, indemnify and hold harmless the City of Apopka and all of the City of Apopka's officers, agents, and employees from and against all claims, liability, loss and expense, including reasonable costs, collection expenses, attorneys' fees, and court costs which may arise because of the negligence (whether active or passive), misconduct, or other fault, in whole or in part (whether joint, concurrent, or contributing), of Vendor, its officers, agents or employees in performance or non-performance of its obligations under the Agreement. Vendor recognizes the broad nature of this indemnification and hold harmless clause, as well as the provision of a legal defense to the City of Apopka when necessary, and voluntarily makes this covenant and expressly acknowledges the receipt of such good and valuable consideration provided by the City of Apopka in support of these indemnification, legal defense and hold harmless contractual obligations in accordance with the laws of the State of Florida. This clause shall survive the termination of this Agreement. Compliance with any insurance requirements required elsewhere within this Agreement shall not relieve Vendor of its liability and obligation to defend, hold harmless and indemnify the City of Apopka as set forth in this article of the Agreement.

Nothing herein shall be construed to extend the City of Apopka's liability beyond that provided in section 768.28, Florida Statutes.

SECTION 00110

THIS SECTION RESERVED FOR

THE CONTRACTOR'S CERTIFICATE OF INSURANCE

GENERAL LIABILITY

SECTION 00120
DRUG FREE WORKPLACE CERTIFICATION

The undersigned vendor in accordance with Florida Statue 287.087 hereby certifies that _____ does:
(Name of Business)

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

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

3. Give each employee engaged in providing the commodities or contractual services that are under bid 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 bid, the employee will abide by the terms of the statement and will notify the employer of any conviction of, or plea of guilty or nolo contendere to, any violation of chapter 893 or of any controlled substance law of the United States or any state, for a violation occurring in the workplace no later than 5 days after such conviction.

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

6. Make a good faith effort to continue a drug-free workplace through implementation of this section.

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

_____
Proposer's Signature

_____
Date

SECTION 00130

QUESTIONS REGARDING SPECIFICATIONS OR SUBMITTAL PROCESS

A. CONE OF SILENCE:

(1) Definition: "Cone of Silence," as used herein, means a prohibition on any communication regarding a particular Request for Proposal ("RFP"), Request for Qualification ("RFQ") or bid, between:

(a) a potential vendor, service provider, proposer, bidder, lobbyist, or consultant, and:

(b) the City Council members, City's professional staff including, but not limited to, the City Administrator and his or her staff, any member of the City's selection or evaluation committee.

(2) Restriction Notice: A Cone of Silence shall be imposed upon each RFP, RFQ and bid after the advertisement of said RFP, RFQ or bid.

(3) Termination of Cone of Silence: The Cone of Silence shall terminate at the beginning of the City Council meeting (whether regular, special or Committee of the Whole meeting) at which the City Administrator makes his or her written recommendation to the City Council. However, if the City Council refers the Administrator's recommendation back to the Administrator or staff for further review, the Cone of Silence shall be re-imposed until such time as the Administrator makes a subsequent written recommendation.

(4) Exceptions to Applicability: The provisions of this section shall not apply to:

(a) Oral communications at pre-bid conferences;

(b) Oral presentations before selection or evaluation committees;

(c) Public presentations made to the City Council members during any duly noticed public meeting;

(d) Communications in writing at any time with any City employee, unless specifically prohibited by the applicable RFP, RFQ or bid documents. The bidder or respondent shall file a copy of any written communication with the City Clerk. The City Clerk shall make copies available to any person upon request;

(e) Communications regarding a particular RFP, RFQ or Bid between a potential vendor, service provider, proposer, bidder, lobbyist or consultant and the City employee designated responsible for administering the procurement process for such RFP, RFQ or bid, provided the communication is limited strictly to matters of process or procedure already contained in the corresponding solicitation document;

(f) Communications with the City Attorney and his or her staff;

(g) Duly noticed site visits to determine the competency of the bidders regarding a particular bid during the time period between the opening of bids and the time the City Administrator makes his or her written recommendation;

(h) Any emergency procurement of goods or services pursuant to City Code;

(i) Responses to the City's request for clarification or additional information;

(j) Contract negotiations during any duly noticed public meeting;

(k) Communications to enable City staff to seek and obtain industry comment or perform market research, provided all communications related thereto between a potential vendor, service provider, proposer, bidder, lobbyist, or consultant and any member of the City's professional staff including, but not limited to, the City Administrator and his or her staff are in writing or are made at a duly noticed public meeting.

(l) Penalties: Violation of this section by a particular respondent, bidder or proposer shall render any RFP award, RFQ award or bid award to said bidder or proposer voidable by the City Council or City Administrator. Any person who violates a provision of this section may be prohibited from serving on a City selection or evaluation committee. In addition to any other penalty provided herein, violation of any provision of this section by a City employee may subject said employee to disciplinary action.

B. ADDENDUM

It will be the responsibility of the respondent to verify via DemandStar or the City website prior to filing a submittal to ascertain if any addenda have been issued, to obtain all such addenda, and to return executed addenda with the submittal.

C. INQUIRIES

Inquiries shall be directed to:

City of Apopka
R. John Dufresne
Finance Department, Purchasing Manager
150 E. 5th Street
Apopka, Florida 32703
Email: rdufresne@apopka.net

Any and all Requests for Information (RFI) shall be sent to the attention of the above listed person. Deadline for submission of RFI's shall be by the close of business on Wednesday, September 28, 2016. Responses to all RAIs shall be posted on Demand Star no later than close of business on Friday, September 30, 2016. Phone calls seeking additional information will not be accepted.

SECTION 00140
SWORN STATEMENT UNDER THE FLORIDA
TRENCH SAFETY ACT

THIS FORM MUST BE SIGNED BY THE BIDDER WHO WILL BE RESPONSIBLE FOR THE EXCAVATION WORK ("BIDDER"), OR ITS AUTHORIZED REPRESENTATIVE, IN THE PRESENCE OF A NOTARY PUBLIC AUTHORIZED TO ADMINISTER OATHS.

1. This Sworn Statement is submitted with the Bid No. _____

2. This Sworn Statement is submitted by _____ hereinafter "BIDDER". The BIDDER's submitting sworn statement)

   Business Address is _____

   BIDDER's Federal Employer Identification Number (FEIN) is _____

3. My Name is _____ and my relationship
   (print name of individual signing)

   to the BIDDER is _____ of/for the BIDDER.
   (position or title)

   I certify, through my signature at the end of this Sworn Statement, that I am an authorized representative of the BIDDER.

4. The Trench Safety Standard that will be in effect during the construction of this Project complies with the Florida Trench Safety Act (90-96), Florida law. (refer to the applicable Florida Statute(s) and/or OSHA Regulation(s) and include the "effective date" in the citation(s). Reference to and compliance with the applicable Florida Statute(s) and/or OSHA Regulation(s) is the complete and sole responsibility of the BIDDER. Such reference will not be checked by OWNER or ENGINEER for accuracy, completeness or any other purpose. The OWNER and ENGINEER shall have no responsibility to review or check the BIDDER's compliance with the trench safety standards.

5. The BIDDER assures the OWNER that it will comply with the applicable Trench Safety Standards and agrees to indemnify, defend and hold harmless the OWNER and ENGINEER, and any of their agents or employees, from any claims arising from the failure of the BIDDER to identify applicable standards or to comply with said standards. As specific consideration for the indemnification above, the OWNER agrees to give the BIDDER twenty-five dollars ($25.00), which the OWNER agrees is paid on behalf of all parties indemnified hereinabove. The method of payment is further described in the General Terms and Conditions.

6. The Bidder has allocated and included in its bid the total amount of

_____ ($) based on the linear feet of trench to be excavated over 5 feet deep, for compliance with the applicable Trench Safety Standards and intends to comply with said standards by instituting the following specific methods(s) of compliance on this Project:

_____

_____

_____

The determination of the appropriate method(s) of compliance is the complete and sole responsibility of the BIDDER. Such methods will not be checked by the OWNER or ENGINEER for accuracy, completeness or any other purpose. The OWNER and ENGINEER shall have no responsibility to review or check the BIDDER's compliance with the trench safety standards.

7. The BIDDER has allocated and included in its bid the total amount of _____ _____ ($) based on the square feet of shoring to be used for compliance with shoring safety requirements and intends to comply with said shoring requirements by instituting the following specific method(s) of compliance on this Project:_____

_____

The determination of the appropriate method(s) of compliance is the complete and sole responsibility of the Excavation Contractor. Such methods will not be checked by the OWNER or ENGINEER for accuracy, completeness or any other purpose. The OWNER and ENGINEER shall have no responsibility to review or check the BIDDER's compliance with the trench safety standards.

8. The BIDDER, in submitting this bid, represents that it has obtained and considered all available geotechnical information, has utilized said geotechnical information and that, based on such information and the BIDDER's own information, the BIDDER has sufficient knowledge of the Project's surface and subsurface site conditions and characteristics to assure BIDDER's compliance with the applicable Trench Safety Standards in designing the trench safety system(s) for the Project.

BIDDER

_____

By: _____
(Signature)

_____
(Position or Title)

_____
(Date)

SWORN TO AND SUBSCRIBED before me this ___ day of _____, 20___.

My Commission Expires: _____ _____
Notary Public

SECTION 0150
SWORN STATEMENT PURSUANT TO SECTION 287.133(3)(a),
FLORIDA STATUTES, ON PUBLIC ENTITY CRIMES

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

1. This sworn statement is submitted to _____

By_____

(print individual's name and title)

for_____

(print name of entity submitting statements)

whose business address is _____

and if applicable whose Federal Employer Identification Number (FEIN) is _____.

If the entity has no FEIN, include the Social Security Number of the individual signing

this sworn Statement: _____.

2. I understand that a "public entity crime" as defined in Paragraph 287.133(1)(g), Florida Statutes, means a violation of any state or federal law by a person with respect to and directly related to the transaction of business with any public entity or with an agency or political subdivision of any other state or with the United States, including, but not limited to, any bid, proposal, reply, or contract for goods or services, any lease for real property, or any contract for the construction or repair of a public building or public work, involving antitrust, fraud, theft, bribery, collusion, racketeering, conspiracy, or material misrepresentation.

3. I understand that "convicted" or "conviction" as defined in Paragraph 287.133(1)(b), Florida Statutes means a finding of guilt or a conviction of a public entity crime, with or without an adjudication of guilt, in any federal or state trial court of record relating to charges brought by indictment or information after July 1, 1989, as a result of a jury verdict, nonjury trial, or entry of a plea of guilty or nolo contendere.

4. I understand that an "affiliate" as defined in Paragraph 287.133(1)(a), Florida Statutes, means:

1. A predecessor or successor of a person convicted of a public entity crime; or
2. An entity under the control of any natural person who is active in the management of the entity and who has been convicted of a public entity crime. The term "affiliate" includes those officers, directors, executives, partners, shareholders, employees, members, and agents who are active in the management of an affiliate. The ownership by one person of shares constituting a controlling interest in another person, or a pooling of equipment or income among persons when not for fair market value under an arm's length agreement, shall be a prima facie case that one person controls another person. A person who knowingly enters into a joint venture with a person who has been convicted of a public entity crime in Florida during the preceding 36 months shall be considered an affiliate.

5. I understand that a "person" as defined in Paragraph 287.133(1)(e), Florida Statutes, means any natural person or any entity organized under the laws of any state or of the United States with the legal power to enter into a binding contract and which bids or applies to bid on contracts for the provision of goods or services let by a public entity, or which otherwise transacts or applies to transact business with a public entity. The term "person" includes those officers, directors, executives, partners, shareholders, employees, members, and agents who are active in management of an entity.

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

____ Neither the entity submitting this sworn statement, nor any of its officers, directors, executives, partners, shareholders, employees, members, or agents who are active in the management of the entity, or any affiliate of the entity has been charged with and convicted of a public entity crime within the past 36 months.

____ The entity submitting this sworn statement, or one or more of its officers, directors, executives, partners, shareholders, employees, members, or agents who are active in the management of the entity, or an affiliate of the entity has been charged with and convicted of a public entity crime within the past 36 months.
AND

____ The entity submitting this sworn statement, or one or more of its officers, directors, executives, partners, shareholders, employees, members, or agents who are active in the management of the entity, or agents who are active in the management of the entity, or an affiliate of the entity has been charged with and convicted of a public entity crime within the past 36 months. However, there has been a subsequent proceeding before a Hearing Officers of the State of Florida, Division of Administrative Hearings and the Final Order by the Hearing Officer determined that it was not in the public interest to place the entity submitting this sworn statement on the convicted vendor list. (Attached is a copy of the final order).

I UNDERSTAND THAT THE SUBMISSION OF THIS FORM TO THE CONTRACTING

OFFICER FOR THE PUBLIC ENTITY IDENTIFIED IN PARAGRAPH 1 (ONE) ABOVE IS FOR THE PUBLIC ENTITY ONLY AND, THAT THIS FORM IS VALID THROUGH DECEMBER 31 OF THE CALENDAR YEAR IN WHICH IT IS FILED AND FOR THE PERIOD OF THE CONTRACT ENTERED INTO, WHICHEVER PERIOD IS LONGER. I ALSO UNDERSTAND THAT I AM REQUIRED TO INFORM THE PUBLIC ENTITY PRIOR TO ENTERING INTO A CONTRACT IN EXCESS OF THE THRESHOLD AMOUNT PROVIDED IN SECTION 287.017, FLORIDA STATUTES, FOR CATEGORY TWO OF ANY CHANGE IN THE INFORMATION CONTAINED IN THIS FORM.

_____
(Signature)

STATE OF FLORIDA

COUNTY OF _____

Sworn and subscribed before me this _____ day of _____, 20___ by

_____ who is Personally known to me

_____ Or who produced identification - _____
(Type of Identification)

_____
(Signature) Notary Public - State of Florida

_____
(Printed, typed or stamped commissioned name of notary public)

My commission expires _____ (SEAL)

SECTION 00160

GENERAL TERMS AND CONDITIONS

1. Intent of Contract Documents.

1.1 1.1 It is the intent of the Contract Documents to describe a functionally complete project (or portion thereof) to be constructed in accordance with the Contract Documents. Any work, materials or equipment that may reasonably be inferred from the Contract Documents as being required to produce the intended result shall be supplied whether or not specifically called for. When words which have a well known technical or trade meaning are used to describe work, materials or equipment, such words shall be interpreted in accordance with that meaning. Reference to standard specifications, manuals-or codes of any technical society, organization or association or to the laws or regulations of any governmental authority having jurisdiction over the Project, whether such reference be specific or by implication, shall mean the latest standard specification, manual, code, law or regulation in affect at the time the Work is performed, except as may be otherwise specifically stated herein.

1.2 1.2 If during the performance of the Work Contractor discovers a conflict, error or discrepancy in the Contract Documents, Contractor immediately shall report same to Engineer in writing and before proceeding with the Work affected thereby shall obtain a written interpretation or clarification from the Engineer or Architect. Contractor shall take field measurements and verify field conditions and shall carefully compare such field measurements and conditions and other information known to Contractor with the Contract Documents before commencing any portion of the Work.

1.3 1.3 Drawings are intended to show general arrangements, design and extent of Work and are not intended to serve as shop drawings. Specifications are separated into divisions for convenience of reference only and shall not be interpreted as establishing divisions for the Work, trades, subcontracts, or extent of any part: of the Work. In the event of a discrepancy between or among the drawings, specifications or other Contract Document provisions, Contractor shall be required to comply with the provision which is the more restrictive or stringent requirement upon the Contractor, as determined by the Engineer or Architect. Unless otherwise specifically mentioned, all anchors, bolts, screws, fittings, fillers, hardware, accessories, trim and other parts required in connection with any portion of the Work

to make a complete, serviceable, finished and first quality installation shall be furnished and installed as part of the Work, whether or not called for by the Contract Documents.

2. Investigation and Utilities.

1.4 2.1 Contractor shall have the sole responsibility of satisfying 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 materials; availability and quality of labor; water and electric power; availability and condition of roads; work area; living facilities; climatic conditions and seasons; physical conditions at the work-site and the Project area as a whole; topography and ground surface conditions; nature and quantity of the surface materials to be encountered; subsurface conditions; equipment and facilities needed preliminary to and during performance of the Work; and all other costs associated with such performance. The failure of Contractor to acquaint itself with any applicable conditions shall not relieve Contractor from any of its responsibilities to perform under the Contract Documents, nor shall it be considered the basis for any claim for additional time or compensation. Provided, however, the terms of this Paragraph 2.1 shall be subject to the provisions of Paragraph 10.8 herein.

1.5 2.2 Contractor shall locate all existing roadways, railways, drainage facilities and utility services above, upon, or under the Project site, said roadways, railways, drainage facilities and utilities being referred to in this Section 2 as the "Utilities". Contractor shall timely contact the owners of all Utilities to determine the necessity and the Utilities owner's scheduling requirements for relocating or temporarily interrupting any Utilities during the construction of the Project. Contractor shall schedule and coordinate its Work around the Utilities owner's scheduling requirements for any such relocation or temporary service interruption. Contractor shall be responsible for properly shoring, supporting and protecting all Utilities at all times during the course of the Work. To the extent Contractor is unreasonably delayed in the performance of its Work due to the failure of any Utilities owner to timely perform with respect to any relocation or temporary service interruption of its Utility, so long as such delay is not due to the fault or neglect of Contractor, Contractor may seek an extension to the Contract Time in accordance with the procedures set forth in Paragraph 9.2 hereafter. In no event shall Contractor be entitled to any increase to the Contract Amount as a result of any such delay.

3. Schedule.

1.6 3.1 The Contractor, within ten (10) calendar days after the execution of this Agreement by both parties, shall prepare and submit to Owner and Engineer, for their review and acceptance, a progress schedule for the Project (herein "Progress Schedule"). The Progress Schedule shall relate to all Work required by the Contract Documents and shall provide for expeditious and practicable execution of the Work within the Contract Time. The Progress Schedule shall indicate the dates for starting and completing the various stages of the Work. The Progress Schedule shall utilize a CPM network approach to scheduling and shall contain such level of detailing as may be required by Owner and Engineer.

1.7 3.2 The Progress Schedule shall be updated monthly by the Contractor. All monthly updates to the Progress Schedule shall be subject to the Owner's and Engineer's review and acceptance. Contractor shall submit the updates to the Progress Schedule with its monthly Applications for Payment noted below. The Owner's and Engineer's review and acceptance of the submitted Progress Schedule updates shall be a condition precedent to the Owner's obligation to pay Contractor.

4. Progress Payments.

1.8 4.1 The first Application for Payment shall be submitted no earlier than thirty (30) days after the Commencement Date. Within ten (10) calendar days after the execution of this Agreement by both parties, Contractor shall submit to Owner and Engineer, for their review and approval, a schedule of values based upon the Contract Amount, listing the various items of the Work and the dollar value for each element. Said schedule of values to be developed from the Contractor's bid sheet attached as Section 00030. After its approval by Owner and Engineer, this schedule of values shall be used as the basis for Contractor's monthly Applications for Payment. This schedule shall be updated and submitted each month to Engineer along with a completed and notarized copy of the Application for Payment form attached to the Agreement as Section 00210.

4.1.1 As noted in Section 3.A of the Agreement to which these General Conditions are attached, initially the Contract Amount is based upon an amount equal to the sum of the established unit prices for each separately identified item of Work times the estimated quantity for each item as reflected in attached Section 00030. The estimated quantities of items of Work are not guaranteed and are solely for the purpose of comparison of bids and determining

an initial Contract Amount. Determinations of the actual quantities and classifications of Work performed by Contractor will be made by Engineer in accordance with the procedures in subparagraph 4.1.3 below.

4.1.2 The unit price for each item of Work will be deemed to include an amount considered by Contractor to be adequate to compensate Contractor for its overhead and profit for each separately identified item of Work.

4.1.3 Engineer will determine the actual quantities and classifications of Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision thereon will be final and binding upon Contractor, unless Contractor files a Claim contesting such determination within five (5) business days after Engineer has rendered its decision.

4.1.4 If the quantity of any item of Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in Section 00030 (such difference must be at least twenty (20) per cent) and such difference will cause substantial inequity to either the Owner of Contractor, the applicable unit price shall be equitably adjusted by Change Order. If Contractor believes any such difference exists, it must file a Claim in accordance with the procedures set forth in Article 11 hereafter.

1.9 4.2 Within ten (10) calendar days after the execution of this Agreement by both parties, Contractor shall submit to Owner and the Engineer a complete list of all its proposed subcontractors and materialmen, showing the work and materials involved and the dollar amount of each proposed subcontract and purchase order. Said list of proposed subcontractors and materialmen is to be based upon the list provided with Contractor's bid for this Project.

1.10 4.3 Payment for materials and equipment not incorporated into the Project, but delivered and suitably stored at the site, shall be subject to the Owner's discretion. If Owner consents, such payments shall not exceed 50% of the value of such unincorporated items, and the Application for Payment shall be accompanied by a bill of sale, invoice or other documentation warranting that, conditioned solely upon Contractor's receipt of full payment for such items, the Owner has received the materials and equipment free and clear of all liens, charges, security interests and encumbrances, together with evidence that the materials and equipment are covered by appropriate property insurance and other arrangements to protect

Owner's interest therein, all of which shall be subject to the Owner's satisfaction. Owner shall not make any payments, and Contractor shall not include in any of its Applications for Payment, any amounts for equipment or materials stored off-site.

1.11 4.4 Contractor shall submit three (3) copies of its monthly Application for Payment to the Engineer on or before the 25th day of each month for Work performed during the previous month. Invoices received after the 25th day of each month shall be considered for payment as part of the next month's application. Within ten (10) calendar days after receipt of each Application for Payment, the Engineer shall either: (1) indicate its approval of the requested payment; (2) indicate its approval of only a portion of the requested payment, stating in writing its reasons therefore; or (3) return the Application for Payment to the Contractor indicating, in writing, the reason for refusing to approve payment. In the event of a total denial and return of the Application for Payment by the Engineer, the Contractor may make the necessary corrections and resubmit the Application for Payment. So long as the Contractor has submitted a complete and proper Application for Payment with all required supporting documentation, Owner shall, within thirty (30) calendar days after its receipt of the Application for Payment, pay the Contractor the amounts approved by the Engineer and Owner. Provided, however, in no event shall the Owner be obligated to pay an amount greater than that portion of the Application for Payment approved by the Engineer.

1.12 4.5 Owner shall retain ten percent (10%) of the gross amount of each monthly payment request or ten percent (10%) of the portion thereof approved by the Owner for payment, whichever is less. Such sum shall be accumulated and not released to Contractor until final payment is due. Any interim interest on such sums shall accrue to Owner.

1.13 4.6 Monthly payments to Contractor shall in no way imply approval or acceptance of the Work.

1.14 4.7 Each Application for Payment shall be accompanied by Release and Affidavits, in the form attached as Section 00230, from Contractor (and each of its subcontractors and suppliers on a form substantially similar to Section 00230 as approved by Owner) with respect to that portion of the Work upon which payment is being requested. The Owner shall not be required to make payment until and unless these affidavits are furnished by Contractor.

5. Payments Withheld.

1.15 5.1 The Engineer or Owner may decline to approve any Application for Payment, or portions thereof, because of subsequently discovered evidence or subsequent inspections. The Engineer or Owner may nullify the whole or any part of any approval for payment previously issued and Owner may withhold any payments otherwise due Contractor under this Agreement or any other agreement between Owner and Contractor, to such extent as may be necessary in the Engineer's or Owner's opinion to protect it from loss because of: (a) defective Work not remedied; (b) third party claims filed or reasonable evidence indicating probable filing of such claims; (c) failure of Contractor to make payment properly to subcontractors or materialmen for labor, materials or equipment; (d) reasonable doubt that the Work can be completed for the unpaid balance of the Contract Amount; (e) reasonable indication that the Work will not be completed within the Contract Time; (f) unsatisfactory prosecution of the Work by the Contractor; or (g) any other material breach of the Contract Documents by Contractor. If these conditions are not remedied or removed, Owner may, after three (3) days written notice, rectify the same at Contractor's expense. Owner also may offset against any sums due Contractor the amount of any liquidated or unliquidated obligations of Contractor to Owner, whether relating to or arising out of this Agreement or any other agreement between Contractor and Owner.

6. Final Payment.

1.16 6.1 Owner shall make final payment to Contractor within thirty (30) calendar days after the Work is finally inspected and accepted by both Owner and the Engineer in accordance with Section 20.1 herein, provided that Contractor first, and as an explicit condition precedent to the accrual of Contractor's right to final payment, shall have furnished Owner with a properly executed and notarized copy of the Release and Affidavit attached as Section 00230, as well as, a duly executed copy of the Surety's consent to final payment and such other documentation that may be required by the Contract Documents, Engineer or Owner.

1.17 6.2 Contractor's acceptance of final payment shall constitute a full waiver of any and all claims by Contractor against Owner arising out of this Agreement or otherwise relating to the Project, except those previously made in writing and identified by Contractor as unsettled in its final Application for Payment. Neither the acceptance of the Work nor payment by Owner shall be deemed to be a waiver of Owner's right to enforce any obligations of

Contractor hereunder or to the recovery of damages for defective Work not discovered by the Engineer or Owner at the time of final inspection.

7. Submittals and Substitutions.

7.1 Contractor shall carefully examine the Contract Documents for all requirements for approval of materials to be submitted such as shop drawings, data, test results, schedules and samples. Contractor shall submit all such materials at its own expense and in such form as required by the Contract Documents in sufficient time to prevent any delay in the delivery of such materials and the installation thereof.

1.18 7.2 Whenever materials or equipment are specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular supplier, the naming of the item is intended to establish the type, function and quality required. Unless the name is followed by words indicating that no substitution is permitted, materials or equipment of other suppliers may be accepted by Owner if sufficient information is submitted by Contractor to allow the Owner to determine that the material or equipment proposed is equivalent or equal to that named. Requests for review of substitute items of material and equipment will not be accepted by Owner from anyone other than Contractor and all such requests must be submitted by Contractor to Engineer within thirty (30) calendar days after Notice of Award is received by Contractor.

1.19 7.3 If Contractor wishes to furnish or use a substitute item of material or equipment, Contractor shall make application to the Engineer for acceptance thereof, certifying that the proposed substitute shall perform adequately the functions and achieve the results called for by the general design, be similar and of equal substance to that specified and be suited to the same use as that specified. The application shall state that the evaluation and acceptance of the proposed substitute will not prejudice Contractor's achievement of substantial completion on time, whether or not acceptance of the substitute for use in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for the Project) to adapt the design to the proposed substitute and whether or not incorporation or use by the substitute in connection with the Work is subject to payment of any license fee or royalty. All variations of the proposed substitute from that specified will be identified in the application and available maintenance, repair and replacement service shall be indicated. The application also shall contain an itemized estimate of all costs that will result

directly or indirectly from acceptance of such substitute, including costs for redesign and claims of other contractors affected by the resulting change, all of which shall be considered by the Engineer in evaluating the proposed substitute. The Engineer may require Contractor to furnish at Contractor's expense additional data about the proposed substitute.

1.20 7.4 If a specific means, method, technique, sequence or procedure of construction is indicated in or required by the Contract Documents, Contractor may furnish or utilize a substitute means, method, sequence, technique or procedure of construction acceptable to the Engineer, if Contractor submits sufficient information to allow the Engineer to determine that the substitute proposed is equivalent to that indicated or required by the Contract Documents. The procedures for submission to and review by the Engineer shall be the same as those provided herein for substitute materials and equipment.

1.21 7.5 The Engineer shall be allowed a reasonable time within which to evaluate each proposed substitute. The Engineer and Owner shall be the sole judges of acceptability, and no substitute will be ordered, installed or utilized without the Engineer's and the Owner's prior written acceptance which shall be evidenced by either a Change Order or an approved Shop Drawing. The Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute. The Engineer will record time required by the Engineer and the Engineer's consultants in evaluating substitutions proposed by Contractor and making changes in the Contract Documents occasioned thereby. Whether or not the Owner accepts a proposed substitute, Contractor shall reimburse Owner for the charges of the Engineer and the Engineer's consultants for evaluating each proposed substitute.

8. Daily Reports, As-Builts and Meetings.

1.22 8.1 Unless waived in writing by Owner, Contractor shall complete and submit to Engineer on a weekly basis a daily log of the Work for the preceding week in a format approved by the Engineer and Owner. The daily log shall document all activities of Contractor at the Project site including, but not limited to, the following:

8.1.1 Weather conditions showing the high and low temperatures during work hours, the amount of precipitation received on the Project site, and any other weather conditions which adversely affect the Work;

8.1.2 Soil conditions which adversely affect the Work;

8.1.3 The hours of operation by Contractor's and subcontractor's personnel;

8.1.4 The number of Contractor's and subcontractor's personnel present and working at the Project site, by subcontract and trade;

8.1.5 All equipment present at the Project site, description of equipment use and designation of time equipment was used (specifically indicating any down time);

8.1.6 Description of Work being performed at the Project site;

8.1.7 Any unusual or special occurrences at the Project site;

8.1.8 Materials received at the Project site; and

8.1.9 A list of all visitors to the Project site.

The daily log shall not constitute nor take the place of any notice required to be given by Contractor to Owner or Engineer pursuant to the Contract Documents.

1.23 8.2 Contractor shall maintain in a safe place at the Project site one-record copy of the Contract Documents, including, but not limited to, all drawings, specifications, addenda, amendments, Change Orders, Work Directive Changes and Field Orders, as well as all written interpretations and clarifications issued by the Engineer, in good order and annotated to show all changes made during construction. The annotated drawings shall be continuously updated by the Contractor throughout the prosecution of the Work to accurately reflect all field changes that are made to adapt the Work to field conditions, changes resulting from Change Orders, Work Directive Changes and Field Orders, and all concealed and buried installations of piping, conduit and utility services. All buried and concealed items, both inside and outside the Project site, shall be accurately located on the annotated drawings as to depth and in relationship to not less than two (2) permanent features (e.g. interior or exterior wall faces). The annotated drawings shall be clean and all changes, corrections and dimensions shall be given in a neat and legible manner in a contrasting color. The "As-Built" record documents, together with all approved samples and a counterpart of all approved shop drawings shall be available to Engineer and Owner for reference. Upon completion of the Work and as a condition precedent to Contractor's entitlement to final payment, these "As-Built" record documents, samples and shop drawings shall be delivered to Engineer by Contractor for Owner.

1.24 8.3 Contractor shall keep all records and supporting documentation which concern or relate to the Work hereunder for a minimum of five (5) years from the date of termination of this Agreement or the date the Project is completed, whichever is later. Owner,

or any duly authorized agents or representatives of Owner, shall have the right to audit, inspect and copy all such records and documentation as often as they deem necessary during the period of this Agreement and during the five (5) year period noted above; provided, however, such activity shall be conducted only during normal business hours.

9. Contract Time and Time Extensions.

1.25 9.1 Contractor shall diligently pursue the completion of the Work and coordinate the Work being done on the Project by its subcontractors and materialmen, as well as coordinating its Work with all work of others at the Project Site, so that its Work or the work of others shall not be delayed or impaired by any act or omission by Contractor. Contractor shall be solely responsible for all construction means, methods, techniques, sequences, and procedures, as well as coordination of all portions of the Work under the Contract Documents.

1.26 9.2 Should Contractor be obstructed or delayed in the prosecution of or completion of the Work as a result of unforeseeable causes beyond the control of Contractor, and not due to its fault or neglect, including but not restricted to acts of God or of the public enemy, acts of government, fires, floods, epidemics, quarantine regulation, strikes or lockouts, Contractor shall notify the Owner in writing within forty-eight (48) hours after the commencement of such delay, stating the cause or causes thereof, or be deemed to have waived any right which Contractor may have had to make a claim for increased time or costs. Contractor shall be entitled to an extension to the Contract Time for any such delays, to the extent its performance of critical path Work has been delayed, so long as such delay is beyond its control and not due to its fault or neglect and Contractor has provided the written notice as required herein.

1.27 9.3 No interruption, interference, inefficiency, suspension or delay in the commencement or progress of the Work from any cause whatever, including those for which Owner may be responsible, in whole or in part, shall relieve Contractor of his duty to perform or give rise to any right to damages or additional compensation from Owner. Contractor expressly acknowledges and agrees that it shall receive no damages for delay. Contractor's sole remedy, if any, against Owner will be the right to seek an extension to the Contract Time; provided, however, the granting of any such time extension shall not be a condition precedent to the aforementioned "No Damage For Delay" provision. This paragraph shall expressly apply to claims for early completion, as well as to claims based on late completion.

Notwithstanding the foregoing, if the Work is delayed due to the fault or neglect of Owner or anyone for whom Owner is liable ("Owner Delay"), and such Owner Delay exceeds a cumulative total of 90 calendar days, Contractor may make a claim in accordance with the procedures set forth in this Contract, for the actual and direct increased field costs it incurs as a result of such Owner Delay accruing after said 90 calendar days. Provided, however, Contractor expressly acknowledges and agrees that its actual and direct increased field costs shall not exceed $500.00 per calendar day.

10. Changes in the Work.

1.28 10.1 Owner shall have the right at any time during the progress of the Work to increase or decrease the Work. Promptly after being notified of a change, Contractor shall submit an itemized estimate of any cost or time increases or savings it foresees as a result of the change. Except in an emergency endangering life or property, or as expressly set forth herein, no addition or changes to the Work shall be made except upon written order of Owner, and Owner shall not be liable to the Contractor for any increased compensation without such written order. No officer, employee or agent of Owner is authorized to direct any extra or changed Work orally.

1.29 10.2 A Change Order, in the form attached as Section 00200 to this Agreement, shall be issued and executed promptly after an agreement is reached between Contractor and Owner concerning the requested changes. Contractor shall promptly perform changes authorized by duly executed Change Orders. The Contract Amount and Contract Time shall be adjusted in the Change Order in the manner as Owner and Contractor shall mutually agree.

1.30 10.3 If Owner and Contractor are unable to agree on a Change Order for the requested change, Contractor shall, nevertheless, promptly perform the change as directed by Owner in a written Work Directive Change. In that event, the Contract Amount and Contract Time shall be adjusted as directed by Owner. If Contractor disagrees with the Owner's adjustment determination, Contractor must make a claim pursuant to Section 11 of these General Conditions or else be deemed to have waived any claim on this matter it might otherwise have had.

1.31 10.4 In the event a requested change results in an increase to the Contract Amount, the amount of the increase shall be limited to the Contractor's reasonable direct labor

and material costs and reasonable actual equipment costs as a result of the change (including allowance for labor burden costs) plus a maximum ten percent (10%) markup for all overhead and profit. In the event such change Work is performed by a subcontractor, a maximum ten percent (10%) markup for all overhead and profit for that subcontractors' direct labor and material costs and actual equipment costs shall be permitted, with a maximum five percent (5%) markup thereon by the Contractor for all of its overhead and profit, for a total maximum markup of fifteen percent (15%). All compensation due Contractor and any subcontractor for field and home office overhead is included in the markups noted above.

1.32 10.5 Owner shall have the right to conduct an audit of Contractor's books and records to verify the accuracy of the Contractor's claim with respect to Contractor's costs associated with any Change Order.

1.33 10.6 The Engineer shall have authority to order minor changes in the Work not involving an adjustment to the Contract Amount or an extension to the Contract Time and not inconsistent with the intent of the Contract Documents. Such changes may be effected by Field Order or by other written order. Such changes shall be binding on the Contractor.

1.34 10.7 If Contractor encounters on the Project site any materials reasonably believed by Contractor to be petroleum or petroleum related products or other hazardous or toxic substances which have not been rendered harmless, Contractor immediately shall (i) stop Work in the area affected and (ii) immediately report the condition to Owner and Engineer. If the Work is so stopped and hazardous material is found, the Work in the affected area shall not thereafter be resumed except by Change Order. Any such Change Order shall include, but not be limited to, an adjustment to the Contract Time and Contract Amount, as appropriate. If no hazardous material is found after the Work is stopped, no Change Order is required to resume the Work in the affected area. Further, if the hazardous material was generated or caused by Contractor or any of its employees, agents, subcontractors or materialmen, no Change Order will be required, nor any adjustment to either the Contract Time or Contract Amount shall be made, and Contractor shall indemnify, defend and hold Owner harmless from any costs or expenses incurred by Owner with respect to such hazardous material.

1.35 10.8 Subject to the provisions of Paragraph 6 of the Special Provisions attached to the Agreement as Section 00170, if conditions are encountered at the Project site which are (i) subsurface or otherwise concealed physical conditions which differ materially from those indicated in the Contract Documents, or (ii) unknown physical conditions of an

unusual nature, which differ material from those ordinarily found to exist and generally recognized as inherent in construction activities for the character provided for in the Contract Documents, then Contractor shall provide Owner with prompt written notice thereof before conditions are disturbed and in no event later than 48 hours after the first observance of such conditions. Contractor's failure to provide such written notice shall be deemed a waiver of any claim Contractor otherwise may have made with respect to any such conditions. Owner and Engineer shall properly investigate such conditions and, if they differ materially and cause an increase or decrease in Contractor's cost of, or time required for, performance of any part of the Work, Owner will acknowledge and agree to an equitable adjustment to the Contract Amount or Contract Time, or both, for such Work. If Owner determines that the conditions at the site are not materially different from those indicated in the Contract Documents or not of an unusual nature or should have been discovered by Contractor as part of its site investigations, and that no change in the terms of the Contract Documents is justified, Owner shall so notify Contractor in writing, stating its reasons. Claims by Contractor in opposition to such determination by Owner must be made within seven (7) calendar days after Contractor's receipt of Owner's written notice of such decision. If Contractor fails to provide Owner and Engineer written notice of such claim within said seven calendar (7) day period, Contractor shall be deemed to have waived any such claim. If Owner and Contractor cannot agree on the adjustment to the Contract Amount or Contract Time, the dispute resolution procedures set forth in the Contract Documents shall be complied with by the parties.

11. Claims and Disputes.

1.36 11.1 A Claim is a demand or assertion by one of the parties seeking an adjustment or interpretation of the terms of the Contract Documents, payment of money, extension of time or other relief with respect to the terms of the Contract Documents. The term "Claim" also includes other disputes and matters in question between Owner and Contractor arising out of or relating to the Contract Documents. The responsibility to substantiate a Claim shall rest with the party making the Claim.

1.37 11.2 Claims by the Contractor shall be made in writing to the Owner and Engineer within the time period set forth in the Contract Documents for such claim event, or if no such time period is stated, then within forty-eight (48) hours after the first day of the event giving rise to such Claim. Contractor's failure to comply with these notice requirements shall

be deemed a waiver of the Claim by Contractor. Written supporting data shall be submitted to the Owner and Engineer within fifteen (15) calendar days after the occurrence of the event, unless the Owner grants additional time in writing, or else the Contractor shall be deemed to have waived the Claim. All Claims shall be priced in accordance with the provisions of Subsection 10.4.

1.38 11.3 The Contractor shall proceed diligently with its performance as directed by the Owner, regardless of any pending Claim action, suit, arbitration or administrative proceeding, unless otherwise agreed to by the Owner in writing, and Owner shall continue to make payments in accordance with the Contract Documents during the pendency of any Claim.

12. Other Work.

1.39 12.1 Owner may perform other work related to the Project at the site with Owner's own forces, have other work performed by utility owners or let other direct contracts. If the fact that such other work is to be performed is not noted in the Contract Documents, notice thereof will be given to Contractor prior to starting any such other work. If Contractor believes that such performance will involve additional expense to Contractor or require additional time, Contractor shall file a Claim in accordance with the procedures set forth in Article 11 above.

1.40 12.2 Contractor shall afford each utility owner and other contractors who are a party to a direct contract with Owner (or Owner, if Owner is performing the additional work with Owner's employees) proper and safe access to the site and a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such work and shall properly connect and coordinate its Work with theirs. Contractor shall do all cutting, fitting and patching of the Work that may be required to make its several parts come together properly and integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating or otherwise altering their work and will only cut or alter their work with the written consent of the Engineer and the others whose work will be affected.

1.41 12.3 If any part of the Work depends for proper execution or results upon the work of any other contractor or utility owner (or Owner), Contractor shall inspect and promptly report to Engineer in writing any delays, defects or deficiencies in such work that render it unavailable or unsuitable for such proper execution and results. Contractor's failure to report

will constitute an acceptance of the other work as fit and proper for integration with the Work except for latent defects in such other work not reasonably discovered by Contractor.

13. Indemnification and Insurance.

1.42 13.1 To the maximum extent permitted by Florida law, Contractor agrees to save harmless and indemnify Owner and its officers and employees from any and all liabilities, claims, damages penalties, demands, judgments, actions proceedings, losses or costs, including, but not limited to reasonable attorneys' fees and paralegals' fees, whether resulting from any claimed breach of this Agreement by Contractor or from personal injury, property damage, direct or consequential damages, or economic loss, to the extent caused by the negligence, recklessness, or intentional wrongful misconduct of Contractor or anyone employed or utilized by the Contractor in the performance of this Agreement. Owner and Contractor agree the first $100.00 of the Contract Amount paid by Owner to Contractor shall be given as separate consideration for this indemnification, the sufficiency of such separate consideration being acknowledged by Contractor by Contractor's execution of the Agreement.

13.1.1 Contractor agrees to defend the Owner and its employees, officers, directors and agents, and at the Owner's discretion, upon written demand to the Contractor, the Engineer and their respective employees, officers, directors and agents (collectively "Defended Parties"), from any and all liabilities, claims, damages, penalties, demands, losses, actions or proceedings, whether for personal injury, property damage, direct or consequential damages, or economic loss, arising directly or indirectly on account of or in connection with any negligent or wrongful act or omission of Contractor or anyone for whom Contractor is legally liable, or resulting from any breach of this Agreement by Contractor or anyone for whom Contractor is legally liable, or resulting from the use by Contractor, or by anyone for whom Contractor is legally liable, of any materials, tools, machinery or other property of any of Defended Party. The selection of counsel for defense of any such matter is subject to approval by Owner. Owner has the right to direct the defense of any matter under this Paragraph. Provided, however, nothing herein shall be construed as requiring Contractor to defend any particular Defended Party in claims arising solely from the negligence or misconduct of that Defended Party. And further provided that, following settlement or satisfaction of any claim against a Defended Patty, nothing herein shall be construed to limit or abrogate the rights of Contractor to seek common law contribution for such settlement or satisfaction. Owner and Contractor

agree the second $100.00 of the Contract Amount paid by Owner to Contractor shall be given as separate consideration for this duty to defend, the sufficiency of such separate consideration being acknowledged by Contractor by Contractor's execution of the Agreement.

1.43 13.2 Contractor shall obtain and carry, at all times during its performance under the Contract Documents, insurance of the types and in the amounts set forth in Division 00090 to the Agreement. All insurance policies shall be from responsible companies duly authorized to do business in the State of Florida and/or responsible risk retention group insurance companies which are registered with the State of Florida. Within ten (10) calendar days after the execution of this Agreement by both parties, Contractor shall provide Owner with properly executed Certificates of Insurance to evidence Contractor's compliance with the insurance requirements of the Contract Documents. Said Certificates of Insurance shall be on forms approved by Owner. The Certificates of Insurance shall be personally, manually signed by the authorized representatives of the insurance company/companies shown on the Certificates of Insurance, with proof that they are authorized representatives thereof. In addition, certified, true and exact copies of all insurance polices required hereunder shall be provided to Owner, on a timely basis, when requested by Owner.

1.44 13.3 The Certificates of Insurance and required insurance policies shall contain provisions that thirty (30) days prior written notice by registered or certified mail shall be given Owner of any cancellation, intent not to renew, or reduction in the policies or coverages, except in the application of the aggregate limits provisions. In the event of a reduction in the aggregate limit of any policy, Contractor shall immediately take steps to have the aggregate limit reinstated to the full extent permitted under such policy.

1.45 13.4 All insurance coverages of the Contractor shall be primary to any insurance or self insurance program carried by the Owner applicable to this Project. The acceptance by Owner of any Certificate of Insurance does not constitute approval or agreement by the Owner that the insurance requirements have been satisfied or that the insurance policy shown on the Certificate of Insurance is in compliance with the requirements of the Contract Documents. No Work shall commence at the Project site unless and until the required Certificates of Insurance are received by the Owner.

1.46 13.5 Contractor shall require each of its subcontractors to procure and maintain, until the completion of the subcontractor's work, insurance of the types and to the limits specified in Section 00090, unless such insurance requirements for the subcontractor is

expressly waived in writing by the Owner. All liability insurance policies, other than professional liability, worker's compensation and employer's liability policies, obtained by Contractor to meet the requirements of the Contract Documents shall name the Owner as an additional insured and shall contain severability of interest provisions. If any insurance provided pursuant to the Contract Documents expires prior to the completion of the Work, renewal Certificates of Insurance and, if requested by Owner, certified, true copies of the renewal policies, shall be furnished by Contractor within thirty (30) days prior to the date expiration.

1.47 13.6 Should at any time the Contractor not maintain the insurance coverages required herein, the Owner may terminate the Agreement for cause or at its sole discretion shall be authorized to purchase such coverages and charge the Contractor for such coverages purchased. The Owner shall be under no obligation to purchase such insurance, nor shall it be responsible for the coverages purchased or the insurance company or companies used. The decision of the Owner to purchase such insurance coverages shall in no way be construed to be a waiver of any of its rights under the Contract Documents.

1.48 13.7 Contractor shall submit to Engineer a copy of all accident reports arising out of any injuries to its employees or those of any firm or individual to whom it may have subcontracted a portion of the Work, or any personal injuries or property damages arising or alleged to have arisen on account of any work by Contractor under the Contract Documents.

14. Compliance with Laws.

1.49 14.1 Contractor agrees to comply, at its own expense, with all federal, state and local laws, codes, statutes, ordinances rules, regulations and requirements applicable to the Project, including but not limited to those dealing with taxation, worker's compensation, equal employment and safety. If Contractor observes that the Contract Documents are at variance therewith, it shall promptly notify Owner and Engineer in writing prior to performing any such portion of the Work.

15. Cleanup and Protections.

1.50 15.1 Contractor agrees to keep the Project site clean at all times of debris, rubbish and waste materials arising out of the Work. At the completion of the Work, Contractor shall remove all debris, rubbish and waste materials from and about the Project site,

as well as all tools, appliances, construction equipment and machinery and surface materials, and shall leave the Project site clean and ready for occupancy by Owner.

1.51 15.2 Any existing surface or subsurface improvements (subject to the provisions of Paragraph 10.8 above), including, but not limited to, pavements, curbs, sidewalks, pipes, utilities, footings, structures, trees and shrubbery, not indicated in the Contract Documents to be removed or altered, shall be protected by Contractor from damage during the prosecution of the Work. Any such improvements so damaged shall be restored by Contractor to the condition equal to that existing at the time of Contractor's commencement of the Work.

16. Assignment.

1.52 16.1 Contractor shall not assign this Agreement or any part thereof, without the prior written consent of Owner, which consent shall be at Owner's sole discretion. Contractor shall not be released from this Agreement as the result of any such assignment.

17. Permits, Licenses and Taxes.

1.53 17.1 Except for St. John River Water Management Permit for surface water drainage and FDEP permits for water and sewer utility improvements, all permits and licenses necessary for the prosecution of the Work (including all dewatering and NPDES permits) shall be procured and paid for by Contractor. If Contractor performs any Work without obtaining, or contrary to, such permits or licenses, Contractor shall bear all costs arising therefrom. Except for all City of Apopka permit and inspection fees, which have been waived by Owner, Contractor shall pay all other governmental charges and inspection fees necessary for the prosecution of the Work.

1.54 17.2 Contractor shall pay all sales, consumer, use and other similar taxes associated with the Work or portions thereof, which are applicable during the performance of the Work.

18. Termination for Default.

1.55 18.1 Contractor shall be considered in material default of the Agreement and such default shall be considered cause for Owner to terminate Contractor's right to continue to perform under the Agreement, in whole or in part, as further set forth in this Section, if Contractor: (1) fails to begin the Work under the Contract Documents within the time specified herein; or (2) fails to properly and timely perform the Work as directed by the Owner or the

Engineer or as provided for in the approved Progress Schedule; or (3) performs the Work unsuitably or neglects or refuses to remove materials or to correct or replace such Work as may be rejected as unacceptable or unsuitable; or (4) discontinues the prosecution of the Work; or (5) fails to resume Work which has been suspended within a reasonable time after being notified to do so; or (6) becomes insolvent or is declared bankrupt, or commits any act of bankruptcy; or (7) allows any final judgment to stand against it unsatisfied for more than ten (10) days; or (8) makes an assignment for the benefit of creditors; or (9) fails to obey any applicable codes, laws, ordinances, rules or regulations with respect to the Work; or (10) materially breaches any other provision of the Contract Documents.

1.56 18.2 Owner shall notify Contractor in writing of Contractor's default(s). If Owner determines that Contractor has not remedied and cured the default(s) within seven (7) calendar days following receipt by Contractor of said written notice (unless the cure cannot reasonably be accomplished within said seven (7) calendar days, in which event Contractor must commence the cure within said seven (7) calendar days and thereafter diligently and continuously prosecute such cure to completion, but in no event shall such time period to cure exceed thirty (30) calendar days following receipt by Contractor of Owner's default notice), then Owner, at its option, without releasing or waiving its rights and remedies against the Contractor's sureties and without prejudice to any other right or remedy it may be entitled to hereunder or by law, may terminate Contractor's right to proceed under the Agreement, in whole or in part, and take possession of all or any portion of the Work and any materials, tools, equipment, and appliances of Contractor, take assignments of any of Contractor's subcontracts and purchase orders, and complete all or any portion of the Work by whatever means, method or agency which Owner, in its sole discretion, may choose.

1.57 18.3 If Owner deems any of the foregoing remedies necessary, Contractor agrees that it shall not be entitled to receive any further payments hereunder until after the Project is completed. All monies expended and all of the costs, losses, damages and extra expenses, including all management, administrative and other overhead and other direct and indirect expenses (including Engineer's and attorneys' fees) or damages incurred by Owner incident to such completion, shall be deducted from the Contract Amount, and if such expenditures exceed the unpaid balance of the Contract Amount, Contractor agrees to pay promptly to Owner on demand the full amount of such excess, including costs of collection, attorney's fees (including appeals) and interest thereon at the maximum legal rate of interest

until paid. If the unpaid balance of the Contract Amount exceeds all such costs, expenditures and damages incurred by the Owner to complete the Work, such excess shall be paid to the Contractor. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Engineer, upon application, and this obligation for payment shall survive termination of the Agreement.

1.58 18.4 The liability of Contractor hereunder shall extend to and include the full amount of any and all sums paid, expenses and losses incurred, damages sustained, and obligations assumed by Owner in good faith under the belief that such payments or assumptions were necessary or required, in completing the Work and providing labor, materials, equipment, supplies, and other items therefore or reletting the Work, and in settlement, discharge or compromise of any claims, demands, suits, and judgments pertaining to or arising out of the Work hereunder. Owner may rely upon the Engineer's recommendations and determinations with respect to any default by Contractor hereunder, including whether any such default has been appropriately cured by Contractor.

1.59 18.5 If, after notice of termination of Contractor's right to proceed pursuant to this Section, it is determined for any reason that Contractor was not in default, or that its default was excusable, or that Owner was not entitled to the remedies against Contractor provided herein, then Contractor's remedies against Owner shall be the same as and limited to those afforded Contractor under Section 19 below.

19. Termination for Convenience and Right of Suspension.

1.60 19.1 Owner shall have the right to terminate this Agreement, in whole or in part, without cause upon seven (7) calendar days written notice to Contractor. In the event of such termination for convenience, Contractor's recovery against Owner shall be limited to that portion of the Contract Amount earned through the date of termination, together with any retainage withheld and reasonable termination expenses incurred, but Contractor shall not be entitled to any other or further recovery against Owner, including, but not limited to, damages or any anticipated profit on portions of the Work not performed.

1.61 19.2 Owner shall have the right to suspend all or any portions of the Work upon giving Contractor two (2) calendar days' prior written notice of such suspension. If all or any portion of the Work is so suspended, Contractor may seek an extension of time to its schedule in accordance with the terms and conditions of Paragraphs 9.2 and 9.3 herein.

Provided, however, if the ordered suspension exceeds three (3) months, the Contractor shall have the right to terminate the Agreement with respect to that portion of the Work which is subject to the ordered suspension.

20. Completion.

1.62 20.1 When the entire Work (or any portion thereof designated in writing by Owner) is ready for its intended use, Contractor shall notify Owner and Engineer in writing that the entire Work (or such designated portion) is substantially complete and request that Engineer issue a Certificate of Substantial Completion (or Certificate of Partial Substantial Completion). Within a reasonable time thereafter, Owner, Contractor and Engineer shall make an inspection of the Work (or designated portion thereof) to determine the status of completion. If Owner and Engineer do not consider the Work (or designated portion) substantially complete, Engineer shall notify Contractor in writing giving the reasons therefor. If Owner and Engineer consider the Work (or designated portion) substantially complete, Engineer shall prepare and deliver to Contractor a Certificate of Substantial Completion (or Certificate of Partial Substantial Completion) which shall fix the date of Substantial Completion for the entire Work (or designated portion thereof) and include a tentative punchlist of items to be completed or corrected by Contractor before final payment. Owner shall have the right to exclude Contractor from the Work and Project site (or designated portion thereof) after the date of Substantial Completion, but Owner shall allow Contractor reasonable access to complete or correct items on the tentative punchlist.

1.63 20.2 Upon receipt of written notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Engineer shall promptly make such inspection and, if it finds the Work acceptable and fully performed under the Contract Documents, Engineer shall promptly issue a final Certificate for Payment, stating that, on the basis of its observations and inspections, the Work has been completed in accordance with the terms and conditions of the Contract Documents and that the entire balance found to be due the Contractor is due and payable. Neither the final payment nor the retainage shall become due and payable until Contractor submits: (1) the Release and Affidavit in the form attached as Section 00230, (2) consent of surety to final payment, and (3) if required by Owner or Engineer, other data establishing payment or satisfaction of all obligations, such as receipts, releases and waivers, arising out of the Contract Documents, to the extent and in such

form as may be designated by Owner or Engineer. Owner reserves the right to inspect the Work and make an independent determination as to the Work's acceptability, even though the Engineer may have issued its certificate. Unless and until the Owner is completely satisfied, neither the final payment nor the retainage shall become due and payable.

21. Warranty.

1.64 21.1 Contractor shall obtain and assign to Owner all express warranties given to Contractor or any subcontractors by any materialmen supplying materials, equipment or fixtures to be incorporated into the Project. Contractor warrants to Owner that any materials and equipment furnished under the Contract Documents shall be new unless otherwise specified, and that all Work shall be of good quality, free from all defects and in conformance with the Contract Documents. Contractor further warrants to Owner that all materials and equipment furnished under the Contract Documents shall be applied, installed, connected, erected, used, cleaned and conditioned in accordance with the instructions of the applicable manufacturers, fabricators, suppliers or processors except as otherwise provided for in the Contract Documents. If, within one (1) year after final completion, any Work is found to be defective or not in conformance with the Contract Documents, Contractor shall correct it promptly after receipt of written notice from Owner. Contractor shall also be responsible for and pay for replacement or repair of adjacent materials or Work which may be damaged as a result of such replacement or repair. These warranties are in addition to those implied warranties to which Owner is entitled as a matter of law or any other express warranties contained within the Contract Documents.

22. Tests and Inspections.

1.65 22.1 Owner, Engineer, their respective representatives, agents and employees, and governmental agencies with jurisdiction over the Project shall have access at all times to the Work, whether the Work is being performed on or off of the Project site, for their observation, inspection and testing. Contractor shall provide proper, safe conditions for such access. Contractor shall provide Engineer with timely notice of readiness of the Work for all required inspections, tests or approvals.

1.66 22.2 If the Contract Documents or any codes, laws, ordinances, rules or regulations of any public authority having jurisdiction over the Project requires any portion of the Work to be specifically inspected, tested or approved, Contractor shall assume full

responsibility therefore, pay all costs in connection therewith and furnish Engineer the required certificates of inspection, testing or approval. All inspections, tests or approvals shall be performed in a manner and by organizations acceptable to the Engineer and Owner.

1.67 22.3 If any Work that is to be inspected, tested or approved is covered without written concurrence from the Engineer, such Work must, if requested by Engineer, be uncovered for observation. Such uncovering shall be at Contractor's expense unless Contractor has given Engineer timely notice of Contractor's intention to cover the same and Engineer has not acted with reasonable promptness to respond to such notice. If any Work is covered contrary to written directions from Engineer, such Work must, if requested by Engineer, be uncovered for Engineer's observation and be replaced at Contractor's sole expense.

1.68 22.4 The Owner shall charge to Contractor and may deduct from any payments due Contractor all engineering and inspection expenses incurred by Owner in connection with any overtime work. Such overtime work consisting of any Work performed during the construction period beyond the regular eight (8) hour day and for any work performed on Saturday, Sunday or holidays.

1.69 22.5 Neither observations by the Engineer or Owner, nor inspections, tests or approvals by others, shall relieve Contractor from Contractor's obligations to perform the Work in accordance with the Contract Documents.

23. Defective Work.

1.70 23.1 Work not conforming to the requirements of the Contract Documents shall be deemed defective Work. If required by Owner or Engineer, Contractor shall as directed, either correct all defective Work, whether or not fabricated, installed or completed, or, if the defective Work has been rejected by Owner or Engineer, remove it from the site and replace it with nondefective Work. Contractor shall bear all direct, indirect and consequential costs of such correction or removal (including, but not limited to fees and charges of engineers, architects, attorneys and other professionals) made necessary thereby, and shall hold Owner harmless for same.

1.71 23.2 If the Owner or Engineer consider it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, Contractor, at Owner's or Engineer's request, shall uncover, expose or otherwise make available for observation, inspection or tests as Owner or Engineer may require, that portion of the Work in question,

furnishing all necessary labor, material and equipment. If it is found that such Work is defective, Contractor shall bear all direct, indirect and consequential costs of such uncovering, exposure, observation, inspection and testing and of satisfactory reconstruction (including, but not limited to, fees and charges of engineers, architects, attorneys and other professionals), and Owner shall be entitled to an appropriate decrease in the Contract Amount. If, however, such Work is not found to be defective, Contractor shall be allowed an increase in the Contract Amount and/or an extension to the Contract Time, directly attributable to such uncovering, exposure, observation, inspection, testing and reconstruction.

1.72 23.3 If any portion of the Work is defective, or Contractor fails to supply sufficient skilled workers with suitable materials or equipment, or fails to finish or perform the Work in such a way that the completed Work will conform to the Contract Documents, Owner or Engineer may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner and Engineer to stop the Work shall not give rise to any duty on the part of Owner or Engineer to exercise this right for the benefit of Contractor or any other party.

1.73 23.4 Should the Owner determine, at its sole opinion, it is in the Owner's best interest to accept defective Work, the Owner may do so. Contractor shall bear all direct, indirect and consequential costs attributable to the Owner's evaluation of and determination to accept defective Work. If such determination is rendered prior to final payment, a Change Order or Work Change Directive shall be issued evidencing such acceptance of such defective Work, incorporating the necessary revisions in the Contract Documents and reflecting an appropriate decrease in the Contract Amount. If the Owner accepts such defective Work after final payment, Contractor shall promptly pay Owner an appropriate amount determined by Owner to adequately compensate Owner for its acceptance of the defective Work.

1.74 23.5 If Contractor fails, within a reasonable time after the written notice from Owner or Engineer, to correct defective Work or to remove and replace rejected defective Work as required by Engineer or Owner, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any of the provisions of the Contract Documents, Owner may, after seven (7) days written notice to Contractor, correct and remedy any such deficiency. To the extent necessary to complete corrective and remedial action, Owner may exclude Contractor from any or all of the Project site, take possession of all or any part of the Work, and suspend Contractor's services related

thereto, take possession of Contractor's tools, appliances, construction equipment and machinery at the Project site and incorporate in the Work all materials and equipment stored at the Project site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Engineer and their respective representatives, agents, and employees such access to the Project site as may be necessary to enable Owner to exercise the rights and remedies under this paragraph. All direct, indirect and consequential costs of Owner in exercising such rights and remedies shall be charged against Contractor, and a Change Order or Work Change Directive shall be issued, incorporating the necessary revisions to the Contract Documents, including an appropriate decrease to the Contract Amount. Such direct, indirect and consequential costs shall include, but not be limited to, fees and charges of engineers, architects, attorneys and other professionals, all court and arbitration costs and all costs of repair and replacement of work of others destroyed or damaged by correction, removal or replacement of Contractor's defective Work. Contractor shall not be allowed an extension of the Contract Time because of any delay in performance of the Work attributable to the exercise by Owner of Owner's rights and remedies hereunder.

24. Supervision and Superintendents.

1.75 24.1 Contractor shall supervise and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be responsible to see that the finished Work complies accurately with the Contract Documents. Contractor shall keep on the Work at all times during its progress a competent resident superintendent, who shall not be replaced without prior written notice to Owner and Engineer except under extraordinary circumstances. The superintendent shall be Contractor's representative at the Project site and shall have authority to act on behalf of Contractor. All communications given to the superintendent shall be as binding as if given to the Contractor. Owner shall have the right to direct Contractor to remove and replace its Project superintendent, with or without cause.

25. Protection of Work.

1.76 25.1 Contractor shall fully protect the Work from loss or damage and shall bear the cost of any such loss or damage until final payment has been made. If Contractor or

any one for whom Contractor is legally liable for is responsible for any loss or damage to the Work, or other work or materials of Owner or Owner's separate contractors, Contractor shall be charged with the same, and any monies necessary to replace such loss or damage shall be deducted from any amounts due Contractor.

1.77 25.2 Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

26. Emergencies.

1.78 26.1 In the event of an emergency affecting the safety or protection of persons or the Work or property at the Project site or adjacent thereto, Contractor, without special instruction or authorization from Owner or Engineer is obligated to act to prevent threatened damage, injury or loss. Contractor shall give Engineer written notice within forty-eight (48) hours after the occurrence of the emergency, if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby. If the Engineer determines that a change in the Contract Documents is required because of the action taken in response to an emergency, a Change Order shall be issued to document the consequences of the changes or variations. If Contractor fails to provide the forty-eight (48) hour written notice noted above, the Contractor shall be deemed to have waived any right it otherwise may have had to seek an adjustment to the Contract Amount or an extension to the Contract Time.

27. Use of Premises.

1.79 27.1 Contractor shall confine all construction equipment, the storage of materials and equipment and the operations of workers to the Project site and land and areas identified in and permitted by the Contract Documents and other lands and areas permitted by law, rights of way, permits and easements, and shall not unreasonably encumber the Project site with construction equipment or other material or equipment. Contractor shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or any land or areas contiguous thereto, resulting from the performance of the Work.

28. Safety.

1.80 28.1 Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

28.1.1 All employees on the Work and other persons and/or organizations who may be affected thereby;

28.1.2 All the Work and materials and equipment to be incorporated therein, whether in storage on or off the Project site; and

28.1.3 Other property on the Project site or adjacent thereto, including trees, shrubs, laws, walks, pavements, roadways, structures, utilities and any underground structures or improvements not designated for removal, relocation or replacement in the Contract Documents.

1.81 28.2 Contractor shall comply with all applicable codes, laws, ordinances, rules and regulations of any public body having jurisdiction for the safety of persons or property or to protect them from damage, injury or loss (including, but not limited to, the Trench Safety Act, Chapter 553, Florida Statutes). Contractor shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify owners of adjacent property and of underground structures and improvements and utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation or replacement of their property. Contractor's duties and responsibilities for the safety and protection of the Work shall continue until such time as the Work is completed and final acceptance of same by Owner has occurred.

1.82 28.3 Contractor shall designate a responsible representative at the Project site whose duty shall be the prevention of accidents. This person shall be Contractor's superintendent unless otherwise designated in writing by Contractor to Owner.

29. Project Meetings.

1.83 29.1 Prior to the commencement of Work, the Contractor shall attend a preconstruction conference with the Engineer and others as appropriate to discuss the Progress Schedule, procedures for handling shop drawings and other submittals, and for processing Applications for Payment, and to establish a working understanding among the parties as to the Work. During the prosecution of the Work, the Contractor shall attend any and all meetings

convened by the Engineer or Owner with respect to the Project, when directed to do so by Owner or Engineer. Contactor shall have its subcontractors and suppliers attend all such meetings (including the preconstruction conference) as may be directed by the Owner or Engineer.

30. Securing Agreement.

1.84 30.1 Contractor warrants that Contractor has not employed or retained any company or person, other than a bona fide employee working solely for Contractor, to solicit or secure this Agreement and that Contractor has not paid or agreed to pay any person, company, corporation, individual or firm, other than a bona fide employee working solely for Contractor, any fee, commission, percentage, gift or any other consideration contingent upon or resulting from the award or making of this Agreement.

31. Public Entity Crimes.

31.1 By its execution of this Contract, Contractor acknowledges that it has been informed by Owner of the terms of Section 287.133(2)(a) of the Florida Statutes which read as follows:

"A person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a bid, proposal, or reply on a contract to provide any goods or services to a public entity; may not submit a bid, proposal, or reply on a contract with a public entity for the construction or repair of a public building or public work; may not submit bids, proposals, or replies on leases of real property to a public entity; may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with any public entity; and may not transact business with any public entity in excess of the threshold amount provided in s. 287.017 for CATEGORY TWO for a period of 36 months following the date of being placed on the convicted vendor list."

32. Equal Employment Opportunity/Non-Discrimination

32.1 In performing all services to be provided hereunder, Contractor shall not discriminate against any employee or applicant for employment because of race, color, religion, sex or national origin. Contractor shall take affirmative action to ensure that applicants for employment are employed, and that employees are treated during employment, without regard to their race, color, religion, sex or national origin. Such actions shall include, but not be limited to the following: (i) employment, upgrading, demotion or transfer; (ii) recruitment or recruitment advertising; (iii) layoff or termination; (iv) rates of pay or other forms of compensation; and (v) selection for training, including apprenticeship. Contractor shall post in conspicuous places, available to all employees and applicants for employment notices setting

forth the terms of this Equal Employment Opportunity Non-Discrimination Clause and stating that all qualified candidates will receive consideration for employment without regard to race, color, religion, sex or national origin.

33. Drug-Free Workplace

33.1 By its execution of this Contract, Contractor acknowledges that it has been informed by Owner of the terms of Section 287.087 of the Florida Statutes which reads as follows: "Whenever two or more bids, proposals, or replies that 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 bid, proposal, or reply received from a business that certifies that it has implemented a drug-free workplace program shall be given preference in the award process. 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 bid 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 bid, the employee will abide by the terms of the statement and will notify the employer of any conviction of, or plea of guilty or nolo contendere to, any violation of chapter 893 or of any controlled substance law of the United States or any state, for a violation occurring in the workplace no later than 5 days after such conviction.

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

(6) Make a good faith effort to continue to maintain a drug-free workplace through implementation of this section.

END OF GENERAL TERMS AND CONDITIONS

SECTION 00170
SPECIAL PROVISIONS

1. STANDARD SPECIFICATIONS

The project shall be constructed in accordance with these specifications and the Florida Department of Environmental Protection (FDEP), all applicable standards required to obtain Orange County right-of-way permits and all applicable City of Apopka Construction Design Standards.

2. LABORATORY TESTING

a. Cost of all required laboratory testing, except the soil cement mix design, shall be borne by the City, except that the cost of all retesting due to defective materials or construction shall be borne by the Contractor.

b. Owner will make available to the Contractor one copy of any and all laboratory testing performed by the Owner and or Engineer as a part of this project's design.

3. COOPERATION WITH OTHERS

The Contractor shall cooperate with the owners of any underground or overhead utilities in their removal and rearrangement operations, in order that these operations may progress in a reasonable manner and that service rendered by these parties will not be interrupted.

4. METHOD OF MEASUREMENT

All measurement for payment will be based on the completed work performed in strict accordance with the drawings and specifications. All work completed under this contract shall be measured by the Contractor or his representatives in the presence of the Engineer or his representative.

5. NOTIFICATION TO AND COORDINATION WITH UTILITY COMPANIES

The excavators shall comply with FL 77-153 regarding notification of existing gas and oil pipeline company owners. During the period of this contract, it shall be the Contractor's responsibility to coordinate all utility adjustments necessary for the completion of the project.

6. SUBSURFACE INVESTIGATIONS

The Contractor shall be responsible for having determined to his satisfaction, prior to the submission of his bid, the nature of the work, the conformation of the ground, the character and quality of the nature of the groundwater conditions and all other matters which can in any way affect the work under this contract. The prices established for the work to be done will reflect all costs pertaining to the work.

7. CLEAN-UP

Upon completion of construction of all facilities, the entire construction area shall be cleaned up and all trash, debris and excess material must be hauled away and disposed of to the satisfaction of the City.

8. PERMITS, LICENSES AND NOTICES

The Contractor shall procure all permits and licenses required by Contract Documents. The Contractor shall give all notice necessary and incidental to the due and lawful prosecution of the work.

9. USE OF PUBLIC ROADS AND STREETS

The use of public roads and streets shall be such as to provide a minimum of inconvenience to the public and to other traffic. Any earth or excavated material spilled from trucks shall be removed by the Contractor and the street cleaned to the satisfaction of the Owner. Contractor shall be responsible for any and all damage to existing facilities whether caused by themselves or their subcontractor. It is highly recommended that Contractor notify all subcontractor's of this liability in an effort to prevent or minimize damage.

10. CARE OF TREES, SHRUBS AND GRASS

The Contractor shall be fully responsible for maintaining in good condition all cultivated grass plots, trees and shrubs beyond the grading limits of this Contract. Where maintained shrubbery or grassed strips must be removed or destroyed incident to the construction operation, the Contractor shall, after completion of the work, replace or restore to the original condition, all destroyed or damaged shrubbery or grass. Tree limbs which interfere with equipment operation and are approved for pruning, shall be neatly trimmed.

11. DAMAGE TO EXISTING STRUCTURES AND UTILITIES

The Contractor shall be responsible for and make good all damage to pavement beyond the limits of this contract, buildings, telephone, power or other cables, water pipes, storm sewer facilities, sanitary pipe, gas lines, or other structures which may be encountered whether or not shown on the Drawings.

12. RECORD DRAWINGS

After completion of the work and with final pay request, the Contractor shall submit to the Engineer one set of "Record Drawings." These drawings shall show the exact location and elevations of all structures constructed and shall be prepared and signed and sealed by a professional surveyor licensed to do business in Florida. After completion of the work and with final payment, the Contractor shall submit to the Engineer/Owner one set of Record Drawings including an Autocad file (release 2000 or later).

13. USE OF EXPLOSIVES

No blasting shall be done except upon approval by the City and the governmental agency or political subdivision having jurisdiction. When the use of explosives is approved by the City as necessary for the execution of the work, the Contractor shall use the utmost care so as not to endanger life or property, and assume responsibility for any such damage resulting from his blasting operations, and whenever explosives shall be stored in a secure manner and all such storage places shall be marked clearly "DANGEROUS EXPLOSIVES" and shall be in the care of competent watchmen. All permits required for the use of explosives shall be obtained by the Contractor at his expense. All requirements of the governmental agency issuing permits shall be observed.

14. CITY INSPECTOR'S OFFICE

Not required.

15. MONTHLY PROGRESS SCHEDULE

Monthly progress schedule shall include the necessary manpower and equipment required to maintain the projected progress schedule. Should the Contractor fail to maintain the progress schedule he has provided to the City and is unable to recover prior to the next month's pay requisition, the City may elect to withhold a portion of or all of the following payments until such time that the Contractor has recovered his loss time. The City may request the Contractor to submit a revised schedule with evidence, by means of additional manpower and equipment, displaying his intentions to make up for the loss of time. If the City agrees and believes that the Contractor will recover, the City may elect to continue with the monthly payments.

16. STORING OF EQUIPMENT AND MATERIAL

The Contractor shall discuss and obtain approval from the City for any area outside the limits of construction that may be impacted by his work. This shall include any areas necessary for the staging, storing and delivery of equipment and material. In addition, the Contractor shall discuss and obtain approval from the City for the selection of the best delivery routes to the construction site.

17. Contractor shall take the necessary steps to explore or otherwise verify and confirm location of underground pipes utilities & structures for the entire length of the proposed pipeline prior to excavating.

18. Contractor shall schedule his work in such a manner as to maintain access for homes & businesses.

END OF SPECIAL PROVISIONS

SECTION 00180

NOTICE OF AWARD

CONTRACTOR: DATE: _____

_____
_____
_____

Project: RWS Extension Ocoee - Apopka Rd. (Harmon Rd. – Alston Bay Blvd.)

Bid Opening Date: _____

You are hereby notified that you are the apparent successful Bidder on the Project noted above. Upon compliance with the conditions precedent to be fulfilled by you within the time specified, the Agreement will be executed and delivered to you.

No. Copies	Item
3	Agreement between Owner and Contractor
3	Performance and Payment Bond
1	Notice of Award

Please take the following actions:

1. Execute Agreements and Seal.
2. Have your insurance company provide 3 copies each of Certificate of Insurance as described in Section 00100 and 00110.
3. Provide Performance and Payment bond.
4. Return all 3 copies of Agreement, insurance certificates and bonds to:

City of Apopka
748 E. Cleveland St.
Apopka, FL 32703
Attn: R. Jay Davoll, P.E.

We will return a fully executed copy of the Contract Documents to you along with a Notice to Proceed.

OWNER:

CITY OF APOPKA
748 E. CLEVELAND ST.
APOPKA, FL 32703

BY:

_____
R. Jay Davoll, P.E.
Public Services Director

SECTION 00190

NOTICE TO PROCEED

CONTRACTOR: DATE:

_____

_____

_____

Notice to Proceed On Project: RWS Extension Ocoee - Apopka Rd. (Harmon Rd. – Alston Bay Blvd.)

You are hereby notified that you may proceed with the work on the subject Project as of _____ as you requested. A pre-con meeting has been scheduled for _____.

The plans and specifications will be distributed to you at that time.

OWNER:

CITY OF APOPKA
748 E. CLEVELAND ST.
APOPKA, FL 32703

BY:

_____
R. Jay Davoll, P.E.
Public Services Director

SECTION 00200
CHANGE ORDER

No. ____

Date: _____

Project:

Bid No.:

Owner: City of Apopka

Contract Date:

Contractor:

_____
_____
_____

Nature of the Change:

_____
_____
_____
_____
_____

Total Cost of Change Order: $_____

The changes result in the following adjustment of Contract Price:

Original Contract Price	$ _____
Change Order Amount Prior to this Change Order	$ _____
Contract Price Prior to this Change Order	$ _____
Net (Increase) (Decrease) Resulting from this Change Order	$ _____
Current Contract Price Including this Change Order	$ _____

Contract Time Prior to this Change Order _____
(date/days)

Net (Increase) (Decrease) Resulting from this Change Order _____
(date/days)

Current Contract Time Including this Change Order _____
(date/days)

The Above Changes Are Approved:

_____
Public Services Director

By: R. Jay Davoll, P.E.
Date: _____

The Above Changes Accepted:

_____
Contractor

By: _____

Date: _____

SECTION 00210
APPLICATION FOR PAYMENT

Application No. _____ Progress _____ Final _____ Project No. _____

Project: *RWS Extension Ocoee - Apopka Rd. (Harmon Rd. – Alston Bay Blvd.)*
Contractor: Contract Date:

Contract for:

Application Date: _____ For Period Ending _____

Analysis of Work Performed

1. Value of original contract price _____

2. Cumulative change orders _____

3. Current contract price _____

4. Value of work completed to date _____

5. Plus material stored 50% _____

6. Total value of work completed to date _____

7. Less _____% retainage _____

8. Less liquidated damages _____

9. Less amount of previous payments _____

10. Balance due this estimate _____

CONTRACTORS CERTIFICATION

The undersigned Contractor hereby swears under penalty of perjury that (1) all previous progress payments received from the OWNER on account of Work performed under the contract referred to above have been applied by the undersigned to discharge in full all obligations of the undersigned incurred in connection with Work covered by prior Application for Payment numbered 1 through ___ inclusive; and (2) all materials and equipment incorporated in said project or otherwise listed in or covered by this Application for Payment are free and clear of all liens, claims, security interest and encumbrances; and (3) all applicable provisions of the Florida Prevailing Wage Law (Florida Statutes, 215.19) regarding apprentices and payment of wages have been complied with and to the best of my knowledge and belief by all subcontractors. (Contractor shall attach like affidavits by all subcontractors.)

_____ _____

(DATE) (CONTRACTOR)

By: _____

(PRINT/TYPE)

COUNTY OF _____

STATE OF _____

Before me on this __ day of _____ 20__, personally appeared _____, known to me, who being duly sworn, deposes and says that (s)he executed the above Application for Payment and statement of behalf of said Contractor; and that all of the statements contained therein are true, correct and complete.

_____

Notary Public
My Commission Expires:

PROJECT MANAGER/ENGINEER APPROVAL

In accordance with above contract, the undersigned approves payment to the Contractor of the Amount Due as shown above.

City of Apopka Public Services
748 E. Cleveland St.
Apopka, FL 32703

By: _____
R. Jay Davoll, P.E.

Public Services Director
(Title)

Date:_____

SECTION 00220
CERTIFICATE OF SUBSTANTIAL COMPLETION

Project No: _____

Project: _____

Contractor: _____ Contract Date: _____

Contract For: _____

_____

Project or Specified Part Shall Include: _____

_____

_____

_____

DEFINITION OF SUBSTANTIAL COMPLETION

The date of Substantial Completion of a Project or Specified part of a Project is the date when the construction is sufficiently completed, in accordance with the Contract Documents, so that the Project or specified part of the Project can be utilized for the purpose for which it was intended.

To: _____
(Owner)

And To: _____

Date of Substantial Completion: _____

The Work performed under this contract has been inspected by authorized representatives of the OWNER, CONTRACTOR and ENGINEER, and the Project (or specified part of the Project, as indicated above) is hereby declared to be substantially completed on the above date.

A tentative list of items to be completed or corrected is appended hereto. This list may not be exhaustive, and the failure to include an item on it does not alter the responsibility of the CONTRACTOR to complete all the Work in accordance with Contract Documents. These items shall be completed by the CONTRACTOR within _____ days of Substantial Completion.

CONTRACTOR accepts this Certificate of Substantial Completion on _____, 20___.

_____
Contractor

By: _____

OWNER accepts this Certificate of Substantial Completion on _____, 20___

_____
Owner

By: _____

SECTION 00230
RELEASE AND AFFIDAVIT

COUNTY OF ORANGE)

STATE OF FLORIDA)

Before me, the undersigned authority, personally appeared _____ who after being duly sworn, deposes and says:

(1) In accordance with the Contract Documents and conditioned upon receipt of payment in the amount of $_____, _____ ("Contractor") hereby releases and waives for itself and its subcontractors, material men, successors and assigns, except for unpaid retainage, all claims demands, damages, costs and expenses, whether in contract or in tort, against the City of Apopka, Florida ("Owner") relating in any way to the performance of the Agreement between Contractor and Owner , dated _____, 20___, for the period from _____ to _____, except for such still pending claims as Contractor previously may have filed in accordance with the terms of the Contract Documents and which are expressly identified as follows:

_____

(2) Contractor certifies for itself and its subcontractors, material men, successors and assigns, that all charges for labor, materials, supplies, lands, licenses and other expenses for which Owner might be sued or for which a lien or a demand against any payment bond might be filed, have been fully satisfied and paid through the previous month's Application for Payment No. _____, except for unpaid retainage and the following expressly identified items:

_____

_____.

(3) Contractor agrees to indemnify, defend and save harmless Owner from all demands or suits, actions, claims of liens or other charges filed or asserted against the Owner arising out of the performance by Contractor of the Work covered by this Release and Affidavit.

(4) This Release and Affidavit is given in connection with Contractor's [monthly/final] Application for Payment No. _____.

CONTRACTOR:

_____

By:_____
Its: President

_____

_____
Witnesses

Date:_____

[Corporate Seal]

STATE OF FLORIDA

COUNTY OF _____

The foregoing instrument was acknowledged before me this __ day of _____, 20___, by _____, as _____ President of _____ on behalf of the corporation.

_____
Notary Public, State of Florida
My Commission Expires: _____
(SEAL)

SECTION 00240
CONTRACTOR REQUEST FOR INFORMATION

QUESTION

REFERENCE SPEC. SECTION _____ DWG. NO. _____

BY: _____ DATE: _____

REPLY

BY: _____ DATE: _____
CC: _____
_____

RFI No. _____

SECTION 101
MOBILIZATION

101-1 Description.

Perform preparatory work and operations in mobilizing for beginning work on the project, including, but not limited to, those operations necessary for the movement of personnel, equipment, supplies, and incidentals to the project site and for the establishment of temporary offices, buildings, safety equipment and first aid supplies, and sanitary and other facilities.

Include the costs of bonds and any required insurance and any other preconstruction expense necessary for the start of the work, excluding the cost of construction materials.

101-2 Basis of Payment.

101-2.1 Partial Payments: When the proposal includes a separate pay item for Mobilization and the Notice to Proceed has been issued, partial payments will be made in accordance with the following:

For contracts of 120 contract days duration or less, partial payment will be made at 50% of the bid price per month for the first two months. For contracts in excess of 120 contract days duration, partial payment will be made at 25% of the bid price per month for the first four months. In no event shall more than 50% of the bid price be paid prior to commencing construction on the project site.

Total partial payments for Mobilization on any project, including when more than one project or job is included in the Contract, will be limited to 10% of the original Contract amount for that project. Any remaining amount will be paid upon completion of all work on the Contract.

Retainage, as specified in 9-5, will be applied to all partial payments.

Partial payments made on this item will in no way act to preclude or limit any of the provisions for partial payments otherwise provided for by the Contract.

101-2.2 When No Separate Item is Included in the Proposal: When the proposal does not include a separate item for Mobilization, all work and incidental costs specified as being covered under this Section will be included for payment under the several scheduled items of the overall Contract, and no separate payment will be made therefore.

101-2.1 When a Separate Item is Included in the Proposal: When the proposal includes a separate item of payment for this work, the work and incidental costs specified as being covered under this Section will be paid for at the Contract lump sum price for the item of Mobilization.

Payment will be made under:

ITEM NO. 101-1	MOBILIZATION, LUMP SUM.

SECTION 102
MAINTENANCE OF TRAFFIC

102-1 Description.

Maintain traffic within the limits of the project for the duration of the construction period, including any temporary suspensions of the work. Construct and maintain detours. Provide facilities for access to residences, businesses, etc., along the project. Furnish, install and maintain traffic control and safety devices during construction. Furnish and install work zone pavement markings for maintenance of traffic (MOT) in construction areas. Provide any other special requirements for safe and expeditious movement of traffic specified in the Plans. MOT includes all facilities, devices and operations as required for safety and convenience of the public within the work zone.

Do not maintain traffic over those portions of the project where no work is to be accomplished or where construction operations will not affect existing roads. Do not obstruct or create a hazard to any traffic during the performance of the work, and repair any damage to existing pavement open to traffic.

Include the cost of any work that is necessary to meet the requirements of the Contract Documents under the MOT pay item, when there is not a pay item provided.

102-2 Materials.

Meet the following requirements:

Bituminous Adhesive.....Section 970 *
Temporary Retroreflective Pavement Markers Section 990 *
Paint .....Section 971 *
Removable Tape .....Section 990 *
Glass Spheres.....Section 971 *
Temporary Traffic Control Device Materials.....Section 990 *
Retroreflective and Nonreflective Sheeting
for Temporary Traffic Control Devices.....Section 994 *

*Refer to FDOT Standard Specifications for Road and Bridge Construction 2013.

102-2.1 Temporary Traffic Control Devices: Use only the materials meeting the requirements of Section 990, Section 994, Design Standards and the Manual on Uniform Traffic Control Devices (MUTCD).

102-2.2 Detour: Provide all materials for the construction and maintenance of all detours.

102-2.3 Commercial Materials for Driveway Maintenance: Provide materials of the type typically used for base, including recycled asphalt pavement material, and having stability and drainage properties that will provide a firm surface under wet conditions.

102-3 Specific Requirements.

102-3.1 Beginning Date of Contractor's Responsibility: Maintain traffic starting the day work begins on the project or on the first day Contract time is charged, whichever is earlier.

102-3.2 Worksite Traffic Supervisor: Provide a worksite traffic supervisor in accordance with Section 105 of the FDOT Standard Specifications for Road and Bridge Construction 2013. Provide the worksite traffic supervisor with all equipment and materials needed to set up, take down, maintain traffic control, and handle traffic-related situations.

Ensure that the worksite traffic supervisor performs the following duties:

1. Performs on site direction of all traffic control on the project.
2. Is on site during all set up and take down, and performs a drive through inspection immediately after set up.
3. Is on site during all nighttime operations to ensure proper MOT.
4. Immediately corrects all safety deficiencies and does not permit minor deficiencies that are not immediate safety hazards to remain uncorrected for more than 24 hours.
5. Is available on a 24 hour per day basis and present within 45 minutes after notification of an emergency situation and is prepared to positively respond to repair the work zone traffic control or to provide alternate traffic arrangements.
6. Conducts daily daytime and weekly nighttime inspections of projects with predominately daytime work activities, and daily nighttime and weekly daytime inspections of projects with predominantly nighttime work activities of all traffic control devices, traffic flow, pedestrian, bicyclist, and business accommodations.

Advise the project personnel of the schedule of these inspections and give them the opportunity to join in the inspection as is deemed necessary. Submit a comprehensive weekly report, using the FDOT currently approved form, to the Engineer detailing the condition of all traffic control devices (including pavement markings) being used. Include assurances in the inspection report that pedestrians are accommodated with a safe, accessible travel path around work sites separated from mainline traffic in compliance with the Americans with Disabilities Act (ADA) Standards for Transportation Facilities, that existing or detoured bicyclist paths are being maintained satisfactorily throughout the project limits, and that existing businesses in work areas are being provided with adequate entrances for vehicular and pedestrian traffic during business hours. Have the worksite traffic supervisor sign the report and certify that all of the above issues are being handled in accordance with the Contract Documents. When deficiencies are found, the worksite traffic supervisor is to note such deficiencies and include the proposed corrective actions, including the date corrected.

A worksite traffic supervisor who fails to comply with the provisions of this Section may be disqualified and removed from the project. All activities, except traffic, erosion control and such other activities that are necessary for project maintenance and safety, for failure to comply with these provisions may be temporarily suspended.

102-4 Alternative Traffic Control Plan.

The Contractor may propose an alternative traffic control plan (TCP) to the plan presented in the Contract Documents. Have the Contractor's Engineer of Record sign and seal the alternative plan. Prepare the TCP in conformance with and in the form outlined in the current version of the FDOT Plans Preparation Manual. Indicate in the plan a TCP for each phase of activities. Take responsibility for identifying and assessing any potential impacts to a utility that may be caused by the alternate TCP proposed by the Contractor, and notify the City in writing of any such potential impacts to utilities.

Engineer's approval of the alternate TCP does not relieve the Contractor of sole responsibility for all utility impacts, costs, delays or damages, whether direct or indirect, resulting from Contractor initiated changes in the design or construction activities from those in the original Contract Specifications, Design Plans (including TCPs) or other Contract Documents.

The City reserves the right to reject any alternative TCP. Obtain the Engineer's written approval before beginning work using an alternate TCP. The Engineer's written approval is required for all modifications to the TCP. The Engineer will only allow changes to the TCP in an emergency without the proper documentation.

102-5 Traffic Control.

102-5.1 Standards: FDOT Design Standards are the minimum standards for the use in the development of all TCPs. The MUTCD, Part VI is the minimum national standard for traffic control for highway construction, maintenance, and utility operations. Follow the basic principles and minimum standards contained in these documents for the design, application, installation, maintenance, and removal of all traffic control devices, warning devices and barriers which are necessary to protect the public and workers from hazards within the project limits.

102-5.2 Maintenance of Roadway Surfaces: Maintain all lanes that are being used for the MOT, including those on detours and temporary facilities, under all weather conditions. Keep the lanes reasonably free of dust, potholes and rutting. Provide the lanes with the drainage facilities necessary to maintain a smooth riding surface under all weather conditions.

102-5.3 Number of Traffic Lanes: Maintain one lane of traffic in each direction. Maintain two lanes of traffic in each direction at existing four (or more) lane cross roads, where necessary to avoid undue traffic congestion. Construct each lane used for MOT at least as wide as the traffic lanes existing in the area before commencement of construction. Do not allow traffic control and warning devices to encroach on lanes used for MOT.

The Engineer may allow the Contractor to restrict traffic to one-way operation for short periods of time provided that the Contractor employs adequate means of traffic control and does not unreasonably delay traffic. When a construction activity requires restricting traffic to one-way operations, locate the flaggers within view of each other when possible. When visual contact between flaggers is not possible, equip them with 2-way radios, official, or pilot vehicles, or use traffic signals.

102-5.4 Crossings and Intersections: Provide and maintain adequate accommodations for intersecting and crossing traffic. Do not block or unduly restrict any road or street crossing the project unless approved by the Engineer. Before beginning any construction, provide the Engineer the names and phone numbers of persons that can be contacted when signal operation malfunctions.

102-5.5 Access for Residences and Businesses: Provide continuous access to all residences and all places of business.

102-5.6 Protection of the Work from Injury by Traffic: Where traffic would be injurious to a base, surface course, or structure constructed as a part of the work, maintain all traffic outside the limits of such areas until the potential for injury no longer exists.

102-5.7 Flagger: Provide trained flaggers in accordance with Section 105 of the FDOT Standard Specifications for Road and Bridge Construction 2013.

102-5.8 Conflicting Pavement Markings: Where the lane use or where normal vehicle or pedestrian paths are altered during construction, remove all pavement markings (paint, tape, thermoplastic, raised pavement markers, etc.) that will conflict with the adjusted vehicle or pedestrian paths. Use of paint to cover conflicting pavement markings is prohibited. Remove conflicting pavement markings using a method that will not damage the surface texture of the pavement and which will eliminate the previous marking pattern regardless of weather and light conditions.

Remove all pavement markings that will be in conflict with "next phase of operation" vehicle pedestrian paths as described above, before opening to vehicle traffic or use by pedestrians.

Cost for removing conflicting pavement markings (paint, tape, thermoplastic, raised pavement markers, etc.) to be included in Maintenance of Traffic, Lump Sum.

102-5.9 Vehicle and Equipment Visibility: Equip all pickups and automobiles used on the project with a minimum of one Class 2 amber or white warning light that meets the Society of Automotive Engineers Recommended Practice SAE J595, dated November 1, 2008, or SAE J845, dated December 1, 2007, and incorporated herein by reference. Existing lights that meet SAE J845, dated March, 1992, or SAE J1318, dated April, 1986, may be used to its end of service life. Lights should be unobstructed by ancillary vehicle equipment such as ladders, racks or booms. If the light is obstructed, additional lights will be required. The lights shall be operating when a vehicle is in a work area where a potential hazard exists, when operating the vehicle at less than the average speed for the facility while performing work activities, making frequent stops or called for in the Plans or Design Standards.

Equip all other vehicles and equipment with a minimum of 4 square feet of retroreflective sheeting or flashing lights.

To avoid distraction to motorists, do not operate the lights on the vehicles or equipment when the vehicles are outside the clear zone or behind a barrier.

102-5.10 No Waiver of Liability: Conduct operations in such a manner that no undue hazard results due to the requirements of this Article. The procedures and policies described herein in no way acts as a waiver of any terms of the liability of the Contractor or his surety.

102-6 Detours.

Refer to FDOT Standard Specifications for Road and Bridge Construction 2013.

102-7 Traffic Control Officer.

Provide uniformed law enforcement officers, including marked law enforcement vehicles, to assist in controlling and directing traffic in the work zone when the following types of work is necessary on projects:

1. Directing traffic/overriding the signal in a signalized intersection.
2. When Design Standards, Index No. 619 is used on freeway facilities (interstates, toll roads, and expressways) at nighttime for work within the travel lane.
3. When Design Standards, Index No. 655 Traffic Pacing for overhead work is called for in the Plans or approved by the Engineer.
4. When pulling conductor/cable above an open traffic lane on limited access facilities, when called for in the Plans or approved by the Engineer.
5. When Design Standards, Index No. 625 Temporary Road Closure 5 Minutes or Less is used.

102-8 Driveway Maintenance.

102-8.1 General: Ensure that each residence and business has safe, stable, and reasonable access.

102-8.2 Construction Methods: Place, level, manipulate, compact, and maintain the material, to the extent appropriate for the intended use.

As permanent driveway construction is accomplished at a particular location, the Contractor may salvage and reuse previously placed materials that are suitable for reuse on other driveways.

102-9 Temporary Traffic Control Devices.

Refer to FDOT Standard Specifications for Road and Bridge Construction 2013.

102-10 Work Zone Pavement Marking.

Refer to FDOT Standard Specifications for Road and Bridge Construction 2013.

102-11 Method of Measurement.

Refer to FDOT Standard Specifications for Road and Bridge Construction 2013.

102-12 Submittals.

Refer to FDOT Standard Specifications for Road and Bridge Construction 2013.

102-13 Basis of Payment.

Refer to FDOT Standard Specifications for Road and Bridge Construction 2013.

Payment Items: Payment will be made under:

Item No. 102-1	Maintenance of Traffic, lump sum.

SECTION 104
PREVENTION, CONTROL, AND ABATEMENT OF EROSION AND WATER POLLUTION

104-1 Description.

Provide erosion control measures on the project and in areas outside the right-of-way where work is accomplished in conjunction with the project, so as to prevent pollution of water, detrimental effects to public or private property adjacent to the project right-of-way and damage to work on the project. Construct and maintain temporary erosion control features or, where practical, construct and maintain permanent erosion control features as shown in the Plans or as may be directed by the Engineer.

104-2 General.

Coordinate the installation of temporary erosion control features with the construction of the permanent erosion control features to the extent necessary to ensure economical, effective, and continuous control of erosion and water pollution throughout the life of the Contract.

Due to unanticipated conditions, the Engineer may direct the use of control features or methods other than those included in the original Contract. In such event, the City will pay for this additional work as unforeseeable work.

104-3 Control of Contractor's Operations Which May Result in Water Pollution.

Prevent pollution of streams, canals, lakes, reservoirs, and other water impoundments with fuels, oils, bitumens, calcium chloride, or other harmful materials. Also, conduct and schedule operations to avoid or otherwise minimize pollution or siltation of such water impoundments, and to avoid interference with movement of migratory fish. Do not dump any residue from dust collectors or washers into any live stream.

Restrict construction operations in rivers, streams, lakes, tidal waters, reservoirs, canals, and other water impoundments to those areas where it is necessary to perform filling or excavation to accomplish the work shown in the Plans and to those areas which must be entered to construct temporary or permanent structures. As soon as conditions permit, promptly clear rivers, streams, and impoundments of all obstructions placed therein or caused by construction operations.

Do not frequently ford live streams with construction equipment. Wherever an appreciable number of stream crossings are necessary at any one location, use a temporary bridge or other structure.

Except as necessary for construction, do not deposit excavated material in rivers, streams, canals, or impoundments, or in a position close enough thereto, to be washed away by high water or runoff.

Where pumps are used to remove highly turbid waters from enclosed construction areas such as cofferdams or forms, treat the water by one or more of the following methods prior to discharge into State waters: pumping into grassed swales or appropriate vegetated areas or sediment basins, or confined by an appropriate enclosure such as turbidity barriers when other methods are not considered appropriate.

Do not disturb lands or waters outside the limits of construction as staked, except as authorized by the Engineer.

Obtain the Engineer's approval for the location of, and method of operation in, borrow pits, material pits, and disposal areas furnished for waste material from the project (other than commercially operated sources) such that erosion during and after completion of the work will not result in probability of detrimental siltation or water pollution.

104-4 Materials for Temporary Erosion Control.

The Engineer will not require testing of materials used in construction of temporary erosion control features other than as provided for geotextile fabric in 985-3 unless such material is to be incorporated into the completed project. When no testing is required, the Engineer will base acceptance on visual inspection.

The Contractor may use new or used materials for the construction of temporary silt fence, staked turbidity barriers, and floating turbidity barrier not to be incorporated into the completed project, subject to the approval of the Engineer.

104-5 Preconstruction Requirements.

At the Preconstruction Conference, provide to the City an Erosion Control Plan meeting the requirements or special conditions of all permits authorizing project construction. If no permits are required or the approved permits do not contain special conditions or specifically address erosion and water pollution, the project Erosion Control Plan will be governed by 7-1.1, 7-2.2, 7-8.1, 7-8.2, and Section 104 of the FDOT Standard Specifications for Road and Bridge Construction 2013.

When the Stormwater Pollution Prevention Plan (SWPPP) is required, prepare the Erosion Control Plan in accordance with the planned sequence of operations and present in a format acceptable to the City. The Erosion Control Plan shall describe, but not be limited to, the following items or activities:

(1) For each phase of construction operations or activities, supply the following information:

(a) Locations of all erosion control devices
(b) Types of all erosion control devices
(c) Estimated time erosion control devices will be in operation
(d) Monitoring schedules for maintenance of erosion control devices
(e) Methods of maintaining erosion control devices
(f) Containment or removal methods for pollutants or hazardous wastes

(2) The name and telephone number of the person responsible for monitoring and maintaining the erosion control devices.

(3) Submit for approval the Erosion Control Plans meeting paragraphs 3a and 3b below:

(a) Projects permitted by the St. Johns River Water Management District, require the following:

Obtain the Engineer's approval of the Erosion Control Plan.

Do not begin construction activities until the Erosion Control Plan receives written approval from the Engineer.

(b) Projects authorized by permitting agencies other than the Water Management Districts or projects for which no permits are required require the following:

The Engineer will review and approve the Contractor's Erosion Control Plan.

Do not begin construction activities until the Erosion Control Plan receives written approval from the Engineer.

Comply with the approved Erosion Control Plan.

104-6 Construction Requirements.

104-6.1 Limitation of Exposure of Erodible Earth: The Engineer may limit the surface areas of unprotected erodible earth exposed by the construction operation and may direct the Contractor to provide erosion or pollution control measures to prevent contamination of any river, stream, lake, tidal waters, reservoir, canal, or other water impoundments or to prevent detrimental effects on property outside the project right-of-way or damage to the project. Limit the area in which excavation and filling operations are being performed so that it does not exceed the capacity to keep the finish grading, turf, sod, and other such permanent erosion control measures current in accordance with the accepted schedule.

Do not allow the surface area of erodible earth that clearing and grubbing operations or excavation and filling operations expose to exceed 750,000 square feet without specific prior approval by the Engineer. This limitation applies separately to clearing and grubbing operations and excavation and filling operations.

The Engineer may increase or decrease the amount of surface area the Contractor may expose at any one time.

104-6.2 Incorporation of Erosion and Sediment Control Features: Incorporate permanent erosion control features into the project at the earliest practical time. Use temporary erosion and sediment control features found in the State of Florida Erosion and Sediment Control Designer and Reviewer Manual (E&SC Manual) to correct conditions that develop during construction which were not foreseen at the time of design, to control erosion and sediment prior to the time it is practical to construct permanent control features, or to provide immediate temporary control of erosion and sediment that develops during normal construction operations, which are not associated with permanent erosion control features on the project. An electronic version of the E&SC Manual can be found at the following URL:

http://www.dot.state.fl.us/specificationsoffice/Implemented/URLinSpecs/Files/FLErosionSedimentManual.pdf

Install all sediment control devices in a timely manner to ensure the control of sediment and the protection of lakes, streams, gulf or ocean waters, or any wetlands associated therewith and to any adjacent property outside the right-of-way as required.

At sites where exposure to such sensitive areas is prevalent, complete the installation of any sediment control device prior to the commencement of any earthwork.

After installation of sediment control devices, repair portions of any devices damaged at no expense to the City. The Engineer may authorize temporary erosion and sediment control features when finished soil layer is specified in the Contract and the limited availability of that material from the grading operations will prevent scheduled progress of the work or damage the permanent erosion control features.

104-6.3 Scheduling of Successive Operations: Schedule operations such that the area of unprotected erodible earth exposed at any one time is not larger than the minimum area necessary for efficient construction operations, and the duration of exposure of uncompleted construction to the elements is as short as practicable.

Schedule and perform clearing and grubbing so that grading operations can follow immediately thereafter. Schedule and perform grading operations so that permanent erosion control features can follow immediately thereafter if conditions on the project permit.

104-6.4 Details for Temporary Erosion and Sediment Control Features:

104-6.4.1 General: Use temporary erosion, sediment and water pollution control features found in the E&SC Manual. These features consist of, but are not limited to, temporary turf, rolled erosion control products, sediment containment systems, runoff control structures, sediment barriers, inlet protection systems, silt fences, turbidity barriers, and chemical treatment. For design details for some of these items, refer to the Design Standards and E&SC Manual.

104-6.4.2 Temporary Turf: The Engineer may designate certain areas of turf or sod constructed in accordance with Section 570 of the FDOT Standard Specifications for Road and Bridge Construction 2013 as temporary erosion control features. For areas not defined as sod, constructing temporary turf by seeding only is not an option for temporary erosion control under this Section. The Engineer may waive the turf establishment requirements of Section 570 for areas with temporary turf that will not be a part of the permanent construction.

104-6.4.3 Runoff Control Structures: Construct runoff control structures in accordance with the details shown in the Plans, the E&SC Manual, or as may be approved as suitable to adequately perform the intended function.

104-6.4.4 Sediment Containment Systems: Construct sediment containment systems in accordance with the details shown in the Plans, the E&SC Manual, or as may be approved as suitable to adequately perform the intended function. Clean out sediment containment systems as necessary in accordance with the Plans or as directed.

104-6.4.5 Sediment Barriers: Provide and install sediment barriers according to details shown in the Plans, as directed by the Engineer, or as shown in the E&SC Manual to protect against downstream accumulation of sediment. Sediment Barriers include, but are not limited to synthetic bales, silt fence, fiber logs and geosynthetic barriers. Reusable barriers that have had sediment deposits removed may be reinstalled on the project as approved by the Engineer.

104-6.4.6 Silt Fence:

104-6.4.6.1 General: Furnish, install, maintain, and remove silt fences, in accordance with the manufacturer's directions, these Specifications, the details as shown in the Plans, the Design Standards, and the E&SC Manual.

104-6.4.6.2 Materials and Installation: Use a geotextile fabric made from woven or nonwoven fabric, meeting the physical requirements of Section 985 of the FDOT Standard Specifications for Road and Bridge Construction 2013 according to those applications for erosion control.

Choose the type and size of posts, wire mesh reinforcement (if required), and method of installation. Do not use products which have a separate layer of plastic mesh or netting. Provide a durable and effective silt fence that controls sediment comparable to the Design Standards and the E&SC Manual.

Erect silt fence at upland locations, across ditchlines and at temporary locations shown in the Plans or approved by the Engineer where continuous construction activities change the natural contour and drainage runoff. Do not attach silt fence to existing trees unless approved by the Engineer.

104-6.4.6.3 Inspection and Maintenance: Inspect all silt fences immediately after each rainfall and at least daily during prolonged rainfall. Immediately correct any deficiencies. In addition, make a daily review of the location of silt fences in areas where construction activities have changed the natural contour and drainage runoff to ensure that the silt fences are properly located for effectiveness. Where deficiencies exist, install additional silt fences as directed by the Engineer.

Remove sediment deposits when the deposit reaches approximately 1/2 of the volume capacity of the silt fence or as directed by the Engineer. Dress any sediment deposits remaining in place after the silt fence is no longer required to conform with the finished grade, and prepare and seed them in accordance with Section 570 of the FDOT Standard Specifications for Road and Bridge Construction 2013.

104-6.4.7 Floating Turbidity Barriers and Staked Turbidity Barriers: Install, maintain, and remove turbidity barriers to contain turbidity that may occur as the result of dredging, filling, or other construction activities which may cause turbidity to occur in the waters of the State. The Contractor may need to deploy turbidity barriers around isolated areas of concern such as seagrass beds, coral communities, etc. both within as well as outside the right-of-way limits. The Engineer will identify such areas. Place the barriers prior to the commencement of any work that could impact the area of concern. Install the barriers in accordance with the details shown in the Plans or as approved by the Engineer. Ensure that the type barrier used and the deployment and maintenance of the barrier will minimize dispersion of turbid waters from the construction site. The Engineer may approve alternate methods or materials.

Operate turbidity barriers in such a manner to avoid or minimize the degradation of the water quality of the surrounding waters and minimize damage to areas where floating barriers installed.

104-6.4.8 Inlet Protection System: Furnish and install inlet protection systems as shown in the Plans, Design Standards and the E&SC Manual.

104-6.4.10 Chemical Treatment: Provide chemical treatment in accordance with the E&SC Manual. Chemical treatment may be used to clarify turbid or sediment laden water that does not yet meet state water quality standards or as an amendment to other erosion prevention and sediment control products to aid in their performance. The contractor must provide all of the required toxicity testing information in accordance with the E&SC Manual to the Engineer for review and acceptance prior to using any chemical treatment on the project site.

104-6.5 Removal of Temporary Erosion Control Features: In general, remove or incorporate into the soil any temporary erosion control features existing at the time of construction of the permanent erosion control features in an area of the project in such a manner that no detrimental effect will result. The Engineer may direct that temporary features be left in place.

104-7 Maintenance of Erosion and Sediment Control Features.

104-7.1 General: Provide routine maintenance of permanent and temporary erosion and sediment control features, at no expense to the City, until the project is complete and accepted. If reconstruction of such erosion and sediment control features is necessary due to the Contractor's negligence or carelessness or, in the case of temporary erosion and sediment control features, failure by the Contractor to install permanent erosion control features as scheduled, the Contractor shall replace such erosion control features at no expense to the City. If reconstruction of permanent or temporary erosion and sediment control features is necessary due to factors beyond the control of the Contractor, the City will pay for replacement under the appropriate Contract pay item or items.

Inspect all erosion and sediment control features at least once every seven calendar days and within 24 hours of the end of a storm of 0.50 inches or greater. Maintain all erosion control features as required in the Stormwater Pollution Prevention Plan, Contractor's Erosion Control Plan and as specified in the State of Florida Department of Environmental Protection Generic Permit for Stormwater Discharge from Large and Small Construction Activities.

104-8 Protection During Suspension of Contract Time.

If it is necessary to suspend the construction operations for any appreciable length of time, shape the top of the earthwork in such a manner to permit runoff of rainwater, and construct earth berms along the top edges of embankments to intercept runoff water. Provide temporary slope drains to carry runoff from cuts and embankments that are in the vicinity of rivers, streams, canals, lakes, and impoundments. Locate slope drains at intervals of approximately 500 feet, and stabilize them by paving or by covering with waterproof materials. Should such preventive measures fail, immediately take such other action as necessary to effectively prevent erosion and siltation. The Engineer may direct the Contractor to perform, during such suspensions of operations, any other erosion and sediment control work deemed necessary.

104-9 Method of Measurement.

When separate items for temporary erosion control features are included in the Contract, the quantities to be paid for will be: (1) the area, in square yards, of rolled erosion control products; (2) the length, in feet, of runoff control structures, measured along the surface of the work constructed; (3) the number of sediment containment systems constructed and accepted; (4) the number of sediment containment system cleanouts accomplished and

accepted; (5) the length, in feet, of sediment barriers; (6) the length, in feet, of floating turbidity barrier; (7) the length, in feet, of staked turbidity barrier; (8) the number of inlet protection systems; (9) the area, in square yards, of chemical treatment.(10) the number of floc logs or drums of product for chemical treatment.

Upon acceptance by the Engineer, the quantity of floating turbidity barriers, sediment barriers, staked turbidity barriers, and inlet protection devices will be paid for regardless of whether materials are new, used, or relocated from a previous installation on the project.

104-10 Basis of Payment.

Prices and payments will be full compensation for all work specified in this Section, including construction and routine maintenance of temporary erosion control features.

Any additional costs resulting from compliance with the requirements of this Section, other than construction, routine maintenance, and removal of temporary erosion control features, will be included in the Contract unit prices for the item or items to which such costs are related. The work of performance turf designated as a temporary erosion control feature in accordance with 104-6.4.2 will be paid for under the appropriate pay items specified in Sections 570 and 580.

Separate payment will not be made for the cost of constructing temporary earth berms along the edges of the roadways to prevent erosion during grading and subsequent operations. The Contractor shall include these costs in the Contract prices for grading items.

Additional temporary erosion control features constructed as directed by the Engineer will be paid for as unforeseeable work.

In case of repeated failure on the part of the Contractor to control erosion, pollution, or siltation, the Engineer reserves the right to employ outside assistance or to use the City's own forces to provide the necessary corrective measures. Any such costs incurred, including engineering costs, will be charged to the Contractor and appropriate deductions made from the monthly progress estimate.

Payment will be made under:

ITEM NO. 104-13-2	PREVENTION, CONTROL AND ABATMENT OF EROSION , LUMP SUM.

SECTION 105
PROTECTION AND RESTORATION OF EXISTING FACILITIES

PART 1 – GENERAL

1.01 GENERAL

A. The CONTRACTOR shall protect all existing utilities and improvements not designated for removal and shall restore damaged or temporarily relocated utilities and improvements to a condition equal to or better than they were prior to such damage or temporary relocation, all in accordance with the requirements of the Contract Documents.

B. All utility locates shall be the responsibility of the CONTRACTOR. Call SUNSHINE ONE CALL at 811 for locates of all underground utilities within the WORK limits prior to any work.

C. The CONTRACTOR shall verify the exact locations and depths of all utilities and the CONTRACTOR 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 CONTRACTOR's WORK. Any utility or service in conflict with the WORK will be reburied by the CONTRACTOR prior beginning the WORK to avoid damage.

D. The number of exploratory excavations required shall be that number which is sufficient to determine the alignment and grade of the utility.

E. The ENGINEER shall be notified of the CONTRACTOR's field-locate schedule.

1.02 RIGHTS-OF-WAY

A. The CONTRACTOR shall not do any WORK that would affect any oil, gas, sewer, or water pipeline; any telephone, cable television, telegraph, or electric transmission line; any fence; or any other structure, nor shall the CONTRACTOR enter upon the rights-of-way involved until notified by the ENGINEER that the OWNER has secured authority therefor from the proper party. After authority has been obtained, the CONTRACTOR, shall give said party due notice of its intention to begin WORK, if required by said party, and shall remove, shore, support to otherwise protect such pipeline, transmission line, ditch, fence, or structure or replace the same. When two (2) or more contracts are being executed at one time on the same or adjacent land in such manner that work on one contract may interfere with that on another, the OWNER shall determine the sequence and order of the WORK. 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 CONTRACTOR so desiring, to the extent, amount, in the manner, and at the times permitted.

1.03 PROTECTION OF SURVEY MONUMENTS, STREET AND/OR ROADWAY MARKERS

A. The CONTRACTOR shall not destroy, remove, or otherwise disturb any existing survey monuments 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 monuments, markers or points disturbed by the CONTRACTOR shall be accurately re-established, at the CONTRACTOR's expense unless provided for elsewhere in the Contract Documents, after all street or roadway resurfacing has been completed. Re-establishment of all survey monuments shall be by a Registered Florida Land Surveyor.

1.04 RESTORATION OF PAVEMENT

A. General. All paved areas, including asphalt concrete berms, cut or damaged during construction shall be replaced with similar materials and of equal thickness to match the existing adjacent undisturbed areas, except where specific 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 pavement 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 CONTRACTOR shall place temporary surfacing promptly after backfilling and shall maintain such surfacing for the period of time fixed by said authorities before proceeding with the final restoration of improvements.

C. Permanent Resurfacing. In order to obtain a satisfactory junction with adjacent surfaces, the CONTRACTOR shall saw cut 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 Driveways. Wherever sidewalks or private roads have been removed for purposes of construction, the CONTRACTOR shall place suitable temporary sidewalks or roadways promptly after backfilling and shall maintain them in satisfactory condition for the period of time fixed by the authorities having jurisdiction over the affected portions before proceeding with the final restoration or, if no such period of times is so fixed, the CONTRACTOR shall maintain said temporary sidewalks or roadways until the final restoration thereof has been made.

1.05 EXISTING UTILITIES AND IMPROVEMENTS

A. General. The CONTRACTOR shall protect all underground utilities and other improvements which may be impaired during construction operations. It shall be the CONTRACTOR's responsibility to ascertain the actual location of all existing utilities and other improvements that will be encountered in its construction operations, and to

see that such utilities or other improvements are adequately protected from damage due to such operations. The CONTRACTOR shall take all possible precautions for the protection of unforeseen utility lines to provide for interrupted service and to provide such special protection as may be necessary.

B. Utilities to be Moved. In 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 CONTRACTOR, 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 CONTRACTOR shall notify the ENGINEER 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 CONTRACTOR shall remove and, without unnecessary delay, temporarily replace or relocate such utility or improvement in a manner satisfactory to the ENGINEER and the owner of the facility. In all cases of such temporary removal or relocation, restoration to former location shall be accomplished by the CONTRACTOR in a manner that will restore or replace the utility or improvement as nearly as possible to its former locations and to as good or better 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 CONTRACTOR prior to excavation and that are to be retained, and all utility lines that are constructed during excavation operations shall be protected from damage during excavation and backfilling and, if damaged, shall be immediately repaired or replaced by the CONTRACTOR.

F. Underground Utilities Not Indicated. In the event that the CONTRACTOR damages any existing utility lines that are not indicated or the locations of which are not made know to the CONTRACTOR prior to excavation, a written report thereof shall be made immediately to the ENGINEER. If directed by the ENGINEER, repairs shall be made by the CONTRACTOR under the provisions for changes and extra WORK contained in the General Terms and Conditions.

G. 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.

H. Maintaining in Service. All oil and gasoline pipelines, power, and telephone, cable television 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 arrangement satisfactory to the

ENGINEER are made with the owner of said pipelines, duct, main, irrigation line, sewer, storm drain, pole, or wire or cable. The CONTRACTOR shall be responsible for and shall repair all damage due to it operations, and the provisions of this section shall not be abated even in the event such damage occurs after backfilling or is not discovered until after completion of the backfilling.

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

A. General. The CONTRACTOR shall exercise all necessary precautions so as not to damage or destroy any trees or shrubs, including those lying within street rights-of-way and Project limits, and shall not trim or remove any trees unless such trees have been approved for trimming or removal by the jurisdictional agency or OWNER. All existing trees and shrubs which are damaged during construction shall be trimmed or replaced by the CONTRACTOR or a licensed landscaping company under permit from the jurisdictional agency and/or the OWNER. Tree trimming and replacement shall be accomplished in accordance with the following paragraphs:

1. 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.
2. Replacement. The CONTRACTOR shall immediately notify the jurisdictional agency and/or the OWNER if any tree is damaged by the CONTRACTOR's operations. If, in the opinion of said agency or the OWNER, the damage is such that replacement is necessary, the CONTRACTOR shall replace the tree at its own expense. The tree shall be of a like size and variety at the tree damaged, or, the CONTRACTOR shall pay to the owner of said tree a compensatory payment acceptable to the tree owner, subject to the approval of the jurisdictional agency or OWNER.

1.07 PROTECTION OF EXISTING STRUCTURES

A. Compaction Equipment and Operations. The CONTRACTOR shall restrict compaction operations as necessary to assure no damage occurs to adjacent building. This may require the use of smaller compaction equipment than is usually employed for trench backfill and roadway embankment compaction operations when in the vicinity of buildings sensitive to vibrating or other impact-type activities. It shall be the CONTRACTOR's responsibility to determine in which areas of the Project the compaction operations must be restricted, to avoid damage to existing buildings. The foregoing restrictions on the size of, and magnitude of impact energy exerted by, compaction equipment will in no way relieve the CONTRACTOR from the compaction requirements as specified in other sections of the Contract Documents.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

PART 4- **BASIS** OF PAYMENT.
Refer to FDOT Standard Specifications for Road and Bridge Construction 2013.

Payment Items: Payment will be made under:

ITEM NO. 105-1	PROTECTION AND RESTORATION OF EXISTING FACILITIES, LUMP SUM.

END OF SECTION

SECTION 110
CLEARING AND GRUBBING

110-1 Description.

Clear and grub within the areas of the roadway right-of-way and of borrow pits, sand-clay base material pits, lateral ditches, and any other areas shown in the Plans to be cleared and grubbed. Remove and dispose of all trees, stumps, roots and other such protruding objects, buildings, structures, appurtenances, existing flexible asphalt pavement, and other facilities necessary to prepare the area for the proposed construction. Remove and dispose of all product and debris not required to be salvaged or not required to complete the construction.

Also, perform certain miscellaneous work the Engineer considers necessary for the complete preparation of the overall project site, as follows:

(a) Plug any water wells that are encountered within the right-of-way and that are to be abandoned.

(b) Level the terrain outside the limits of construction for purposes of facilitating maintenance and other post-construction operations in accordance with 110-10.3.

(c) Trim trees and shrubs within the project right-of-way that are identified in the Contract Documents.

Meet the requirements for such miscellaneous work as specified in 110-10.

110-2 Standard Clearing and Grubbing.

110-2.1 Work Included: Completely remove and dispose of all buildings, timber, brush, stumps, roots, rubbish, debris, and all other obstructions resting on or protruding through the surface of the existing ground and the surface of excavated areas, and all other structures and obstructions necessary to be removed and for which other items of the Contract do not specify the removal thereof, including septic tanks, building foundations, and pipes.

Perform Standard Clearing and Grubbing within the following areas:

(a) All areas where excavation is to be done, including borrow pits, lateral ditches, right-of-way ditches, etc.

(b) All areas where roadway embankments will be constructed.

(c) All areas where structures will be constructed, including pipe culverts and other pipe lines.

110-2.2 Depths of Removal of Roots, Stumps, and Other Debris: In all areas where excavation is to be performed, or roadway embankments are to be constructed, remove roots and other debris to a depth of 12 inches below the ground surface. Remove roots and other debris from all excavated material to be used in the construction of roadway embankment or roadway base. Plow the surface to a depth of at least 6 inches, and remove all roots thereby exposed to a depth of at least 12 inches. Completely remove and dispose of all stumps within the roadway right-of-way.

Remove all roots, etc., protruding through or appearing on the surface of the completed excavation within the roadway area and for structures, to a depth of at least 12 inches below the finished excavation surface.

Remove or cut off all stumps, roots, etc., below the surface of the completed excavation in borrow pits, material pits, and lateral ditches.

In borrow and material pits, do not perform any clearing or grubbing within 3 feet inside the right-of-way line.

Within all other areas where Standard Clearing and Grubbing is to be performed remove roots and other debris projecting through or appearing on the surface of the original ground to a depth of 12 inches below the surface, but do not plow or harrow these areas.

110-2.3 Trees to Remain: As an exception to the above provisions, where so directed by the Engineer, trim, protect, and leave standing desirable trees within the roadway area. Trim branches of trees extending over the area occupied by the roadway as directed, to give a clear height of 16 feet above the roadway.

110-2.4 Boulders: Remove any boulders encountered in the roadway excavation (other than as permitted under the provisions of 120-7.2) or found on the surface of the ground. When approved by the Engineer place boulders in neat piles inside the right of way. The Contractor may stockpile boulders encountered in City-furnished borrow areas, which are not suitable for use in the embankment construction, within the borrow area.

110-3 Selective Clearing and Grubbing.

The Contractor shall remove and dispose of all vegetation, obstructions, etc., as provided above except that, where so elected, the Contractor may cut roots, etc., flush with the ground surface. Completely remove and dispose of stumps. Entirely remove undergrowth except in specific areas designated by the Engineer to remain for aesthetic purposes. Trim, protect, and leave standing desirable trees, with the exception of such trees as the Engineer may designate to be removed in order to facilitate right-of-way maintenance. Remove undesirable or damaged trees as so designated by the Engineer. Perform Selective Clearing and Grubbing only in areas so designated in the Plans.

110-4 Protection of Property Remaining in Place.

Protect and do not displace property obstructions which are to remain in place, such as buildings, sewers, drains, water or gas pipes, conduits, poles, walls, posts, bridges, etc.

110-5 Removal of Buildings.

110-5.1 Parts to be Removed: Completely remove all parts of the buildings, including utilities, plumbing, foundations, floors, basements, steps, connecting concrete sidewalks or other pavement, septic tanks, and any other appurtenances, by any practical manner which is not detrimental to other property and improvements. Remove utilities to the point of connection to the utility authority's cut-in. After removing the sewer connections to the point of cut-in, construct a concrete plug at the cut-in point, as directed by the Engineer, except where the utility owners may elect to perform their own plugging. Contact the appropriate utility companies prior to removal of any part of the building to ensure disconnection of services.

110-5.2 Removal by Others: Where buildings within the area to be cleared and grubbed are so specified to be removed by others, remove and dispose of any foundations, curtain walls, concrete floors, basements or other foundation parts which might be left in place after such removal of buildings by others.

110-6 Removal of Existing Structures.

110-6.1 Structures to be Removed: Remove and dispose of the materials from existing structures. Remove the following: (1) those structures, or portions of structures, shown in the Plans to be removed; (2) those structures, or portions of structures, found within the limits of the area to be cleared and grubbed, and directed by the Engineer to be removed; (3) those structures, or portion of structures, which are necessary to be removed in order to construct new structures; and (4) other appurtenances or obstructions which may be designated in the Contract Documents as to be included in an item of payment for the work under this Article.

Provide detailed schedule information to the Engineer 15 working days prior to the commencement of any demolition or renovation of any structures, even if asbestos is not found on the project, for the Engineer's use in notifying the Department of Environmental Protection (DEP) on DEP Form 62-257.900(1) "Notice of Asbestos Renovation or Demolition".

110-6.2 Method of Removal:

110-6.2.1 General: Remove the structures in such a way so as to leave no obstructions to any proposed new structures or to any waterways. Pull, cut off, or break off pilings to the requirements of the permit or other Contract Documents, or if not specified, not less than 2 feet below the finish ground line. In the event that the Plans indicate channel excavation to be done by others, consider the finish ground line as the limits of such excavation.

For materials which are to remain the property of the City or are to be salvaged for use in temporary structures, avoid damage to such materials, and entirely remove all bolts, nails, etc. from timbers to be so salvaged. Mark structural steel members for identification as directed.

110-6.5 Asbestos Containing Materials (ACM) Not Identified Prior to the Work: When encountering or exposing any condition indicating the presence of asbestos, cease operations immediately in the vicinity and notify the Engineer.

Make every effort to minimize the disturbance of the ACM. Immediately provide for the health and safety of all workers at the job site and make provisions necessary for the health and safety of the public that may be exposed to any potentially hazardous conditions. Provisions shall meet all applicable laws, rules or regulations covering hazardous conditions and will be in a manner commensurate with the gravity of the conditions.

The Engineer will notify the District Contamination Assessment Coordinator who will coordinate selecting and tasking the Department's Asbestos Contractor or Contamination Assessment/Remediation Contractor (CAR). Provide access to the potential contamination area. Preliminary investigation by the Asbestos/CAR Contractor will determine the course of action necessary for site security and the steps necessary to resolve the contamination issue.

The Asbestos/CAR Contractor will delineate the contamination area(s), any staging or holding area required. Coordinate with the Asbestos/CAR Contractor and the Engineer to develop a work plan that will provide the Asbestos/CAR Contractor's operations schedule with projected completion dates for the final resolution of the contamination issue.

The Asbestos/CAR Contractor will maintain jurisdiction over activities inside any outlined contaminated areas and any associated staging holding areas. The Asbestos/CAR Contractor will be responsible for the health and safety of workers within the delineated areas.

Provide continuous access to these areas for the Asbestos/CAR Contractor and representatives of regulatory or enforcement agencies having jurisdiction.

Both Contractors will use the schedule as a basis for planning the completion of both work efforts. The Engineer may grant the Contract Time extensions according to the provisions of 8-7.3.2.

Cooperate with the Asbestos/CAR Contractor to expedite integration of the Asbestos/CAR Contractor's operations into the construction project. The Prime Contractor is not expected to engage in routine construction activities involving asbestos containing materials. Adjustments to quantities or to Contract unit prices will be made according to work additions or reductions on the part of the Prime Contractor in accordance with 4-3.

The Engineer will direct the Prime Contractor when operations may resume in the affected area.

110-7 Removal of Existing Pavement.

Remove and dispose of existing rigid portland cement concrete pavement, sidewalk, slope pavement, ditch pavement, curb, and curb and gutter etc., where shown in the Plans or ordered by the Engineer to be removed or where required because of the construction operations. Retaining walls, drainage structures and flexible asphalt pavement are not included in the work under this Article.

110-8 Ownership of Materials.

Except as may be otherwise specified in the Contract Documents, the Contractor shall take ownership of all buildings, structures, appurtenances, and other materials removed by him and shall dispose of them in accordance with 110-9.

110-9 Disposal of Materials.

110-9.1 General: Either stack materials designated to remain the property of the City in neat piles within the right-of-way or load onto the City's vehicles.

Dispose of timber, stumps, brush, roots, rubbish, and other objectionable material resulting from clearing and grubbing in areas and by methods meeting the applicable requirements of all Local, State and Federal regulations. Do not block waterways by the disposal of debris.

110-9.2 Burning Debris: Where burning of such materials is permitted, perform all such burning in accordance with the applicable laws, ordinances, and regulations. Perform all burning at locations where trees and shrubs adjacent to the cleared area will not be harmed.

110-9.3 Timber and Crops: The Contractor may sell any merchantable timber, fruit trees, and crops that are cleared under the operations of clearing and grubbing for his own benefit, subject to the provisions of 7-1.2 of the FDOT Standard Specifications for Road and Bridge Construction 2013, which may require that the timber, fruit trees, or crops be burned at or near the site of their removal, as directed by the Engineer. The Contractor is liable for any claims which may arise pursuant to the provisions of this Subarticle.

110-9.4 Disposal of Treated Wood: Treated wood, including that which comes from bridge channel fender systems, must be handled and disposed of properly during removal. Treated wood should not be cut or otherwise mechanically altered in a manner that would generate dust or particles without proper respiratory and dermal protection. The treated wood must be disposed of in at least a lined solid waste facility or through recycling/reuse. Treated wood shall not be disposed by burning or placement in a construction and demolition (C&D) debris landfill. All compensation for the cost of

removal and disposal of treated wood will be included in the Cost of Removal of Existing Structures.

110-9.5 Hazardous Materials/Waste: Handle, transport and dispose of hazardous materials in accordance with all Local, State and Federal requirements including the following:

a. SSPC Guide 7
b. Federal Water Pollution Control Act, and
c. Resource Conservation and Recover Act (RCRA).

Accept responsibility for the collection, sampling, classification, packaging, labeling, accumulation time, storage, manifesting, transportation, treatment and disposal of hazardous waste, both solid and liquid. Separate all solid and liquid waste and collect all liquids used at hygiene stations and handle as hazardous materials/waste. Obtain written approval from the Engineer for all hazardous materials/waste stabilization methods before implementation.

Obtain an EPA/FDEP Hazardous Waste Identification Number (EPA/FDEP ID Number) before transporting and/or disposal of any hazardous materials/waste.

List the City of Apopka as the generator of all hazardous materials/waste.

Submit the following for the Engineers' approval before transporting, treatment or disposal of any hazardous materials/waste:

a. Name, address and qualifications of the transporter,
b. Name, address and qualifications of the treatment facility,
c. Proposed treatment and/or disposal of all Hazardous Materials/Waste. Transport all hazardous materials/waste in accordance with applicable 40 CFR 263 Standards. Provide a copy of all completed Hazardous Materials/Waste manifest/bills of lading to the Engineer within 21 days of each shipment.

110-9.5.1 Steel Members With Hazardous Coating: Dispose of steel members with hazardous coating in one of the following manners:

(a) Deliver the steel members and other hazardous waste to a licensed recycling or treatment facility capable of processing steel members with hazardous coating.

(b) Deliver the steel members with hazardous coating to a site designated by the Engineer for use as an offshore artificial reef. Deliver any other hazardous materials/waste to a licensed hazardous materials/waste recycling treatment facility.

Dismantle and/or cut steel members to meet the required dimensions of the recycling facility, treatment facility or offshore artificial reef agency.

All compensation for the cost of removal and disposal of hazardous materials/waste will be included in the Cost of Removal of Existing Structures.

110-9.5.2 Certification of Compliance: Furnish two copies of Certification of Compliance from the firm actually removing and disposing of the hazardous materials/waste stipulating, the hazardous materials/waste has been handled, transported and disposed of in accordance with this Specification. The Certification of Compliance shall be attested to by a person having legal authority to bind the company.

Maintain all records required by this Specification and ensure these records are available to the City upon request.

110-10 Miscellaneous Operations.

110-10.1 Water Wells Required to be Plugged: Fill or plug all water wells within the right-of-way, including areas of borrow pits and lateral ditches, that are not to remain in service, in accordance with applicable Water Management District rules or the Department of Environmental Protection regulations.

Cut off the casing of cased wells at least 12 inches below the ground line or 12 inches below the elevation of the finished excavation surface, whichever is lower. Water wells, as referred to herein, are defined either as artesian or non-artesian, as follows:

(a) An artesian well is an artificial hole in the ground from which water supplies may be obtained and which penetrates any water-bearing rock, the water in which is raised to the surface by natural flow or which rises to an elevation above the top of the water- bearing bed. Artesian wells are further defined to include all holes drilled as a source of water that penetrate any water-bearing beds that are a part of the artesian water system of Florida, as determined by representatives of the applicable Water Management District.

(b) A non-artesian (water-table) well is a well in which the source of water is an unconfined aquifer. The water in a non-artesian well does not rise above the source bed.

When the Plans do not indicate whether a non-flowing well is artesian or non- artesian, obtain this information from the Engineer.

110-10.2 Landscape Areas: When certain areas of the right-of-way, outside of the limits of construction, are shown in the Plans or designated by the Engineer to be landscaped, either under the construction Contract or at a later time, remove undesirable trees, stumps, undergrowth, and vegetation, as directed, and preserve and trim natural growth and trees as directed by the Engineer.

110-10.3 Leveling Terrain: Within the areas between the limits of construction and the outer limits of clearing and grubbing, fill all holes and other depressions, and cut down all mounds and ridges. Make the area of a sufficient uniform contour so that the City's subsequent mowing and cutting operations are not hindered by irregularity of terrain. Perform this work regardless of whether the irregularities were the result of construction operations or existed originally.

110-10.4 Mailboxes: When the Contract Documents require furnishing and installing mailboxes, permit each owner to remove the existing mailbox. Work with the Local Postmaster
to develop a method of temporary mail service for the period between removal and installation of the new mailboxes. Install the mailboxes in accordance with the Design Standards.

110-11 Method of Measurement.

110-11.1 Clearing and Grubbing: When direct payment is provided in the Contract, the quantity to be paid for will be the lump sum quantity.

110-11.2 Removal of Existing Structures: When direct payment is provided in the Contract, the quantity to be paid for will be the lump sum quantity or quantities for the specific structures removed, as designated.

110-11.3 Removal of Existing Pavement: Payment for removal of flexible asphalt pavement is included in the Lump Sum price for Clearing and Grubbing. When a separate item for Removal of Existing Pavement is provided, the quantity to be paid for will be the number of square yards of existing pavement of the types listed in 110-7, acceptably removed and

disposed of, as specified. The quantity will be determined by actual measurement along the surface of the pavement before its removal. Measurements for appurtenances which have irregular surface configurations, such as curb and gutter, steps, and ditch pavement, will be the area as projected to an approximate horizontal plane. Where the removal of pavement areas is necessary only for the construction of box culverts, pipe culverts, storm sewers, inlets, manholes, etc., these areas will not be included in the measurements.

110-11.4 Plugging Water Wells: When direct payment is provided in the Contract, the quantity to be paid for will be the number of water wells plugged, for each type of well (artesian or non-artesian).

110-11.5 Mailboxes: When direct payment is provided in the Contract, the quantity to be paid for will be the number of mailboxes acceptably furnished and installed.

110-11.6 Delivery of Salvageable Material to the City: When direct payment is provided in the Contract, the quantity to be paid for will be the Lump Sum quantity for delivery of salvageable materials to the City as indicated in the Plans.

110-11.7 General: In each case, except as provided below, where no item of separate payment for such work is included in the proposal, all costs of such work will be included in the various scheduled items in the Contract, or under specific items as specified herein below or elsewhere in the Contract.

110-12 Basis of Payment.

110-12.1 Clearing and Grubbing:

110-12.1.1 Lump Sum Payment: Price and payment will be full compensation for all clearing and grubbing required for the roadway right-of-way and for lateral ditches, channel changes, or other outfall areas, and any other clearing and grubbing indicated, or required for the construction of the entire project, including all necessary hauling, furnishing equipment, equipment operation, furnishing any areas required for disposal of debris, leveling of terrain and the landscaping work of trimming, etc., as specified herein, except for any areas designated to be paid for separately or to be specifically included in the costs of other work under the Contract.

Where construction easements are specified in the Plans and the limits of clearing and grubbing for such easements are dependent upon the final construction requirements, no adjustment will be made in the lump sum price and payment, either over or under, for variations from the limits of the easement defined in the Plans.

110-12.1.2 When No Direct Payment is Provided: When no item for clearing and grubbing is included in the proposal, the Contractor shall include the cost of any work of clearing and grubbing which is necessary for the proper construction of the project in the Contract price for the structure or other item of work for which such clearing and grubbing is required.

The Contractor shall include the cost of all clearing and grubbing which might be necessary in pits or areas from which base material is obtained in the Contract price for the base in which such material is used. The clearing and grubbing of areas for obtaining stabilizing materials, where required only for the purpose of obtaining materials for stabilizing, will not be paid for separately.

110-12.2 Removal of Existing Structures: Price and payment will be full compensation for all work of removal and disposal of the designated structures.

When direct payment for the removal of existing structures is not provided in the proposal, the Contractor shall include the cost of removing all structures in the Contract price for clearing and grubbing or, if no item of clearing and grubbing is included, in the

compensation for the other items covering the new structure being constructed.

110-12.3 Removal of Existing Pavement: Price and payment will be full compensation for performing and completing all the work of removal and satisfactory disposal.

When no separate item for this work is provided and no applicable item of excavation or embankment covering such work (as provided in 120-13.1) is included, the Contractor shall include the costs of this work in the Contract price for the item of clearing and grubbing or for the pipe or other structure for which the pavement removal is required.

110-12.4 Plugging Water Wells: Price and payment will be full compensation for each type of well acceptably plugged.

If a water well requiring plugging is encountered and the Contract contains no price for plugging wells of that specific type, the plugging of such well will be paid for as unforeseeable work.

110-12.5 Mailboxes: Price and payment shall be included in item 110-1-1. Mailboxes shall be relocated providing no damage occurs. In the event a mailbox cannot be relocated without damage, it will be the Contractor's responsibility to provide another mailbox equal to or better than the existing.

110-12.6 Delivery of Salvageable Material to the City: Price and payment will be full compensation for all work required for delivery of the materials to the City.

110-12.7 Payment Items:

Payment will be made under:

ITEM NO. 110-1-1	CLEARING AND GRUBBING, LUMP SUM.

SECTION 1050
UTILITY PIPE

1050-1 Description.

Furnish and install utility pipe for potable water transmission/distribution mains, reclaimed water transmission/distribution mains, and sanitary sewer force mains at the locations specified in the Construction Plans.

1050-2 Materials.

The work under this Section includes piping systems utilizing the following materials:

1050-2.1 Polyvinyl Chloride (PVC) Pressure Pipe:

1050-2.1.1 Pressure pipe with nominal diameter of 4-inch (100-mm) through 12-inch (300-mm) shall be in compliance with ANSI/AWWA C900.

a. Pressure pipe used for transmission/distribution of potable water or reclaimed water with nominal diameter of 4-inch (100-mm) through 12-inch (300-mm) shall have as minimum requirements: Pressure Class of 150 psi and Dimension ratio (DR) of 18 with cast-iron-pipe-equivalent outside diameters (ODs).
b. Pressure pipe used for transmission of sanitary sewer with nominal diameter of 4-inch (100-mm) through 12-inch (300-mm) shall have as minimum requirements: Pressure Class of 100 psi and Dimension ratio (DR) of 25 with cast-iron-pipe-equivalent outside diameters (ODs).

1050-2.1.2 Pressure pipe with nominal diameter of 14-inch (350-mm) through 48-inch (1200-mm) shall be in compliance with ANSI/AWWA C905.

a. Pressure pipe used for transmission/distribution of potable water or reclaimed water with nominal diameter of 14-inch (350-mm) through 48-inch (1200-mm) shall have as minimum requirements: Pressure Class of 160 psi and Dimension ratio (DR) of 26 with cast-iron-pipe-equivalent outside diameters (ODs).
b. Pressure pipe used for transmission of sanitary sewer with nominal diameter of 14-inch (350-mm) through 48-inch (1200-mm) shall have as minimum requirements: Pressure Class of 100 psi and Dimension ratio (DR) of 41 with cast-iron-pipe-equivalent outside diameters (ODs).

1050-2.1.3 Pressure pipe used for transmission/distribution of potable water shall have a solid blue color or solid white color with blue identification markings. All markings on the pipe shall be in compliance with Section 6.1.2 of ANSI/AWWA C900 or C905, respectively.

1050-2.1.4 Pressure pipe used for transmission/distribution of reclaimed water shall have a solid lavender/purple color or solid white color with lavender/purple identification markings. All markings on the pipe shall be in compliance with Section 6.1.2 of ANSI/AWWA C900 or C905, respectively.

1050-2.1.5 Pressure pipe used for transmission of sanitary sewer shall have a solid green color or solid white color with green identification markings. All

markings on the pipe shall be in compliance with Section 6.1.2 of ANSI/AWWA C900 or C905, respectively.

1050-2.1.6 Pressure pipe with nominal diameter of 4-inch (100-mm) through 48-inch (1200-mm) used for transmission/distribution of potable water or reclaimed water, or for transmission of sanitary sewer shall be installed with a continuous, insulated single strand 10-gauge copper wire rated 600V direct bury, directly on top of the pipe, for location purposes.

1050-2.2 Polyethylene (PE) Pressure Pipe:

1050-2.2.1 Pressure pipe with nominal diameter of 1/2-inch (13-mm) through 3-inch (76-mm) shall be in compliance with ANSI/AWWA C901.

a. Pressure pipe used for transmission/distribution of potable water or reclaimed water with nominal diameter of 1/2-inch (13-mm) through 3-inch (76-mm) shall have as minimum requirements: Pressure Class of 160 psi and an outside-diameter-based Dimension ratio (DR) of 9 for PE 2406 and PE 3406 and Pressure Class of 160 psi and an outside-diameter-based Dimension ratio (DR) of 11 for PE 3408.
b. Pressure pipe used for transmission of sanitary sewer with nominal diameter of 1/2-inch (13-mm) through 3-inch (76-mm) shall have as minimum requirements: Pressure Class of 100 psi and Dimension ratio (DR) of 13.5 for PE 2406 and PE 3406 and Pressure Class of 100 psi and an outside-diameter-based Dimension ratio (DR) of 17 for PE 3408.

1050-2.2.2 Pressure pipe with nominal diameter of 4-inch (100-mm) through 63-inch (1575-mm) shall be in compliance with ANSI/AWWA C906.

a. Pressure pipe used for transmission/distribution of potable water or reclaimed water with nominal diameter of 4-inch (100-mm) through 63-inch (1575-mm) shall have as minimum requirements: Pressure Class of 156 psi and an outside-diameter-based Dimension ratio (DR) of 9 for PE 2406 and PE 3406 and Pressure Class of 160 psi and an outside-diameter-based Dimension ratio (DR) of 11 for PE 3408.
b. Pressure pipe used for transmission of sanitary sewer with nominal diameter of 4-inch (100-mm) through 63-inch (1575-mm) shall have as minimum requirements: Pressure Class of 100 psi and Dimension ratio (DR) of 13.5 for PE 2406 and PE 3406 and Pressure Class of 100 psi and an outside-diameter-based Dimension ratio (DR) of 17 for PE 3408.

1050-2.2.3 Pressure pipe used for transmission/distribution of potable water shall have a solid black color with continuous blue stripes on the pipe wall parallel to the axis at no greater than 90° intervals around the pipe (4 stripes) and with blue identification markings. All markings on the pipe shall be in compliance with Section 6.1.2 of ANSI/AWWA C901 or C906, respectively. The use of solid color non-black pipe, color-striped pipe, or a co-extruded colored pipe is also allowed.

1050-2.2.4 Pressure pipe used for transmission/distribution of reclaimed water shall have a solid black color with continuous lavender/purple stripes on the pipe wall parallel to the axis at no greater than 90° intervals around the pipe (4 stripes) and

with lavender/purple identification markings. All markings on the pipe shall be in compliance with Section 6.1.2 of ANSI/AWWA C901 or C906, respectively. The use of solid color non-black pipe, color-striped pipe, or a co-extruded colored pipe is also allowed.

1050-2.2.5 Pressure pipe used for transmission of sanitary sewer shall have a solid black color with continuous green stripes on the pipe wall parallel to the axis at no greater than 90° intervals around the pipe (4 stripes) and with green identification markings. All markings on the pipe shall be in compliance with Section 6.1.2 of ANSI/AWWA C901 or C906, respectively. The use of solid color non-black pipe, color-striped pipe, or a co-extruded colored pipe is also allowed.

1050-2.2.6 Pressure pipe with nominal diameter of 4-inch (100-mm) through 63-inch (1575-mm) used for transmission/distribution of potable water or reclaimed water, or for transmission of sanitary sewer shall be installed with a continuous, insulated single strand 10-gauge copper wire rated 600V direct bury, directly on top of the pipe, for location purposes.

1050-2.3 Ductile-Iron (DI) Pressure Pipe, Centrifugally Cast:

1050-2.3.1 Pressure pipe with nominal diameter of 3-inch (76-mm) through 64-inch (1600-mm) shall be in compliance with ANSI/AWWA C151/A21.51.

a. Pressure pipe used for transmission/distribution of potable water or reclaimed water with nominal diameter of 3-inch (76-mm) through 12-inch (300-mm) shall be of Pressure Class of 350 psi.
b. Pressure pipe used for transmission/distribution of potable water or reclaimed water with nominal diameter of 14-inch (355-mm) through 64-inch (1600-mm) shall be of minimum Pressure Class of 250 psi.
c. Pressure pipe used for transmission of sanitary sewer is allowed only with written approval issued by the Public Services Director. Approved pressure pipe with nominal diameter of 3-inch (76-mm) through 12-inch (300-mm) shall be of Pressure Class of 350 psi. Approved pressure pipe with nominal diameter of 14-inch (355-mm) through 24-inch (610-mm) shall be of minimum Pressure Class of 250 psi. Approved pressure pipe with nominal diameter of 30-inch (760-mm) through 64-inch (1600-mm) shall be of minimum Pressure Class of 150 psi. All pressure pipes shall have an interior protective lining polyethylene with a minimum dry thickness of 30 mils applied by the pipe manufacturer. Polyethylene lining material shall comply with ASTM D-1248 and shall be fused to the interior of the pipe by heat forming a tightly bonded lining. All pressure pipes shall also have polyethylene encasement with minimum requirements in compliance with ANSI/AWWA C105/A21.51.

1050-2.3.2 Pressure pipe used for transmission/distribution of potable water shall have a blue color continuous stripe with minimum width of 2-inches, located within the top 90° of the pipe. All markings on the pipe shall be in compliance with Section 4.6 of ANSI/AWWA C151/A21.51.

1050-2.3.3 Pressure pipe used for transmission/distribution of reclaimed water shall have a lavender/purple color continuous stripe with minimum width of 2-inches, located within the top 90° of the pipe. All markings on the pipe shall be in

compliance with Section 4.6 of ANSI/AWWA C151/A21.51.

1050-2.3.4 Pressure pipe used for transmission of sanitary sewer shall have a green color continuous stripe with minimum width of 2-inches, located within the top 90° of the pipe. All markings on the pipe shall be in compliance with Section 4.6 of ANSI/AWWA C151/A21.51.

1050-3 Quality Assurance.

1050-3.1 Design Requirements:

1050-3.1.1 Utility pipes shall be laid in accordance with the Construction Plans, with a minimum cover of 36-inches below finished grade, unless otherwise indicated.

1050-3.1.2 Changes in horizontal alignment may be achieved through use of allowable pipe deflection in lieu of fittings shown in the Construction Plans at the Contractor's option, but subject to approval of the Engineer as to layout. Pipe deflection shall not exceed 75% of the maximum allowable deflection set forth by the pipe manufacturer.

1050-3.1.3 Pipes shall be constructed of the materials indicated in the Construction Plans. Polyvinyl chloride (PVC) pressure pipe may be substituted with polyethylene (PE) pressure pipe or ductile iron (DI) pressure pipe, or vice versa, with prior written approval of the Engineer.

1050-3.1.4 Utility pipe on this project shall be supplied by a single manufacturer unless otherwise directed, in writing by the Engineer.

1050-3.2 Pipe Inspection: The Contractor shall obtain from the pipe manufacturers a certificate of inspection to the effect that the pipe supplied for this Contract has been inspected at the manufacturing plant and that it meets the requirements of Section 1050. All pipe shall be subjected to visual inspection at time of delivery by rail or truck, as well as just before it is lowered into the trench to be laid. Pipe that does not conform to Section 1050 will be rejected and must be removed immediately by the Contractor. The entire product of any manufacturing plant may be rejected when, in the opinion of the Engineer, the methods of manufacture fail to secure uniform results, or where the materials used are such as to produce inferior pipe.

1050-3.3 Prevention of Electrolysis: Where shown on Plan Drawings or deemed necessary, electrolytic action through the contact of dissimilar metals shall be prevented by either:

a. The separation of one material from the other by means of an insulating or dielectric coupling (min. 20 mil polyethylene wrap), or
b. The use of alternative materials, as directed by the Engineer.

1050-4 Submitals.

1050-4.1 Shop Drawings: Shop drawings shall be submitted to the Engineer for approval prior to construction in accordance with Division 1 of the FDOT Standard Specifications for Road and Bridge Construction 2013 for the following:

(a) Mill test certificates or certified test reports on pipe.
(b) Detailed laying schedule for pipe.

1050-4.2 Acceptance of Material: The Engineer reserves the right to

sample and test any pipe or fitting after delivery and to reject all pipe represented by any sample which fails to comply with the specified requirements of Section 1050.

1050-5 Job Conditions.

1050-5.1 Water in Excavation: Water shall not be allowed in the trenches while the pipe is being laid and/or tested. The Contractor shall not open more trenches than the available pumping facilities are able to dewater to the satisfaction of the Engineer. The Contractor shall assume responsibility for disposing of all water so as not to injure or interfere with the normal drainage of the territory in which he is working. In no case shall the pipe being installed be used as drain for such water, and the ends of the pipe shall be kept properly and adequately blocked during construction by the use of directed stoppers and not by improvised equipment. All necessary precautions shall be taken to prevent the entrance of mud, sand, or other obstructing matter into the pipe. If on completion of the work any such material has entered the pipe, it must be cleaned as directed by the Engineer so that the entire system will be left clean and unobstructed.

1050-6 Preparation.

1050-6.1 Bedding:

1050-6.1.1 Pipe Cradle: Upon satisfactory installation of the pipe bedding material as specified in Section 2221, a continuous trough for the pipe barrel and recesses for the pipe bells or couplings shall be excavated by hand digging. When the pipe is laid in the prepared trench, true to line and grade, the pipe barrel shall receive continuous, uniform support and no pressure will be exerted on the pipe joints from the trench bottom.

1050-6.1.2 Cleanliness: The interior of the pipe shall be thoroughly cleaned of all foreign matter before being gently lowered into the trench and shall be kept clean during laying operations by means of plugs or other methods directed by the Engineer. During suspension of work for any reason at any time, a suitable stopper shall be placed in the end of the pipe last laid to prevent mud or other foreign material from entering the pipe.

1050-7 Installation.

1050-7.1 Pipe:

1050-7.1.1 Gradient: Lines shall be laid straight, and depth of cover shall vary to provide uniform gradient or slope to pipe, whether grading is completed or proposed at time of pipe installation. When a grade or slope is shown on the Drawings, batter boards with string line paralleling design grade, or other previously directed means, shall be used by the Contractor to assure conformance to required grade. Pipe shall be installed to meet design criteria.

1050-7.1.2 Pipe Joint Deflection: Whenever it is desirable to deflect pipe, the amount of deflection shall not exceed 75% of the maximum allowable deflection as specified by the pipe manufacturer.

1050-7.1 3 Rejection: Any pipe found defective shall be immediately removed and replaced with sound pipe at the Contractor's expense.

1050-7.1.4 Joint Compounds: No sulfur base joint compound shall be

used.

1050-7.1.5 Restrainings: Thrust restraints shall be accomplished by the use of mechanical restraining devices unless specifically identified otherwise on the Plan Drawings or herein.

1050-7.2 Concrete Encasement:

1050-7.2.1 Concrete encasement shall be constructed in accordance with details shown in the Construction Plans and shall be constructed of Class C concrete. Encasement shall be constructed where:

a. Indicated in the Construction Plans.
b. The Engineer shall order the line encased.

1050-7.2.2 The points of beginning and ending of pipe encasement shall be not more than 6 inches from a pipe joint to protect the pipe from cracking due to uneven settlement of its foundation or the effects of superimposed live loads.

1050-7.3 Flush Out Connections: Flush out connections shall be installed at the locations as determined by the Engineer and be full pipe size.

1050-7.4 Backfilling: Backfilling shall be in accordance with Section 2221 of these specifications.

1050-8 Cleaning.

1050-8.1 General: At the conclusion of the work, the Contractor shall thoroughly clean the new pipe by flushing with water or other means to remove all dirt, stones or other material which may have entered the pipe during the construction period.

1050-8.2 Correction of Non-Conforming Work: All non-conforming work shall be repaired or replaced by the Contractor at no additional expense to the City. Non-conforming work shall be defined as failure to adhere to any specific or implied directive of Section 1050 and/or the Construction Plans, including but not limited to pipe not laid straight, true to the lines and grades as shown on the drawings, damaged or unacceptable materials, misalignment or diameter ring deflection in pipe due to bedding or backfilling, visible or detectable leakage and failure to pass any specified test or inspection.

1050-9 Field Quality Control.

1050-9.1 Flushing: All pipe shall be flushed to remove all sand and other foreign matter. Flushing shall be accomplished through full pipe size connections at full pipe depth. The velocity of the flushing water shall be at least 4 (ft/s) unless otherwise directed by the Engineer. Flushing shall be terminated at the direction of the Engineer. The Contractor shall dispose of the flushing water without causing a nuisance or property damage. The Contractor shall arrange with the City the source of flushing water. Prior to any testing being performed, the Contractor shall submit and have approved the required record drawings.

1050-9.2 Utility Pipe:

1050-9.2.1 General: The Contractor shall perform hydrostatic pressure and leakage tests on newly installed pressure pipe and against both sides of all valves.

1050-9.2.2 Standard: AWWA C600, Section 4, with the exceptions required herein and the exception that the Contractor shall furnish all gauges, meters, pressure pumps and other equipment needed to test the lines.

1050-9.2.3 Hydrostatic Pressure Test:

a. Test Pressure: 50 percent above the normal working pressure, but not less than 150 (psi), unless otherwise noted in the Construction Plans.

b. Test Duration: 2 hours.

c. Air Release: Corporation cocks at least 3/4-inch (19 mm) in diameter, pipe riser and angle globe valves shall be provided at each dead-end to bleed air from the line.

1050-9.2.4 Hydrostatic Leakage Test:

a. General: Following the pressure test, the Contractor shall perform the leakage test. The line (in intervals between valves) shall be filled with water and all air removed for the test. The Contractor shall provide a pump to maintain the test pressure for the entire test period.

b. Test Pressure: Maximum operating pressure as determined by the Engineer but not less than 150 (psi) unless otherwise noted.

c. Test duration: 2 hours.

d. Allowable leakage:

L (18-foot pipe) = $$L = N\,D\sqrt{\frac{P}{133{,}200}}$$

L (20-foot pipe) = $$L = N\,D\sqrt{\frac{P}{148{,}000}}$$

L = Allowable leakage (gallons per hour)
N = Length of pipe tested (feet)
D = Nominal diameter of pipe (inches)
P = Average test pressure maintained (psig)

e. Visible Leakage: All leaks evident at the surface shall be repaired and leakage eliminated regardless of the measured total leakage.

f. Leakage Measurement: The amount of water required to maintain the test pressure represents the leakage.

1050-10 Disinfecting Potable Water Transmission/Distribution Mains.

1050-10.1 General: Before being placed in service, all potable water transmission/distribution mains shall be disinfected by chlorination. Taps for chlorination and sampling shall be uncovered and backfilled by the Contractor as required. The Engineer shall approve the disinfection procedure.

1050-10.2 Standard: AWWA 651, "Standard Procedures for Disinfecting Water Mains".

1050-10.3 Procedure:

a. Flush all dirty or discolored water from the line and introduce chlorine in directed dosages through a tap at one end while water is being withdrawn at the other end of the line.

b. The chlorine solution shall remain in the pipeline for 24 hours.

c. Following the chlorination period, all treated water shall be flushed from the line and replaced with water from the distribution system.

d. Bacteriological sampling and analysis shall be made in full accordance with AWWA Manual C651 and the appropriate FDEP permit. If necessary, the Contractor will be required to rechlorinate the system.

e. The City will provide bacteriological sampling and analysis at no cost to the Contractor.

1050-10.4 Approval: The line shall not be placed in service until the requirements of the State and/or County Public Health Department are met, and the bacteriological test results are directed by the Florida Department of Environmental Protection.

1050-11 Method of Measurement.

Quantities measured for payment under this section shall be the length in Linear Feet measured in place, completed and accepted. Measurements shall be from end to end for each section of pipe.

1050-12 Basis of Payment.

All materials, work and incidental costs related to the installation of the pipe as herein specified will be paid for by Linear Foot.
Payment shall be made under:

ITEM NO. 1050-11-425	UTILITY PIPE (30" DI, C-151/A21.51, PC 250), (INSTALL ONLY)

SECTION 1055
UTILITY FITTINGS

1055-1 Description.

Furnish and install utility fittings and all necessary appurtenant items for a full completion of potable water transmission/distribution mains, reclaimed water transmission/distribution mains, and sanitary sewer force mains at the locations specified in the Construction Plans.

1055-2 Materials.

1055-2.1 Polyvinyl Chloride (PVC) Pressure Pipe: Fittings shall be restrained mechanical joint ductile iron or gray iron conforming to ANSI/AWWA C110/ A21.10, and have a minimum of 250 psi pressure rating, or ANSI/AWWA C153/ A21.53.

1055-2.2 Ductile-Iron (DI) Pressure Pipe:

1055-2.2.1 Fittings shall be ductile iron compact fittings in accordance with ANSI/AWWA C153/ A21.53 and have a minimum 350 psi pressure class rating. All ductile iron fittings shall have an interior protective lining polyethylene with a minimum dry thickness of 30 mils applied by the pipe manufacturer. Polyethylene lining material shall comply with ASTM D-1248 and shall be fused to the interior of the pipe by heat forming a tightly bonded lining.

1055-2.2.2 Where ductile iron pipe and fittings are to be above ground, pipe, fittings, and valves shall be thoroughly cleaned and given one field coat (minimum 1.5 mils dry thickness) of rust inhibitor primer. Intermediate and finished field coats of oil based paint shall also be applied by the Contractor (minimum 1.5 mils dry thickness each coat). Primer and field coats shall be compatible and shall be applied in accordance with the manufacturer's recommendations. Final field coat color shall be specific to pipe discipline.

1055-2.3 Polyethylene (PE) Pressure Pipe: Fittings shall be polyethylene (PE) molded and shall be made, at a minimum, to the same pressure rating as the associated utility pipe. All fabricated PE fittings shall be manufactured with a minimum dimension ratio (DR) of 13.5. Ductile iron fittings, with mechanical joint adapters, may be used when required for special connections but must be supplied by a pre-approved manufacturer.

1055-3 Method of Measurement.

Quantities measured for payment under this Section shall be per item in place, completed and accepted.

1055-4 Basis of Payment.

Payment for items under this section will be made upon completion and acceptance. Payment shall be full compensation for all work specified herein and shall include all equipment, labor and materials required for an acceptable installation.

Payment for installation of fittings shall be included in Bid Item 1050.

SECTION 1080
UTILITY FIXTURES

1080-1 Description.

Furnish and install utility fixtures and appurtenant items necessary for a full completion of potable water transmission/distribution mains at the locations specified in the Construction Plans.

1080-2 Materials.

1080-2.1 Valve Assemblies:

1080-2.1.1 Gate Valves: Resilient seated gate valves shall be used for potable water transmission/distribution mains and reclaimed water transmission/distribution mains (unless otherwise indicated in the Construction Plans).

A. Gate valves shall meet the requirements of AWWA C509. Valves shall be rated for 150 (psi) working pressure and a minimum 300 (psi) test pressure. Valves shall be iron body, resilient seat, non-rising bronze stem type. All valves shall be provided with O-ring seals. The design and machining of valves shall be such as to permit replacing the O-ring seals while in service without undue leakage. The operating nuts shall be square 2-inches. All valves shall open counterclockwise. Gate valves shall be mechanical joint as shown in the Construction Plans as specified herein.

B. All buried valves shall be fitted with valve boxes as specified in 1080-2.1.3 of this section.

C. All gate valves greater than 12-inches (300mm) shall be equipped with a side actuator mechanism designed specifically for and supplied by the valve manufacturer.

1080-2.1.2 Plug Valves: Plug valves shall be used for sanitary sewer force mains (unless otherwise indicated in the Construction Plans).

A. Plug valves shall meet the requirements of AWWA C509. Valves shall be rated for 100 (psi) working pressure and a minimum 300 (psi) test pressure. The operating nuts shall be 2-inches square. All valves shall open counterclockwise. Plug valves shall be mechanical joint as shown in the Construction Plans as specified herein. Valves shall be of the non-lubricated eccentric type with resilient faced plugs and shall be furnished with end connections. Flanged valves shall be faced and drilled to the ANSI 125/150 lb. standard. Mechanical joint ends shall meet ANSI/AWWA C111, Class B. Valve bodies shall be of ASTM A126, Class B Semi-steel, 31,000 psi tensil strength minimum in compliance with AWWA C507 and C504. All exposed nuts, bolts, springs, washers, etc. shall be zinc or cadmium plated. Resilient plug facing shall be of Hycar or Neoprene. Port areas for valves 4-

inches through 20-inches shall be 80 percent of the nominal pipe diameter. Valves 24-inches and larger shall have a minimum port area of 70 percent of the nominal pipe diameter. Valves shall be furnished with permanently lubricated stainless steel or oil-impregnated bronze upper and lower plug stem bushings. These bearings shall comply with AWWA C507 and C504. Seats in 4-inch and larger valves shall have a welded-in overlay of high nickel content on all surfaces contacting with the plug face which comply with AWWA C507 and C504. Valve shaft seals shall be adjustable and comply with AWWA C507.

B. All buried valves shall be fitted with valve boxes as specified in 1080-2.1.3 of this section.

C. All plug valves greater than 12-inches shall be equipped with a side actuator mechanism designed specifically for and supplied by the valve manufacturer.

1080-2.1.3 Valve Boxes: Cast iron valve boxes shall be provided for all valves installed underground. The valve boxes shall be adjustable to fit the depth of earth cover over the valve and shall be designed so as to prevent the transmission of surface loads directly to the valve or piping. The valve boxes shall be provided with covers marked WATER, which shall be so constructed as to prevent tipping, or rattling. Extension sections shall be ductile iron or cast iron only. The protective concrete collar shall be constructed of Class B concrete, with a minimum of 18-inch diameter of the dimensions as shown on the drawings, and include a 2-inch brass pipe with brass/bronze plug for location wire storage and access. The barrel shall be two-piece, screw type, having 5-1/4 inch shaft. The upper section shall have a flange at the bottom having sufficient bearing area to prevent settling and shall be complete with cast iron covers.

A. Air Release Valves: Air release valves for use on reclaimed water and sanitary sewer transmission mains shall be installed in the high points of the water main in an enclosure as shown on the Drawings. Valves shall be cast iron body, rated for a minimum 10.5 kilograms/centimeter2 (150 psi) working pressure, equipped with a vacuum ball to prevent air return.

B. Service Saddles: Service saddles shall be double stainless steel strap, ductile iron fusion epoxy or nylon coated body with stainless steel bolts, nuts and washers.

C. Corporation Stops and Curb Stops: Corporations stops and curb stops shall be all brass suitable for 10.5 kilograms/centimeter2 (150 psi) operating pressure compatible with the connecting service piping type, threaded in accordance with AWWA C800, and shall be of sizes required and/or noted on the Drawings.

D. Polyethylene Service Pipe: Polyethylene tubing for service connections shall comply with AWWA C901 and be directed for potable water use and bear the seal of the National Sanitation Foundation (NSF). The product shall be rated for a minimum working pressure of 10.5 kilograms/centimeter2 (150 psi) and a Dimension Ration DR-9 size. The tubing shall be designated copper tube size and the material PE-2406 cell classification minimum PE213323C in accordance with ASTM 3350.

E. Tapping Sleeves and Valves: Tapping sleeves and tapping valves used to make "wet" taps into existing mains shall be provided and installed at locations as shown in the Drawings. Tapping sleeve shall be mechanical joint - split body or steel fusion epoxy coated body with stainless steel straps, bolts, nuts and washers. Contractor shall determine the outside diameter of the existing main prior to ordering sleeve. Tapping valve shall be as specified in this section. Test plug (3/4" NPT) shall be provided on sleeves.

1. Mechanical Joint Tapping Sleeves

   a. Sleeves shall be cast of gray-iron or ductile-iron and have an outlet flange with the dimensions of the Class 125 flanges shown in ANSI B16.1 properly recessed for tapping valve. Glands shall be gray-iron or ductile iron. Gaskets shall be synthetic rubber. Bolts and nuts shall comply with ANSI/AWWA C111/A21.11. Sleeves shall be capable of withstanding a 200 psi working pressure.

2. Steel Tapping Sleeves

   a. Sleeves shall be fabricated of minimum 3/8" carbon steel meeting ASTM A285 Grade C or ASTM A-36. Outlet flange shall meet AWWA C-207, Class "D" ANSI 150 lb. drilling and be properly recessed for the tapping valve. Bolts and nuts shall be high strength low alloy steel conforming to AWWA C111 (ANSI A21.11). Gasket shall be synthetic rubber. Sleeve shall have manufacturer applied fusion bonded epoxy coating, minimum 12 mil thickness. Sleeves shall be rated at minimum 150 psi working pressure.

F. Line Stops:

1. Line stop assemblies shall include line stop fitting (tapping sleeve), temporary tapping valve, temporary line stop equipment including folding head, completion plug, blind flange, and temporary 2" equalization/purge connection.

2. Line stop fitting (tapping sleeve) for prestressed concrete cylinder pipe shall be fabricated from ASTM A-36 carbon steel, with grouting

horns. Fitting is to be fusion epoxy coated, with 304 stainless steel bolts, nuts, and straps, and shall be made specifically for prestressed concrete cylinder pipe (PCCP) embedded cylinder pipe (ECP) for 54" and larger and lined cylinder pipe (LCP) for 48" and smaller.

3. Line stop fitting (Tapping Sleeve) for ductile or cast iron pipe shall be fabricated from ASTM A-36 carbon steel. Fitting is to be fusion epoxy coated, with 304 stainless steel bolts, nuts and straps.

4. Temporary tapping valve shall be in accordance with this Section.

5. Line stop shall utilize a reduced branch fitting having a folding head type system.

6. Flanges shall be AWWA C207 Class D, ANSI 150 pound drilling. Gaskets shall be compounded for use with water, salt solutions and mild acids.

7. Completion plug and blind flange shall meet other sections of these specifications.

8. Line stop assembly shall be capable of withstanding 150 psi design operating pressure (80 psi normal operating pressure) plus 100 psi surge pressure. Equipment shall be as furnished by Flowserve-IPSCO or approved equal.

G. Concrete: Concrete shall conform to the requirements of Division 3.

H. Tie Rods: Steel for tie rods and tie bolts shall conform to the requirements of ASTM Designation A 242, and rods shall be galvanized in conformance with requirements of ASTM Designation A 123.

I. Additional Work: Additional items of construction, necessary for the complete installation of the systems, shall conform to specific details shown on the Drawings and shall be constructed of first-class materials conforming to the applicable portions of these specifications.

1080-3 Installation.

A. Installing Valves and Boxes:

1. Valves: Valves shall be carefully inspected, opened wide and then tightly closed and the various nuts and bolts shall be tested for

tightness. Any valve that does not operate correctly shall be removed and replaced.

2. Valve Boxes: Valve boxes shall be carefully centered over the operating nuts of the valves so as to permit a valve key to be fitted easily to the operating nut. In unpaved areas, valve boxes shall be set to conform to the level of the finished surface and held in position by a concrete collar placed under the support flange as shown on the Drawings. The valve box shall not transmit surface loads to the pipe or valve. Extensions or risers for valve boxes shall be an integral part of the box. No cut sections of DI pipe shall be used in extending the box to its proper height. Care shall be taken to prevent earth and other material from entering the valve box. Any valve box which is out of alignment or whose top does not conform to the finished ground surface shall be dug out and reset. Before final acceptance of the work all valve boxes shall be adjusted to finish grade.

3. Concrete Collar: Each valve installed in right-of-way or easement areas (outside of pavement, driveways or sidewalks) shall require a 610 mm x 610mm x 152 mm (24" x 24" x 6") concrete pad or collar as shown in the Drawings. The collar shall also include a 51 mm (2") PVC pipe with a 51 mm (2") brass/bronze plug (containing the location wire) penetrating the collar and accessible at the surface.

B. Pressure connection with tapping sleeve and valve:

1. Sufficient length of existing main shall be exposed to allow for installation of the tapping sleeve and valve and the operation of the tapping machinery. The main shall be supported at sufficient intervals to properly carry its own weight, plus the weight of the tapping sleeve, valve, and machinery. Any damage to the main due to improper or insufficient supports shall be repaired at the Contractor's expense.

2. The inside of the tapping sleeve and valve, the outside of the main, and the tapping machine shall be cleaned and swabbed or sprayed with 10% liquid chlorine prior to beginning installation for potable water system pressure connections.

3. After the tapping sleeve has been mounted on the main, the tapping valve shall be bolted to the outlet flange, making a pressure tight connection. Prior to beginning the tapping operation, the sleeve and valve shall be pressure tested at 150 psi to ensure that no leakage will occur.

4. Restrained joints shall be provided to prevent movement of the installation before test pressure is applied. See table on plans.

5. For pressure connections through 12" diameter or less the minimum diameter cut shall be 1/2" less than the nominal diameter of the pipe to be attached. For 14" through 20" installations the minimum diameter shall be 1 1/2" less; for larger taps the allowable minimum diameter shall be 2" to 3" less than the nominal diameter of the pipe being attached. After the tapping procedure is complete the Contractor shall submit the coupon to the Engineer.

C. Installing Temporary Line Stops:

1. The following is the basic procedure used to perform a pivoting head line stop:

   a. Install line stop fitting and tapping valve on the existing pipeline.

   b. Encase pipe and line stop fitting with 5500 pound concrete in accordance with plans. Wait a minimum of 72 hours before performing the next step. Pipe to be restrained upstream of linestop.

   c. Tap existing pipeline on each side of line stop fitting and install 2" bypass/purgeline with control valves. Valves to be closed.

   d. Install hot tap machine.

   e. Perform hot/wet tap through the open valve. A special device retains the "coupon" removed during the hot tap operation.

   f. Retract cutter assembly.

   g. Close hot tapping valve.

   h. Remove hot tap machine to allow for connection to new pipe.

   i. Line stop equipment is installed on the temporary tapping valve and the valve is opened.

   j. Line stop head enters the pipeline though the hot/wet tap connection. Align head so that upstream water pressure will open folding head automatically.

   k. Temporary seal is achieved and pipeline flow is stopped.

   l. Once pipeline has been isolated by a combination of line stops and/or existing valves, pipeline relocation, alteration or valve cut-in is performed.

   m. Open bypass line valves to equalize pressure on both sides of line stop fitting.

n. Line stop head is removed from the pipeline through the hot/wet tap connection.

o. Temporary tapping valve is closed and the line stop equipment is removed.

p. Completion plug is installed on the tapping machine.

q. Tapping machine is installed on the temporary tapping valve.

r. Temporary tapping valve is opened, the completion plug is installed in the branch of the line stop fitting and locked into position.

s. Line stop equipment and temporary tapping valve are removed from the line stop fitting.

t. Blind flange is installed on the line stop fitting.

2. Tapping and Installing Line Stops in Ductile Iron or Cast Iron Pipe

a. The Contractor shall clean the exterior of the main to remove debris, corrosion deposits and other surface irregularities that might interfere with proper seating and sealing of the line stop fitting against the main.

b. Line Stop Fitting shall be installed and pressure tested at 150 PSI for 15-30 minutes prior to tapping the main.

c. Concrete support/anchor shall be installed after pressure test. This method should prevent movement laterally where the line is isolated and cut open.

d. Temporary tapping valve is installed onto the line stop fitting. Drilling machine is mounted to line stop valve and the wet tap is performed.

e. Cut out pipe section (coupon) from the tap is retracted into machine, tapping valve is closed, drilling machine is depressurized and removed. Coupon is measured to verify pipe I.D. for sizing of the stop sealing element.

f. Line stop machine is mounted on tapping valve, line stop assembly enters the pipe and the line stop is performed.

g. Pipe main is de-pressured and alterations can now began.

D. Concrete Encasement:

1. Concrete encasement shall be constructed in accordance with details shown on the Drawings and shall be constructed of Class C concrete. Encasement shall be constructed where:

   a. Indicated on the Drawings.

   b. The Engineer shall order the line encased.

2. The points of beginning and ending of pipe encasement shall be not more than 6 inches from a pipe joint to protect the pipe from cracking due to uneven settlement of its foundation or the effects of superimposed live loads.

E. Flush Out Connections: Flush out connections shall be installed at the locations as determined by the Engineer and be full pipe size.

F. Backfilling: Backfilling shall be in accordance with Section 2221.

1080-4 Basis of Payment.

Utility fixtures will be paid for at the contract unit price, completed and accepted. The unit price shall include all associated cost including delivery, installation, excavation and backfilling, if necessary. Payments shall be full compensation for all work and materials described herein for an acceptable and properly functioning product.

Payment for installation of fixtures shall be included in Bid Item 1050.

SECTION 01001
GENERAL REQUIREMENTS

1.01 WORK UNDER THIS CONTRACT

In conformance with the requirements of General Terms and Conditions, all notices or other papers required to be delivered by the Contractor to the Owner shall be delivered to the office of the Owner's, City of Apopka, Public Services, 748 E. Cleveland Street, Apopka, FL 32703.

A. WORK TO BE DONE

1. The Contractor shall furnish all labor, materials, equipment, tools services and incidentals to complete all work required by these specifications and as shown on the Drawings, at a rate of progress which will ensure completion of the Work within the Contract Time stipulated.

2. All materials, equipment, skills, tools and labor which is reasonably and properly inferable and necessary for the proper completion of the Work in a substantial manner and in compliance with the requirements stated or implied by these Specifications or Drawings shall be furnished and installed by the Contractor without additional compensation, whether specifically indicated in the Contract Documents or not.

3. The Contractor shall perform the work complete, in place, and ready for continuous service, and shall include repairs, testing, permits, clean-up, replacements, and restoration required as a result of damages caused during this construction.

4. The Contractor shall comply with all City, County, State, Federal, and other codes that are applicable to the proposed construction work.

5. All newly constructed work shall be carefully protected from injury in any way. No wheeling or walking or placing of heavy loads on it shall be allowed and the Contractor at his own expense shall reconstruct all portions damaged.

6. Scope of Work: See the Bid Schedule for details.

B. DRAWINGS AND PROJECT MANUAL

1. The Work shall be performed in accordance with the Drawings and Specifications prepared by the City of Apopka, 748 E. Cleveland Street, Apopka, FL 32703. In addition, The Contractor shall comply with all agencies whom retain jurisdiction within the limits of the project site.

2. The Contractor shall verify all dimensions, quantities and details shown on the Drawings, Supplementary Drawings, Schedules, Specifications or other data received from the Engineer, and shall notify same, in writing, of all errors, omissions, conflicts and discrepancies found therein. Failure to discover or correct errors, conflicts or discrepancies shall not relieve the Contractor of full

responsibility for unsatisfactory Work, faulty construction or improper operation resulting therefrom, nor from rectifying such conditions at his own expense.

3. All schedules are given for the convenience of the Engineer and the Contractor and are not guaranteed to be complete. The Contractor shall assume all responsibility for the making of estimates of the size, kind, and quantity of materials and equipment included in the Work to be done under this Contract.

4. Intent:

   a. All Work called for in the Specifications applicable to this Contract, but not shown on the Drawings in their present form, or vice versa, shall be of like effect as if shown or mentioned in both. Work not specified in either the Drawings or in the Specifications, but involved in carrying out their intent, or in the complete and proper execution of the Work, is required and shall be performed by the Contractor as though it were specifically delineated or described.

   b. Items of material, equipment, machinery, and the like may be specified on the Drawings and not in the Specifications. The Contractor in accordance with the specification on the Drawings shall provide such items.

   c. The apparent silence of the Specifications as to any detail, or the apparent omission from them of a detailed description concerning any Work to be done and materials to be furnished, shall be regarded as meaning that only the best general practice is to prevail and that only material and workmanship of the best quality is to be used, and interpretation of these Specifications shall be made upon that basis.

   d. Reference to the following standards of any technical society, organization or body shall be construed to mean the latest standard, code or specification or tentative specification adopted and published at the date of advertisement for bids, even though reference has been made to an earlier standard. Such reference is hereby made a part of the Contract the same as if herein repeated in full and in the event of any conflict between any of these specifications, standard codes or tentative specifications and the Contract Documents, the most stringent shall govern.

AA	Aluminum Association
AASHTO or AASHO	American Association of State Highway and Transportation Officials
ABPA	Acoustical and Board Products Association
ACI	American Concrete Institute
AFBMA	Anti-Friction Bearing Manufacturer's Association
AGA	American Gas Association
AGMA	American Gear Manufacturers Association
AI	The Asphalt Institute
AIA	American Institute of Architects
AIEE	American Institute of Electrical Engineers
AIMA	Acoustical and Insulating Materials Association
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AMCA	American Moving and Conditioning Association
ANSI	American National Standards Institute
API	American Petroleum Institute
APWA	American Public Works Association
AREA	American Railway Engineering Association
ASA	American Standards Association (now ANSI)
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigerating, and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASSCBC	American Standard Safety Code for Building Construction
ASTM	American Society for Testing and Materials
AWPA	American Wood Preservers Association
AWBP	American Wood Preservers Board

AWS	American Welding Society
AWWA	American Water Works Association
CRSI	Concrete Reinforcing Steel Institute
CS	Commercial Standard
DOT Spec	Standard Specification for Road and Bridge Construction - Florida Department of Transportation
FS	Federal Standard
IEEE	Institute of Electrical and Electronic Engineers
IPCEA	Insulated Power Cable Engineers Association
NBFU	National Board of Fire Underwriters
NBS	National Bureau of Standards
NEC	National Electrical Code
NECA	National Electrical Contractor's Association
NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Association
NPT	National Pipe Threads
NSF	National Science Foundation
OSHA	U.S. Department of Labor, Occupational Safety and Health Administration
PCA	Portland Cement Association
PCI	Pre-stressed Concrete Institute
PS	United States Products Standards
SAE	Society of Automotive Engineers
SDI	Steel Decks Institute
SJI	Steel Joists Institute
SMACNA	Sheet Metal and Air Conditioning Contractors National Association
SSPC	Structural Steel Painting Council
UL	Underwriter's Laboratories, Inc.
UASI	United States of American Standards Institute or USAS (Now ANSI)

5. When obtaining data and information from the Drawings, conflicts, errors, and discrepancies shall be resolved from the documents given the following order of precedence:

   a. Agreement
   b. Change Orders
   c. Addenda
   d. Special Provisions
   e. Instructions to Bidders
   f. General Terms and Conditions
   g. Specifications (Div. 1 through 16)
   h. Drawings
      1) Dimensions
      2) Full-size Drawing
      3) Large-scale Drawing
      4) Small-scale Drawing
   i. Invitation for Bids
   j. Bid
   k. Bonds
   l. Insurance Certificates
   m. Insurance Endorsements
   n. Affidavits

   When measurements are affected by conditions already established or where items are to be fitted into constructed conditions, it shall be the CONTRACTOR'S responsibility to verify all such dimensions at the site and the actual job dimensions shall take precedence over scale and figure dimensions on the Drawings.

C. WORK UNDER OTHER CONTRACTS

1. During progress of Work under this Contract, it may be necessary for other contractors and persons employed by the Owner to work in or about the project. The Owner reserves the right to put such other contractors to work and to afford such access to the Site of the Work to be performed hereunder at such times as the Owner deems proper.

2. The Engineer's control of the coordination and sequence of the Work to be performed under various contracts shall permit him to direct the operations of two contractors at junctions in their Work so as to minimize disturbance to the respective operations and minimize conflicts as to responsibility for placement and maintenance of plugs, caps, or bulk-heads at such locations.

3. If this Contract requires a portion of the Work to be tied into work done under other Contract(s), it will be necessary for this Contractor to plan his work and cooperate with other contractors insofar as possible to prevent any interference and delay.

4. At pipe connections between work construction by separate contractors or subcontractors, it shall be the responsibility of the first contractor reaching such a location to place and maintain watertight plugs, caps or bulkheads in his Work. It shall be the responsibility of the second contractor reaching such a location to dewater the prior work, if such is required, make his connection thereto and place and maintain the necessary watertight plugs or bulkheads at the entrances of his work to the existing pipeline or structure so as to prevent any water, sand or other material and debris from entering the Work completed under other contracts.

5. The Contractor shall not impede or interfere with the work of such other contractors engaged in or about the Work and shall so arrange and conduct his work that such other contractors may complete their work at the earliest date possible.

D. HOURS OF WORK & CONTRACTOR'S PAYMENT TO OWNER FOR OVERTIME WORK

Except in the event of special construction, no work shall be done between the hours of 6:00 p.m. and 7:00 AM, or on Saturdays, Sundays and City of Apopka holidays. If the proposed and efficient prosecution of the Work requires operations during the aforementioned hours or on Saturdays or Sundays, the Owner's permission shall be required to obtain two (2) days before starting such items of the Work.

The normal working hours for the Owner's Resident Project Representative (RPR) are defined as any 8 hour period between the hours of 8:00 AM. and 5:00 PM on the weekdays of Monday through Friday. Any work beyond the aforementioned normal working hours of the RPR shall be requested in writing 48 hours in advance. All overtime and weekend work compensation to the RPR for working beyond the normal working hours are considered overtime compensation and shall be paid for by the Contractor. This overtime pay rate is subject to adjustment by the Owner. The Contractor agrees that the Owner shall deduct such charges for work outside normal work hours and for overtime pay from payments due to the Contractor.

Normal working hours for the work within the Orange County right of ways shall comply with the provisions of the Orange County Right of Way Permit.

E. WEATHER

During inclement weather, all work that might be damaged or rendered inferior by such weather conditions shall be suspended. The orders and decisions of the Project Representative as to suspensions shall be final and binding. During suspension of the Work from any cause, the Work shall be suitably covered and protected so as to

preserve it from injury by the weather or otherwise; and, if the Project Representative will so direct, the rubbish and surplus materials shall be removed.

F. PROTECTION AND RESTORATION

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

2. Protection of Trees and Shrubs:

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

3. Tree and Limb Removal

   a. Tree limbs that interfere with equipment operation and are designated for pruning shall be neatly trimmed and the tree cut coated with a tree paint.
   b. The Owner may order the Contractor, for the convenience of the Owner, to remove trees along the line or trench excavation. The Contractor shall obtain any permits required for removal of trees. Ordered tree removal shall be paid for under the appropriate Contract Items.

4. He shall replace trees or shrubs destroyed by negligence of the Contractor or his employees with new stock of similar size and age, at the proper season and at the sole expense of the Contractor.

5. Lawn Areas - All lawn areas disturbed by construction shall be replaced with like kind to a condition similar or equal to that existing before construction. Where sod is to be removed, it shall be carefully removed, and the same resodded, or the area where sod has been removed shall be restored with new sod in the manner described in the applicable section.

6. Fences - Any fence, or part thereof, that is damaged or removed during the course of the work shall be replaced or repaired by the Contractor, and shall be left in as good a condition as before the starting of the work.

7. Where fencing, walls, shrubbery, grass strips or area must be removed or destroyed incident to the construction operation, the Contractor shall, after completion of the work, replace or restore to the original condition all such destroyed or damaged landscaping and improvements.

8. The cost of all labor, materials, equipment, and work for restoration shall be deemed included in the appropriate Contract Item or items, or if no specific item is provided therefor, as part of the overhead cost of the Work, and no additional payment will be made therefor.

G. ADJACENT LANDS AND IMPROVEMENTS

1. Contractor shall be entirely responsible and liable for all damage or injury as a result of his operations to all other adjacent public and private property, landscaping, trees, fences, structures of any kind and appurtenances thereto met with during the progress of the Work.

2. The Contractor shall not enter or occupy private land outside of the project site or right-of-way, except by written permission of the appropriate owners. Contractor shall provide Owner a copy of such written permission.

1.02 LABOR

A. The Contractor shall keep the Contract under his own control and it shall be his responsibility to see that the Work is properly supervised and carried on faithfully and efficiently. The Contractor shall supervise the Work personally or shall have a competent, English speaking superintendent or representative, who shall be on the site of the project at all working hours, and who shall have full authority by the Contractor to direct the performance of the Work and make arrangements for all necessary materials, equipment, and labor without delay.

B. Jurisdictional Disputes - It shall be the responsibility of the Contractor to pay all costs that may be required to perform any of the Work shown on the Drawings or specified herein to avoid any work stoppages due to jurisdictional disputes. The basis for subletting work in question, if any, shall conform with precedent agreements and decisions on record with the Building and Construction Trades Department, AFL-CIO, dated June, 1973, including any amendments thereto.

C. Apprenticeship - The Contractor shall comply with all of the requirements of Chapter 446, Florida Statutes, for all contracts in excess of $25,000 excluding roadway, highway or bridge contracts and the Contractor agrees to insert in any subcontract under this Contract the requirements of this Article.

1.03 MATERIALS AND EQUIPMENT

A. MANUFACTURER

1. All transactions with the manufacturers or subcontractors shall be through the Contractor, unless the Contractor shall request and at the Engineer's option, that the manufacturer or subcontractor communicate directly with the Engineer. Any such transactions shall not in any way release the Contractor from his full responsibility under this Contract.

2. All workmanship and materials shall be of the highest quality. The equipment

shall be the product of manufacturers who are experienced and skilled in the field with an established record of research and development. No equipment will be considered unless the manufacturer has designed and manufactured equipment of comparable type and size and have demonstrated sufficient experience in such design and manufacture.

3. All materials and equipment furnished by the Contractor shall be subject to the inspection, review and acceptance of the Engineer. No material shall be delivered to the work without prior approval of the Engineer/Owner.

4. All apparatus, mechanisms, equipment, machinery, and manufactured articles for incorporation into the Project shall be the new (most current production at time of bid) and unused standard products of recognized reputable manufacturers.

5. Manufactured and fabricated products:

   a. Design, fabricate and assemble in accord with the best engineering and shop practices.
   b. Manufacture like parts of duplicate units to standard sizes and gauges, to be interchangeable.
   c. Any two or more pieces of material or equipment of the same kind, type or classification, and being used for identical types of service, shall be made by the same manufacturer.
   d. Products shall be suitable for service conditions as specified and as stated by manufacturer.
   e. Equipment capacities, sizes and dimensions shown or specified shall be adhered to unless variations are specifically accepted in writing.
   f. Do not use material or equipment for any purpose other than that for which it is designed or is specified.

B. SUBSTITUTIONS

1. The substitution requirements of this Section are in addition to the requirements of the General Terms and Conditions.

2. When a particular product is specified or called for, it is intended and shall be understood that the proposal tendered by the Bidder includes those products in his Bid. Should the Bidder desire to provide alternate products equal to those specified, the Bidder shall furnish information as described in the Contract Documents. The alternate product or products submitted by the Bidder shall meet the requirements of the specifications and shall, in all respects, be equal to the products specified by name herein.

3. The intent of these specifications is to provide the Owner with a quality facility without discouraging competitive bidding. For products specified only by reference standards, performance and descriptive methods, without naming manufacturer's products, the Contractor may provide the products of any manufacturer complying with the Contract Documents, subject to the review of

product data by the Engineer/Owner as specified herein. For products specified by naming a manufacturer's product followed by the words "or equal", the Contractor may provide any of the named products. He may substitute a product by another manufacturer as an equal only after review by the Engineer/Owner as specified herein.

4. In all cases, any product provided must comply with all of the specified requirements.

C. DELIVERY AND STORAGE

1. General:

   a. The Contractor shall be responsible for all material, equipment and supplies sold and delivered to the Owner under this Contract until final inspection of the Work and acceptance thereof by the Owner.
   b. All materials and equipment to be incorporated in the Work shall be handled and stored by the Contractor before, during and after shipment in a manner to prevent warping, twisting, bending, breaking, chipping, rusting, and any injury, theft or damage or any kind whatsoever to the material or equipment.
   c. All materials which, in the opinion of the Engineer/Owner, have become so damaged as to be unfit for the use intended or specified shall be promptly removed from the site of the Work, and the Contractor shall receive no compensation for the damaged material or its removal.
   c. In the event any such material, equipment and supplies are lost, stolen, damaged or destroyed prior to final inspection and acceptance, the Contractor shall replace same without additional cost to the Owner.

2. Delivery - the Contractor Shall:

   a. Deliver materials in ample quantities to insure the most speedy and uninterrupted progress of the Work so as to complete the Work within the allotted time.
   b. Coordinate deliveries in order to avoid delay in, or impediment of, the progress of the Work of any related Contractor.
   c. Schedule deliveries to the site not more than one month prior to scheduled installation without written authorization from the Engineer.
   d. Arrange deliveries of products in accordance with construction schedules coordinated to avoid conflict with work and conditions at the site.
   e. Deliver products in undamaged condition, in manufacturer's original containers or packaging, with identifying labels intact and legible.
   f. Immediately on delivery, inspect shipments with the Owner's field representative to assure compliance with requirements of Contract Documents and accepted submittals, and that products are properly protected and undamaged.
   g. Provide equipment and personnel to handle products by methods recommended by the manufacturer to prevent soiling or damage to products or packaging.

h. Submit operation and maintenance data to the Engineer/Owner for review prior to shipment of equipment.

3. Storage:

a. The Contractor shall be responsible for securing a location for on-site storage of all material and equipment necessary for completion of this project. The location and storage layout shall be submitted to the Engineer/Owner at the Pre-Construction conference.

b. All material delivered to the job site shall be protected from dirt, dust, dampness, water, and any other condition detrimental to the life of the material from the date of delivery to the time of installation of the material and acceptance by the Owner.

c. Store products in accord with manufacturer's instructions, with seals and labels intact and legible.

d. When required or recommended by the manufacturer, the Contractor shall furnish a covered, weather protected storage structure providing a clean, dry, non-corrosive environment for all mechanical equipment, valves, architectural items, electrical and instrumentation equipment, and special equipment to be incorporated into this project.

e. 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.

f. Manufacturer's storage instructions shall be carefully studied by the Contractor and reviewed with the Engineer by him. These instructions shall be carefully followed and a written record of this kept by the Contractor.

g. Moving parts shall be rotated a minimum of once weekly to insure proper lubrication and to avoid metal-to-metal "welding". Electric motors provided with heaters shall be temporarily wired for continuous heating during storage. Upon installation of the equipment, the Contractor shall start the equipment, at least half load, and once weekly for an adequate period of time to insure that the equipment does not deteriorate from lack of use.

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

i. Prior to acceptance of the equipment, the Contractor shall have the manufacturer inspect the equipment during startup and certify that its condition has not been detrimentally affected by the long storage period. Such startup certification by the manufacturer shall be deemed to mean that the equipment is judged by the manufacturer to be in a condition equal to that of equipment that has been shipped, installed and tested. If such a certification is not given, the equipment shall be judged to be defective. It shall be removed and replaced at the Contractor's expense.

j. Specific Material Storage Requirements:

1) Loose Granular Materials: Store in a well-drained area on solid

surfaces to prevent mixing with foreign matter.

2) Cement, sand and lime: Stored under a roof and off the ground and kept completely dry at all times.

3) Brick, block and similar masonry products: Handle and store in a manner to reduce breakage, chipping, cracking and spilling to a minimum.

4) Precast Concrete Beams: Handle and Store in a manner to prevent accumulations of dirt, standing water, staining, chipping or cracking.

5) All structural and miscellaneous steel, and reinforcing steel: Store off the ground or otherwise to prevent accumulations of dirt or grease, and in a position to prevent accumulations of standing water and to minimize rusting. Beams shall be stored with the webs vertical.

4. Should the Contractor fail to take proper action on storage and handling of equipment supplied under this Contract within seven days after written notice to do so has been given, the Owner retains the right to correct all deficiencies noted in previously transmitted written notice and deduct the cost associated with these corrections from the Contractor's Contract. These costs may be comprised of expenditures for labor, equipment usage, administrative, clerical, engineering and any other costs associated with making the necessary corrections. In any event, equipment and materials not properly stored will not be included in a payment estimate.

D. MANUFACTURER'S INSTRUCTIONS FOR INSTALLATION

1. Comply with manufacturer's printed instructions, obtain and distribute copies of such instructions to all parties involved in the installation, including two copies for the Engineer's/Owner's use. Maintain one set of complete instructions at the job site during installation and until completion.

2. Handle, install, connect, clean, condition and adjust products in strict accord with such instructions and in conformity with specified requirements. Should job conditions or specified requirements conflict with the manufacturer's instructions, consult with Engineer for further instructions. Do not proceed with Work without clear instructions.

3. Perform Work in strict accordance with manufacturer's instructions. Do not omit any preparatory step or installation procedure unless specifically modified or exempted by Contract Documents.

4. The Contractor shall have on hand sufficient proper equipment and machinery of ample capacity to facilitate the installation of the Work and to handle all emergencies normally encountered in Work of this character.

5. Equipment shall be installed in a neat and workmanlike manner on the foundations at the locations and elevations shown on the Plans, unless directed otherwise by the Engineer during installation.

6. All equipment shall be correctly aligned leveled and adjusted for satisfactory operation and shall be installed so that proper and necessary connections can be made readily between the various units.

7. The Contractor shall furnish, install and protect all necessary anchor and attachment bolts and all other appurtenances needed for the installation of the devices included in the equipment specified. Anchor bolts shall be as accepted by the Engineer and made of ample size and strength for the purposes intended. The manufacturer shall furnish substantial templates and working drawings for installation.

E. OPERATING AND MAINTENANCE DATA

1. The Contractor shall furnish two (2) sets of preliminary manufacturers' operation and maintenance materials and manuals for review by the Engineer/Owner in the same manner as shop drawing submittals. The Contractor shall furnish two (2) sets of final equipment manufacturer's operation and maintenance materials and manuals for use by the Owner, after incorporating Engineers'/Owners' review comments.

2. Each manufacturer shall provide a recommended maintenance schedule guide for each item of equipment. Each manual shall include lubrication instructions for the equipment; the lubrication instruction shall include a list of recommended lubricants, with cross-references, for each recommended type of lubricant. The manuals are intended to be used as a guide for routine maintenance and should include tasks necessary for properly maintaining the equipment.

3. This material shall be furnished directly to the Engineer/Owner upon review and acceptance of shop drawings for the equipment and prior to all the equipment being installed and its final acceptance by the Engineer.

F. MANUFACTURER'S SERVICE

1. Where service by the manufacturer is specified to be furnished as part of the cost of the item of equipment, the Work shall be at the Contractor's expense.

2. The services provided shall be by a qualified manufacturer's service representative to check and verify the completed installation, place the equipment in operation, and instruct the Owner's operators in the operation and maintenance procedures. Such services are to be for period of time and for the number of trips specified. A working day is defined as a normal 8-hour working day on the job and does not include travel time.

3. The services shall further demonstrate to the Engineer's/Owner's complete satisfaction that the equipment will satisfactorily perform the functions for which is has been installed. See also Article 1.13 - Startup.

G. INSPECTION AND TESTING

1. General:

a. If, in the testing of any material or equipment, it is ascertained by the Engineer/Owner that the material or equipment does not comply with the Contract, the Contractor shall be notified thereof, and he will be directed to refrain from delivering said material of equipment, or to remove it promptly from the site or from the Work and replace it with acceptable material, without cost to the Owner.

b. Tests of electrical and mechanical equipment and appliances shall be conducted in accordance with recognized test codes of the ANSI, ASME, or the IEE, except as may otherwise be stated herein.

2. Cost:

a. Owner shall employ and pay for the services of an independent testing laboratory to perform testing specifically indicated on the Contract Documents or specified in the Specifications and may at any other time elect to have materials and equipment tested for conformity with the Contract Documents.

b. The cost of field leakage and pressure tests, chlorination of water and shop tests of materials and equipment specifically called for in the Contract Documents shall be borne by the Contractor, and such costs shall be deemed to be included in the Contract price.

c. Notify Owner employed laboratory a minimum of 48 hours sufficiently in advance of operations to allow for laboratory assignment of personnel and scheduling of tests. When tests or inspections cannot be performed after such notice, reimburse Owner for laboratory personnel and travel expenses incurred.

d. The Contractor shall pay for all Work required to uncover, remove, replace, retest, etc any Work not tested due to the Contractor's failure to provide the 48-hours advance notice or due to failed tests. The Contractor shall also provide compensation for the Engineer's/Owner's personnel for required re-testing due to failed or rescheduled testing.

3. Shop Testing:

a. Each piece of <u>equipment</u> for which pressure, duty, capacity, rating, efficiency, performance, function or special requirements are specified shall be tested in the shop of the manufacturer in a manner which shall conclusively prove that its characteristics comply fully with the requirements of the Contract Documents. No such equipment shall be shipped to the Work until the Engineer notifies the Contractor, in writing, that the results of such tests are acceptable.

b. Two copies of the manufacturer's actual shop test data and interpreted results thereof, accompanied by a certificate of authenticity notarized and signed by a responsible official of the manufacturing company, shall be furnished to the Engineer as a prerequisite for the acceptance of any

equipment. The cost of shop tests (excluding cost of Owner's representative) and of furnishing manufacturer's preliminary and shop test data of operating equipment shall be borne by the Contractor and shall be included in the Contract price.

c. The Contractor shall give notice in writing to the Owner sufficiently in advance of his intention to commence the manufacture or preparation of materials especially manufactured or prepared for use in or as part of the permanent construction. Such notice shall contain a request for inspection, the date of commencement and the expected date of completion of the manufacture or preparation of materials. Upon receipt of such notice, the Owner shall arrange to have a representative present at such times during the manufacture as may be necessary to inspect the materials; or he will notify the Contractor that the inspection will be made at a point other than the point of manufacture; or he will notify the Contractor that inspection will be waived.

d. When inspection is waived or when the Engineer so requires, the Contractor shall furnish to him authoritative evidence in the form of Certificates of Manufacture that the materials to be used in the Work have been manufactured and tested in conformity with the Contract Documents. These certificates shall be notarized and shall include five (5) copies of the results of physical tests and chemical analysis, where necessary, that have been made directly on the product or on similar products of the manufacturer.

e. The Contractor must comply with these provisions before shipping any material. Such inspections by the Owner shall not release the Contractor from the responsibility for furnishing materials meeting the requirements of the Contract Documents.

4. Field Testing:

a. The Owner shall employ and pay for services of an independent testing laboratory to perform testing specifically indicated in the Contract Documents. Employment of the laboratory shall in no way relieve Contractor's obligations to perform the Work of the Contract. The Contractor shall provide compensation for re-testing of all failed tests.

b. The Owner may at any time during the progress of the Work request additional testing beyond that which is specified in the Contract. This testing will be at the Owner's expense. The Contractor shall assist the testing laboratory personnel in all ways so as to facilitate access to the location of the material or equipment to be tested.

c. Contractor shall:

1) Cooperate with laboratory personnel, provide access to the Project.

2) Secure and deliver to the laboratory adequate quantities of representative samples of materials proposed to be used and which require testing.

3) Provide to the laboratory the preliminary design mix proposed to be used for concrete and other material mixes that require control

by the testing laboratory.

TEST	NOTES	PAID FOR
Soil Compaction	A. Pipe Work: Every 300 ft. at each lift of compaction. B. Structures: As a minimum one test per 2000 SF of fill area per lift, or at least 2 tests per structure, per lift. As specified in material specifications sections.	Owner
Hydrostatic Leakage	All segments of pressure piping (2-hour test)	Contractor
Asphaltic Concrete Paving	As required by Owner	Owner
LBR	Each 600 SY of pavement	Owner
Concrete	Slump test each delivery, cylinders every 20 CY	Owner
All Other Testing	As specified in various sections of the Project Manual	As Indicated

5. Demonstration Tests: Upon completion of the Work and prior to final payment, all equipment and piping installed under this Contract shall be subjected to acceptance or demonstration tests as specified or required to provide compliance with the Contract Documents. The Contractor shall furnish all labor, fuel, energy, water and all other equipment necessary for the demonstration tests at no additional cost to the Owner.

6. Final Inspection: Prior to preparation of the final payment application, a final inspection will be performed by the Owner and the Engineer to determine if the Work is properly and satisfactorily constructed in accordance with the requirements of the Contract Documents.

7. Inspection by Existing Utility Owners: The Contractor shall pay for all inspections during the progress of the Work required and provided by the owner of all existing public utilities paralleling or crossing the Work, as shown on the Drawings. All such inspection fees shall be deemed included in the appropriate Contract Item or items, or if no specific item is provided therefor, as part of the overhead cost of the Work, and no additional payment will be made therefor.

8. Inspection by Other Agencies: Orange County, the Florida Department of Transportation, the Florida Department of Environmental Regulation, and other authorized governmental agencies shall have free access to the site for inspecting materials and Work, and the Contractor shall afford them all necessary facilities and assistance for doing so. Any instructions to the Contractor resulting from these inspections shall be given through the Engineer/Owner. These rights of inspections shall not be construed to create any contractual relationship between the Contractor and these agencies.

H. WARRANTIES AND BONDS

1. The Contractor shall submit warranties and bonds as specified in the General Terms and Conditions and as specified herein. Co-execute submittals when so specified.

2. For all major pieces of equipment, the Contractor shall submit a warranty from the equipment manufacturer. "Major" equipment is defined as a device having a 1.0 HP or larger motor or which lists for more than $1,000.00. The manufacturer's warranty period shall be concurrent with the Contractor's for one (1) year, unless otherwise specified, commencing at the time of final acceptance by the Owner.

   The Contractor shall warrant all equipment in the Contractor's one-year warranty period even though certificates of warranty may not be required.

3. In the event that the equipment manufacturer or supplier is unwilling to provide a one-year warranty commencing at the time of the Owner acceptance, the Contractor shall obtain from the manufacturer a two (2) year warranty commencing at the time of equipment delivery to the job site. This two-year warranty from the manufacturer shall not relieve the Contractor of the one-year warranty starting at the time of Owner acceptance of the equipment.

4. If an individual specification section requires a particular warranty more stringent than that required by this Section or the General Terms and Conditions, the more stringent requirements shall govern for the applicable portion of the Work.

5. Assemble warranties, bonds and service and maintenance contracts, executed by each of the respective manufacturers, suppliers, and subcontractors, and bind into a commercial quality standard three (3) ring binder; submit two (2) copies of the warranties and bonds to the Engineer for review and transmittal to the Owner.

6. The warranties and bonds shall include:

   a. Equipment or product description
   b. Manufacturer's name, principal, Address and telephone number
   c. Contractor, name of responsible Principals address and telephone number
   d. Local supplier's or representatives name and address
   e. Scope of warranty or bond
   f. Proper procedure in case of failure
   g. Instances which might affect the validity of warranty bond
   h. Date of beginning of warranty, bond of service and maintenance contract
   i. Duration of warranty, bond or service maintenance contract

I. TOOLS AND ACCESSORIES

1. The Contractor shall furnish with each type, kind or size of equipment, one complete set of suitably marked high-grade special tools and accessories that may be needed to adjust, operate, maintain or repair the equipment (including special grease guns or other lubricating tools).

2. Such tools and accessories shall be furnished in accepted painted steel tool cases, properly labeled and equipped with good grade cylinder locks and duplicate keys no later than upon start-up.

3. Each piece of equipment shall be provided with a substantial stainless steel nameplate, securely fastened in place and clearly inscribed with the manufacturer's name, year of manufacture, serial number, weight and principal rating data.

J. HAULING AND CONSTRUCTION OPERATIONS - The Contractor shall conduct access, hauling, filling and storage operations on site as specified herein and as shown on the Contract Drawings.

1. On-site borrow areas are designated as follows, in order of first usage:
None: All borrow material required shall be obtained off-site by the Contractor.

2. On-site spoil areas are designated as follows, in order of first usage:
None: All excess unsuitable material shall become the property and responsibility of the Contractor.

3. The Contractor shall properly dispose of all surplus material, including soil, in accordance with local, state and federal regulations. Under no circumstances shall surplus material be disposed of in wetland areas as defined by the Florida Department of Environmental Regulation.

K. USE OF CHEMICALS - All chemicals used during the project construction furnished for project operation, whether herbicide, pesticide, disinfectant, polymer, reactant or other classification, must show approval of either the Environmental Protection Agency or the U.S. Department of Agriculture. Use of all such chemicals and disposal of residues shall be in strict conformance with instructions.

L. QUALITY ASSURANCE - In order to establish a standard of quality and to demonstrate the proficiency of workmen or to facilitate the choice among several textures, types, finishes and surfaces, the Contractor shall provide such samples of workmanship or finish as may be required, or requested by the Owner. The materials and equipment used on the Work shall correspond to the samples or other data accepted as a quality standard for the Work.

1.04 PROJECT SITE AND ACCESS

A. RIGHT-OF-WAY AND EASEMENTS

1. The use of public streets and alleys shall be such as to provide a minimum of inconvenience to the public and to other traffic. The Contractor shall remove any earth or other excavated material spilled from trucks and the streets cleaned to the satisfaction of the Owner.

2. The Contractor shall not enter or occupy private land outside of easements, except by written permission of the property owner.

B. EXISTING FACILITIES

The Work shall be so conducted to maintain existing facilities in operation insofar as is possible.

C. ACCESS

1. Neither the material excavated nor the materials or equipment used in the construction of the Work shall be so placed as to prevent free access to all fire hydrants, valves or manholes.

2. Access to businesses located adjacent to the project site must be maintained at all times. Contractor may prearrange the closing of business access with the business owner. Such prearranged access closing shall not exceed two (2) hours. Property drainage and grading shall be restored and all construction debris removed within 48 hours of backfilling trench.

3. Contractor agrees that representatives of the Owner and any governmental agents will have access to the Work wherever it is in preparation or progress and that the Contractor shall provide facilities for such access and inspection.

1.05 PERMITS

A. The Owner shall obtain permits related to this Work prior to issuance of the Notice to Proceed and are as follows:
- Roadway Right-of-Way Permit (by Owner).
- Orange County Right-of-Way Permit (by Contractor).
- Traffic Control Plan (by Contactor).

B. Upon Notice of Award, the Contractor shall immediately apply for all other applicable permits to construct the Work from the appropriate governmental agency or agencies. No Work shall commence until all applicable permits have been obtained and copies delivered to the Engineer/Owner. The costs for obtaining these permits shall be borne by the Contractor.

C. The Contractor shall strictly adhere to the specific requirements of the governmental unit(s) or agency(ies) having jurisdiction over the Work. Whenever there is a difference in the requirements of a jurisdictional body and these Specifications, the more stringent shall apply.

1.06 UTILITIES

A. UTILITY CONSTRUCTION

1. Public utility installations and structures shall be understood to include all poles, tracks, pipes, wires, conduits, house service connections, vaults, manholes and all other appurtenances and facilities pertaining thereto, whether owned or controlled by governmental bodies or privately owned by individuals, firms or corporations, used to serve the public with transportation, traffic control, gas, electricity, telephone, sewerage, drainage or water. Other public or private property that may be affected by the Work shall be deemed included hereunder.

2. All open excavations shall be adequately safeguarded by providing temporary barricades, caution signs, lights and other means to prevent accidents to persons,

and damage to property. The Contractor shall, at his own expense, provide suitable and safe bridges and other crossings for accommodating travel by pedestrians and workmen. Bridges provided for access to private property during construction shall be removed when no longer required.

3. The length of open trench will be controlled by the particular surrounding conditions, but shall always be confined to no more than 300 LF of open trench at any given time and no open trench at the end of the day to remain open overnight. If any excavation becomes a hazard, or if it excessively restricts traffic at any point, the Owner may require special construction procedures such as further limiting the length of open trench, prohibiting stacking excavated materials in the street, and temporary restoration of roadways, driveways and walkways to be accomplished each day.

B. EXISTING UTILITIES

1. The locations of all existing underground piping, structures and utilities have been taken from information received from the respective owner. The locations are shown without express or implied representation, assurance, or guarantee that they are complete or correct or that they represent a true picture of underground piping, conduit and cables to be encountered.

2. The Contractor shall, at all times in performance of the Work, employ accepted methods and exercise reasonable care and skill so as to avoid unnecessary delay, injury, damage or destruction of existing public utility installations and structures; and shall, at all times in the performance of the Work, avoid unnecessary interference with, or interruption of, public utility services; and shall cooperate fully with the owners thereof to that end.

3. Pipelines shall be located substantially as indicated on the Drawings, but the Engineer/Owner reserves the right to make such modifications in locations as may be found desirable to avoid interference with existing structures or for other reasons. When the location of piping is dimensioned on the Drawings, it shall be installed in that location; when the location of piping is shown on a scaled drawing, without dimensions, the piping shall be installed in the scaled location unless the Engineer/Owner approves an alternate location for the piping. Where fittings are noted on the Drawings, such notation is for the Contractor's convenience and does not relieve him from laying and jointing different or additional items where required. The Engineer may require detailed pipe laying drawings and schedules for project control.

4. The Contractor shall exercise care in any excavation to locate all existing piping and utilities. All utilities that do not interfere with the completed Work shall be carefully protected against damage. Any existing utilities damaged in any way by the Contractor shall be restored or replaced by the Contractor at his expense as directed by the Engineer/Owner. Only the owner of the respective utility shall perform any existing facilities that require operation to facilitate repairs.

5. It is the responsibility of the Contractor to ensure that all utility or other poles,

the stability of which may be endangered by the proximity of excavation, be temporarily stayed and/or shored in position while Work proceeds in the vicinity of the pole and that the utility or other companies concerned be given reasonable advance notice of any such excavation by the Contractor.

C. NOTICES

1. The Contractor will inform all governmental utility departments and other owners of public utilities that may be affected by the Work in writing within two weeks after the execution of the Contract or Contracts covering the Work. Such notice will be sent out in general, and directed to the attention of the governmental utility departments and other owners of public utilities for such installations and structures as may be affected by the Work.

2. The Contractor shall also comply with Florida Statute Chapter 553 regarding notification of existing gas and oil pipeline company owners. Evidence of such notice shall be furnished to the Owner within two weeks after the execution of the Contract.

3. It shall be the Contractor's responsibility to contact utility companies at least 72 hours in advance of breaking ground in any area or on any unit of the Work so maintenance personnel can locate and protect facilities, if required by the utility company.

4. The Contractor shall give a minimum 5 working day notice prior to utility personnel interrupting a utility service (water, sewer, etc.) for the purpose of making cut-ins to the existing lines or for any other purposes, contact the utility owner and make arrangements for the utility personnel to isolate the existing lines thus providing interruption which will be satisfactory to the utility owner.

D. EXPLORATORY EXCAVATIONS

The Contractor for the purpose of locating underground pipelines or structures in advance of the construction shall conduct exploratory excavations. Test pits shall be excavated in areas of potential conflicts between existing and proposed facilities and at piping connections to existing facilities a minimum of 48 hours or 1000 feet in advance of Work. If there is a potential conflict, the Contractor is to notify the Engineer immediately. Information on the obstruction to be furnished by the Contractor shall include: Location, Elevation, Utility Type, Material and Size. Test pits shall be backfilled immediately after their purpose has been satisfied and the surface restored and maintained in a manner satisfactory to the Engineer.

E. UTILITY CROSSINGS

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

F. RELOCATIONS

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

2. Relocations not shown on the Drawings:

   a. Where public utility installations or structures are encountered during the course of the Work, and <u>are not</u> indicated on the Drawings or in the Specifications, and when, in the opinion of the Engineer/Owner, removal, relocation, replacement or rebuilding is necessary to complete the Work under this contract, such Work shall be accomplished by the utility having jurisdiction, or such Work may be ordered, in writing by the Engineer/Owner, for the Contractor to accomplish.
   b. If such Work is accomplished by the utility having jurisdiction, it will be carried out expeditiously and the Contractor shall give full cooperation to permit the utility to complete the removal, relocation, replacement or rebuilding as required. If the Contractor accomplishes such Work, it will be paid for as a Change Order.

3. All existing utility castings, including valve boxes, junction boxes, manholes, hand holes, pull boxes, inlets and similar structures in the areas of construction that are to remain in service and in areas of trench restoration and pavement replacement, shall be adjusted by the Contractor to bring them flush with the surface of the finished Work.

4. All existing utility systems which conflict with the construction of the Work herein that can be temporarily removed and replaced shall be accomplished at the expense of the Contractor. Work shall be done by the utility unless the utility approves in writing that the Work may be done by the Contractor.

1.07 RELATED CONSTRUCTION REQUIREMENTS

A. TRAFFIC MAINTENANCE

1. Maintain public highway traffic within the limits of the project for the duration of the construction period, including any temporary suspensions of Work. Work shall also include construction and maintenance of any necessary detour facilities; furnishing, installing and maintaining of traffic control and safety devices during construction, control of dust, or any other special requirements for safe and expeditious movement of vehicular and pedestrian traffic.

2. Traffic Control shall be provided at the Contractor's expense by the Contractor's

personnel or off-duty-uniformed police officer, depending on and as required by the applicable traffic control requirements jurisdictional to the construction or road.

3. At the request of any jurisdictional agency, the Contractor shall prepare and submit a Traffic Control Plan to the Engineer for review and acceptance prior to commencing any Work on the site. The Traffic Control Plan shall detail procedures and protective measures proposed by the Contractor to provide for protection and control of traffic affected by the Work consistent with the following applicable standards:

   a. Standard Specifications for Road and Bridge Construction, Latest Edition including all subsequent supplements issued by the Florida Department of Transportation, (FDOT Spec.).
   b. Manual of Traffic Control and Safe Practices for Street and Highway Construction, Maintenance and Utility Operations, FDOT.
   c. Right-of-Way Utilization Regulations, Orange County, Florida, latest edition.

   All references to the respective agency in the above referenced standards shall be construed to also include the Owner for this Work.

4. Before closing any thoroughfare, the Contractor shall give written notice to and, if necessary, obtain a permit or permits from the duly constituted public authority having jurisdiction over the thoroughfare. Notice shall be given no less than 72 hours in advance of the time when it may be necessary in the process of construction to close such thoroughfare, or as may be otherwise provided in the accepted Traffic Control Plan.

5. The Contractor shall sequence and plan construction operations and shall generally conduct his Work in such a manner as not to unduly or unnecessarily restrict or impede existing normal traffic through the streets of the local community.

6. Insofar as it is practicable, excavated material and spoil banks shall not be located in such a manner as to obstruct traffic. The traveled way of all streets, roads and alleys shall be kept clear and unobstructed insofar as is possible and shall not be used for the storage of construction materials, equipment, supplies, or excavated earth, except when and where necessary.

7. If required by duly constituted public authority, the Contractor shall, at his own expense, construct bridges or other temporary crossing structures over trenches so as not to unduly restrict traffic. Such structures shall be of adequate strength and proper construction and shall be maintained by the Contractor in such a manner as not to constitute an undue traffic hazard. Private driveways shall not be closed except when and where necessary, and then only upon due advance notice to the Engineer/Owner and for the shortest practicable period of time consistent with efficient and expeditious construction. The Contractor shall be liable for any damages to persons or property resulting from his work.

8. The Contractor shall make provisions at all "open cut" a street crossing to allow a minimum of one lane to be open for vehicular traffic at all times. Lane closing shall be as permitted by the local governing authority and shall be repaired to a smooth, safe driving surface immediately following the installation of pipe or conduit. Flagmen shall be required, in addition to barricades, signs and other protective devices at all lane closings.

9. The Contractor shall make provisions at cross streets for the free passage of vehicles and pedestrians, either by bridging or otherwise, and shall not obstruct the sidewalks, gutters, or streets, nor prevent in any manner the flow of water in the latter, but shall use all proper and necessary means to permit the free passage of surface water along the gutters.

10. The Contractor shall immediately cart away all offensive matter, exercising such precaution as may be directed by the Engineer/Owner. All material excavated shall be so disposed of as to inconvenience the public and adjacent tenants as little as possible and to prevent injury to trees, sidewalks, fences and adjacent property of all kinds.

B. BARRIER AND LIGHTS

The Contractor shall exercise extreme care in the conduct of the Work to protect health and safety of the workmen and the public. The Contractor shall provide all protective measures and devices necessary, in conformance with applicable local, state and federal regulations regarding their need and use. Protective measures shall include but are not limited to barricades, warning lights/flashers and safety ropes.

C. DEWATERING, FLOTATION

The Contractor, with his own equipment, shall do all pumping necessary to dewater any part of the Work area during construction operations to insure dry working conditions. The Contractor shall be completely responsible for any tanks, wet wells or similar structures that may become buoyant during the construction and modification operations due to the ground water or floods and before the structure is put into operation. The proposed final structures have been designed against buoyancy; however, the Contractor may employ methods, means and techniques during the various stages of construction (or other conditions) which may affect the buoyancy of structures. Should there be any possibility of buoyancy of a structure, the Contractor shall take the necessary steps to prevent its buoyancy either by increasing the structure's weight, by filling it with acceptable material or other acceptable methods. Damage to any structures due to floating or flooding shall be repaired or the structures replaced at the Contractor's expense.

D. DUST, NOISE AND EROSION CONTROL

1. The Contractor shall prevent dust nuisance from his operations or from traffic by the use of water.

2. Noise suppression:

   a. The Contractor shall eliminate noise to as great an extent as practical at all times. Air compressing plants shall be equipped with silencers and the exhaust of all gasoline motors or other power equipment shall be provided with mufflers. In the vicinity of hospitals and schools, special care shall be used to avoid noise or other nuisances. The Contractor shall strictly observe all local regulations and ordinances covering noise control.
   b. Sound levels measured by the Engineer's/Owner's personnel shall not exceed 55 dBA 8 a.m. to 7 p.m. This sound level shall be measured at the exterior of the nearest exterior wall of the nearest residence or building. Levels at the equipment shall not exceed 85 dBA at any time. Sound levels in excess of these values are sufficient cause to have the Work halted until equipment can be quieted to these levels. Work stoppage by the Engineer/Owner for excessive noise shall <u>not</u> relieve the Contractor of other contractual responsibilities stipulated in the Contract Documents including, but not limited to Contract Price and time.

3. Erosion and Sedimentation Control:

   a. Temporary <u>erosion controls</u> include, but are not limited to, grassing, mulching, netting, watering and receding on-site surfaces and soil and borrow area surfaces and providing interceptor ditches at ends of berms and at those locations which will ensure that erosion during construction will be either eliminated or maintained within acceptable limits as established by the Owner, FDER and any other agency having jurisdiction.
   b. Temporary <u>sedimentation controls</u> include, but are not limited to, silt dams, traps, barriers, and appurtenances at the foot of sloped surfaces which will ensure that sedimentation pollution will be either eliminated or maintained within acceptable limits as established by the Owner, FDEP and any other agency having jurisdiction.
   c. The construction of temporary erosion and sedimentation control facilities shall be in accordance with the technical provision of section 104-6.4 of the 2004 Edition, FDOT Standard Specifications for Road and Bridge Construction.
   d. Contractor is responsible for providing effective temporary erosion and sediment control measures during construction or until final controls become effective.

E. CONSTRUCTION FIELD ENGINEERING

1. Professional Engineer: The Contractor shall provide the services of a Registered Professional Engineer currently licensed in the State of Florida for the following specific services as applicable to the Work:

   a. Inspections, testing, witnessing requiring a licensed professional engineer.
   b. Design of temporary shoring, bridging, scaffolding or other temporary construction.
   c. Other requirements as specified herein.

2. Registered Land Surveyor: The Contractor shall retain the services of a registered land surveyor licensed in the State of Florida for the following specific services as applicable to the Work:

   a. Identify existing rights-of-ways and property lines along or adjacent to the Work.
   b. Locate existing utilities and structures as may be affected by the Work.
   c. Locate control points prior to starting the Work.
   d. Replace controls points or reference points that may be lost or destroyed.
   e. Prepare a certified survey of the actually constructed facilities based on information concurrent with the construction progress. This site survey is herein referred to as "Project Record Drawings". The Project Record Drawings shall be prepared at the same scale as the Contract Drawings on reproducible Mylar sheet 24 inch x 36 inch. Where the Contract Drawings are at various scales, the Project Record Drawings shall be at the scale that shows the greatest detail. The Project Record Drawings shall indicate the actual locations of all building corners, structures and elevation and stationing (100 ft. stationing) of all piping, fittings, valves, conduits, existing utilities and all other above and below ground improvements constructed under this contract.

3. Contractor shall protect control points prior to starting the Work and shall preserve all permanent reference points during construction. Report to the Engineer/Owner when any reference point is lost or destroyed, or requires relocation because of necessary changes in grades or locations.

   The Contractor shall bear the cost of re-establishing project control points if disturbed, and bear the entire expense of rectifying Work improperly installed due to not maintaining or protecting or to removing without authorization such established points, stakes and marks.

4. Submittals:

   a. Certificate signed by a Registered Surveyor certifying that elevations and locations of improvements are in conformance, or non-conformance, with Contract Documents.
   b. Signed and sealed drawings and digital file showing locations of all structures, piping conduits and other improvements. These drawings are referenced as the Project Record Drawings and shall be included with the Project Record Documents.
   c. Documentation to verify accuracy of field engineering work when requested by the Engineer.

F. LINES AND GRADES

1. All Work under this Contract shall be constructed in accordance with the lines and grades shown on the Drawings, or as given by the Engineer. The full responsibility for keeping alignment and grade shall rest upon the Contractor.

2. The Contractor shall, at his own expense, establish all working or construction lines and grades as required from the project control points set by the Engineer/Owner, and shall be solely responsible for the accuracy thereof.

3. Reclaimed water main shall have a minimum of 36-inches of cover over the top of the pipe. Cover shall vary to provide long uniform gradient or slope to pipe to minimize air pockets and air release valves. The stationing shown on the Drawings for air and vacuum release valve assemblies are approximate and the Contractor shall field adjust these locations to locate these valves at the highest point in the pipeline installed. The Engineer/Owner must accept all locations.

G. CUTTING AND PATCHING

1. The Contractor shall do all cutting, fitting or patching of his portion of the Work that may be required to make the several parts thereof join and coordinate in a manner satisfactory to the Engineer and in accordance with the Drawings and Specifications.

2. Preparation:

   a. Inspect the existing conditions of the project, including elements subject to damage and/or movement during cutting and patching.
   b. Provide adequate temporary support to assure the structural integrity of all facilities during completion of the Work.

3. Performance:

   a. Execute cutting and demolition by methods that will prevent damage to other existing facilities and will provide proper surfaces to receive installation of equipment and repair.
   b. Excavation and backfilling shall be performed in a manner that will prevent settlement and/or damage to existing facilities.
   c. All pipes, sleeves, ducts, conduits and other penetration through surfaces shall be made airtight.
   d. Refinish entire surfaces as necessary to provide an even finish to match adjacent finishes.

H. TEMPORARY CONSTRUCTION

1. Temporary fences: If, during the course of the Work, it is necessary to remove or disturb any fencing, the Contractor shall, at his own expense, provide a suitable temporary fence which shall be maintained until the permanent fence is replaced. The Engineer/Owner will be solely responsible for the determination of the necessity for providing a temporary fence and the type of temporary fence to be used.

2. Responsibility for Temporary Structures: In accepting the Contract, the Contractor assumes full responsibility for the sufficiency and safety of all

temporary structures or work and for any damage which may result from their failure or their improper construction, maintenance or operation and will indemnify and save harmless the Owner from all claims, suits or actions and damages or costs of every description arising by reason of failure to comply with the above provisions.

I. CONSTRUCTION PHOTOGRAPHS

1. Pre-Construction Documentation: The Contractor shall engage the services of a professional videographer to record pre-construction conditions no more than thirty (30) days and no less than five (5) days prior to construction. The videographer shall be a commercially known firm skilled and regularly engaged in the business of continuous Pre-Construction color audio-visual tape documentation. No construction shall begin prior to the review and acceptance of the respective videotapes by the Owner and Engineer. All videotapes and written records shall become the property of the Owner.

   a. Video Recording:
      1) Type: E.I.A. standard video with minimum horizontal resolution of 525 lines, 60 fields.
      2) Screen display: time of day, month, day and year.
      3) Coverage: record all existing surface features located within the area affected by construction featuring existing improvements and vegetation and existence of any faults, defects or fractures thereto.
      4) Each video tape shall be permanently labeled and provided with a log of the video's content indexed by Video Unit Counter Numbers with corresponding subject data (street name, direction, engineering station numbers and date).
      5) Recording shall be performed on bright sunny days using a stable continuity of coverage at a rate not exceeding five miles per hour, with camera not mounted more than 10 feet above ground.
   b. Audio recording:
      1) Single voice narrative recording corresponding and simultaneous with the video recording.
      2) Provide commentary to assist viewer orientation; street name, side, direction of travel, house addresses, engineering station numbers.

J. CLEANING

1. During Construction:

   a. During construction of the Work, the Contractor shall, at all times, keep the site of the Work and adjacent premises as free from material, debris and rubbish as is practicable and shall remove the same from any portion of the site if, in the opinion of the Engineer/Owner, such material, debris, or rubbish constitutes a nuisance or is objectionable.
   b. Provide on-site containers for the collection of waste materials, debris and

rubbish and remove such from the site periodically by disposal at a legal disposal area away from the site.

c. Clean interior spaces prior to the start of finish painting and continue cleaning on an as-needed basis until painting is finished. Use only those cleaning materials which will not create hazards to health or property and which will not damage surfaces. Use only those cleaning materials and methods recommended by the manufacturer of the surface material to be cleaned. Schedule operations so that dust and other contaminants resulting from cleaning process will not fall on wet or newly coated surfaces.

d. The Contractor shall remove from the site all surplus materials and temporary structures when no longer necessary to the Work at the direction of the Engineer/Owner.

2. Final Cleaning:

a. At the conclusion of the Work, all equipment, tools, temporary structures and materials belonging to the Contractor shall be promptly taken away, and he shall remove and promptly dispose of all water, dirt, rubbish or any other foreign substances. Employ skilled workmen for final cleaning. Thoroughly clean all installed equipment and materials to a bright, clean, polished and new appearing condition. Remove grease, mastic, adhesives, dust, dirt, stains, fingerprints, labels, and other foreign materials from sight-exposed interior and exterior surfaces. Broom clean exterior paved surfaces; rake clean other surfaces of the grounds.

b. The Work shall be left in a condition as shown on the Drawings and the remainder of the site shall be restored to a condition equal or better than what existed before the Work.

c. Prior to final completion, or Owner occupancy, Contractor shall conduct an inspection of interior and exterior surfaces, and all work areas to verify that the entire Work is clean. The Engineer/Owner will determine if the final cleaning is acceptable.

1.08 CONSTRUCTION NOT PERMITTED

A. USE OF EXPLOSIVES - No blasting shall be done except upon approval by the Owner and the governmental agency or political subdivision having jurisdiction. When the use of explosives is directed by the Owner as necessary for the execution of the Work, the Contractor shall use the utmost care so as not to endanger life or property, and assume responsibility for any such damage resulting from his blasting operations, and whenever directed, the number and size of the charges shall be reduced. All explosives shall be stored in a secure manner and all such storage places shall be marked clearly, "DANGEROUS EXPLOSIVES" and shall be in care of competent watchmen. The Contractor at his expense shall obtain all permits required for the use of explosives. All requirements of the governmental agency-issuing permit shall be observed.

B. EXCAVATED SUITABLE MATERIAL HAULED-OFF-SITE - At the direction of the Engineer/Owner, all excess suitable topsoil and other suitable excavated material shall remain at the site and if necessary stockpiled at the Engineer/Owner's direction.

1.09 PROJECT MEETINGS

A. GENERAL

1. The Contractor shall attend all meetings to ascertain that work is expedited consistent with the Contract Documents and construction schedules.

2. Representatives of the Engineer/Owner, contractors, subcontractors, suppliers and utility owners attending meeting shall be qualified and authorized to act on behalf of the entity each represents.

3. The Engineer/Owner will schedule and administer the Pre-Construction meeting, periodic progress meetings, and specially called meetings throughout the progress of the work (i.e., prepare agenda for meetings, make physical arrangements for meetings and, preside at meetings, prepare meeting minutes). A copy of the minutes of each progress meeting will be available within five (5) days after the meeting.

B. PRE-CONSTRUCTION MEETING

1. A Pre-Construction meeting shall be held no later than fifteen (15) days after date of Notice To Proceed at a central site, convenient for all parties, designated by the Engineer/Owner.

2. Attendance:

   a. Project Manager
   b. Engineer/Owner Representative
   c. Utilities
   d. Contractor and his superintendent
   e. Major subcontractors
   f. Major suppliers
   g. Orange County Right of Way Representative
   h. Others as appropriate

3. Suggested Agenda: This meeting is intended to introduce the various key personnel from each organization and to discuss the requirements of the Contract Documents as to how they specifically pertain to this Project and Work. The Engineer/Owner will prepare a "Agenda" for this meeting outlining specific construction administration procedures, general construction requirements and other special considerations. The Contractor shall provide information as requested by the Engineer in the development of the Pre-Construction Meeting.

C. PROGRESS MEETINGS

1. Progress meetings will be held every thirty (30) days or less with the first meeting thirty (30) days after the Pre-Construction Meeting or thirty (30) days

or less after the date of Notice to Proceed.

2. Progress meeting dates and time shall be scheduled at the Pre-Construction Meeting for the entire duration of the Work on a monthly calendar basis. All progress meetings shall be held at the City of Apopka Public Services Facility, 748 East Cleveland St., Apopka, FL 32703.

3. Attendance:
   a. Project Manager
   b. Owner's Representative
   c. Engineer as needed
   d. Contractor
   e. Subcontractors as appropriate to agenda
   f. Suppliers as appropriate to the agenda
   g. Orange County Right of Way Representative
   h. Others as appropriate

4. Suggested Agenda: A general agenda for Progress Meetings will be provided to the Contractor at the Pre-Construction Meeting.

5. The Contractor shall study previous meeting minutes and current agenda items in order to be prepared to discuss pertinent topics such as deliveries of materials and equipment, progress of the Work, etc.

6. The Contractor is to provide a current shop drawing log at each progress meeting, as well as evidence of the completion of Project Record Drawings concurrent with Work progress.

1.10 CONSTRUCTION / PAYMENT PROGRESS SCHEDULE AND PARTIAL RELEASE

A. Within fifteen (15) days after Award of the Contract or before the Pre-Construction Meeting, prepare and submit to the Engineer/Owner estimated construction progress schedules for the Work with sub-schedules of related activities which are essential to its progress.

B. Construction Progress Schedules shall be prepared in the form of a horizontal bar chart with separate horizontal bars for each trade or operation within each structure or item in chronological order. Provide horizontal time scale in weeks from the start of construction and identify the first work day of each month. Scale and spacing shall allow for notations and future revisions. Identify listings by major specification section numbers as applicable and structure. Maximum sheet size shall be 24 x 36-inches.

C. Content of Schedules; show or indicate the following:

1. Complete sequence of construction by activity;

2. Dates for the beginning and completion of each major element of construction in no more than a two-week incremental scale.

3. Items of work that must be accomplished to achieve substantial completion.
   a. Major disciplines or trades of work
   b. Approval of Regulatory agencies.
   c. Time required for Contractor's submittals, fabrication and deliveries.
   d. Time required by Engineer to review all submittals.
   e. Time required by Owner to support pre-operational and start-up testing.
   f. Time required for the relocation of utilities.
   g. Activities performed by each minority subcontractor.
   h. Interface milestones with the work of the Contractors.

4. Projected percentage of completion for each item as of the first day of each month.

5. Dates for Contractor's submittals.

6. Dates for required Owner-furnished materials or equipment.

7. Dates accepted submittals will be required from the Engineer/Owner.

8. Additionally, provide a typewritten list of all long lead items (equipment, materials, etc.)

D. Progress Schedule Submissions and Revisions:

1. Submit two (2) opaque copies of the revised monthly progress schedule with that month's Application for Payment to the Engineer/Owner.

2. Indicate progress of each activity to date of submission and changes occurring since previous submission of schedule. Provide a narrative report as needed to define problem areas, anticipated delays, and the impact on the schedule; corrective action recommended and its effect; and, the effect of changes on schedules of other prime contractors, if any.

E. Progress Schedule Updates:

1. Contractor shall submit a progressed version of the Progress Schedule with each Application for Payment, showing actual progress up to the date of the application. If the update calculations result in early dates for completion of the Work, or a part thereof, beyond that Contract Time or Milestone, Contractor shall revise the schedule to show how the Work can be completed within the remaining time, or requests an extension of Contract Time if Contractor believes he is entitled to additional time. A narrative report shall be submitted with any revised or extended Progress Schedule explaining revisions made and actions taken or planned to recover the schedule or obtain a Change Order for an extension of Contract Time.

F. Partial Release:

1. The Contractor shall be required to have applications for Progress Payments accompanied by legally effective partial releases or waivers of right to claim

against the payment bond (progress payment) executed by all Subcontractors which performed services and suppliers of material or equipment for the Contractor for services or supplies which were included in the previous Application for Progress Payment, and, Consent of Surety to Partial Payment. The Contractor shall include the following certification on each Application for Progress Payments and the Application for Final Payment:
"The undersigned Contractor certifies that the work covered by this application for payment has been done, or completed in accordance with the Contract documents, that all amounts have been paid by him for work, supplies, material or equipment for which previous Certificates for Payment were issued and that the current payment shown herein is now due".

1.11 SHOP DRAWINGS, WORKING DRAWINGS AND SAMPLES

A. GENERAL: The Contractor shall submit to the Engineer for review and comment, if any, such working drawings, shop drawings, test reports and data on materials and equipment, and material samples as are specified elsewhere in the specifications and in the Contract Drawings.

B. SHOP DRAWINGS: The term "Shop Drawings" shall be construed to mean Contractor's plans for material and equipment, which becomes an integral part of the Project. Shop drawings shall consist of fabrication, erection and setting drawings and schedule drawings, manufacturer's scale drawings, wiring and control diagrams, material and equipment lists, catalog data sheets, cuts, performance curves, diagrams, materials of construction and similar descriptive material.

1. Shop drawings shall be prepared in a manner and sufficient detail to enable the Engineer to determine compliance with all stated specification requirements.

2. Drawings and schedules shall be checked and coordinated with the work of all trades involved before they are submitted for review by the Engineer and shall bear the Contractor's stamp of review and acceptance as evidence of such checking and coordination.

3. If drawings show variation from Contract requirements because of standard shop practice or for other reasons, the Contractor shall describe such variations in his letter of transmittal. If acceptable, proper adjustment in the Contract shall be implemented where appropriate. If the Contractor fails to describe such variations, he shall not be relieved of the responsibility for executing the Work in accordance with the Contract, even though such drawings have been reviewed.

C. WORKING DRAWINGS: The term "Working Drawings" shall be construed to mean the Contractor's plan for temporary structures such as temporary bulkheads, support of open cut excavation, support of utilities, groundwater control systems, forming and false work for underpinning, and for such other work as may be required for construction but does not become an integral permanent part of the Project.

1. Working Drawings shall be submitted to the Engineer where required by the

Contract Documents or requested by the Engineer, and shall be submitted at least thirty (30) calendar days (unless otherwise specified by the Engineer) in advance of their being required for the work.

2. Working Drawings shall be prepared, signed and sealed by a registered professional engineer currently licensed to practice in the State of Florida. Working Drawing submittals are required to verify compliance with this provision. The Engineer will not check designs prepared by the Contractor's professional engineer. The Contractor and the Contractor's engineer assume all risks of error; the Engineer/Owner shall have no responsibility therefor.

D. SAMPLES: The Contractor shall furnish, for the inspection of the Engineer/Owner, samples required by the Contract Documents or requested by the Engineer/Owner.

1. Samples shall be delivered to the Engineer as specified or directed. The Contractor shall prepay all shipping charges on samples.

2. Review and acceptance of a sample shall be only for the characteristics or use named in such acceptance and shall not be construed to change or modify any Contract requirements. Materials or equipment for which samples are required shall not be used in work until accepted by the Engineer/Owner. Materials and equipment incorporated in Work shall match the accepted samples.

3. Accepted samples not destroyed in testing shall be sent to the site of the Work. Accepted samples of the hardware in good condition will be marked for identification and may be used in the Work. Samples which failed testing or were not accepted will be returned to the Contractor at his expense, if so requested at the time of submission.

E. CONTRACTOR'S RESPONSIBILITY - The Contractor shall:

1. Check all drawings, data and samples prepared by or for him before submitting them to the Engineer/Owner for review;

2. Stamp each data Submittal with "Contractor's Stamp" indicating that they have been checked. Shop drawings submitted to the Engineer without the "Contractor's Stamp" will be returned for non-conformance with this requirement;

3. Determine and verify field measurements and construction criteria;

4. Determine and verify specific catalog numbers and similar data (other catalog or manufacturer's data not pertinent to the Submittal shall be crossed or marked out).

5. Determine and verify general conformance with Contract Documents.

6. Not begin any work covered by a shop drawing returned for correction until a revision or correction thereof has been reviewed, accepted and returned to the Contractor by the Engineer/Owner. The Contractor shall be responsible for and

bear all costs for damages which may result from the ordering of any material or from proceeding with any part of the work prior to the review and acceptance by the Engineer/Owner of the necessary shop drawings;

7. Carry out the construction in accordance with shop drawings as returned by the Engineer with no exceptions or as noted and shall make no further changes therein except upon written instruction from the Engineer/Owner;

8. Submit to the Engineer/Owner all shop drawings, samples and schedules sufficiently in advance of construction requirements to provide no less than fifteen (15) calendar days for checking, and appropriate action;

9. List exceptions to the specifications taken by the Contractor in the letter of Shop Drawing Transmittal to the Engineer.

F. ENGINEER'S RESPONSIBILITY - the Engineer/Owner will:

1. Review shop drawings, data, and samples submitted by the Contractor to interpret the work depicted on such Submittal to be in general conformance with the design concept and in general compliance with the Contract Document requirements. The Engineer's review and comments, if any, constitutes a limited, conditional or qualified permission to use such materials, equipment or methods and does not constitute an acceptance of dimensions, quantities, details of the material, equipment, device or item submitted.

2. Review and return shop drawing submittals within 30 calendar days of receipt.

3. Reject and return shop drawings to the Contractor without action (Stamped "REJECTED") or review with the following applicable notation:

   a. "Contractor's Stamp required - Incomplete Review by Contractor", or
   b. "Submittal Not Required by Contract Documents", or
   c. "Submittal Incomplete - See Section _____", or
   d. "Contract Variation Not Noted in Transmittal".

G. SUBMITTAL PROCEDURES:

1. Preliminary Shop Drawing Data: Within 20 days after the Award of the Contract or before the Pre-Construction Meeting, the Contractor shall submit to the Engineer a complete listing of manufacturers for all items for which shop drawings are to be submitted.

2. Shop Drawing Submittal Schedule: Within 30 days after the Notice to Proceed, the Contractor shall submit to the Engineer a complete schedule of shop drawing submittals fixing the respective dates for submission, the beginning of manufacture, testing, and installation of materials, supplies and equipment, noting those submittals critical to the progress schedule.

3. Submittal Log: An accurate updated log of submittals maintained by the

Contractor and subject to review by the Engineer/Owner at each scheduled progress meeting.

4. When reviewed by the Engineer/Owner, each of the shop drawings will be identified as having received such review, being so stamped and dated. Shop drawings stamped "REJECTED" will be returned to the Contractor for correction and re-submittal with the required correction indicated on the shop drawing.

5. If submitted drawings or schedules show a departure or variation from the Contract Requirements which the Engineer finds to be in the interest of the Owner and to be so minor as not to involve a change in Contract Price or time for performance, the Engineer may return the reviewed drawings without noting an exception.

6. If the Contractor considers any correction indicated on the drawings to constitute a change to the Contract Drawings or specifications, the Contractor shall give written notice thereof to the Engineer. This does not constitute a change order until accepted by the Owner.

7. Resubmittals will be handled in the same manner as first submittals. On resubmittals, the Contractor shall direct specific attention on the transmittal and on resubmitted shop drawings to revisions other than the corrections requested by the Engineer on previous submissions. The Contractor shall make any corrections required by the Engineer.

8. The Engineer/Owner will review a Submittal/resubmittal a maximum of two (2) times after which the cost of review will be borne by the Contractor at the Engineer's standard hourly rate.

9. No partial submittals will be reviewed. Submittals not complete will be returned to the Contractor, and will be considered "Rejected" until properly resubmitted.

10. Contractor shall submit as many copies as he believes necessary. The Owner will require one copy and return the remainder for Contractor's distribution. Additional sets as required shall be submitted by his subcontractors, of each shop drawing Submittal for review.

1.12 PROJECT RECORD DOCUMENTS

A. The Contractor shall maintain at the site, for the Owner, one record copy of the following to be submitted to the Engineer for the Owner at Project Closeout:

1. Conformed Drawings
2. Conformed Specifications
3. Addenda
4. Change Orders and other modifications to the Contract
5. Construction Progress Schedules
6. Field Orders
7. Contractor's Requests for Additional Information
8. Accepted Shop Drawings
9. Field Test Records
10. Project Record Drawings certified by Professional Land Surveyor registered in the State of Florida

B. Store Record Documents and samples in Contractor's office apart from documents used for construction. Do not use record document for construction purposes. Label each document "PROJECT RECORD" in neat large printed letters. File documents and samples in accordance with CSI/CSC format.

C. Record information concurrently with construction progress. Do not conceal any work until required information is recorded.

1.13 START-UP

A. GENERAL: As soon as conditions permit, the Contractor shall furnish all labor, fuel, energy, lubrication, water, and all other materials, equipment, tools, and instruments necessary for the following acceptance tests ("Start-up Check-Out and Demonstration and Testing"). Prior to these acceptance tests, the Contractor shall conduct preliminary testing of equipment and, if the preliminary field test disclose any equipment furnished under this Contract which does not comply with the requirements of the Contract Documents, then Contractor shall, prior to Start-up Demonstration and Testing, make all changes, adjustments and replacements required. The furnishing Contractor shall assist in the preliminary field-tests as applicable.

1. Coordinate start-up activities with the Owner's operating personnel at the project site and with the Engineer prior to commencing system start-up.

2. Demonstrate to the Engineer that all temporary jumpers and/or bypasses have been removed and that all of the components are operating under their own controls as designed.

B. Start-up CHECK-OUT Certification

1. Conduct start-up testing with the Manufacturer's field service representative to test the equipment installation to the satisfaction of the Manufacturer.

2. Confirm that all equipment is properly energized, that the valves are set to their normal operating condition and that the flow path through the new work is unobstructed.

3. Slowly fill each hydrostatic structure in the process flow stream with water.

4. Observe the component operation and make adjustments as necessary to optimize the performance of the Work.

5. Coordinate with Owner for any adjustments desired or operational problems requiring debugging. Make adjustments as necessary.

6. Submit five (5) copies of the CHECK-OUT MEMO signed by the Contractor and the manufacturer's representative. This form shall be completed and submitted before Instruction in Operation to the Owner or a request for final inspection.

C. Start-Up DEMONSTRATION AND TESTING Certification:

1. After all Work components have been constructed, field tested and the start-up CHECK-OUT completed in accordance with the manufacturer requirements, perform Start-up DEMONSTRATION AND TESTING in the presence of the Engineer and the Owner.

2. The intent of the start-up demonstration and testing is for the Contractor to demonstrate to the Owner and Engineer that the Work will function as a complete and operable system under normal as well as emergency operating conditions and is ready for acceptance. The demonstration shall be conducted upon completion of all systems at a date to be agreed upon in writing by the Owner or his representative.

3. Start-up DEMONSTRATION AND TESTING will be conducted continuously for three (3) consecutive days. The Work must operate successfully during this testing period in the manner intended. If the Work does not operate successfully, or if the start-up is interrupted due to other contracts, the problems will be corrected and the test will start over from day one. The party causing the interruption will be subject to the assessment of actual damages due to delay.

4. During the start-up demonstration period, operate the Work, instruct designated plant operating personnel in the function and operation of the Work and cause various operational circumstances to occur. As a minimum these circumstances will include average and peak daily flows, random equipment failures, surcharges and bypasses. Demonstrate the essential feature of the equipment and its relationship to other equipment.

5. Acceptability of the Work's performance will be based on the Work performing as specified, under these actual and simulated operating conditions as defined in the Contract Documents.

6. Certificate of Completed Demonstration: Submit five (5) copies of Certificate of Completed Demonstration, signed by the Contractor, Subcontractor and Owner and insert one copy in each Operation and Maintenance Manual.

D. FAILURE OF TESTS:

1. Any defects in the materials and equipment or their failure to meet the tests, guarantees or requirements of the Contract Documents shall be promptly corrected by the Contractor by replacements, improvements, or otherwise at no cost to the Owner. The decision of the Engineer as to whether or not the Contractor has fulfilled his obligations under the Contract shall be final and conclusive.

2. If the Contractor fails to make these corrections or if the improved materials and equipment, when tested, shall again fail to meet the guarantees or specified requirements, the Owner, notwithstanding partial payment for work, and materials and equipment, may reject the nonconforming materials and equipment and may order the Contractor to remove them from the site at his own expense.

3. If the Owner rejects any materials and equipment, then the Contractor shall replace the rejected materials and equipment within a reasonable time. If he fails to do so, the Owner may, after the expiration of a period of thirty (30) calendar days after giving him notice in writing, proceed to replace such rejected materials and equipment. The cost thereof shall be deducted from any compensation due or which may become due the Contractor under his Contract.

1.14 CONTRACT CLOSEOUT

A. SUBSTANTIAL COMPLETION:

1. When the Contractor considers the Work as substantially complete, he shall submit to the Engineer/Owner a written notice stating so and requesting the Engineer/Owner to make an inspection to determine the status of completion. This request shall be accompanied by a list of items known to be incomplete or yet to be corrected.

2. Should the Engineer/Owner determine that the work is not substantially complete, the Engineer/Owner will promptly notify the Contractor in writing, given the reasons therefor in the form of a punch list. The Contractor shall remedy the deficiencies in the Work, and send a second written notice of substantial completion to the Engineer/Owner for re-inspection.

3. When the Engineer/Owner finds that the work is substantially complete, he will prepare a tentative Certificate of Substantial Completion with a tentative list of items to be completed or corrected prior to final payment.

B. FINAL INSPECTION:

1. When the Contractor considers the Work complete, he shall submit written certification that:

   a. Contract Documents have been reviewed.
   b. Work has been inspected for compliance with Contract Documents.
   c. Work has been completed in accordance with Contract Documents.
   d. Equipment and systems have been tested in the presence of the Owner's Representative and are operational.
   e. Work is completed and ready for final inspection.

2. The Engineer/Owner will make a final inspection to verify the status of completion after receipt of such certification.

3. Should the Engineer/Owner consider that the Work is incomplete or defective, he will promptly notify the Contractor in writing, listing the incomplete and defective work, to the best of his knowledge at that time. If the Engineer has inadvertently omitted any items from the list it shall not relieve the Contractor from his obligations shown on the Drawings and specified in the Project Manual. Contractor shall take immediate steps to remedy the stated deficiencies,

and send a second written certification to the Engineer/Owner that the Work is complete.

4. When the Engineer/Owner finds that the Work is acceptable under the Contract Documents, he shall request the Contractor to make closeout submittals.

5. Should the Engineer/Owner perform reinspection due to failure of the work to comply with the claims of status of completion made by the Contractor, the Owner will deduct the amount of any compensation or costs paid for additional inspections or tests from the final payment to the Contractor.

C. CONTRACTOR'S CLOSE-OUT SUBMITTALS TO ENGINEER:

1. Evidence of compliance with requirement of governing authorities
2. Project Record Documents
3. Operating and Maintenance Data
4. Warranties and Bonds (required for the Correctional Period and Maintenance Period)
5. Spare Parts and Maintenance Materials
6. Evidence of Payment and Release of Liens
7. Final Application for Payment, including "Final Release of Liens", "Consent of Surety to Final Payment", "Final Statement of Accounting" and final Change Order, if required. The final Statement of Accounts shall reflect the following adjustments to the Contract Price:

a.	Previous Change Orders	e	Penalties and bonuses
b.	Allowances	f.	Deductions for liquidated damages
c.	Unit prices	g	Deductions for reinspection payments
d.	Deductions for uncorrected work	h.	Other adjustments

8. The Engineer/Owner will prepare a final Change Order, reflecting accepted adjustments to the Contract Price which were not previously made by Change Orders. The Contractor shall meet all close-out requirements as specified in the General Terms and Conditions (Part F) of these specifications.

END OF SECTION

SECTION 01025
MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.01 GENERAL PROVISIONS

A. Unit Price Contracts: The quantities of work to be done and materials to be furnished under a unit price contract, as given in the Bid Form, are to be considered as approximate only and are to be used solely for the comparison of Bids received and determining an initial Contract Price. The Owner/Engineer does not expressly or by implication represent that the actual quantities involved will correspond exactly therewith; nor shall the Contractor plead misunderstanding or deception because of such estimate or quantities or of the character, location or other conditions pertaining to the Work. Payment to the Contractor will be made only for the actual quantities of work performed or material furnished in accordance with the Drawings and other Contract Documents, and it is understood that the quantities may be increased or diminished as provided in the General Conditions without in any way invalidating any of the unit prices bid.

B. Lump Sum Contracts: The quantities of work to be done and materials to be furnished, including all labor, equipment and incidentals required to complete the Work, are specified in the Contract Specifications and shown in the Contract Drawings. Payment to the Contractor of the lump sum price bid for the Work will be made and shall fully compensate the Contractor for the construction of the Work, completed and ready for continuous operation and use, in the manner contemplated by the Contract Documents.

C. Unit Price and Lump Sum Contracts:

1. All schedules are given for the convenience of the Engineer, the Owner and the Contractor and are not guaranteed to be complete. The Contractor shall assume all responsibility for the making of estimates of the size, kind, and quantity of materials and equipment included in work to be done under this Contract.

2. Where fittings are noted on the Drawings, such notation is for the Contractor's convenience and does not relieve him from laying and jointing different or additional items where required and approved.

3. All contracts shall be subject to 10% minimum retainage as defined in the General Conditions and the Agreement.

1.02 ALLOWANCES - NOT APPLICABLE

1.03 SCHEDULE OF VALUES

A. Scope of Work:

1. Submit to the Engineer/Owner a Schedule of Values within fifteen (15) days after the Notice to Proceed.

2. A Schedule of Values shall be submitted for both lump sum and unit price contracts and the sum of the values in the schedule shall equal the Total Bid amount.

3. Schedule of Values shall establish the actual value of the component parts of the Work and, unless objected to by the Engineer or Owner, shall be used as the basis for the Contractor's Applications for Payment.

B. Form and Content:

1. Type the schedule on the Engineer's/Owner's standard form. The Engineer/Owner upon Contractor's request will consider contractor's standard forms and computer printout for review and acceptance.

2. The values listed shall be the installed values of the component parts of the Work, including material, labor, overhead and profit, and all other costs associated with the installed value of each item.

C. Unit Price Contracts: For unit price contracts, the Bid Schedule shall be used as the basis for the Schedule of Values. The Contractor shall resubmit the Bid Schedule in the format described herein, and may, at his option, divide the items in the Bid Schedule into sub-items to provide a more detailed basis of payment.

D. Lump Sum Contracts: For lump sum contracts, the cost of the Work shall be separated into major items and sub-items as outlined below:

1. General Requirements (Division 1 Specification Sections)

a. Mobilization, Demobilization, Bonds and Permits
b. Shop Drawing Preparation / Submittal
c. Field Engineering and Exploratory Excavation
d. Record Drawing Preparation
e. All other costs associated with Division 1 of the Specifications

2. Site Work: The cost of the site work, with the exception of earthwork for structures and underground piping, shall be separated by task, with estimated quantities where applicable.

3. Yard Piping: Pipe size and type, valves and appurtenances shall separate the cost of yard piping. The Contractor's estimated quantities and unit prices shall be included for each sub-item.

E. The Owner reserves the right to delete any item included in the Schedule of Values and decrease the Contract Price by the scheduled amount for the item deleted.

1.04 APPLICATIONS FOR PAYMENT

A. Applications for the Contractor to the R.P.R. in accordance with the schedule shall submit Payment established by the General Conditions and Agreement between the

Owner and the Contractor.

B. Format:

1. Submit applications typed on forms provided by the Owner. The Contractor shall prepare itemized continuation sheets using the accepted Schedule of Values and attach them to the Application. Each item shall have an assigned dollar value for the current pay period, and a cumulative value for the project to date. Change Orders executed prior to the date of submission shall be listed at the end of the continuation sheets and shall be totaled separately.

2. The following items shall be included with each copy of the application for payment:
   a. Progress Schedule
   b. Stored Material Log
   c. Partial Release of Liens (for payment for stored material)
   d. Consent of Surety
   e. Invoices for Stored Material

3. The Contractor shall certify, for each current pay request, that all previous payments received from the Owner, under his Contract, have been applied by the Contractor to discharge in full all obligations of the Contractor in connection with Work covered by prior applications for payment, and all materials and equipment incorporated into the Work are free and clear of all liens, claims, security interest and encumbrances. Contractor shall attach to each application for payment like affidavits by all Subcontractors and Suppliers. Contractor shall also attach a "Consent of Surety" to each application for payment. Additionally, a "Partial Release of Lien" from each subcontractor and supplier shall be attached to each application for payment.

4. Submit three (3) copies of each application to the R.P.R. Each copy shall include original signatures. The R.P.R. shall review the application and verify quantities of installed work and stored materials. Upon his review and acceptance, he shall submit the application to the Engineer for review. When the Engineer/Owner finds the application properly completed and correct, he will transmit recommendation of payment to Contractor.

C. Work not installed in accordance with the requirements of the Contract Documents or the R.P.R., Owner or Engineer will not accept materials not conforming to the Contract Documents for payment.

D. The Application for Final Payment shall be prepared in accordance with Article 1.14 of the General Requirements - Contract Closeout.

1.05 MEASUREMENT AND PAYMENT

A. Methods of Payment:

1. Unit Price Contracts/Items: Payment will be made for actual quantities of work properly installed as accepted by the Owner/Engineer unless otherwise indicated herein.

2. Lump Sum Contracts/Items: Payment will be made for each individual item on a percentage of completion basis as estimated by the Contractor and accepted by the Owner/Engineer. Quantities provided in the Schedule of Values are for the purpose of estimating the completion status for progress payments. Adjustments to costs provided in the accepted Schedule of Values may be made only by Change Order.

B. Methods of Measurement:

1. Units of measurement shall be defined in general terms as follows:

a.	Linear Feet (LF)	d.	Each (EA)
b.	Square Feet (SF)	e.	Square Yard (SY)
c.	Cubic Feet (CF)	f.	Lump Sum (LS)

2. Unit Price Contracts/Items:

a. Linear Feet (LF) shall be measured along the horizontal length of the centerline of the installed material, unless otherwise specified. Pipe shall be measured along the length of the completed pipeline, regardless of the type of joint required, without deduction for the length of valves or fittings. Pipe included within the limits of lump sum items will not be measured.

b. Square Feet (SF), Square Feet (SF), Cubic Feet (CF), Each (EA) and Square Yard (SY) shall be measured as the amount of the unit of measure installed within the limits specified and shown in the Specifications and Drawings. Slope angles and elevations shall be measured using land surveying equipment. Contractor shall provide supporting documentation (i.e. drawings, truck tickets, invoices, etc.) to verify actual installed quantities.

c. No measurement is required for Lump Sum (LS) items.

3. Lump Sum Contracts/Items:

a. The Measurement of Work for lump sum contracts and/or items shall be based on the information provided in the Contract Documents and compiled through the Contractor's own field verifications, investigations and testing prior to Bidding.

END OF SECTION

SECTION 01720
PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.01 OVERVIEW

A. These standards and procedures are for integration of digital engineering CAD drawings and data into the database environments, while maintaining the integrity and positional accuracy of the data. The requirement for digital submittal of approved construction plans is to provide the CITY with a parcel and utility base for field maintenance and operations.

1.02 DESCRIPTION

A. Scope of Work

1. Drawings;
2. Specifications;
3. Addenda;
4. Change Orders and other modifications to the contract;
5. Engineer's Field Orders or written instructions;
6. Approved Shop Drawings, Working Drawings and Samples;
7. Field Test Records; and
8. Construction Photographs.

B. Related Requirements Described Elsewhere

1. Shop Drawings, Working Drawings, and Samples: Section 01001 - General Requirements, Subsection 1.11.

1.03 MAINTENANCE OF DOCUMENTS AND SAMPLES

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

B. Make documents and samples available at all time for inspection by the ENGINEER/OWNER.

C. As a prerequisite for monthly progress payments, the CONTRACTOR is to exhibit the currently updated "Record Documents" for review by the ENGINEER and Owner. Payment will be withheld if record documents are not satisfactorily maintained.

1.04 RECORDING

A. Stamp each document "PROJECT RECORD" with a rubber stamp having 1-1/2-inch high letters.

B. RECORD DRAWINGS shall include the following:

1. Record information concurrently with construction progress. Do not conceal any work until required information is recorded.

2. Legibly and clearly mark, to scale, each drawing to record actual construction.
3. Depths of various elements of foundation in relation to finish first floor datum.
4. All underground piping uncovered in the trench with elevations and dimensions; change in piping location; horizontal and vertical locations of underground utilities and appurtenances, actual installed pipe material, class, utility owner, size, etc.
5. Valves referenced to three fixed permanent surface improvements.
6. Location of internal utilities and appurtenances concealed in the construction, referenced to visible and accessible features of the structure.
7. Field changes of dimension and detail.
8. Changes made by Field Order or by Change Order.
9. Details not on original contract drawing.
10. Equipment and piping relocations.
11. Engineering schedule change according to Contractor's records and shop drawings.
12. Recording of existing utilities if different than shown on the drawings.

C. Specifications and Addenda: Legibly mark each section to record.

1. Manufacturer, trade name, catalog number, and Supplier of each product and item of equipment actually installed; and
2. Changes made by Field Order or by Change Order.

PART 2 – GENERAL

2.01 RECORD DOCUMENTS SUBMITTAL REQUIREMENTS

Record documents submittal to the CITY is required prior to the issuance of certificate of completion for the improvements. The system will not be placed into operation until record documents are submitted to the CITY and approved.

A. RECORD DOCUMENTS SUBMITTAL

1. The CONTRACTOR shall submit the following:
   a. One certified, full size, hard copy of the RECORD DRAWING.
   b. One revised digital RECORD DRAWING (City's current version of AutoCAD drawing (dwg) file.

B. RECORD DRAWINGS shall comply with the following requirements:

   a. RECORD DRAWINGS shall include certifications from the SURVEYOR, and the CONTRACTOR.
   b. The CONTRACTOR shall be responsible for recording information on the approved PLANS concurrently with construction progress.
   c. Drawings shall be legibly marked to record actual construction.
   d. Drawings shall show location of all underground and above ground water, wastewater and reclaimed water piping and related appurtenances,

based upon RECORD SURVEY information. All changes to piping location including horizontal and vertical locations of utilities and appurtenances shall be clearly shown and referenced to permanent surface improvements and road rights-of-way. Drawings shall also show actual installed pipe material, class, etc.

e. Drawings shall clearly show all field changes of dimension and detail including changes made by Field Order or by Change Order.

f. Drawings shall clearly show all details not on original contract drawings but constructed in the field. All equipment and piping relocation shall be clearly shown.

g. Each sheet of the PLANS shall be signed, sealed and dated by the licensed SURVEYOR as being RECORD DRAWINGS.

SECTION 02140
DEWATERING

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope of Work: The Work to be performed under this section shall include furnishing all equipment and labor necessary to remove storm or subsurface waters from excavation areas in accordance with the requirements set forth, as shown on the Drawings and as stated in the respective geotechnical report if furnished under separate cover.

1.02 QUALITY ASSURANCE

A. The dewatering of any excavation areas and the disposal of the water shall be in strict accordance with the latest revision of all local and state government rules and regulations.

B. The Contractor shall conform to all local and state agencies for discharge of dewatering fluids. All agency requirements, permits and permit fees shall be the sole responsibility of the Contractor and shall ensure all such permits and permit requirements are in affect prior to beginning any dewatering operations.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.01 DEWATERING

A. The Contractor shall provide adequate equipment for the removal of storm or subsurface waters which may accumulate in the excavation. Within and adjacent to residential areas, all pumping equipment shall be electrically powered without the use of internal combustion engines or generators associated unless directed in writing by the Owner.

B. If subsurface water is encountered, the Contractor shall utilize suitable equipment to adequately dewater the excavation so that it will be dry for work and pipe laying. A wellpoint system or other Engineer accepted dewatering method shall be utilized if necessary to maintain the excavation in a dry condition for preparation of the trench bottom and for pipe laying.

C. Dry condition shall be defined as groundwater table lowered to a minimum of 1 foot below the proposed trench bottom or trench bottom soils within 2% optimum moisture content.

D. Dewatering by trench pumping will not be permitted if migration of fine grained natural material from bottom, side walls, or bedding material will occur.

E. In the event that satisfactory dewatering cannot be accomplished due to subsurface conditions or where dewatering could damage existing structures, the Contractor shall

obtain the Engineer's/Owner's review and acceptance of wet trench construction or procedure before commencing construction.

3.02 DISPOSAL

A. Water pumped from the trench or other excavation shall be disposed of in storm sewers having adequate capacity, canals or suitable disposal pits.

B. Contractor is responsible for acquiring all permits required to discharge the water and shall protect waterways from turbidity during the operation.

C. In areas where adequate disposal sites are not available, partially backfilled trenches may be used for water disposal only when the Contractor's plan for trench disposal is accepted in writing by the Engineer/Owner. The Contractor's plan shall include temporary culverts, barricades and other protective measures to prevent damage to property or injury to any person or persons.

D. No flooding of streets, roadways, driveways or private property will be permitted. Engines driving dewatering pumps shall be equipped with residential type mufflers.

END OF SECTION

SECTION 02220
EXCAVATING, BACKFILLING AND COMPACTING

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope of Work: The work included under this Section consists of excavating, backfilling and compacting as required for the construction of the utility system consisting of piping and appurtenances as shown on the Drawings and specified herein.

B. Definitions:

1. Maximum Density: Maximum weight in pounds per cubic foot of a specific material.

2. Optimum Moisture: Percentage of water in a specific material at maximum density.

3. Rock Excavation: Excavation of any hard natural substance which requires the use of explosives and/or special impact tools such as jack hammers, sledges, chisels or similar devices specifically designed for use in cutting or breaking rock, but exclusive of trench excavating machinery.

4. Suitable: Suitable materials for fills shall be a noncohesive, nonplastic granular local sand and shall be free from vegetation, organic material, marl, silt or muck. The Contractor shall furnish all additional fill material required.

5. Unsuitable: Unsuitable materials are highly organic soil (Peat or muck) classified as A-8 in accordance with AASHTO Designation M 145.

C. Plan For Earthwork: The Contractor shall be responsible for having determined to his satisfaction, prior to the submission of his bid, the conformation of the ground, the character and quality of the substrata, the types and quantities of materials to be encountered, the nature of the groundwater conditions, the prosecution of the work, the general and local conditions and all other matters which can in any way affect the work under this Contract. Prior to commencing the excavation, the Contractor shall submit a plan of his proposed operations to the Engineer/Owner for review. The Contractor shall consider, and his plan for excavation shall reflect, the equipment and methods to be employed in the excavation. The prices established in the Proposal for the work to be done will reflect all costs pertaining to the work.

1.02 QUALITY ASSURANCE

A. A testing laboratory employed by the Owner will make such tests as are deemed advisable. The Contractor shall schedule his work so as to permit a reasonable time for testing before placing succeeding lifts and shall keep the laboratory informed of his progress. Costs for all testing shall be paid by the Owner. However, any and all tests

which have to be repeated because of the failure of the tested material to meet specification shall be paid for by the Contractor and the cost of any tests shall be deducted from payments due the Contractor.

B. Standards:

1. OSHA 29 CFR Subpart P - Excavations and Trenches a) 1926.650, 1926.651, 1926.652.
2. OSHA 29 CFR Subpart J - a) 1910.146 for Confined Space Entry.

1.03 JOB CONDITIONS

A. Test borings and the sub-surface exploration data if previously done on the site will be made available upon request and are for the Contractor's information only.

B. If, in the opinion of the Engineer/Owner, conditions encountered during construction warrant a change in the footing elevation, or in the depth of removal of unsuitable material from that indicated on the Drawings, an adjustment will be made in the contract price, as provided in the Schedule of cost for Changes in Quantities.

1.04 PROTECTION

A. Sheeting and Bracing:

1. Furnish, put in place, and maintain such sheeting and bracing as may be required to support the sides of excavations, to prevent any movement which could in any way diminish the width of the excavation below that necessary for proper construction, and to protect adjacent structures, power poles, etc. from undermining, and to protect workers from hazardous conditions or other damage. Such support shall consist of braced steel sheet piling, braced wood lagging and soldier beams or other accepted methods. If the Engineer/Project Manager is of the opinion that at any points sufficient or proper supports have not been provided, he may order additional supports put in at the expense of the Contractor, and compliance with such order shall not relieve or release the Contractor from his responsibility for the sufficiency of such supports. Care shall be taken to prevent voids outside of the sheeting, but if voids are formed, they shall be immediately filled and compacted. Where soil cannot be properly compacted to fill a void, lean concrete shall be used as backfill at no additional expense to the Owner.

2. The Contractor shall construct the sheeting outside the neat lines of the foundation unless indicated otherwise to the extent he deems it desirable for his method of operation. Sheeting shall be plumb and securely braced and tied in position. Sheeting and bracing shall be adequate to withstand all pressure to which the structure or trench will be subjected. Any movement or bulging which may occur shall be corrected by the Contractor at his own expense so as to provide the necessary clearances and dimensions.

3. Where sheeting and bracing is required to support the sides of excavations for

structures, the Contractor shall engage a Professional Geotechnical Engineer, registered in the State of Florida, to design the sheeting and bracing. The sheeting and bracing installed shall be in conformity with the design, and the Professional Engineer shall provide certification of this.

4. The installation of sheeting, particularly by driving or vibrating, may cause distress to existing structures. The Contractor shall evaluate the potential for such distress and, if necessary, take all precautions to prevent distress of existing structures because of sheeting installation.

5. The Contractor shall leave in place to be embedded in the backfill all sheeting and bracing not shown on the Drawings but which the Owner may direct him in writing to leave in place at any time during the progress of the work for the purpose of preventing injury to structures, utilities, or property, whether public or private. The Engineer/Project Manager may direct that timber used for sheeting and bracing be cut off at any specified elevation.

6. All sheeting and bracing not left in place shall be carefully removed in such manner as not to endanger the construction or other structures, utilities, or property. All voids left or caused by withdrawal of sheeting shall be immediately refilled with sand by ramming with tools especially adapted to that purpose, or otherwise as may be directed by the Engineer/Project Manager.

7. The right of the Engineer/Project Manager to order sheeting and bracing left in place shall not be construed as creating any obligation on his part to issue such orders, and his failure to exercise his right to do so shall not relieve the Contractor from liability for damages to persons or property occurring from or upon the work occasioned by negligence or otherwise, growing out of a failure on the part of the Contractor to leave in place sufficient sheeting and bracing to prevent any caving or moving of the ground.

8. No wood sheeting is to be withdrawn if driven below mid-diameter of any pipe, and under no circumstances shall any wood sheeting be cut off at a level lower than 1 foot above the top of any pipe.

B. Pumping and Drainage:

1. The Contractor shall at all times during construction provide and maintain proper equipment and facilities to remove all water entering excavations, and shall keep such excavations dry so as to obtain a satisfactory undisturbed subgrade foundation condition until the fills, structures or pipes to be built thereon have been completed to such extent that they will not be floated or otherwise damaged by allowing water levels to return to natural levels as stipulated in Section 02140. The Contractor shall engage a Professional Geotechnical Engineer registered in the State of Florida, to design the dewatering systems for all structures. The Contractor shall submit to the Engineer/Owner for review a plan for dewatering systems prior to commencing work. The dewatering system installed shall be in conformity with the overall construction plan, and the Professional Engineer shall provide

certification of this. The Professional Engineer shall be required to monitor the performance of the dewatering systems during the progress of the work and require such modifications as may be required to assure that the systems are performing satisfactorily.

2. 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 and to preserve the integrity of adjacent structures. Well or sump installations shall be constructed with proper sand filters to prevent drawing of finer grained soil from the surrounding ground.

3. Water entering the excavation from surface runoff shall be collected in shallow ditches around the perimeter of the excavation, drained to sumps, and pumped from the excavation to maintain a bottom free from standing water.

4. The Contractor shall take all additional precautions to prevent uplift of any structure during construction.

5. The conveying of water in open ditches or trenches will not be allowed. Permission to use any storm sewers, or drains, for water disposal purposes shall be obtained from the authority having jurisdiction. Any requirements and costs for such use shall be the responsibility of the Contractor. However, the Contractor shall not cause flooding by overloading or blocking up the flow in the drainage facilities, and he shall leave the facilities unrestricted and as clean as originally found. Any damage to facilities shall be repaired or restored as directed by the Engineer/Owner or the authority having jurisdiction, at no cost to the Owner.

6. The Contractor shall prevent flotation by maintaining a positive and continuous operation of the dewatering system. The Contractor shall be fully responsible and liable for all damages which may result from failure of this system.

7. Removal of dewatering equipment shall be accomplished after the system is no longer required; the Contractor shall remove the material and equipment constituting the system.

8. The Contractor shall take all necessary precautions to preclude the accidental discharge of fuel, oil, etc. in order to prevent adverse effects on groundwater quality.

PART 2 - PRODUCTS

2.01 MATERIALS

A. General:

1. All fill material shall be subject to the review and acceptance of the Engineer.

2. All fill material shall be free of organic material, trash, or other objectionable material. The Contractor shall remove excess or unsuitable material from the job site.

B. Common Fill Material: Common fill shall be sand and shall not contain stones, rock, concrete or other rubble larger than two (2) inches in diameter. It shall have physical properties that allow it to be easily spread and compacted.

C. Structural Fill: Structural fill shall be reasonably well graded sand to gravelly sand having the following gradation:

US Sieve Size	Percent Passing By Weight
1 - in.	100
No. 4	75-100
No. 40	15-80
No. 100	0-30
No. 200	0-12

D. Class 1 Soils*: Manufactured angular, granular material, 6 to 4 mm (1/4 to 1 1/2 inches) size, including materials having significance such as crushed stone or rock, broken coral, crushed slag, cinders, or crushed shells. Sieve analysis for crushed stone is given below separately.

Crushed Stone: Crushed stone shall consist of clean mineral aggregate free from clay, loam or organic matter, conforming with ASTM C33 stone size No. 89 and with particle size limits as follows:

U.S. Sieve Size	Percent Passing By Weight
1/2	100
3/8	90-100
No. 4	20-55
No. 8	5-30
No. 16	0-10
No. 50	0- 5

E. Class II Soils**:

1. GW: Well-graded gravel's and gravel-sand mixtures, little or no fines. Fifty (50) percent or more retained on No. 4 sieve. More than 95 percent retained on No. 200 sieve. Clean.
2. GP: Poorly graded gravels and gravel-sand mixtures, little or no fines. Fifty (50) percent or more retained on No. 4 sieve. More than 95 percent retained on No. 200 sieve. Clean.
3. SW: Well-graded sands and gravelly sands, little or no fines. More than fifty (50) percent passes No. 4 sieve. More than 95 percent retained on No. 200 sieve. Clean.
4. SP: Poorly graded sands and gravelly sands, little or no fines. More than fifty (50) percent passes No. 4 sieve. More than 95 percent retained on No. 200 sieve. Clean.

* Soils defined as Class I materials are not defined in ASTM D2487.
** In accordance with ASTM D2487, less than 5 percent pass No. 200 sieve.

F. Coarse Sand: Sand shall consist of clean mineral aggregate with particle size limits as follows:

U.S. Sieve Size	Percent Passing By Weight
3/8 inch	100
No. 10	85-100
No. 40	20-40
No. 200	0-12

G. Other Material: All other material, not specifically described, but required for proper completion of the work shall be selected by the Contractor and accepted by the Engineer.

PART 3 - EXECUTION

3.01 PREPARATION

A. Clearing:

1. The construction areas shall be cleared of all obstructions and vegetation including large roots and undergrowth, within 10 feet of the lines of the excavation.

2. Strip and stockpile topsoil on the site at the location to be determined by the Owner.

3.02 EXCAVATION

A. General: Excavations for roadways, structures and utilities must be carefully executed in order to avoid interruption of utility service.

B. Excavating for Roadways/Structures/Utilities:

1. Excavation shall be made to such dimensions as will give suitable room for building the foundations and the structures, for bracing and supporting, for pumping and draining, and for all other work required.

a. Excavation for precast or prefabricated structures shall be carried to an elevation 2 feet lower than the proposed outside bottom of the structure to provide space for the select backfill material. Prior to placing the select backfill, the excavation shall be measured by the Engineer to indicate to the satisfaction of the Owner that the excavation has been carried to the proper depth and is reasonably uniform over the area to be occupied by the structure.

b. Excavation for structures constructed or cast in place in dewatered excavations shall be carried down to the bottom of the structure where dewatering methods are such that a dry excavation bottom is exposed and the naturally occurring material at this elevation leveled and left ready to receive construction. Material disturbed below the founding elevation in dewatered excavations shall be replaced with Class B concrete.

c. Footings: Cast-in-place concrete footing sides shall be formed immediately after excavation. Forming for footing sides is specified elsewhere.

2. Immediately document the location, elevation, size, material type and function of all new subsurface installations, and utilities encountered during the course of construction.

3. Excavation equipment operators and other concerned parties shall be familiar with subsurface obstructions as shown on the Drawings and should anticipate the encounter of unknown obstructions during the course of the work.

4. Encounters with subsurface obstructions shall be hand excavated.

5. Excavation and dewatering shall be accomplished by methods that preserve the undisturbed state of subgrade soils. Subgrade soils which become soft, loose, "quick" or otherwise unsatisfactory for support of structures as a result of inadequate dewatering or other construction methods, shall be removed and replaced by crushed stone as required by the Engineer/Project Manager at the Contractor's expense.

6. The bottom of excavations shall be rendered firm and dry before placing any structure. Excavated material not suitable for backfill shall be removed from the site and disposed of by the Contractor.

7. All pavements shall be cut prior to removal, with saws or approved power tools.

8. Excavated material shall be stockpiled in such a manner as to prevent nuisance conditions. Surface drainage shall not be hindered.

9. All locations and elevations as required herein must be permanently documented by the Contractor, on the Record Drawings prior to the Engineer's/Owner's review and acceptance of the Application for Payment for that work.

3.03 DRAINAGE

A. The Contractor shall at all times during construction provide and maintain proper equipment and facilities to remove promptly and dispose of properly all water entering excavations, and keep such excavations dry so as to obtain a satisfactory undisturbed subgrade foundation condition. The dewatering method used shall prevent disturbance of earth below grade.

B. All water pumped or drained from the work shall be disposed of in a suitable manner without undue interference with other work, without damage to surrounding property, and in accordance with pertinent rules and regulations.

C. No construction, including pipe laying, shall be allowed in water. No water shall be allowed to contact masonry or concrete within 24 hours after being placed. The Contractor shall constantly guard against damage due to water and take full responsibility for all damage resulting from his failure to do so.

D. The Contractor will be required at his expense to excavate below grade and refill with crushed stone (gradation 57 or 89) or other accepted fill material if the Engineer determines that adequate dewatering has not been provided.

3.04 UNDERCUT

A. If the bottom of any excavation is below that shown on the Drawings or specified because of Contractor error, convenience, or unsuitable subgrade due the Contractor's excavation methods, he shall refill to normal grade with fill at his own cost. Fill material and compaction method shall be as directed by the Engineer.

3.05 FILL AND COMPACTION

A. Compact and backfill excavations and construct embankment according to the following schedule. (Proctor standard shall be ASTM D-698):

STRUCTURES AND ROADWORK

Area	Material	Compaction
Beneath Structures	Structural Fill	12 inch lifts, compacted to 95% maximum density as determined by AASHTO T-180. Fill should not be placed over any in-place soils until those deposits have been compacted to 95% Modified Proctor.
Around structures	Structural Fill	8 inch lifts, 95% of maximum density as determined by AASHTO T-180. Use light rubber-tired or vibratory plate compactors.
Beneath Paved Surfaces	Common Fill	12 inch, 98% by maximum density as determined by AASHTO T-180 or as required by the FDOT Standards.
Open Areas	Common Fill	12 inch, 95% by maximum density as determined by AASHTO T-180.

B. Pipe shall be laid in open trenches unless otherwise indicated on the Drawings or elsewhere in the Contract Documents.

C. Excavations shall be backfilled to the original grade or as indicated on the Drawings. Deviation from this grade because of settling shall be corrected. Backfill operation

shall be performed to comply with all rules and regulation and in such a manner that it does not create a nuisance or safety hazard.

D. Embankments shall be constructed true to lines, grades and cross sections shown on the plans or ordered by the Owner. Embankments shall be placed in successive layers of not more than 8 inches in thickness, loose measure, for the full width of the embankment. As far as practicable, traffic over the work during the construction phase shall be distributed so as to cover the maximum surface area of each layer.

E. If the Contractor requests approval to backfill material utilizing lifts and/or methods other than those specified herein, such request shall be in writing to the Owner. Acceptance will be considered only after the Contractor has performed tests, at the Contractor's expense, to identify the material used and density achieved throughout the backfill area utilizing the method of backfill requested. The Owner's acceptance will be in writing.

SECTION 02662
RECLAIMED WATER TRANSMISSION/DISTRIBUTION MAINS

PART 1 - GENERAL

1.01 WORK INCLUDED

A. The work under this Section includes providing a complete system for reclaimed transmission/distribution pressure piping and appurtenant items.

1.02 QUALITY ASSURANCE

A. Design Requirements:

1. Piping shall be laid with a minimum cover of 36 inches below finished grade, unless otherwise indicated.

2. Pipelines shall be constructed of the materials indicated on the Drawings.

3. Changes in horizontal alignment may be achieved through use of allowable pipe deflection in lieu of fittings shown on the Drawings at the Contractor's option, but subject to approval of the Engineer as to layout. Said deflection shall not exceed 75% of the limits set forth in applicable AWWA Standards.

4. All reclaimed water mains shall be installed with a continuous, insulated 10 gauge copper wire, color to match pipe identification color, installed directly on top of the pipe for location purposes. Wire shall loop at the top of each valve and be capable of extending 18 inches above the top of the box.

5. All PVC reclaimed mains shall be solid purple. All lettering shall appear legibly on the pipe and shall run the entire length of the pipe. Lettering shall read as is acceptable for the intended use.

6. All ductile iron water mains shall be marked with a continuous stripe located within the top 90 degrees of the pipe. Said stripe shall be a minimum 2 inch in width and shall be oil based paint, purple in color. Backfill shall not be placed for 30 minutes following paint application.

7. All pipe on this project shall be supplied by a single manufacturer unless otherwise directed, in writing by the Engineer/Owner.

B. Pipe Inspection: The Contractor shall obtain from the pipe manufacturers certificate of inspection to the effect that the pipe and fittings supplied for this Contract have been inspected at the plant and that they meet the requirements of these specifications. All pipe and fittings shall be subjected to visual inspection at time of delivery by rail or truck, also just before they are lowered into the trench to be laid, and joints or fittings that do not conform to these specifications will be rejected and must be removed immediately by the Contractor. The entire product of any plant may be rejected when,

in the opinion of the Owner, the methods of manufacture fail to secure uniform results, or where the materials used are such as to produce inferior pipe or fittings.

C. Prevention of Electrolysis: Where shown on Drawings or deemed necessary, electrolytic action through the contact of dissimilar metals shall be prevented by either:

1. The separation of one material from the other by means of an insulating or dielectric coupling (min 20 mil polyethylene wrap), or
2. The use of alternative materials, as directed by the Engineer/Owner.

1.03 SUBMITTALS

A. Shop drawings shall be submitted to the Engineer/Owner for comment prior to construction in accordance with Division 1 for the following:

1. Mill test certificates or certified test reports on pipe
2. Details of restrained and flexible joints
3. Detailed laying schedule for pipe
4. Valves and valve boxes

B. Acceptance Of Material: The Owner reserves the right to sample and test any pipe or fitting after delivery and to reject all pipe and fittings represented by any sample which fails to comply with the specified requirements.

1.04 JOB CONDITIONS

A. Water in Excavation: Water shall not be allowed in the trenches while the pipes are being laid and/or tested. The Contractor shall not open more trenches than the available pumping facilities are able to dewater to the satisfaction of the Engineer/Owner. The Contractor shall assume responsibility for disposing of all water so as not to injure or interfere with the normal drainage of the territory in which he is working. In no case shall the pipelines being installed be used as drains for such water, and the ends of the pipe shall be kept properly and adequately blocked during construction by the use of directed stoppers and not by improvised equipment. All necessary precautions shall be taken to prevent the entrance of mud, sand, or other obstructing matter into the pipelines. If on completion of the work any such material has entered the pipelines, it must be cleaned as directed by the Engineer/Owner so that the entire system will be left clean and unobstructed.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Ductile Iron Pipe and Fittings: Ductile iron pipe shall meet the requirements of Section 15062 - Ductile Iron Pipe and Fittings.

B. PVC Pipe Standards for use in connecting to existing small diameter pipe:

a. Pressure rated (DR/SDR) pipe: ASTM –D2241
b. 2" – 4" Schedule 80 pipe: ASTM-D1785
c. Materials: ASTM 1784
d. Joint Materials: Pipe and fittings shall be gasketed style, utilizing single gasket bell and spigot and shall be in accordance with ASTM D3139.

C. Gate Valves: Resilient seated gate valves shall be used for reclaimed water mains (unless otherwise indicated on the Drawings).

1. Gate valves shall meet the requirements of AWWA C509. Valves shall be rated for 150 psi working pressure and a minimum 300 psi test pressure. Valves shall be iron body, resilient seat, non-rising bronze stem type. All valves shall be provided with O-ring seals. The design and machining of valves shall be such as to permit replacing the O-ring seals while in service without undue leakage. The operating nuts shall be 2 inches square. All valves shall open counterclockwise. Gate valves shall be mechanical joint as shown on the drawings as specified herein.

2. All buried valves shall be fitted with valve boxes as specified in Paragraph 2.01D of this section.

3. All gate valves greater than 12 inches shall be equipped with a side actuator mechanism designed specifically for and supplied by the valve manufacturer.

D. Valve Boxes: Cast iron valve boxes shall be provided for all valves installed underground. The valve boxes shall be adjustable to fit the depth of earth cover over the valve and shall be designed so as to prevent the transmission of surface loads directly to the valve or piping. The valve boxes shall be provided with covers marked WATER, which shall be so constructed as to prevent tipping, or rattling. Extension sections shall be ductile or cast iron only. The protective concrete collar shall be constructed of Class B concrete, of the dimensions as shown on the drawings, and include a 2 inch brass pipe with brass/bronze plug for location wire storage and access as shown. The barrel shall be two-piece, screw type, having 5-1/4 inch shaft. The upper section shall have a flange at the bottom having sufficient bearing area to prevent settling and shall be complete with cast iron covers.

E. Air Release Valves: Air release valves or for use on potable water mains shall be installed in the high points of the water main in an enclosure as shown on the Drawings. Valves shall be cast iron body, rated for a minimum 150 psi working pressure, equipped with a vacuum ball to prevent air return.

F. Service Saddles: Service saddles shall be double stainless steel strap, ductile iron fusion epoxy or nylon coated body with stainless steel bolts, nuts and washers.

G. Corporation Stops and Curb Stops: Corporations stops and curb stops shall be all brass suitable for 150 psi operating pressure compatible with the connecting service piping

type, threaded in accordance with AWWA C800, and shall be of sizes required and/or noted on the Drawings.

H. Polyethylene Service Pipe: Polyethylene tubing for service connections shall comply with AWWA C901 and be directed for potable water use and bear the seal of the National Sanitation Foundation (NSF). The product shall be rated for a minimum working pressure of 150 psi and a Dimension Ration DR-9 size. The tubing shall be designated copper tube size and the material PE-2406 cell classification minimum PE213323C in accordance with ASTM 3350.

I. Tapping Sleeves and Valves: Tapping sleeves and tapping valves used to make "wet" taps into existing mains shall be provided and installed at locations as shown in the Drawings. Tapping sleeve shall be mechanical joint - split body or steel fusion epoxy coated body with stainless steel straps, bolts, nuts and washers. Contractor shall determine the outside diameter of the existing main prior to ordering sleeve. Tapping valve shall be as specified in this section. Test plug (3/4" NPT) shall be provided on sleeves.

1. Mechanical Joint Tapping Sleeves

   a. Sleeves shall be cast of gray-iron or ductile-iron and have an outlet flange with the dimensions of the Class 125 flanges shown in ANSI B16.1 properly recessed for tapping valve. Glands shall be gray-iron or ductile iron. Gaskets shall be synthetic rubber. Bolts and nuts shall comply with ANSI/AWWA C111/A21.11. Sleeves shall be capable of withstanding a 200 psi working pressure.

2. Steel Tapping Sleeves

   a. Sleeves shall be fabricated of minimum 3/8" carbon steel meeting ASTM A285 Grade C or ASTM A-36. Outlet flange shall meet AWWA C-207, Class "D" ANSI 150 lb. drilling and be properly recessed for the tapping valve. Bolts and nuts shall be high strength low alloy steel conforming to AWWA C111 (ANSI A21.11). Gasket shall be synthetic rubber. Sleeve shall have manufacturer applied fusion bonded epoxy coating, minimum 12 mil thickness. Sleeves shall be rated at minimum 150 psi working pressure.

J. Butterfly Valves:

1. All butterfly valves shall be of the rubber-sealed tight-closing type designed, manufactured and tested in conformance to AWWA Standard C-504, latest revision. Valves shall be AWWA Class 250 B.

2. Valve Body shall be high strength ductile iron, ASTM A-536, Grade 70-50-5, with 18-8 Stainless Steel Body Seat. Valve Vane (Disc) shall be ductile iron, ASTM A-536, Grade 70-50-5 having rubber seat mechanically secured with serrated 18-8 Stainless Steel self-locked screws. Rubber Seat shall be a full-circle 360° seat not penetrated by the valve shaft. The vane shall be a "Flow-Through" design incorporating three integral flow passages, in order to provide

low flow resistance and assurance of high quality. Valve shafts shall be of two-piece stub shaft type, made of 18-8 Type 630 stainless steel with a diameter equal to or larger than specified for applicable valve class as defined by AWWA Standard C-504, latest revision. Rubber Seats shall be capable of ready replacement or adjustment without the use of special tools. Shaft seals shall be of the "O-ring" type.

Seat – Valve seats must be easily replaceable in the field and in the pipeline without any use of special tools, syringes or adhesives.

3. The operator shall be of the traveling nut or worm gear type, self-locking in any position and sealed, gasketed and lubricated as needed.

   All valves shall close by turning the operator nut in a clock-wise direction (Open left). The operator shall be capable of meeting the torque requirements for opening and closing the valve against the pressure and flow rate specified.

   The minimum number of turns to close a valve shall be no less than 2 turns per inch of valve size in order to minimize water hammer; and AWWA stops shall be provided capable of absorbing up to 450 foot-pounds of input torque without damage to the valve or operator.

4. Mechanical joint end valves shall conform to AWWA Standard C-111 (ANSI B21.11). Mechanical joint bolts, glands and gaskets shall be supplied by the valve manufacturer.

5. All valves shall be tested for leakage at rated pressure, and tested hydrostatically at two times rated pressure – all in conformance with AWWA Standard C-504, latest revision.

   SEAT TEST = 250 psi
   SHELL TEST = 500 psi
   NSF Approved

6. Approved manufacturers: see Appendix D.

K. Concrete: Concrete shall conform to the requirements of Division 3.

L. Tie Rods: Steel for tie rods and tie bolts shall conform to the requirements of ASTM Designation A 242, and rods shall be galvanized in conformance with requirements of ASTM Designation A 123.

PART 3 – EXECUTION

3.01 PREPARATION

A. Bedding:

1. Pipe Cradle: Upon satisfactory installation of the pipe bedding material as specified in Section 02220, a continuous trough for the pipe barrel and recesses for the pipe bells or couplings shall be excavated by hand digging. When the pipe is laid in the prepared trench, true to line and grade, the pipe barrel shall receive continuous, uniform support and no pressure will be exerted on the pipe joints from the trench bottom.

2. Cleanliness: The interior of the pipes shall be thoroughly cleaned of all foreign matter before being gently lowered into the trench and shall be kept clean during laying operations by means of plugs or other methods directed by the Engineer. During suspension of work for any reason at any time, a suitable stopper shall be placed in the end of the pipe last laid to prevent mud or other foreign material from entering the pipe.

3.02 INSTALLATION

A. Pipe:

1. Gradient: Lines shall be laid straight, and depth of cover shall vary to provide uniform gradient or slope to pipe, whether grading is completed or proposed at time of pipe installation. When a grade or slope is shown on the Drawings, batter boards with string line paralleling design grade, or other previously directed means, shall be used by the Contractor to assure conformance to required grade. Pipe shall be installed to meet design criteria.

2. Pipe Joint Deflection: Whenever it is desirable to deflect pipe, the amount of deflection shall not exceed 75% of the maximum limits as shown in AWWA Standard C600 for ductile iron pipe.

3. Rejects: Any pipe found defective shall be immediately removed and replaced with sound pipe at the Contractor's expense.

4. Joint Compounds: No sulfur base joint compound shall be used.

5. Thrust restraints shall be accomplished by the use of mechanical restraining devices unless specifically identified otherwise on the drawings or herein.

B. Installing Valves and Boxes:

1. Valves: Valves shall be carefully inspected, opened wide and then tightly closed and the various nuts and bolts shall be tested for tightness. Any valve that does not operate correctly shall be removed and replaced.

2. Valve Boxes: Valve boxes shall be carefully centered over the operating nuts of the valves so as to permit a valve key to be fitted easily to the operating nut. In unpaved areas, valve boxes shall be set to conform to the level of the finished surface and held in position by a concrete collar placed under the support flange as shown on the Drawings. The valve box shall not transmit surface loads to the

pipe or valve. Extensions or risers for valve boxes shall be an integral part of the box. No cut sections of DI pipe shall be used in extending the box to its proper height. Care shall be taken to prevent earth and other material from entering the valve box. Any valve box which is out of alignment or whose top does not conform to the finished ground surface shall be dug out and reset. Before final acceptance of the work all valve boxes shall be adjusted to finish grade.

3. Concrete Collar: Each valve installed in right-of-way or easement areas (outside of pavement, driveways or sidewalks) shall require a 610 mm x 610mm x 152 mm (24" x 24" x 6") concrete pad or collar as shown in the Drawings. The collar shall also include a 51 mm (2") PVC pipe with a 51 mm (2") brass/bronze plug (containing the location wire) penetrating the collar and accessible at the surface.

C. Pressure connection with tapping sleeve and valve:

1. Sufficient length of existing main shall be exposed to allow for installation of the tapping sleeve and valve and the operation of the tapping machinery. The main shall be supported at sufficient intervals to properly carry its own weight, plus the weight of the tapping sleeve, valve, and machinery. Any damage to the main due to improper or insufficient supports shall be repaired at the Contractor's expense.
2. The inside of the tapping sleeve and valve, the outside of the main, and the tapping machine shall be cleaned and swabbed or sprayed with 10% liquid chlorine prior to beginning installation for potable water system pressure connections.

3. After the tapping sleeve has been mounted on the main, the tapping valve shall be bolted to the outlet flange, making a pressure tight connection. Prior to beginning the tapping operation, the sleeve and valve shall be pressure tested at 150 psi to ensure that no leakage will occur.

4. Restrained joints shall be provided to prevent movement of the installation before test pressure is applied. See table on plans.

5. For pressure connections through 12" diameter or less the minimum diameter cut shall be 1/2" less than the nominal diameter of the pipe to be attached. For 14" through 20" installations the minimum diameter shall be 1 1/2" less; for larger taps the allowable minimum diameter shall be 2" to 3" less than the nominal diameter of the pipe being attached. After the tapping procedure is complete the Contractor shall submit the coupon to the Engineer.

D. Concrete Encasement:

1. Concrete encasement shall be constructed in accordance with details shown on the Drawings and shall be constructed of Class C concrete. Encasement shall be constructed where:

   a. Indicated on the Drawings.
   b. The Engineer shall order the line encased.

2. The points of beginning and ending of pipe encasement shall be not more than 6 inches from a pipe joint to protect the pipe from cracking due to uneven settlement of its foundation or the effects of superimposed live loads.

E. Flush Out Connections: Flush out connections shall be installed at the locations as determined by the Engineer and be full pipe size.

F. Backfilling: Backfilling shall be in accordance with Section 02220 of these specifications.

3.03 CLEANING

A. General: At the conclusion of the work, the Contractor shall thoroughly clean the new pipe lines by flushing with water or other means to remove all dirt, stones or other material which may have entered the line during the construction period.

B. Correction of Non-Conforming Work: All non-conforming work shall be repaired or replaced by the Contractor at no additional expense to the Owner. Non-conforming work shall be defined as failure to adhere to any specific or implied directive of this Project Manual and/or the drawings, including but not limited to paid not laid straight, true to the lines and grades as shown on the drawings, damaged or unacceptable materials, misalignment or diameter ring deflection in pipe due to bedding or backfilling, visible or detectable leakage and failure to pass any specified test or inspection.

3.04 FIELD QUALITY CONTROL

A. Flushing: All pipelines shall be flushed to remove all sand and other foreign matter. Flushing shall be accomplished through full pipe size connections at full pipe depth. The velocity of the flushing water shall be at least 4 feet per second unless otherwise directed by the Engineer. Flushing shall be terminated at the direction of the Engineer or Project Manager. The Contractor shall dispose of the flushing water without causing a nuisance or property damage. The Contractor shall arrange with the Owner the source of flushing water. Prior to any testing being performed, the Contractor shall submit and have approved the required record drawings.

B. Pressure and Leakage Tests of Pressure Piping:

1. General: The Contractor shall perform hydrostatic pressure and leakage tests on all pressure piping and against both sides of all valves.

2. Standard: AWWA C600, Section 4, with the exceptions required herein and the exception that the Contractor shall furnish all gauges, meters, pressure pumps and other equipment needed to test the lines.

3. Hydrostatic Pressure Test:

a. Test Pressure: 50 percent above the normal working pressure, but not less than 150 psi, unless otherwise noted on the drawings.

b. Test Duration: 24 hours

c. Air Release: Corporation cocks at least 3/4-inch in diameter, pipe riser and angle globe valves shall be provided at each dead-end to bleed air from the line.

4. Hydrostatic Leakage Test

a. General: Following the pressure test, the Contractor shall perform the leakage test. The line (in intervals between valves) shall be filled with water and all air removed for the test. The Contractor shall provide a pump to maintain the test pressure for the entire test period.

b. Test Pressure: Maximum operating pressure as determined by the Engineer but not less than 150 psi unless otherwise noted.

c. Test duration: 2 hours.

d. Allowable leakage:

$$L \text{ (18-foot pipe)} = \frac{SD(P)^{0.5}}{133{,}200}$$

$$L \text{ (20-foot pipe)} = \frac{SD(P)^{0.5}}{148{,}000}$$

L = Allowable leakage (gallons per hour)
S = Length of pipe tested (feet)
D = Nominal diameter of pipe (inches)
P = Average test pressure maintained (psig)

e. Visible Leakage: All leaks evident at the surface shall be repaired and leakage eliminated regardless of the measured total leakage.

f. Leakage Measurement: The amount of water required to maintain the test pressure is the leakage.

3.05 DISINFECTING RECLAIMED WATER PIPELINES – NOT APPLICABLE

END OF SECTION

SECTION 03100
CONCRETE FORMWORK

PART 1 - GENERAL

1.01 DESCRIPTION

A. The work included in this section consists of providing all labor, materials and equipment necessary for providing and installing formwork for concrete.

B. Related Work Described Elsewhere:

1. Section 03200 - Concrete Reinforcement

2. Section 03300 - Cast-in-Place Concrete

C. General Design: The Contractor shall be responsible for the design of all formwork and for safety in its construction, use and removal.

1.02 QUALITY ASSURANCE

A. Qualifications: Formwork shall be constructed in accordance with the specified standards, as well as all pertinent codes and regulations. Where provisions of pertinent codes conflict with the requirements of this section of these specifications, the more stringent provisions shall govern.

B. Standards: Unless otherwise indicated, all materials, workmanship and practices shall conform to the following standards:

1. Standard Building Code

2. ACI 347 "Recommended Practice for Concrete Formwork"

3. Local codes and regulations

1.03 SUBMITTALS

A. Materials: Submit manufacturer's literatures on form ties, spreaders, corner formers, form coatings and bond breakers.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Form Lumber: Use form lumber when in contact with exposed concrete, conforming to one of the following, a combination thereof, or equivalent as accepted by the Engineer/Owner.

1. Lumber: Douglas Fir-Larch No. 2 grade, seasoned, surfaced on four sides.

2. Plywood: "Plyform", Class I or II, bearing the label of the Douglas Plywood Association (Minimum 3/4-inch thickness).

B. Form Ties: Use form ties which do not leave an open hole through the concrete and which permit neat and solid patching at every hole. Use embedded rods with integral waterstops and cones to provide a 1-inch breakback. Wire ties and wood spreaders will not be permitted.

C. Form Coatings: Form release coating shall be a paraffin base oil or mineral oil coating which effectively prevents absorption of moisture, prevents bonding with concrete, is non-staining to concrete and leaves the concrete with a paintable surface.

D. Chamfer Strips: Chamfer strips shall be polyvinyl strips or acceptable equal, designed to be nailed in the forms to provide a 1-inch chamfer (unless indicated otherwise) at exposed edges of concrete members.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Construction of Formwork: Forms shall be sufficiently strong to withstand the pressure resulting from the placement and vibration of concrete and shall be sufficiently rigid to maintain specified tolerances. Forms shall be sufficiently tight to prevent loss of mortar, and shall be adequately braced against lateral, upward or downward movement.

B. Coating of Forms: Apply form coating to board forms prior to placing reinforcing. Keeps form coatings off steel reinforcing, items to be embedded and previously placed concrete.

C. Form Erection:

1. Provide a means of holding adjacent edges and ends of panels and sections tightly together and in accurate alignment so as to prevent the formation of ridges, fins, offsets, or similar surface defects of the finished concrete. Insure that forms may be removed without injury to the surface of the finished concrete.

2. Provide a positive means of adjustment of shores and struts. Insure that all settlement is taken up during concrete placing.

3. Temporary openings shall be provided in wall forms to limit the free fall of concrete to a maximum of 6 feet unless an elephant trunk is used. Such openings shall be located to facilitate placing and consolidation and shall be spaced no more than 8 feet apart. Temporary openings shall also be provided in

the bottom of wall and column forms and elsewhere as necessary to facilitate cleaning and observation immediately prior to placing.

4. Do not embed any form-tying device or part thereof other than metal in concrete.

5. Form surfaces of concrete members except where placement of the concrete against the ground is shown on the drawings. The dimensions of concrete members shown on the drawings apply to formed surfaces, except where otherwise indicated.

D. Form Reuse: Reuse only forms which maintain a uniform surface texture on exposed concrete surfaces. Apply light sanding between uses to obtain such a uniform texture. Plug unused tie rod holes with corks, shave flush, and sandpaper on the concrete surface side.

E. Removal of Forms:

1. Forms and shoring for elevated structural slabs, girders, and/or beams shall remain in place until the concrete has reached a compressive strength equal to the specified 28-day compressive strength as determined by test cylinders. Do not remove supports and reshore. The following table indicates the minimum allowable time after the last concrete is placed before forms, shoring, and/or bracing may be removed.

Structural Item	Minimum Allowable Time
Bottom side of slabs, girders, beams	When concrete reaches specified 28-day compressive strength
Vertical sides of girders, beams	48 hours
Walls not supporting vertical or horizontal loads	48 hours
Walls supporting vertical or horizontal	When concrete reaches specified 28-day compressive strength
Footings, pipe encasements, pipe supports	24 hours

2. Do not remove forms from concrete which have been placed with outside air temperature below 50°F without first determining if the concrete has properly set without regard for time. Do not apply heavy loading on green concrete. Immediately after forms are removed, the surface of the concrete shall be carefully examined and any irregularities in the surface shall be repaired and finished as specified.

F. Formed Openings: Openings shall be of sufficient size to permit final alignment of the items within it without deflection or offsets of any kind and to allow space for packing where the items pass through the wall to ensure water tightness around openings so formed. Provide openings with continuous keyways with waterstops where required, and provide a slight flare to facilitate grouting and the escape of entrained air during grouting. Provide formed openings with reinforcement as indicated and specified. Reinforcing steel shall be at least 2 inches clear from the opening.

G. Embedded Items: Set anchor bolts and other embedded items accurately and hold securely in position in the forms until the concrete is placed and set. Check all special castings, channels, or other metal parts that are to be embedded in the concrete prior to and again after concreting. Check all nailing, blocks, plugs and strips necessary for the attachment of trim, finish and similar work prior to concreting.

H. Pipes and Wall Spools Cast in Concrete:

1. Install wall spools, wall flanges and wall anchors before placing concrete. Do not weld, tie or otherwise connect the wall spools to the reinforcing steel.

2. Support pipe and fabricated fittings to be encased in concrete on concrete piers or pedestals. Carry concrete supports to firm foundations so that no settlement will be possible during construction.

I. Form Tolerances:

1. Failure of the forms to produce the specified concrete surface tolerance shall be grounds for rejection of the concrete work. Rejected work shall be repaired or replaced at no cost to the Owner.

2. The following table indicates tolerances or allowable variations from dimensions or positions of structural concrete work:

Maximum Tolerance	
Sleeves and Inserts	+1/4 inch to - 1/4 inch
Projected ends of anchors	+1/4 inch to - 0.0 inch
Anchor bolt setting	+1/4 inch to - 1/4 inch
Finished concrete, all locations	+1/4 inch to - 1/4 inch in 10-feet of length

The planes or axes from which the above tolerances are to be measured shall be as follows:

Sleeves and Inserts	Centerline of sleeve or insert
Projected ends of anchors	Plane perpendicular to the end of the anchor as located on the drawings

Anchor bolt setting	Centerline of anchor bolts
Finish concrete	The concrete surface as located on the drawings

3. Where equipment is to be installed, comply with manufacturer's tolerances if more severe than above.

SECTION 03200
CONCRETE REINFORCEMENT

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope of Work: The work included in this Section consists of providing reinforcing steel and welded wire mesh for cast-in-place or precast concrete structures.

B. Related Work:

1. Concrete Formwork: Section 03100

2. Cast-In-Place Concrete: Section 03300

1.02 QUALITY ASSURANCE

A. Standards: Unless otherwise indicated, all materials, workmanship and practices shall meet all requirements of the current editions of the following standards:

1. Standard Building Code.

2. ACI 318 Building Code Requirements for Reinforced Concrete.

3. ACI 315 Details and Detailing of Concrete Reinforcement.

4. CRSI Manual of Standard Practice, MSP-2.

1.03 SUBMITTALS

A. Complete shop drawings shall be submitted for comment, including bar lists and placing drawings. Drawings shall show the type, spacing and location of metal bar supports, the grade of the reinforcing and the name of the manufacturer. The type of coupler splice devices shall be designated.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Reinforcing Bars: ASTM A615, Grade 60, deformed bars of a USA manufacturer.

B. Welded Wire Fabric: ASTM A185, galvanized.

C. Metal Bar Supports: CRSI MSP-2, Chapter 3, Class 2, Type B, Stainless Steel Protected Bar Supports.

D. Coupler Splice Devices: Cadweld, tension couplers capable of developing the ultimate strength of the bar, as manufactured by Erico Products, Incorporated, Solon, Ohio, or acceptable equal and where accepted by the Engineer.

1. Fibermesh Reinforcement: Fibermesh reinforcement fibers shall be 2" to 3" collated polypropylent fibers. Fibers shall be in strict accordance with the manufacturer recommendations and within the time as specified in ASTM C94, Type III 4.13 and with applicable building codes.

2.02 FABRICATION

A. Fabrication shall not begin until the shop drawings have been reviewed by the Engineer/Owner and no exception taken or other favorable comment has been returned. Fabrication shall meet all requirements of the specified standards. Unless otherwise indicated, the following shall apply:

1. Hooks shall be standard hooks.

2. Bottom bars shall extend a minimum of 6 inches into supporting members.

3. Cover is to the outermost stirrup, tie or bar.

4. Splices are permitted only where indicated on the Drawings.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Supporting Reinforcing: Bar supports shall be provided as required by CRSI MSP-2 and ACI 315. Top and bottom bars in slabs formed on earth shall be supported on precast concrete block supports except where such bars are properly supported from formwork. Precast concrete block supports are not required in slabs formed on tremie concrete but may be used at the Contractor's option.

B. Placing Reinforcing: CRSI MSP-2 and ACI 315 shall as indicated on the Drawings and as recommend Placing of reinforcing and welded wire fabric. Reinforcing shall be securely tied and supported to prevent displacement during concrete placement.

C. Welded Wire Fabric: Splices in welded wire fabric shall be such that the overlap between outermost cross wires of each fabric sheet is not less than the spacing of the cross wires, plus 2". Fabric shall not be extended through expansion joints or construction joints in slabs on grade except as otherwise indicated.

D. Coupler Splice: Unless indicated on the Drawings or where conventional lap splices cannot be achieved, full positive tension connections shall be provided. Such devices shall be installed in accordance with the recommendations of the manufacturer.

E. Dowels: Dowels shall be wired in position prior to placing concrete.

F. Field Bending: Heat shall not be used to bend bars. Bars shall not be bent after being embedded in concrete.

G. Welding: Welding of reinforcing will not be permitted.

H. Place reinforcement minimums of 2" clear of any metal pipe or fittings.

SECTION 03300
CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope of Work: The work included in this Section consists of providing cast-in-place concrete.

B. Related Work Described Elsewhere:

1. Concrete Formwork: Section 03100

2. Concrete Reinforcement: Section 03200

1.02 QUALITY ASSURANCE

A. Standards: Unless otherwise indicated, all materials, workmanship and practices shall conform to the requirements of the following standards:

1. Standard Building Code

2. Local Codes and Regulations

3. ACI 318-83, Building Code Requirements for Reinforced Concrete

B. Plant Qualification: Plant equipment and facilities shall meet all requirements of the checklist for Certification of Ready Mixed Concrete Production Facilities of the National ready Mixed Concrete Association and ASTM C 94.

C. Evaluation and Acceptance of Concrete: Evaluation and acceptance of concrete will be in accordance with ACI-318, Chapter 4.

1.03 SUBMITTALS

A. Materials and Shop Drawings: The following information shall be submitted for review. No concrete shall be furnished until the Engineer/Owner has reviewed Submittal and no exceptions taken or other favorable response has been returned.

1. Plant Qualification: Satisfactory evidence shall be submitted indicating that the plant and operators have sufficient experience in providing the applicable design mix.

2. Materials: Satisfactory evidence shall be submitted indicating those materials to be used, including cement, aggregates and admixtures meet the specified requirements.

3. Design Mix: The design mix to be used shall be prepared by qualified persons and submitted for review. Submit affidavit as to design mix performance over the preceding six months. The design of the mix is the responsibility of the Contractor subject to the limitations of the Specifications. Acceptance of this submission will be required only as minimum requirements of the Specifications have been met. Such acceptance will in no way alter the responsibility of the contractor to furnish concrete meeting the requirements of the Specifications relative to strength and slump.

4. Ready Mix Concrete: Provide delivery tickets or weighmasters certificate per ASTM C 94, including weights of cement and each size aggregate, amount of water in the aggregate, and amount of water added at the plant. Write in the amount of water added on the job.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Cement:

1. Cement for all concrete shall be domestic Portland cement that conforms to the requirements of ASTM Designation C 150 Type I, Type II or Type III. All sanitary sewer manholes, wet wells, pumping stations, tanks and structures exposed to wastewater shall be constructed with Type II cement. Type III cement for high early strength concrete shall be used only for special locations and only with the review and acceptance of the Engineer/Owner. Type I cement may be used for buildings and tremie concrete.

2. Only one brand of cement shall be used in any individual structure unless accepted by the Engineer. Cement that has become damaged, partially set, lumpy or caked shall not be used and the entire contents of the sack or container that contains such cement will be rejected. No salvaged or reclaimed cement shall be used.

3. Flyash shall not be used in either Class A or Class B concrete.

B. Aggregates:

1. ASTM C 33. Coarse aggregates shall be size No. 57. Block cell fill shall be size No. 89.

2. In addition to requirements of ASTM C 33 for structures exposed to wastewater, the following shall apply:

   a. Soft particles: 2.0 percent
   b. Chert as a soft impurity (defined in Table 3 of ASTM C 33): 1.0 percent
   c. Total of soft particles and chert as a soft impurity: 2.0 percent

d. Flat and elongated particles (long dimension > 5 times short dimension): 15.0 percent

C. Water: Clean and free from injurious amounts of deleterious materials.

D. Air Entraining Admixture: ASTM C 260.

E. Water Reducing and Retarding Admixture: ASTM C 494, Type D. Admixture shall not contain calcium chloride.

F. Epoxy Bonding Agent: Sikastix 370, Sikadur Hi Mod, Concresive 1001-LPL or acceptable equal.

2.02 MIXES

A. General Requirements:

1. Mix Design: Proportioning shall be on the basis of field experience and/or trial mixtures as specified in ACI 318, Section 4.3. Data on consecutive compression tests and standard deviation shall be submitted. Proportioning for small structures may be by the water/cement ratio under special review and acceptance by the Engineer/Owner. Concrete mix design shall comply with the Standard Building Code requirements.

2. Air Content: 5 percent plus or minus 1 percent (Class A and B).

3. Slump: 4 inches plus or minus 1 inch.
8 inches plus or minus 1 inch for tremie concrete.

4. Water cement ratio = 0.45 maximum (all concrete exposed to hydrostatic loading), 0.50 maximum (all other concrete).

5. Minimum Compressive Strength at 28 days:

a. Class A, 4000 psi. Wastewater structures inclusive of tanks, ditches, pumping stations, tremie concrete and other structures in contact with treated waters.

b. Class B, 3000 psi. Building structures, curb and gutters, slabs, walks, encasements, thrust blocks, and pipe supports, etc. not in contact with treated waters.

B. Production of Concrete:

1. General: Concrete shall be ready mixed and shall be batch, mixed and transported in accordance with ASTM C 94, except as otherwise indicated.

2. Air Entraining Admixture: Air entraining admixture shall be charged into the

mixture as a solution and shall be measured by means of an accepted mechanical dispensing device. The liquid shall be considered a part of the mixing water.

3. Water Reducing and Retarding Admixture: Water reducing and retarding admixture shall be added and measured as recommended by the manufacturer. The addition of the admixture shall be separate from the air-entraining admixture. The addition of the admixture shall be completed within one minute after addition of water to the cement has been completed, or prior to the beginning of the last three-quarters of the required mixing, whichever occurs first. Admixtures shall be stored, handled and batched in accordance with the recommendations of ACI 68.

C. Delivery Tickets: In addition to the information required by ASTM C 94, delivery tickets shall indicate the cement content and the water/cement ratio.

D. Temperatures: The temperature of the concrete upon delivery from the truck shall not exceed 90°F.

E. Modifications To The Mix: No modifications to the mix shall be made in the plant or on the job which will decrease the cement content or increase the water-cement ratio beyond that specified. A qualified and responsible representative of the concrete producer shall make except no modifications of any kind.

PART 3 - EXECUTION

3.01 PREPARATION

A. Preparations before Placing: No concrete shall be placed until the review and acceptance of the Engineer has been received. Acceptance will not be granted until forms are thoroughly clean, and reinforcing and all other items required to be set in concrete have been placed and thoroughly secured. The Engineer shall be notified a minimum of 24 hours before concrete is placed.

B. Conveying:

1. General: Concrete shall be handled from the truck to the place of final deposit as rapidly as practicable by methods which will prevent segregation or loss of ingredients to maintain the quality of the concrete. No concrete shall be placed more than 90 minutes after mixing has begun for that particular batch.

2. Buckets and Hoppers: Buckets and hoppers shall have discharge gates with a clear opening equal to no less than one-third of the maximum interior horizontal area, or five times the maximum aggregate size being used. Side slopes shall be no less than 60 degrees. Controls on gates shall permit opening and closing during the discharge cycle.

3. Runways: Extreme care shall be exercised to avoid displacement of reinforcing

during the placing of concrete.

4. Elephant Trunks: Hoppers and elephant trunks shall be used to prevent the free fall of concrete for more than 6 feet.

5. Chutes: Chutes shall be metal or metal lined, and shall have a slope not exceeding one vertical to two horizontal, and not less than one vertical to three horizontal. Chutes more than 20 feet long and chutes not meeting the slope requirements, may be used only if they discharge into a hopper before distribution.

6. Pumping Equipment: Pumping equipment and procedures, if used, shall conform to the recommendations contained in the report of ACI Committee 304 on "Placing Concrete by Pumping Methods," ACI 304.2R-71. The specified slump shall be measured at the point of discharge. The loss of slump in pumping shall not exceed 1-1/2 inches.

7. Conveying equipment Construction: Aluminum or aluminum alloy pipe for tremies or pump lines and chutes, except for short lengths at the truck mixer shall not be permitted.

8. Cleaning: Conveying equipment shall be cleaned at the end of each concrete operation.

3.02 APPLICATION

A. Placing:

1. General: Concrete shall be deposited continuously, or in layers of such thickness (not exceeding 2 feet in depth) that no concrete will be deposited on concrete that has hardened sufficiently to cause the formation of seams or planes of weakness.

2. Supported Elements: At least two hours shall elapse after depositing concrete in columns or walls before depositing in beams, girders, or slabs supported thereon.

3. Segregation: Concrete shall be deposited as nearly as practicable in its final position to avoid segregation due to rehandling or flowing. Concrete shall not be subjected to procedures that will cause segregation.

4. Concrete Under Water: All concrete, except that indicated on the Drawings as Tremie concrete, shall be placed in the dry.

B. Seals and Tremie Concrete:

1. General:

a. Wherever practicable, all foundation excavations shall be dewatered and the concrete deposited in the dry. Where conditions are encountered

which render it impracticable to dewater the foundation before placing concrete, a concrete foundation seal shall be placed. The foundation shall then be dewatered, and the balance of the concrete placed in the dry.

b. When seal concrete is required to be placed, the satisfactory performance of the seal in providing a watertight excavation for placing structural concrete shall be the responsibility of the Contractor. Seal concrete placed by the Contractor, which subsequently fails to perform properly, shall be repaired as necessary to perform its required function, at the expense of the Contractor.

2. Method of Placing: Concrete deposited under water shall be carefully placed in the space in which it is to remain by means of a tremie, a closed-bottom dump bucket of not less than one cubic yard capacity, or other approved method, and shall not be disturbed after it is deposited. All seal concrete shall be deposited in one continuous pour. No concrete shall be placed in running water. All form work designed to retain concrete under water shall be watertight, and the design of the form work and excavation sheeting shall be by a Professional Engineer, registered in the State of Florida.

3. Use of Tremie: The tremie shall consist of a tube having a minimum inside diameter of ten inches, and shall be constructed in sections having tight joints. No aluminum parts that have contact with the concrete will be permitted. The discharge end shall be entirely seated at all times, and the tremie tube kept full to the bottom of the hopper. When a batch is dumped into the hopper, the tremie shall be slightly raised (but not out of the concrete at the bottom) until the batch discharges to the bottom of the hopper, after which the flow shall be stopped by lowering the tremie. The means of supporting the tremie shall be such as to permit the free movement of the discharge end over the entire top surface of the work, and shall permit it being lowered rapidly when necessary to choke off or retard the flow. The flow shall preferably be continuous, and in no case shall be interrupted until the work is completed. Special care shall be exercised to maintain still water at the point of deposit.

4. Use of Bottom-dump Bucket: When the concrete is placed by means of a bottom-dump bucket, the bucket shall be lowered gradually and carefully until it rests upon the concrete already placed. The bucket shall then be raised very slowly during the discharge travel; the intent being to maintain, as nearly as possible, still water at the point of discharge and to avoid agitating the mixture. Aluminum buckets will not be permitted.

5. Time of Beginning Pumping: Pumping to dewater a sealed cofferdam shall not commence until the seal has set sufficiently to withstand the hydrostatic pressure, and in no case earlier than 72 hours after placement of the concrete.

C. Consolidating Concrete:

1. General: Concrete shall be consolidated by means of internal vibrators operated

by competent workmen.

2. Vibrators: Vibrators shall have a minimum head diameter of at least 2 inches, a minimum centrifugal force of 700 pounds and a minimum frequency of 8,000 vibrators per second.

3. Vibrators for Confined Areas: In confined areas, the specified vibrators shall be supplemented by others having a minimum head diameter of 1-1/2 inches, a minimum centrifugal force of 300 pounds and a minimum frequency of 9,000 vibrations per second.

4. Spare Vibrator: One spare vibrator for each three in use shall be kept on the site during all concrete placing operations.

5. Use of Vibrators: Vibrators shall be inserted and withdrawn at points approximately 18 inches apart. The duration of each insertion shall be from 5 to 15 seconds. Concrete shall not be transported in the forms by means of vibrators.

D. Protection: Rainwater shall not be allowed to increase the mixing water, nor to damage the surface finish. Concrete shall be protected from construction overloads. Design loads shall not be applied until the specified strength has been attained.

3.03 CONCRETE FINISHING AND CURING

A. All slabs exposed to view shall receive a steel trowel finish without local depressions or high points and apply a light hair-broom finish. Do not use stiff bristle brooms or brushes. Leave hair-broom lines parallel to the direction of slab drainage.

B. All other slabs and footings shall receive a smooth steel trowel finish.

C. All walls of structures or parts of buildings exposed to view shall receive the following finish. Repair defective concrete, remove fins, fill depressions 1/4-inch or deeper, and fill tie holes. In addition, any surface not receiving a special applied finish, shall receive a slurry finish consisting of one part cement and one and one-half parts sand by damp loose volume. Dampen surfaces and then apply the slurry with clean burlap pads or sponge rubber floats. Remove any surplus by scraping and then rubbing with clean burlap. Surfaces that will receive a special applied finish shall be of even color, have no pits, pockets, holes, or sharp changes of surface elevation. Scrubbing with a stiff bristle fiber brush shall produce no dusting or dislodging of cement or sand.

D. All concrete shall be wet cured a minimum of 7 days; or if not to receive special finishes, coatings or concrete toppings, an Engineer accepted curing compound may be utilized.

E. All surface defects shall be repaired by removing defective concrete down to sound concrete and repairing with patching mortar. Finished repair shall match adjacent concrete and be cured as specified.

3.04 TESTING

A. A testing laboratory accepted by the Owner will make such tests as are deemed advisable. The Contractor shall pay for all tests indicating a failure to comply with the Specifications. The Contractor shall keep the laboratory informed of his schedule.

B. Standard laboratory compressive test cylinders will be obtained by the laboratory when concrete is discharged at the point of placing (i.e., discharge end of pumping equipment), and cylinders will be made and cured in accordance with the requirements of ASTM Designation C 31. A set of 4 cylinders will be obtained for each 50 cubic yards or fraction thereof placed each day, for each type of concrete. The cylinders will be cured under laboratory conditions and will be tested at 7 and 28 days of age, respectively, in accordance with the requirements of ASTM Designation C 39.

C. The testing laboratory will make slump tests of Class A and Class B concrete as it is discharged from the mixer at the point of placing. Slump tests will be made for each 25 cubic yards or "pour" of concrete placed. Slump tests may be made on any batch, and failure to meet specified slump requirements will be sufficient cause for rejection of that batch.

SECTION 15062
DUCTILE IRON PIPE AND FITTINGS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope of Work: Furnish all labor, materials, equipment and incidentals required and install and test all ductile iron piping, cast or ductile iron fittings, and appurtenances as specified herein.

B. General Design: The equipment and materials specified herein is intended to be standard types of ductile iron pipe and cast or ductile iron fittings for use in transporting potable water.

1.02 QUALITY ASSURANCE

A. Qualifications: All of the ductile iron pipe and cast or ductile iron fittings shall be furnished by manufacturers who are fully experienced, reputable, and qualified in the manufacture of the materials to be furnished. The pipe and fittings shall be designed, constructed, installed in accordance with the best practices and methods and shall comply with these specifications as applicable.

B. Standards:

1. ANSI A 21.50/AWWA C150
2. ANSI A-21.51/AWWA C151
3. ANSI A-21.41/AWWA C104

C. Factory Tests: The manufacturer shall perform the factory tests described in ANSI A-21.51/AWWA C151.

D. Quality Control:

1. The manufacturer shall establish the necessary quality control and inspection practice to ensure compliance with the referenced standards. All pipe on this project shall be supplied by a single manufacturer unless otherwise accepted, in writing by the Engineer/Owner.

2. In addition to the manufacturer's quality control procedures, the Owner may select an independent testing laboratory to inspect the material at the foundry for compliance with these specifications. The cost of foundry inspection requested by the Owner will be paid for by the Owner.

1.03 SUBMITTALS

A. Materials and Shop Drawings:

1. Submit shop drawings, including layouts, within and under buildings and

structures. Shop drawings shall include dimensioning, methods and locations of supports and all other pertinent technical specifications. Shop drawings shall be prepared by the pipe manufacturer. Shop drawings for piping within and under buildings and structures shall be submitted within 30 days of Execution of Contract.

B. Operating Instructions: Submit Operation and Maintenance Manuals in accordance with Section 01001.

C. Manufacturer's Certification:

1. Submit sworn certification of factory tests and their results.

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Delivery and Storage: Delivery and storage of the materials shall be in accordance with the manufacturer's recommendations.

B. Handling: Care shall be taken in loading, transporting and unloading to prevent damage to the pipe or fittings and their respective coatings. Pipe or fittings shall not be rolled off the carrier or dropped. Unloading shall be done by lifting with a forklift or crane. All pipe or fittings shall be examined before laying, and no piece shall be installed which is found to be defective.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Ductile Iron Pipe:

1. Standards: ANSI A-21.50, AWWA C150 and ANSI A-21.51, AWWA C151

2. Thickness:

a. Below ground piping: Class 350 (4 inch - 12 inch), Class 250 (16 inch - 24 inch) and Class 200 (24 inch - 64 inch) unless otherwise noted or specified.

b. Above ground piping: Flanged, Class 350 (minimum) unless otherwise noted or specified.

3. Joints:

a. Push-on or Mechanical Joints (below ground piping):

1) Standards: ANSI A21.11

2) Class: 350 psi water working pressure rating

3) Gaskets: Potable and Reuse Water Service - styrene Butadine Rubber (SBR) ring type.
Wastewater Service - Neoprene rubber ring type.

b. Flanged (above ground or inside below ground vaults):
   1) Standards: ANSI A21.15, ANSI B16.1
   2) Class: 125 lb. factory applied screwed long hub flanges, plain faced without projection.
   3) Gaskets:
      a) Spans less than 10 feet: full face 1/8-inch thick neoprene rubber.
      b) Spans greater than 10 feet: Toroseal gaskets as manufactured by American Cast Iron Pipe or acceptable equal.

c. Restrained Joints:
   1) Manufacturers: Meg-a-Lug System as manufactured by EBBA Iron, Star Pipe or approved.
   2) Class: 250 psi minimum design pressure rating.
   3) Standard mechanical joint retainer glands will not be acceptable.

d. Joint Accessories:
   1) Mechanical joint bolts, washers and nuts: Ductile iron or Corten steel.
   2) Flanged joint bolts, washers and nuts:
      a) Above ground: Hot dipped galvanized, Grade B, ASTM A-307
      b) Below ground: 304 stainless steel

e. Pipe Length (below ground installation): 20 feet maximum nominal length.

B. PVC Pipe:

1. Pipe and Fittings:

   a. Pipe shall be homogeneous throughout. It shall be free from voids, cracks, inclusions and other defects. It shall be uniform as commercially practical in color, density, and other physical properties. Pipe surfaces shall be free from nicks and scratches. Joining surfaces of spigots and joints shall be free from gouges and imperfections that could cause leakage.
   b. Pipe and pipe fittings shall be gasketed style, utilizing single gasket bell and spigot, unless otherwise shown on the Drawings or specified in other sections of this Division.

2. Joints:

   a. A gasket joint shall be provided with each length of pipe.
   b. The joints shall provide a positive seal against pressure or vacuum.
   c. Joints shall comply with the requirements in ASTM D3139 for pipe sizes less than or equal to 12".

d. Provide couplings of the same quality as the pipe that will maintain tight joints when subjected to the same hydrostatic tests designated for the pipe.

3. Adapters: When applicable, provide adapters for connecting PVC pipe to pipes constructed from other material.

4. Thrust Restraint:

a. Restrained Joints:

1) PVC pipe shall be restrained using a split ring restraining device providing full 360 degree contact. The clamp shall have a serrated inside surface providing the gripping action required to secure the clamp to the pipe. Restraining devices shall be Series 1300 as manufactured by Uniflange Corp. or equal.

C. Fittings

1. Materials: Ductile iron or cast iron

2. Pressure Class:

a. Mechanical Joint, Restrained Joint: Minimum 250 psi pressure rating.
b. Flanged Joint: Class 125, plain.

3. Compact Fittings: ANSI/AWWA A21.53/C153 4-inch through 12-inch diameter

2.02 COATINGS, LININGS AND IDENTIFICATION MARKINGS

A. Exterior Coatings:

1. Below ground or in a casing pipe:

a. Type: Asphaltic coating, 1.0 mil DFT
b. Markings: (continuous 2-inch wide strip within top 90 degrees of pipe - min. drying time 30 minutes before backfill).
c. Color:
1) Raw Wastewater: Green
2) Treated Wastewater: Green
3) Reclaimed Water: Purple (Pantone 522C)
4) Raw Water: Green
5) Potable Water: Blue

2. Above ground:

a. Not subject to non-potable water submergence or splashing:
1) Prime Coat: Rust inhibitor primer, 1.5 mils DFT
2) Intermediate Coat: Alkyd, 1.5 mils DFT
3) Final Coat: Alkyd, 1.5 mils DFT

b. Subject to non-potable water submergence or splashing:
   1) Prime Coat: Epoxy Primer, 5.0 mils DFT
   2) Intermediate Coat: Coal Tar Epoxy, 8.0 mils DFT
   3) Final Coat: Coal Tar Epoxy, 8.0 mils DFT

c. Color:
   1) Raw wastewater: Green
   2) Treated wastewater: Brown
   3) Reclaimed Water: Purple (Pantone 522C)
   4) Raw Water: Green
   5) Potable Water: Blue

B. Interior Lining (Applied by pipe manufacturer):

1. Wastewater: Polyethylene Lining: Heat fused 30 mils DFT in compliance with ASTM-D-1248: **NOTE: DIP shall not be used for wastewater without written acceptance from the Engineer/Owner.**
2. Water and Reclaimed Water: Cement mortar lining with a seal coat of asphaltic material in accordance with ANSI/AWWA A21.4/C104.

C. Polyethylene Encasement (required when pipe is within 10 feet of a gas main or as indicated on the Drawings):

1. Standard: ANSI A 21.5/AWWA C105, 8 mil minimum thickness.

2.03 LOCATION WIRE/LOCATOR SYSTEM

A. Location Detection Wire:

1. Materials: Continuous, insulated 10 gauge copper wire (color to match pipe identification).

2. Installation: Directly above 1 inch maximum centerline of pipe terminating at top of each valve box collar and be capable of extending 18 inches above top of box (stored inside the 2 inch brass pipe through the valve box collar) in a manner so as not to interfere with valve operation. For direction drilling installations, a minimum of two (2) 10 gauge wires shall be pulled along with the pipe.

3. Continuity: Continuity of wire to be tested using Metrotech 810/9860 or acceptable equal.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Standards: ANSI/AWWA C600

B. Underground Ductile Iron Pipe and Fittings:

1. Bedding firm, dry and even bearing of suitable material. Blocking under the pipe will not be permitted.

2. Placement:

   a. Alignment: In accordance with lines and grades shown on the Drawings. Deflection of joints shall not exceed that recommended by the manufacturer.

   b. Polyethylene encasement: Provide min 20 mil polyethylene wrap around all ductile iron pipe unless otherwise shown on the drawings. Where applicable wrap shall be provided in the color specific to the contents of the pipe.

3. Cutting: When required, cutting shall be done by machine, leaving a smooth cut at right angles to the axis of the pipe. Cut ends of the pipe to be used with a push-on bell shall be beveled.

4. Joints:

   a. Joint Placement:

      1) Push on joints: Pipe shall be laid with the bell ends facing upstream. The gasket shall be inserted and the joint surfaces cleaned and lubricated prior to placement of the pipe. After joining the pipe, a metal feeler shall be used to verify that the gasket is correctly located.

      2) Mechanical Joints: Pipe and fittings shall be installed in accordance with the "Notes on Method of Installation" under ANSI A21.11/AWWA C111. The gasket shall be inserted and the joint surfaces cleaned and lubricated with soapy water before tightening the bolts to the specified torque.

C. Thrust Restraint:

1. General: Thrust restraint shall be accomplished by the use of mechanical restraining devices unless specifically identified otherwise on the Drawings or herein.

2. Length of Restrained Joints: In accordance with the lengths listed in the table as shown on the Drawings.

3.02 CLEANING AND FIELD TESTING

A. General: At the conclusion of the work, the Contractor shall provide all associated cleaning and field testing as specified in other related sections of these specifications.

END OF SECTION

Reclaimed Water Category 1 of 5: Valves and Accessories			
Item	**Manufacturer**	**Part Number**	**Comments**
Air Release Valves (Epoxy Lined)			
1.	ARI	D-040 /D-060/S-050 / S-010	
2.	Vent-O-Mat		
Air Release Valve Service Saddles (Epoxy coated with stainless steel straps)			
1.	Smith Blair	Series 317	
2.	Ford	Series FC202	
3.	Mueller	DE 2S	
Blow Off Valve			
1.	Hydro Guard		Automatic Blow Off
Butterfly Valves 12-inch and above (8 mil Epoxy Coated and Lined (AWWA))			
1.	Clow	4500, 1450	
2.	Derzurik	BAW	
3.	Kennedy	4500, 1450	
4.	Mueller		
Gate Valves 12-inch and smaller (Resilient Seated Only)			
1.	American Flow Control	Series 2500	
3.	Clow	SeriesF-6100	
4.	Kennedy	Series 4571	
5.	M & H	Series 3067	
6.	Mueller	Series A-2360	
7.	U.S. Pipe	Metroseal 250	
Tapping Valves (Resilient Seated Only)			
1.	American Flow Control	Series 2500	
2.	Clow	Series F-6114	
3.	Kennedy	Series 4950	
4.	M & H	Series 3751	
5.	Mueller	Series T-2360	
6.	U.S. Pipe	Metroseal 250	
Valve Boxes			
1.	Tyler	Series 6850	
2.	Clow	F2450	
3.	U.S. Foundry	7500	

List of Approved Materials and Products

Reclaimed Water

Reclaimed Water Category 2 of 5: Service Materials			
Item	**Manufacturer**	**Part Number**	**Comments**
Brass Service Saddles (Service saddles can be hinged or bolt controlled OD saddles to be used on C-900 and IPS OD PVC pipe)			
1.	Ford	Series S-70, S-90	
2.	Smith Blair		
3.	McDonald	Model 3891/3895, 3801/3805	
4.	Mueller	Series S-13000/H-13000	
Corporation Stops Ball Type (1-inch with AWWA taper CC threads only/pack joint outlet for CTS)			
1.	Ford	FB1000-4 CC x CTS	
2.	McDonald	4701B-22	
3.	Mueller	P25008	
4.	Cambridge	301-AB	
5.	Smith Blair		
Curb Stops Straight Valves (Curb stop to be ball type, full port IP by IP 3/4-inch by 3/4-inch)			
1.	Ford	B11-333W	
2.	McDonald	6101W	
3.	Mueller	B-20200-R	
Curb Stops Straight Valves (Ball type compression by IP)			
1.	Ford	B41-444W	
2.	McDonald	6100W-22	
3.	Mueller	P25146	
Polyethylene Tubing (Purple with UV protection (SDR-9) 3/4 –inch - 2-inch only)			
1.	Endot	PE Endocore	
2.	Charter Plastics	PE	
Service Saddles (Epoxy or nylon coated stainless steel 18-8-Type 304 straps, CC threads - 2-inch to be iron pipe threads controlled OD saddles to be used on C-900 and IPS OD PVC pipe, double straps to be 2-inch minimum width each; single strap to be minimum 3-inch width)			
1.	Smith Blair	Series 397	
2.	Ford	Series FC202	
3.	Mueller	DR2S, DR2SOD	
U Branch (1-inch by 3/4-inch by 7-1/2-inch)			
1.	Ford	U-48-43	
2.	Mueller	P15363	

Reclaimed Water Category 3 of 5: Pipe Material			
Item	**Manufacturer**	**Part Number**	**Comments**
Casing Spacers (All Sizes) Stainless Steel with Vinyl Runners			
1.	Advance Products	Series SS	
2.	Cascade	Series CCS/CCPS/AZ	
3.	BWM	BWM-SS	
4.	Power Seal	Model 4810	
5.	PSI	Series S-G-2	
6.	PSI-Ranger	Ranger II	
Casing End Seals			
1.	Advance Products	Model AC and AW	
2.	BWM	BMW wrap around end seal	
3.	Link-Seal	400/500 Series	
Ductile Iron/Cast Iron Cement Lined (4-inch through 12-inch=Class 350, 16-inch through 24-inch=Class 250, 30-inch through 64-inch=Class 200)			
1.	American		
2.	Clow		
3.	Griffin		
4.	McWane		
5.	U.S. Pipe		
HDPE (Purple or Purple Striped) (4-inch through 12-inch = DR11)			
1.	Chevron/Phillips		
2.	CSR		
3.	J.M.		
4.	ISCO		
PVC (Purple) 4-inch through 12-inch (AWWA C-900, DR25, DR18)			
1.	Bristolpipe 4" to 12"		
2.	Diamond Plastic		
3.	Freedom Plastic		
4.	Ipex		
5.	J-M Manufacturing		
6.	National Pipe		
7.	NAPCO		North American Pipe Company
8.	Upinor ETI 9	Purple-C-909	
PVC (Purple) 14-inch through 48-inch (AWWA C-905, DR18, DR14)			
1.	Bristolpipe		
2.	Diamond Plastic		
3.	Freedom Plastic		
4.	Ipex		
5.	J-M Manufacturing		
6.	National Pipe		
7.	NAPCO		North American Pipe Company
8.	Upinor ETI 9	Purple-C-909	

Reclaimed Water Category 4 of 5: Pipe Fittings			
Item	**Manufacturer**	**Part Number**	**Comments**
Expansion Joints			
1.	EBAA Iron		
2.	Mercer		
3.	Metraflex		
4.	Proco		
Fittings C153 SSB / C110 Flange (Cement or fusion bonded epoxy lined)			
1.	American		
2.	Assured Flow Sales		Gradelock
3.	Griffin		
4.	Nappco/Sigma		
5.	Star		
6.	Union/Tyler		
7.	U.S. Pipe		Permafuse or cement lined
8.	Pipeline Components Inc.		
9.	One Bolt Inc.	One Bolt	
Restrained Joints – Ductile Iron Pipe			
1.	American	Flex Ring Gasket	
2.	EBAA Iron Inc.	Mega-lug Series 1100 Series 1700 Bell Restrainer Series RS-3800 Restrainer – sleeve included	
3.	Ford	UFR-1400 1300C Series	
4.	Star	Star Grip Series 3000 All Grip Series 3600	
5.	U.S. Pipe	Field Loc Gasket	
6.	Sigma	ONE-LOK-SLD (3-inch to 36-inch)	
7.	Mueller	Aquagrip Restraint System	
8.	Tyler Union	Series 1000 Turf Grip	
Restrained Joints – PVC Pipe			
1.	EBAA Iron Inc.	Mega-lug Series 2000PV Series 1500 & 1600 Bell Restrainer (4-inch to 12-inch) Series RS-3800 Restrainer – sleeve included	
2.	JCM	620 Sur-Grip Bell Joint 621 Sur-Grip Bell Joint	
3.	Star	Series 1000,1100,1200 All Grip Series 3600 Star Grip Series 4000	

Reclaimed Water Category 4 of 5: Pipe Fittings *(Continued)*			
Item	**Manufacturer**	**Part Number**	**Comments**
Tapping Sleeves (For all taps on IPS OD PVC pipe, including size on size (18-8 type 304 body, flange and bolts); flange to accept standard tapping sleeves)			
1.	Ford	Series FTSS	
2.	Mueller	Series H-304 S/S	
3.	Smith Blair	Series 633	
Tapping Sleeves Fabricated Steel (Epoxy coated AWWA C-213, 12 mils) with stainless steel nuts and bolts for all taps except AC and size on size)			
1.	Smith Blair (Rockwell)	Series 622	
2.	JCM	Series 412, 422	
3.	Ford	Series FTSC	
4.	Mueller		
Tapping Sleeves (Epoxy Coated Mechanical joint for all taps on cast iron, ductile iron, PVC-900 & AC)			
1.	American Flow Control	Series 2800	
2.	Clow	Series F-5205	
3.	Mueller	Series H-615,H-616,H-619	
4.	U.S. Pipe	Series T-9	
Tapping Sleeves (Fabricated steel, mechanical joint, fusion bonded epoxy coated)			
1.	Smith Blair	Style 623	
2.	JCM	Series 414	

Reclaimed Water Category 5 of 5: HDPE Fittings (All fittings are to be DIP Sizes)			
Item	**Manufacturer**	**Part Number**	**Comments**
MJ Fused Adapters 4-12-inch			
1.	Central Plastics	PE3408	
2.	Specified Fittings		
3.	Wager Company		
Fused Couplings 4-12-inch			
1.	Central Plastics	PE3408	
2.	Friatec	Frialen	
Fused Fittings 4-12-inch (22°, 45° and 90°)			
1.	Central Plastics	PE3408	
2.	Friatec	Frialen	
Fused Tapping Saddles 1-2-inch			
1.	Central Plastics	PE3408	